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Bożeny SKOTNICKIEJ-ZASADZIEŃ
Radosława WOLNIAKA

Edited by
Bożena SKOTNICKA-ZASADZIEŃ
Radosław WOLNIAK

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WYDAWNICTWO POLITECHNIKI ŚLĄSKIEJ
ul. Akademicka 5, 44-100 Gliwice
tel. (32) 237-13-81, faks (32) 237-15-02
www.wydawnictwopolitechniki.pl

Sprzedaż i Marketing
tel. (32) 237-18-48
wydawnictwo_mark@polsl.pl

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FOREWORD

Presented number of Silesian University of Technology. Scientific Papers. Organization and Management Series. Contemporary management. Presented papers contain result of researches conducted by various universities from Poland. The number consists of 38 papers.

The papers presented in the number concentrate on many topics connected with organization and management. There are in the number papers about: production management, information management, human resource management, public management, impact of Covid-19 pandemic on management, project management, Smart City, creativeness in management, tourist management, economics, marketing, innovation management, Society 5.0, entrepreneurship and environmental management.

Bożena Skotnicka-Zasadzień
Radosław Wolniak

SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

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MULTIMEDIA IN ARCHITECTURE AND SOCIAL COMMUNICATION

Alina LIPOWICZ-BUDZYŃSKA

Bydgoszcz University of Science and Technology; Faculty of Civil and Environmental Engineering and Architecture, Department of Architecture and Town Planning; a.lipowicz-budzynska@pbs.edu.pl, ORCID: 0000-0002-5428-0082

Purpose: The aim of the study is to determine the role of multimedia technologies used in architecture for socially significant communication. It is important to answer the following question: Can the content and graphic shapes included in the façade be used to shape public awareness and create social identity? One of the objectives is to examine the marketing potential of a message included in an image on a façade, and the possibilities of using it in building a region's brand.
Design/methodology/approach: The examination included 15 buildings in which various multimedia technologies were used with the intention to create a message. Among the solutions applied in these objects are those in which the message is composed directly, by a metaphor, or indirectly in combination with the architectural features. The research material was analysed, and groups of useful subjects were selected for further investigation:
- Promotion of a town.
- Accentuating the location.
- Accentuating the importance of events.
- Popularisation of art.
- Façade as a display and information channel.

Findings: groups of subjects were selected, which might be used in creating social integration and regional marketing.
Research limitations/implications: The below research is of preliminary character. In next steps, other aspects could be added, e.g. multimedia technologies, or seeking means of expression, methods of building images.
Practical implications: The article presents the possibilities that multimedia systems offer in the area of message creation. It could potentially give direction to decision-makers with regard to their marketing activities, or the efforts to accentuate certain public functions of a town or region. The results of this research may interest investors, architects, and artists. The anticipated effect is that both awareness and the frequency of using multimedia systems will grow.
Social implications: The article discusses the questions of the social role of art and façade graphics in architecture. It examines the effects of a message contained in an image on the issues of social identity and developing bonds.
Originality/value: The study proves that façade graphics have a substantial impact, and it shows the possibilities of using such graphics in regional marketing; it also mentions their form, scope, and means.

Keywords: multimedia façade, contemporary architecture; theory of architecture; communication in architecture.
Category of the paper: Research paper.

1. Introduction

Multimedia façades have become an attractive way of drawing attention at scale. They allow creating for a huge number of potential viewers, increasing the target user group thanks to online broadcasts and mentions in the media. This group constitutes an interesting material for research. The purpose of such research is to determine the importance and the scope of the effects of a message contained in façade graphics. This research is of preliminary character. Based on example buildings, the author analysed the features that enable measuring the importance of art linked with architecture. Each of the buildings was examined in terms of its usefulness for shaping social awareness and integration; all in connection with creating the image of a region as well as building its brand.

The research was conducted on 15 buildings which have multimedia systems used in their façades. The research material was analysed, and groups of subjects were selected for further investigation:

- Promotion of a town.
- Accentuating the location.
- Accentuating the importance of international events.
- Popularisation of art.
- Façade as a display and information channel.

Selection criteria for the buildings referenced in the paper:

- Multimedia systems are used in the building's façade.
- The image discusses a subject belonging to one of the five categories.
- The research material covers public utility buildings.
- Use of various solutions in the technical systems.
- Completed within the past two decades.

Investigated issues relate to art integration in architecture. It was observed that messages in buildings are usually created using metaphors (Lipowicz-Budzyńska, 2022). The message is built based on the relationship of the image with the form and function of the building. Is it done similarly in the case of images included in a multimedia façade?

In each of the referenced buildings, the predominant factors that take part in creating the information were analysed:

- Those related to the building's form: shape, function, scale of the building.
- Multimedia image: image structure, artistic means, message method and type.

2. Multimedia systems in architecture

A multimedia image has a specific impact. Its reception is full after dusk or at night, when other, non-lit or poorly lit forms of art included in architecture — such as ceramics, murals, façade graphics on glass — are no longer visible. Many not properly lit buildings lose their attractiveness when the sun goes down, and only regain their significance the following morning.

Another huge advantage of multimedia façade systems is the possibility to use motion in the image to further attract attention of a potential viewer.

Additionally, a multimedia façade, through its scale and properties, can be viewed in three contexts (Lipowicz-Budzyńska, 2019): the urban context, the context of the building's façade, as well as — often — the interior. The scope of its visual impact and the direct contact between the graphics and the viewer makes it a perfect medium to create a message.

The message directed at the users and the building's surroundings may be used to generate or enhance social identity, and eventually to have a marketing purpose and become part of strategies for improving a given region's competitiveness.

The referenced research material and the below application examples provide a view of the diversity of forms in which multimedia systems appear in architecture. All of the examples listed below differ in terms of their objectives, relations with the surrounding space, ways of communicating, and applied artistic means, which can be used for marketing purposes, such as in creating image or brand for an institution, company, town or region.

2.1. Promotion of a place and town

One of the methods for regional marketing is the presentation of the town's progressive policies within key strategic areas.

The authorities emphasise how much they care for the environment, sustainability and building an environmentally-friendly society. It is important to provide positive messaging in the town (Figure 1A) around well-being, as well as support and strengthen tourist areas of the town and region. One of the ways of promoting town or region is stressing its openness to state-of-the-art technologies and data transfer. Such message has been incorporated into the *Indemann* multimedia installation (Figure 1B) located in Inden, Germany. The 50-metre high structure acts as a viewing platform, at the same time providing an emphasis for its location (Oosterhuis et al., 2006), and is used as a promotional tool for the region. Its form symbolises the important direction for the development of the town and region — with the emphasis put on the latest technologies but without detriment to human values. The reference to a human silhouette in the graphics is symbolic, and it shows the building's purpose that is linked to the environmentally-friendly policies of the town and region. The installation constitutes a kind of contemporary symbol of the town (Fernandez-Alvarez, 2022) and an element that people associate with the region.

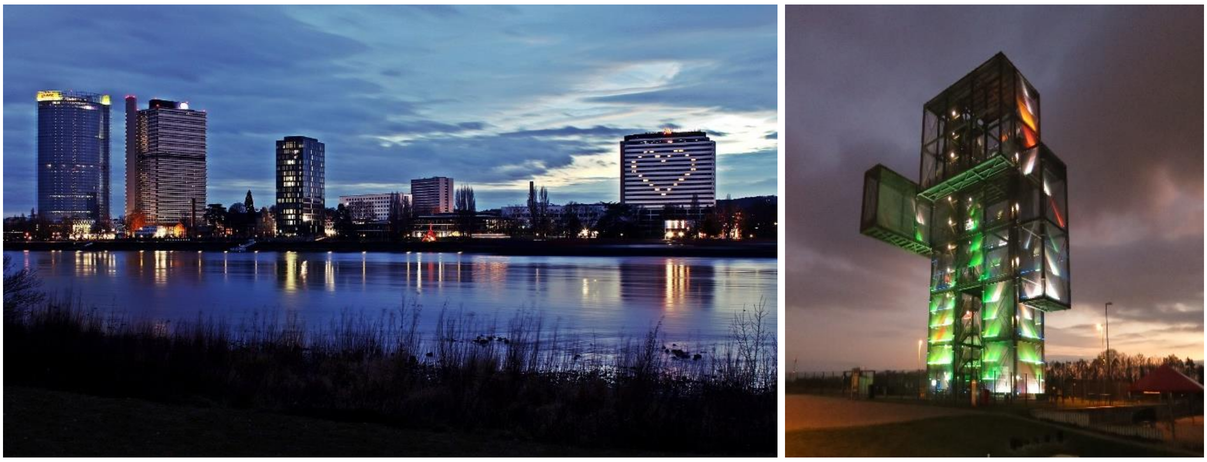

Figure 1. Multimedia system as part of a landscape: A – Bonn skyline with the presentation of the Blinkenlights project shown on the building of the World Conference Center Bonn hotel in Germany. B – Indemann (Maurer United Architects, 2008) Inden, Germany.

Source: https://commons.wikimedia.org/wiki/File:Bonner_Skyline.jpg, Springfield911; photos by author.

In large cities or metropolises, it is common to use façade-enhancing techniques at night, and illuminate façades (Figure 2). Investors, in order to attract attention, surrender to a certain kind of pressure to use multimedia, and apply technologies that are becoming more and more elaborate and advanced. Due to how common these solutions are, and the presence of light smog, such efforts are sometimes ineffective. It is much easier and much more effective to apply this in façades in small or medium-sized urban areas.

Figure 2. The Hong Kong Island skyline, viewed from the Victoria Harbour waterfront.

Source: By Temppic at English Wikipedia - Transferred from en.wikipedia to Commons., Public Domain, https://commons.wikimedia.org/w/index.php?curid=3063381

2.2. Accentuating the location

The primary reason for using multimedia systems in the façade is to accentuate a location in a town. The majority of façades is activated at dusk, when the non-lit or poorly lit buildings are no longer visible. Companies in which recognition of the location is important like to use this medium on the buildings where they operate. It is particularly important for the premises of companies that remain open after dark, such as restaurants or shopping centres. Multimedia façades are associated with new technologies and luxury, which is why they are often used by branch offices of companies offering exclusive goods.

In sectors connected with tourism that offer their services to visitors who are unfamiliar with the town, it is very important to emphasise and accentuate the location (Figure 4A). The battle for the customer starts with attracting attention, and making an effort to stand out. Representatives of these sectors choose more active illuminations. The latest trend are interactive façades that change their visual properties depending on the weather, and that interact with the user of a given space (Figure 7A).

Figure 3. Multimedia systems at two competing car makers on the opposite sides of the road; Essen, Germany: A – Audi showroom, B – AMG Brand Center Essen.

Source: photos by author.

2.3. Accentuating the importance of international events

International sporting and other events, such as world championships, Olympic Games or Expo exhibitions, are accompanied by the appearance of new buildings. Frequently, these buildings use multimedia systems. The unique design of such buildings is often enhanced by top-class prototype systems. They are meant to stress the highest quality of the architecture, and show how important the event is. The appearance of such buildings is part of the promotional strategy of the event as well as the entire region. Using multimedia is not only good for attracting direct viewers of a given architectural space. Photographs showing the façades of such buildings can be found online, in literature, and in the media many years after the event has finished, and work brilliantly as a promotional material.

One of the examples is the Digital Beijing Building constructed in 2007. The building was erected as a data centre for the summer Olympic Games in 2008. The importance of this building is emphasized by the glass façade using geometric patterns associated with the structure of electronic circuits. It stands for advanced technologies and data processing. This 14-storey building is made up of four flat parts joined by enclosed pedestrian bridges made of glass. A three-colour palette is used in the geometrical façade: from green to yellow. The façade has been designed with both day and night viewing in mind. This results in a changed appearance of the elevation, depending on the time of day; both on the inside as well as outside of the building. The building is one of the most popular in Beijing. Its aesthetics are dominated by decorative graphics (Scocca, 2011) (Figure 4B).

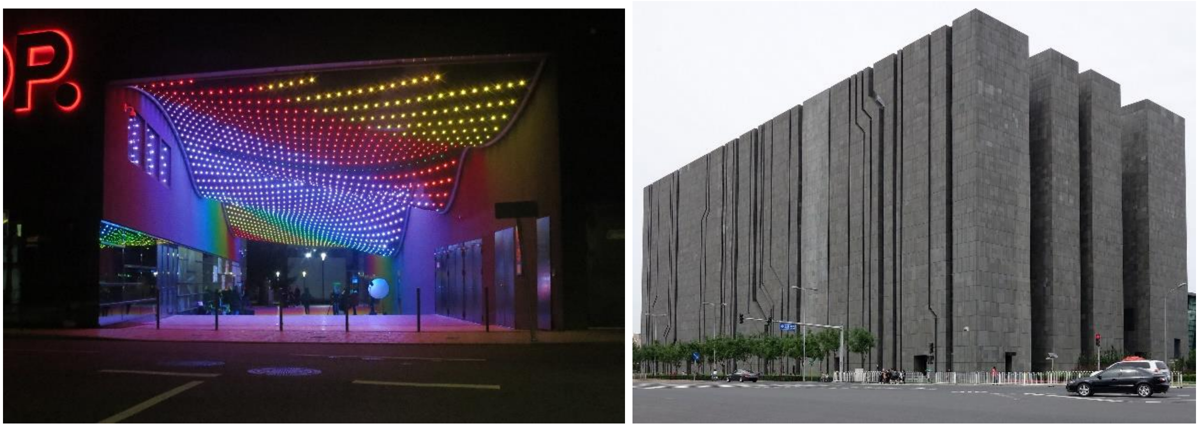

Figure 4. A – World Conference Center Bonn, an example of emphasising the location; a passage. Source: photos by author. B - Digital Beijing Building, (Pei Zhu, 2007) Beijing, China.

Source: By Bjoertvedt - Own work, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=62289496

One of the most interesting buildings remaining as the legacy of the Olympics is GREENPIX, Zero Energy Media Wall Lights (Simone Giostra & Partners and ARUP, 2008). It was built as part of the Xicui entertainment complex in Beijing, close to the venue of the 2008 Olympics. It is equipped with a multimedia system connected to a solar panel system. Throughout the day, the solar façade produces electricity, which is then used after dark for displaying multimedia presentations (Poulin, 2012). Even today the building is a symbol of high architectural standards, as well as ensuring sustainability and caring for the environment. The composition of the combined pane ensures thermal comfort, energy savings, and high efficiency.

2.4. Emphasising cultural functions/popularisation of art

The sense of shared culture and history plays an important role in developing social identity. For many societies, the popularisation of culture and art constitutes one of the priorities included in their development strategy.

Trends in modern architecture for the past two decades have seen such buildings being given a monumental treatment. Since 2000, numerous buildings with a cultural function have been designed all over the world. The remarkable appearance of these buildings is enhanced with the inclusion of multimedia systems in the façade. Examples of such an approach can be observed all over the world. Their location affects the surrounding area, as well as the whole town or region. One of the great examples is the *Kunstaus* building in Graz, Austria (Figure 5A).

The building was designed as part of the European Capital of Culture, which Graz became in 2003. The extraordinary structure of the building has been covered in its entirety with argon glass, and is equipped with LEDs in the shape of a torus that are adapted to multimedia presentations (Figure 5B). The façade acts as a screen on which artists may display their shows, and provides information to passers-by. The building is located in a run-down part of the town, on the west side of the river Mur. The intention of the authorities was to activate this area. Locating a cultural building with strong articulation in this place has enabled the district to develop (Lindsay, 2020), thanks to frequent visits of modern art experts and lovers. Despite its controversial shape, the building has now been incorporated into the town's structure and accepted by the locals. Currently, it can be considered an icon of the town of Graz, something that the place is associated with (Dreher et al., 2020).

Figure 5. Kunsthaus (Peter Cook Petera Cook, Colin Fournier, 2006) Graz, Austria; A – A building in town. B – façade up close.

Source: Von photo taken by Georg Mittenecker - Eigenes Werk, CC BY-SA 2.5, https://commons.wikimedia.org/w/index.php?curid=1068410; Von Stephan Weinberger/Invisible in der Wikipedia auf Deutsch - Selbst fotografiert, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=438407

Another example is the Rockheim Museum (Figure 6), opened in 2010. The building in which the museum is housed is a converted grain store. The designers placed the main part of the museum within an orthogonal shape, on which they put glass and a monochromatic print. Under the glass, LED systems that activate at night have been installed. The architects' idea was to create a different identity of the building for the night time. Several years after opening, the Rockheim is fulfilling its original objective in full, becoming a sculpture-like object in the night-time skyline of the city. The project has been awarded the 2010 Best Construction Award by the city of Trondheim (Almaas, 2016).

Figure 6. A – Rockheim Museum (Pir II Architect, 2010) Trondheim, Norway. Source: https://kvener.no/lokallag/midt-norge/rockheim-museum-kvenfolkets-dag-2021/, B - Star Place (UNStudio, 2008) Kaohsiung, Taiwan. Source: photo taken by Christian Richters https://www.unstudio.com/en/page/11922/star-place-facade

2.5 Façade as a display and an information channel

The main function of façade graphics is information. The message is communicated with various degrees of sophistication: from illuminations that catch the eye with changing colours (Figure 7), through pictograms that present simple messages (Figure 6B) or that are meant to evoke certain feelings or emotions (Figure 1A), simple presentations about human activity (Figure 6B), animal or plant motifs (Figure 6A), to looped clips containing a particular narrative. The subject of clips and presentations may be advertising, public announcements, showing solidarity with regard to global events, information on major events, festivals, or providing any information that is in the public interest.

A key aspect of presenting and creating the information or messages is the level of advancement of the multimedia images and the means of expression that are at the user's disposal depending on the adopted structure of the system.

An example of a multi-purpose use of a façade can be seen in Galleria Centercity (Unstudio, 2010) located in Cheonan, South Korea. The design broadens the functional aspect of the shopping centre and emphasises the meaning of social and cultural aspects in the public space (Uzun et al., 2020). It provides a place for social meetings as well as cultural events (Okur et al., 2019). The strategy used for the building exterior was meant to create an optical illusion. The elevation consists of two layers of aluminium profiles placed on the rear composite layer of aluminium cladding. The vertical profiles of the top layer are straight; but those from the back layer are put at an angle that shifts depending on the viewer's position. In the façade, a low- and high-definition multimedia system has also been installed. In daytime, the building is monochromatic; while at night, the waves of mutually permeable colours begin to rise. The high resolution of the multimedia system in the façade enables displaying figurative images with more details. The displayed animations show subjects related to the shopping centre (Galleria Centercity, 2010). They concern current events, fashion, art or public life.

The building has a double visual identity: in the day, it is monochromatic and shows moiré patterns, and at night the light projections make the vertical posts disappear, and changing colours appear on the façade.

Figure 7. Galleria Centercity (Unstudio, 2010) Cheonan, Korea: A – The façade at night; B – A piece of the façade in daytime, moiré patterns.

Source: photo taken by Kim Yong-Kwan, https://www.unstudio.com/en/page/12104/galleria-centercity

3. Discussion

In the research material, three different types of imaging and messaging were observed:

- Simple single-colour image composed of illuminated pixels.
- A monochromatic image consisting of a raster, where LEDs are used as individual units.
- Coloured surface image.
- Graphically advanced coloured image.

Table 1.
The combination of elements that influence the creation of the messaging in the analysed research material

Item	Image structure	Artistic possibilities and available means of expression	How the messaging is built	Type of messaging
1	Pictogram	Sequentially moving image, a type of compositional game, containing figural elements in the form of pictograms	A narrative made up of several pictogram components; Built based on associations	Refers to the basic human needs and forms of activity; manifests solidarity, emotions and feelings. Multimedia presentations
2	Monochromatic image built of a raster	Moving image built of a single-colour raster	A narrative composed of simple moving elements, built based on simple associations, often contains lettering and graphic symbols, metaphors	Related to forms of human activity; associations with emotions and feelings. Multimedia presentations

Cont. table 1.

3	Surface image, coloured	Surface image, usually tonally changing colour transitions	Multicolour abstract image, or consisting of one colour transitioning into another	None Or colours are given specific meanings
4	Advanced coloured image	Moving image, coloured, usually built of a fine raster	A narrative made of a moving, realistically reproduced image. Usually the messaging is built in a literal way. Metaphors are rarely applied; in artistic multimedia presentations, often linked with the building's shape.	Multimedia presentations, broadcasts, displaying works of art, advertising

Source: own study.

The above list shows that each of the different methods of presenting information with the use of multimedia systems has its own specific ways of forming the image as well as the messaging. Using primitive image creation methods, such as pictograms or single-colour raster images, enables the author to produce equally effective messaging. This is done through creating metaphors in the images. They are used for presentations that are artistic in their character. More technologically advanced systems, which allow accurate recreation of a multi-coloured reality, can be used to create messaging in a more literal and direct way. They are more versatile, and thus frequently used in commercial or advertising presentations.

4. Summary

The above research shows a great diversity in terms of the possibilities for the application of multimedia systems in architecture. It confirms the significant part that multimedia façades play in regional marketing.

Moving multimedia images have a decorative function; they add dynamics to and illuminate the façade; they can be used to present even complex narratives; and they enable interaction with the surroundings. The large extent of the visual impact of the graphics, and the direct contact between the graphics and the viewer, make a visually moving image a perfect medium to create a message. A façade can be used to build or strengthen social identity. The messaging will be greatly affected by the form and means of expression, as well as the use of specific metaphors.

In the research material referenced in the article, various strategies for using façade graphics in the creation of regional marketing were noted. It was observed that the façade may carry content which supports generating or enhancing social integration.

Visual features, the information presented in the façade, or direct messaging may all be useful for the purposes of regional marketing; and they are linked with the following subjects:

- **Promotion of a town.** A stand-alone multimedia structure, located in the open air, has the greatest impact. At dusk and at night, it is visible even from a couple of dozen miles away; it might be used for branding or creating identity for a place. Even simple multimedia façades are effective in small and medium-sized towns. In large cities, due to the prevalence of such solutions, usually only the more advanced façades are going to be effective. They produce an image of a region, linked with the use of the latest trends of caring for the environment and being open to environmentally-friendly solutions and technologies.
- **Promotion of a place and town** is connected with visual factors resulting from an illuminated image being created, which after dark becomes an attractive surface that acts as an ornament, constitutes a composition, and provides a channel for messaging. The information presented in the façade influences the identity of a building and its image. The most common reason for using such façades is advertising combined with branding, which might be used to create an image of a neighbourhood or the whole town.
- **Accentuating the importance of international events** has a high marketing value. It is connected with creating a positive image and referencing the latest trends. International cultural or sporting events remain in the social memory for long time, and provide an excellent promotional opportunity. Multimedia structures used for this type of activity promote the town and region not only in a direct way, but also for many years to come after the event has finished. The messages about such events are kept on websites and in social media for a very long time. An image included in a multimedia façade emphasises the region's openness to international contacts, and may encourage development of new relations in various branches of economy.
- **Emphasising cultural functions** has a significant potential in terms of integration and marketing. Location in the right place may activate the urban space. Placing multimedia façades in buildings of this kind helps in this respect. The transformational effect is not only significant in local terms, but has a larger, urban context. Such actions are particularly important in suburban and run-down areas.
- **Façade as a display and information channel** — in many cases all over the world, digital façades become the very identity of the building, where they are used for making public announcements, showing solidarity with regard to global events, informing about festivals, or simply providing any information that is in the public interest. A narrative created in a multimedia image may be one of the best tools available for generating mass awareness. Although digital façades may, at the same time, act as the illumination for the elevation, or as a work of art, or advertising space — they provide an unprecedented opportunity for a visual refurbishment of many buildings. Using multimedia façades has its own dangers too, and should be done with care. The reason for this is the light smog it produces that poses a health risk. Therefore, I believe that the application of such solutions should be controlled and closely linked to the strategy of the city and region.

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ARTIFICIAL INTELLIGENCE (AI) INFLUENCERS IN INFLUENCER MARKETING

Anna ŁASZKIEWICZ

University of Lodz, Faculty of Management; anna.laszkiewicz@uni.lodz.pl, ORCID: 0000-0001-6202-6239

Purpose: The purpose of this article is to identify the use of virtual influencers (VIs) generated using artificial intelligence (AI) in the field of influencer marketing.
Design/methodology/approach: A narrative and critical literature review was conducted for this purpose. To identify the activity of virtual influencers, the author conducted an observational study to collect and compare the activity data of virtual influencers who had a minimum of 1,000 followers in 2022 with their current popularity and activity (November 2023). It also conducted an analysis of the advertising activity of selected influencers and an analysis of reach and engagement in 2022-2023.
Findings: Analysis of the literature confirms the growing interest in the use of virtual influencers in marketing activities, which is also evident in marketers' current and planned spending on this price. Virtual influencers generate positive results in the level of audience engagement, which makes it possible to consider this means of communication as an attractive alternative. However, significant changes were observed in the number of observers over the year. Of the 54 virtual influencers analyzed, 44% reported a decrease in the number of observers.
Research limitations/implications: The area of using computer-generated influencers and using artificial intelligence requires further intensive research. The spread of generative artificial intelligence will certainly affect the pace of change in this area. The observation made only presents data on changes in the popularity and publishing and advertising activity of virtual influencers. In this context, research dedicated to the semiotics of virtual influencers as well as the nature of parasocial interactions would be advisable.
Practical implications: The article identifies areas of potential for virtual influencers in influencer marketing.
Originality/value: The article adds to the sparse literature to date on virtual influencers, their potential and how they can be used in practice. It will be useful for managers and decision-makers involved in digital marketing.
Keywords: influencer marketing, artificial intelligence, marketing promotion, brand, virtual influencer.
Category of the paper: Research paper.

1. Introduction

Contemporary academic research is increasingly focused on analyzing the impact of developments in information technology, especially artificial intelligence (AI), and the evolution of social media on market dynamics. This interdisciplinary field of research combines elements of marketing, social psychology, and computer science to create new perspectives in understanding the interaction between brands and consumers in the digital age.

The definition of artificial intelligence according to the European parliament is "the ability of machines to exhibit human skills such as reasoning, learning, planning and creativity" (https://www.europarl.europa.eu/news/pl/headlines/society/20200827STO85804/sztuczna-inteligencja-co-to-jest-i-jakie-ma-zastosowania, 2023). GPT Chat defines artificial intelligence as "the field of computer science that deals with the creation of algorithms and systems that can perform tasks that require human intellect. Such tasks include pattern recognition, reasoning, planning, learning, perception, the ability to manipulate objects, and adaptation to new situations (chatGPT, 2023). Artificial intelligence can have traditional and generative dimensions. In the traditional view, it is used, for example, in chatbots, voice assistants such as Siri or Alexa and its operation is based on analyzing large data sets. Artificial intelligence is currently used for functionalities such as customer service with virtual assistants (chatbots), marketing campaign automation, or support in consumers' purchasing decisions through recommendations. Generative artificial intelligence, on the other hand, enables the generation of results that can take a variety of formats. Thus, we can generate text, images, video, music, computer codes as results.

In this context, an extremely promising area is the use of artificial intelligence to create influencers, the so-called Virtual Influencers (VI) or Artificial Intelligence Influecers (AII). Virtual influencers are a phenomenon of recent years combining the use of technology and the popularity of influencer marketing, that is, marketing that is based on the use of the personality of the creator, in this case the influencer.

The rapid growth of social media, as Shareef et al. (2020) point out, has laid the groundwork for the popularity of influencer marketing. It is in the social media space that digital creators, from artists to online celebrities, have found their place to communicate with a wide audience. As Bailis (2019) points out, social media influencers (SMI) are gaining the trust of consumers and significantly influencing their purchasing decisions, making them an important tool in companies' marketing strategies.

The historical roots of influencer marketing date back to the 18th century, when celebrities were used to promote products (Lazarsfeld et al., 1948). Today, the phenomenon has gained a new dimension thanks to the development of social media, as evidenced by a systematic review of SMI research by Vrontis et al. (2020).

In turn, the development of AI (Kalinová, 2022) is contributing to changes in the approach to marketing, offering new opportunities for personalizing communications. AI allows for a better understanding and prediction of consumer needs, which is crucial for creating effective marketing strategies. The emergence of computer-generated virtual influencers (VIs), as Franke et al. (2023) point out, is an example of how AI is influencing the evolution of influencer marketing. The company Dirt, which is behind the success of virtual influencer Lil Miquel, is currently valued at more than $125 million. Companies such as Shadows, SuperPlastic and Toonstar are also deploying their virtual characters (The State of AI in Influencer Marketing, 2023). The growth of the virtual influencer market indicates that this will not just be a passing fad and the importance and use of AI-generated characters could become a major force and play a significant role in the marketing industry. According to the AI Marketing Benchmark Report, 63% of respondents plan to implement AI or Machine Learning into influencer campaigns in 2023. Another 25% are considering the possibility and only less than 12% will use such solutions in the near future.

Another interesting research aspect is the analysis of how modern technologies such as natural language processing, speech and image recognition, and machine learning can support the creation of effective and personalized marketing messages (Lou et al., 2022). It is worth noting here that research on the effectiveness of VIs and their perception by consumers, as Liu (2019) suggests, can provide valuable clues about future directions for social media marketing. While some marketers remain skeptical or cautious about implementing artificial intelligence into their operations, nearly 20% of marketers are already allocating more than 40% of their budget to AI-based solutions.

2. Methods

This study used a narrative and critical literature review. Based on previous research and an earlier systematic literature review dedicated to virtual influencers (Laszkiewicz, Kalinska-Kula, 2023), the author presented the importance and role of virtual influencers in the field of influencer marketing. In addition to academic literature, practical literature was also included. To identify the activity of virtual influencers, the author collected and compared data on the activity of computer-generated or artificial intelligence influencers who had a minimum of 1,000 followers on the Instagram platform in 2022 with their current popularity and activity (November 2023). An analysis of the advertising activity of selected influencers was also carried out, along with an analysis of reach and engagement for 2022-2023 using the Influencer Marketing Hub calculator and Phlanx's Instagram Engagement Calculator.

3. Results

Studies show that the observation intentions of virtual influencers and real influencers do not differ (Sands et al., 2022). Even the use of social heuristics of human interaction in interactions with computers and the attribution of human characteristics and behavior to machines is observed (Arsenyan, Mirowska, 2021). Present in increasing numbers on the Internet, they attract thousands and often even millions of observers stimulating their engagement and purchase decisions (Lou et al., 2022). The criteria that moderate purchasing decisions under the influence of interaction with VI are primarily the fit of the virtual influencer, as in the case of human influencers and anthropomorphism. In addition to these, popularity and homogeneity also play an important role (Huang et al., 2022). An important element that determines the effectiveness of influencers is trust. Trust resulting from the influencer's perceived autonomy by observers and, consequently, his authenticity, determines the credibility of the influencer, both virtual and real (Sands et al., 2022). Given the mechanics of creating and managing the activity of virtual influencers, it could be argued that their perceived credibility by the audience will be low or even eliminate the influencer's role in the observer's buying process. Creators of virtual influencers working with brands can fully customize communications to meet the company's requirements regardless of their own preferences. Studies (Alboqami, 2023; Lou et al., 2022) seem to confirm this regularity. However, if the virtual character is prepared based on a carefully developed personality and its activity is consistent with the established assumptions, the chances of building credibility and authenticity in the eyes of the audience are significant (de Brito Silva et al., 2022). At the same time, the benefits for the company of having full control and influence over the activity of virtual characters in jointly implemented advertising campaigns are increasingly seen as important. Influencers people, who have become opinion leaders in recent years and play an important role in the communication of companies with consumers, in addition to many positive aspects, can unfortunately also be a source of behavior and situations that negatively affect the image of promoted brands. The "Pandora Gate" controversy, the detention of a youtuber nicknamed "Stuu" on the basis of a court decision in the UK (https://www.rp.pl/prawo-karne/art39298931-stuu-w-brytyjskim-areszcie-na-podstawie-decyzji-sadu, October 11, 2023) once again puts the aspect of proper selection of brand ambassadors and the risks associated with it in the forefront of the minds of decision-makers and managers managing brands. Thus, the ability to control the behavior of virtual influencers is one of the important prerequisites for engaging with them (Rodrigo-Martin et al., 2022). In terms of ethical behavior, virtual influencers have been positively evaluated against traditional influencers, which is justified using virtual influencers in socially relevant activities and actions (Mrad et al., 2022). Research (Sands et al., 2022) additionally draws attention to the criterion of "uniqueness" - for observers for whom it matters, the results obtained when working with virtual influencers can be even better than the results of working with human influencers. Research shows that virtual presentation can also improve a brand's image in the eyes of the audience, as an innovative brand using innovative advertising solutions (Franke et al., 2023). According to Influencer Marketing Hub data, almost half of marketers (49.3%) are very positive about the effectiveness of virtual influencers and another 12.7% see their effectiveness as positive to some degree. A negative assessment was shared by 10% of respondents and the remaining 28% remained neutral. This may still be due to a lack of sufficient experience, not enough campaigns, or the development of AI solutions in this area observed all the time.

In addition to the undoubted benefits associated with the involvement of virtual influencers in communication and promotion activities, it is also important to note possible sources of risks and areas that create room for further experimentation and consideration. One possible source of risks is the influencer's designed appearance. Currently, virtual influencers appear both as characters with human characteristics such as Lu to Magal, as well as animal characters, imaginary and existing fairy tale characters or even in the form of a wiener like Nobody Sousage. Each character may also have a corresponding gender, skin color, language, and appearance, including age, which affect their perception. In this context, important questions include to what extent a brand's image can be modified depending on the selection of the right virtual partner or ambassador. To what extent should virtual influencers influence the perception of the human body and the increasing discrepancies between reality and the virtual desired image? Mori's (1970) theory of the Valley of the Uncanny may provide some guidance, but with the rapid spread of AI-generated creativity, the boundary of acceptance may be shifting and the reaction of strong rejection to high levels of human resemblance may be weakening. Alongside these issues are questions related to the strategy of virtual influencers themselves - should they experience the passage of time? Or rather, should they remain in one predefined age tailored to a clearly defined audience?

Table 1 shows the list of virtual influencers compiled and published in 2022 (Laszkiewicz, 2022). In addition, the current number of observers (as of November 10, 2023) and the percentage changes in the number of observers for each account are presented. Similarly, Table 2 presents the number of posts published by 2022 and the current number of posts (as of November 10, 2023), along with the change in the number of publications observed during the period under study in percentage terms. Accounts that were active in 2022 and ceased to function in the following year (Knox Frost, Kakao Friends Studio, Lena, Hannah Stein, Kiera Joy, Ivy Benoit), as well as the Guggimon and Janky accounts, which now exist under a single @jankyandguggimon address, were removed from the summary.

Table 1.
Popularity of virtual influencers in 2022-2023 on the Instagram platform

Influencer	Number of followers July 2022	Number of followers November 2023	Change (%)
Lu to Magal @magazineluiza*	5 900 000,00	6600000,00	11,86%
Nobody Sausage @nobodysausage*	4 400 000,00	7500000,00	70,45%
Casas Bahias @casabahia*	3 200 000,00	3600000,00	12,50%
Miguela @lilmiquela*	3 000 000,00	2700000,00	-10,00%
The Good Advice Cupcake @thegoodadvicecupcake*	2 500 000,00	2400000,00	-4,00%
Barbie @barbie	2 000 000,00	3600000,00	80,00%
minniemouse*	722 000,00	790000,00	9,42%
Daisy Yoox @Yoox*	675 000,00	765000,00	13,33%
kda_music	572 000,00	523000,00	-8,57%
Any Malu @anymalu_real*	529 000,00	653000,00	23,44%
Anna Cattish @anna_cattish	478 000,00	461000,00	-3,56%
Thalasya @thalasya_	476 000,00	462000,00	-2,94%
Seraphine @seradotwav*	408 000,00	361000,00	-11,52%
Noonoouri @noonoouri*	407 000,00	418000,00	2,70%
imma @imma.gram*	406 000,00	396000,00	-2,46%
leyalovenature	339 000,00	450000,00	32,74%
Qai Qai @realqaiqai*	336 000,00	341000,00	1,49%
Bermuda @bermudaisbae*	269 000,00	237000,00	-11,90%
bee_nfluencer	268 000,00	234000,00	-12,69%
KizunaAI @a.i.channel_oppicial*	237 000,00	219000,00	-7,59%
Shudu @shudu.gram*	234 000,00	241000,00	2,99%
FN Meka @fnmeka*	181 000,00	186000,00	2,76%
Body by Ralph @bodybyralph	163 000,00	149000,00	-8,59%
Liv in the future	162 000,00	144000,00	-11,11%
Ronald F. Blawko @blawko22*	141 000,00	128000,00	-9,22%
Rozy Oh @rozy.gram*	129 000,00	162000,00	25,58%
Teflon Sega @teflonsega*	110 000,00	367000,00	233,64%
Miko @thecodemiko*	102 000,00	133000,00	30,39%
Mar.ia @soymar.ia*	96 800,00	84100,00	-13,12%
Yameii Online @yameiionline*	78 600,00	107000,00	36,13%
Squeaky and Roy @squeakyandroy*	66 500,00	57400,00	-13,68%
Apoki @imapoki*	66 300,00	147000,00	121,72%
Ion Gottlich @iongottlich*	52 700,00	77700,00	47,44%
ChillRx @iamchillpill*	50 400,00	44900,00	-10,91%
Eli.sofi.twins @eli.sofi.twins	39 900,00	46200,00	15,79%
Geico Gecko @thegeicogecko*	28 600,00	31900,00	11,54%
AI @ai_ailynn*	24 300,00	30200,00	24,28%
Koffi @koffi.gram	17 700,00	16100,00	-9,04%
Nikuro @liam_nikuro	12 800,00	12 000,00	-6,25%
Ivaany @ivaany.h	11 800,00	11400,00	-3,39%
Han YuA @_hanyua	11 200,00	89800,00	701,79%
Dagny @dagny.gram	9 600,00	10400,00	8,33%
Ilona @ilona*	8 400,00	11000,00	30,95%
Amanda @amanda_bims	4 400,00	4300,00	-2,27%
Konni @konni.violet	3 500,00	3000,00	-14,29%
Brenn @brenn.gram	3 400,00	3600,00	5,88%
Eda Dama @eda.dama	2 700,00	2500,00	-7,41%
Aba Wils @abawils	2 700,00	3500,00	29,63%
Nefele @nefele.verse	2 200,00	3200,00	45,45%
Rina @Rina.8k	2 000,00	33500,00	1575,00%
Idalia @idalia.visual	1 500,00	1300,00	-13,33%
Nilana Arvuti @nilana.arvuti	1 400,00	2000,00	42,86%
Ryan @sevenseasofryan	1 200,00	1000,00	-16,67%
Bella @bella.hueman	1 000,00	1000,00	0,00%

Source: own elaboration.

Table 2.
Virtual influencer activity in 2022-2023 on the Instagram platform

Influencer	Number of posts July 2022	Number of posts November 2023	Change (%)
Lu to Magal @magazineluiza*	2588	3605	39,30%
Nobody Sausage @nobodysausage*	417	545	30,70%
Casas Bahias @casabahia*	1818	2922	60,73%
Miguela @lilmiquela*	1220	1285	5,33%
The Good Advice Cupcake @thegoodadvicecupcake*	1117	1378	23,37%
Barbie @barbie	1881	2200	16,96%
minniemouse*	530	658	24,15%
Daisy Yoox @Yoox*	4256	4745	11,49%
kda_music	106	106	0,00%
Any Malu @anymalu_real*	3060	3417	11,67%
Anna Cattish @anna_cattish	852	868	1,88%
Thalasya @thalasya_	224	222	-0,89%
Seraphine @seradotwav*	75	75	0,00%
Noonoouri @noonoouri*	1427	1642	15,07%
imma @imma.gram*	647	734	13,45%
Leyalovenature	657	589	-10,35%
Qai Qai @realqaiqai*	507	660	30,18%
Bermuda @bermudaisbae*	268	268	0,00%
bee_nfluencer	138	139	0,72%
KizunaAI @a.i.channel_oppicial*	1168	1168	0,00%
Shudu @shudu.gram*	107	142	32,71%
FN Meka @fnmeka*	158	145	-8,23%
Body by Ralph @bodybyralph	193	193	0,00%
Liv in the future	133	133	0,00%
Ronald F. Blawko @blawko22*	162	162	0,00%
Rozy Oh @rozy.gram*	291	411	41,24%
Teflon Sega @teflonsega*	46	70	52,17%
Miko @thecodemiko*	184	214	16,30%
Mar.ia @soymar.ia*	109	147	34,86%
Yameii Online @yameiionline*	134	205	52,99%
Squeaky and Roy @squeakyandroy*	141	231	63,83%
Apoki @imapoki*	210	513	144,29%
Ion Gottlich @iongottlich*	318	352	10,69%
ChillRx @iamchillpill*	13	85	553,85%
Eli.sofi.twins @eli.sofi.twins	75	149	98,67%
Geico Gecko @thegeicogecko*	513	604	17,74%
AI @ai_ailynn*	114	190	66,67%
Koffi @koffi.gram	21	19	-9,52%
Nikuro @liam_nikuro	109	92	-15,60%
Ivaany @ivaany.h	238	302	26,89%
Han YuA @_hanyua	50	122	144,00%
Dagny @dagny.gram	19	45	136,84%
Ilona @ilona*	102	116	13,73%
Amanda @amanda_bims	193	207	7,25%
Konni @konni.violet	405	528	30,37%
Brenn @brenn.gram	15	13	-13,33%
Eda Dama @eda.dama	45	45	0,00%
Aba Wils @abawils	212	357	68,40%
Nefele @nefele.verse	48	66	37,50%
Rina @Rina.8k	40	136	240,00%
Idalia @idalia.visual	8	8	0,00%
Nilana Arvuti @nilana.arvuti	30	67	123,33%
Ryan @sevenseasofryan	7	7	0,00%
Bella @bella.hueman	86	86	0,00%

Source: own elaboration.

Of the 54 virtual influencers analyzed, 44% saw a decrease in the number of followers. A decrease in the number of published posts occurred for 11% of the virtual influencers. The largest increase in observers can be boasted by Nobody Sausage (70.45% in the analyzed period), Barbie (80%), Teflon Sega (almost 234%) or Rina (1575%). However, in the case of observer growth, it would be necessary to verify the activity of observer accounts due to the emerging practice of buying "followers". An analysis of audience engagement and profile can be a helpful indicator. The lowest audience engagement rate among the above influencers is in the case of the @Rina.8k account (1.37%). On the other hand, @nobodysausage reaches 3.43% ER and @teflonsega even reaches 14.39%. Table 3 presents a comparison of reach and engagement for the three virtual influencer accounts analyzed in 2022 and 2023. The selection of VI was dictated by the different profile of the influencer: LilMiguela represents a profile that mimics humans in both appearance and behavior, Noonoouri represents a character that mimics human appearance but retains a "robotic" character and Shudu is a digital model of Diigitals agency.

Table 3.
Reach, engagement and earnings of virtual influencers

	LilMiquela		**Noonoouri**		**Shudu**	
	2022	**2023**	**2022**	**2023**	**2022**	**2023**
Number of observers	3 million	2.7 million	407,452	418,400	234,138	241,400
Average number of likes	57991	55600	5075	7300	7266	8516
ER involvement rate	1,91%	2,06%	1,25%	1,74%	3,12%	3,53%
Estimated cost of a sponsored post	$6,054-$10,091	$5,724-$8,587	$1,215-$2,025	$1,331-$1,996	$700-$1167	$772-$1158
Audience interests	Cinema and actors (80%), luxury goods (80%), music (79%)		Business and career (87%), luxury goods (84%), fashion (77%)		Cinema and actors (88%), artists and art (87%), modeling (86%)	

Source: own elaboration based on Łaszkiewicz, 2022, p. 133.

Noonoouri and Shudu saw increases in reach as well as audience engagement. The observer engagement rate of LilMiquela's account increased to 2.06% while the number of observers decreased, which may indicate the loss of a less engaged audience and the retention of a more active one. In the case of the @lilmiquela account, a decrease in the number of posts during the analyzed period is also evident. The advertising activity of @shudu.gram and @noonoouri remains at a similar level relative to the months analyzed in previous years (Table 4). It is noteworthy, however, that in the case of the Noonoouri account, the number of posts labeled as advertising and the number of posts containing labeled brands have decreased. Some of Noonoouri's posts reflect the social engagement of this virtual influencer.

Table 4.
Advertising activity of virtual influencers in October in 2020-2023

		@lilmiquela	@shudu.gram	@noonoouri
Number of posts	X.2020	41	1	20
	X.2021	13	2	31
	X.2022	15	2	10
	X.2023	6	2	23
Posts containing brands	X.2020	36 (88%)	1 (100%)	12 (60%)
	X.2021	10 (78%)	2 (100%)	25 (81%)
	X.2022	5 (33%)	2 (100%)	8 (80%)
	X.2023	6 (100%)	1 (50%)	13 (56%)
Posts tagged as advertising	X.2020	Tagging in the form of tagged photo/ content or tagged location	1 (100%) #sponsored	10 (83%) #adv
	X.2021		2 (100%) #ad	15 (48%) #adv
	X.2022		2 (100%) #ad #newcollaboration	2 (25%) #sponsored
	X.2023		1 (100%) #sponsored	3 (23%) #sponsored

Source: own elaboration based on Łaszkiewicz, 2022, p. 134.

4. Discussion

Expectations for the use of artificial intelligence in the influencer marketing field are rather positive. The Influencer Marketing Hub report presents the results of a survey in which 40.6% of marketers expressed the opinion that solutions based on artificial intelligence will revolutionize the industry, and another 25.1% believed that they will provide significant improvements. Smaller benefits were seen by 12.4% of respondents and only 6.4% of marketers felt that the application of artificial intelligence in the influencer marketing field would not make a significant difference. The remaining survey participants (15.5%) were not sure (The State of AI in Influencer Marketing: A Comprehensive Benchmark Report, Influencer Marketing Hub, 2023, p. 43). Influencer marketing has been growing in popularity for years. On the one hand, this is due to the far-reaching atomization of the media and the associated significant dispersion of audiences, which are potential target audiences for companies' marketing efforts. On the other hand, product attributes themselves have ceased to be a key selection criterion for consumers. Preferences towards brands are increasingly shaped by intangible benefits such as, for example, a sense of belonging, so important in the field of influencer marketing, or social status. Comparing the results achieved by human influencers with those of virtual influencers, it should be noted that they are very promising. Virtual influencers have higher engagement (2.84%) compared to human influencers (1.72%). Interestingly, the majority of virtual influencers' followers are women (65.5%) and more than 11% of the audience is categorized as between 13 and 17 years old (The State of AI in Influencer Marketing: A Comprehensive Benchmark Report, Influencer Marketing Hub, 2023, p. 43).

5. Summary

The relationship between the development of artificial intelligence and influencer marketing is an important research area. In March 2022, in the U.S. market, research showed that 35% of respondents had purchased products or services promoted by virtual influencers. The tools that make up this new form of marketing are based on advanced technologies such as natural language processing, speech and image recognition, problem solving and machine learning. These technologies make it possible not only to identify and analyze content published on social media, but also to analyze consumer sentiment and attitudes toward brands. They are also an important tool for marketers and digital creators to generate content tailored to audience preferences, based on analysis of their attitudes toward certain topics, while maintaining consistency in brand messages.

Virtual influencers can perform functions analogous to those designated for real influencers, while achieving higher effectiveness among audiences seeking uniqueness and originality. They are characterized as being perceived as more ethical than traditional influencers, mainly due to engaging in socially relevant issues and acting in a socially responsible manner. These results suggest the feasibility of incorporating virtual influencers into marketing strategies, but caution should be exercised against the potential dangers of blurring the lines between reality and fiction, which can negatively impact consumers' physical and psychological well-being.

Future research should focus on understanding how these two aspects can complement each other and what implications they have for marketing practice. An analysis of these relationships, based on a solid theoretical and empirical foundation, will allow for a better understanding of the mechanisms affecting the modern market and consumer behavior.

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ASSESSMENT OF THE ROLE OF SOCIAL CAPITAL IN STIMULATING ECONOMIC DEVELOPMENT DEPENDING ON THE COUNTRY'S INCOME LEVEL

Maria MAJEWSKA[1*], Joanna NIEŻURAWSKA[2], Nelson DUARTE[3]

[1] Adam Mickiewicz University of Poznań, Faculty of Law and Administration; majewska@amu.edu.pl, ORCID: 0000-0002-4415-8403

[2] University WSB Merito in Toruń, Faculty of Finance and Management; joanna.niezurawska@wsb.torun.pl, ORCID: 0000-0001-6396-3363

[3] INESC TEC, ESTG, Instituto Politécnico do Porto, Portugal; nduarte@estg.ipp.pt, duarte.nelson@gmail.com, ORCID: 0000-0002-4156-7922

* Correspondence author

Purpose: Assessing the impact of eleven components of social capital (SC) on economic development depending on the country's income level.

Design/methodology/approach: The research covered 96 countries. They were divided in three groups composed of 32 economies, i.e., low-income, middle-income, and high-income countries. The impact of eleven elements of SC was examined in the period 2008-2020. The economic development measures were GDP pc and GNI pc. The research methods were the Spearman's rank correlation and cluster analysis.

Findings: Social capital in high-income countries is a more important factor in increasing economic development compared to low-income and middle-income countries. In three income groups, the same four components of SC are statistically significant and positive: government effectiveness as defined by the World Bank, reliance on professional management, state of cluster development and willingness to delegate authority. These dimensions of social capital can be called strategic success factors on the road to prosperity.

Research limitations/implications: The main limitations are the availability of data on larger groups of countries over a sufficient long time and obtainig free access to more detailed social capital indicators. In the future, the authors intend to focus on the links between various components of SC occurring at different stages of economic development. This knowledge should help to formulate more precise guidelines for planning policies of improving SC in private and public sectors.

Social implications: The research results indicate that such dimension of SC as honesty, egalitarianism, equality of treatment, and democratic decision making should be adopted as patterns of behaviour in both private and public sectors and in cooperation between them. Without this, social development, which includes economic development, cannot be accelerated. This happens because it is reflected in improving the effectiveness of organisational arrangements applied at the national level and in companies.

Originality/value: There is still a need for more comprehensive research on the impact of social capital on economic development. In response to this need, this study examined eleven components of SC. The hope is that this research approach will result in a more holistic view of how social capital can influence economic development.
Keywords: elements of social capital, economic development, recommendation for public and private sectors.
Category of the paper: Research paper.

1. Introduction

The level of prosperity in the current economic reality depends to a greater and greater extent on achievements in the development of social capital. Therefore, the literature on the subject stresses that the development of an appropriate quality of social capital contributes to the improvement of a country's productivity and determines faster reaching the next stage of economic development.

There are many definitions of social capital because it is a complex and multidimensional phenomenon. However, they include the same primary forms of social capital. They are: general (interpersonal) and institutional trust, formal membership and participation, informal interactions and relations, altruism, and shared values, norms, and obligations.

Social capital at the country level can be viewed as a society's ability to cooperate and work together to achieve a common goal. Social capital researchers at the country level usually refer to the definitions of social capital described by three authors, namely a French sociologist and anthropologist Pierre Bourdieu, an American sociologist James Coleman, and an American political scientist Robert Putnam.

As suggested by Bourdieu, Coleman, and Putnam, trust is critical in providing a basis for the development of social capital. Their understanding of trust is well reflected in the definitions proposed by the American political theorist Francis Fukuyama. For Fukuyama (1995, p. 153), trust is the existing belief in a given community that other members of that group are characterised by honesty and cooperative behaviour based on shared values and principles.

Bourdieu (1986) defines social capital as the actual or potential resources linked to the possession of a durable network of approximately institutionalised relationships of mutual acquaintance and recognition. In other words, social capital is a network of various interpersonal relations or connexions occurring in a group (e.g., family, nation, association, party) under the condition that this network intensifies the sense of community. Bourdieu emphasises that social capital increases with the number of interpersonal connexions in the network, but on the condition that these connexions are based on the mutual solidarity of its members, trust and respect they have for one another, legitimisation of their roles, and the knowledge of group members about one another.

First, according to Coleman (1988, 1990), social capital is the social structure of a community (e.g., family, corporation, school, country) composed mainly of various types of institutional solutions for cooperation in achieving common goals. Secondly, it is an ability to share resources that members of a community can use to perform their tasks. Coleman emphasises that interpersonal relationships both create social capital and are its carrier. In other words, social capital is embedded in the network of interpersonal relations within a given community when that network facilitates the achievement of common goals and mutual benefits for its members. For him, the most important forms of social capital that shape the network of interpersonal relations are: obligations and expectations, information channels, and social norms.

Putnam (1993, 1995) defines social capital as connexions between individuals, norms, and trust that arise from these relationships and can increase the productivity of a society by facilitating the coordination of activities. Different forms of social capital are created through the development of various types of interpersonal relationships within a community. Putnam includes to social capital mainly norms, social trust, loyalty, and social networks that facilitate coordination and cooperation for mutual benefit. He is convinced that everyone would live better if they all worked together, but this requires mutual trust, commitment to joint action, and the ability to enforce commitments. Putnam indicates that forms of social capital expand as they spread within a given community and die when they are not duplicated by their members.

Ways of understanding social capital, for example, those presented by Bourdieu (1986), Coleman (1988, 1990), Putnam (1993, 1995), Majewska (2013), Engbers and Rubin (2018), and Ray, Nyberg and Maltarich (2023), indicate that social capital includes such dimensions as:

- Obligations, norms, and methods of their enforcement.
- Different types of social networks and collective actions at the micro, mezzo, and macro levels.
- Values and attitudes such as trust, solidarity, honesty, fairness, egalitarianism, sense of unity, equality of treatment, democratic decision making, and transparency of government decisions.
- The quality of institutional solutions for cooperation in achieving goals by the government that is reflected in the effectiveness of actions taken by persons responsible for increasing the welfare of the society.
- Organisational structures, arrangements and solutions for cooperation between and among the private and public sectors.
- Information and communication technology that facilitates cooperation.

In this work, the issues are continued, already considered in earlier studies by the authors that cover the enhancement of social development in order to become a post-industrial society with a knowledge-based economy. The aim of this study is to assess the role of eleven elements of social capital in the economic development of 96 countries during 2008-2020. The countries were studied and divided into low-income, middle-income, and high-income economies. The basis for assigning a country to one of the three income groups was the World Bank's classification.

The World Bank divides economies into four income groups according to their gross national income per capita (GNI pc) denominated in U.S. dollars. The groups are now: low income, 1135 or less; lower middle income, 1136 to 4465; upper middle income, 4466 to 13,845; and high income, 13,846 or more (World Bank Country and Lending Groups). In our study the first group consisted of low-income and lower-middle income economies, the second group of upper middle-income economies, and the third group of high-income economies.

The paper is organised as follows. The second part of the paper focuses on the literature review. The third part presents a description of the material selection and research methods. In the fourth and fifth parts, the results of comparative analysis of the examined attributes of countries are discussed and conclusions are described.

2. Literature review

The purpose of our literature review is to present various trajectories of the impact of social capital on economic development mainly at the country level. The literature review is arranged chronologically and covers the years 2005-2022.

Kaldaru and Parts (2005) examine the impact of macro-level social capital and related social factors on economic development in 34 European countries. The data used in the empirical analysis refer to the year 2001. In their studies social capital comprises different aspects of institutional quality and is closely related to the income distribution and social cohesion. The findings show that macro-level social capital is significant both in the formation of GDP per capita and HDI values.

Cheng and Mittelhammer (2008) analyse 40 countries in the period 1994-2002. The research results suggest that when social capital (either civic engagement or confidence) and institutional factors are included in the income model, economic integration has a positive and significant impact on economic development. In other words, the development of social capital together with the improvement of institutional conditions may be a facilitating factor that allows countries to benefit more from economic integration.

Doh and McNeely (2012) test the impact of social capital on economic development across 47 selected countries. Their social capital index, based on measures of trust, associational activities, and civic norms, was constructed for two research periods 1999-2001 and 2005-2007. The research results reveal strong support for the hypothesis suggesting a positive relationship between social capital and economic development.

Estrin, Mickiewicz and Stephan (2013) examine the relationship between social and commercial entrepreneurship drawing on social capital theory**.** Their study covers 114,341 individuals from 47 countries in 2009. Their indicator of social capital complements existing country-level measures including generalized trust and associational membership. The research results indicate that the country prevalence rate of social entrepreneurship is an indicator of constructible nation-level social capital. Moreover, high national rates of commercial entrepreneurship reduce the opportunities available for social entrepreneurs.

Doh (2014) investigates the relationship between social capital and the quality of government while taking into consideration the possible interaction between social capital and economic development in a sample of 89 countries in 2010. The findings suggest that social capital is positively related to the quality of the government. Therefore, countries with both high levels of social capital and economic development exhibit higher quality of the government.

Golubović, Džunić and Marinković (2014) analyse social capital available in Western Balkan countries in the period 1994-2010. Firstly their findings show that these societies are, characterised by very low levels of overall trust and confidence in institutions, as well as a poor level of civil society development. Secondly, by a tendency for the existence of informal networks of social relations created during the pre-transformation that could be marked as negative social capital. They conclude that this situation stands in the way of improving the economic and institutional efficiency of Western Balkan countries.

Hvižďáková and Urbančíková (2014) in their study confirm the existence of a positive relationship between the level of social capital, innovation, and competitiveness in the European Union in the period 2008-2009. The results show that the richer countries of Western Europe present a higher level of social capital than the poorer countries of Central and Eastern Europe. Thus, they emphasise that the development of social capital is necessary for faster economic development.

Leeves (2014) proves that there was an increasing opportunity cost associated with greater levels of social capital investment for high-skilled workers in the period 1991-2007. The findings also confirm that lower social capital is linked to reduced economic growth and innovation, higher transaction costs, and is detrimental to individual well-being. His sample consists of 57,336 person year observations for the wage returns (opportunity cost) analysis and 72,920 person year observations for the social life satisfaction analysis.

Oh, Lee and Bush (2014) test the effects of multidimensional social capital on different economic development partnerships. They employ the data of a survey conducted on economic development managers who were responsible for implementing city's economic development policies in the United States. The research results indicate that different dimensions of social capital contribute to creating economic development partnerships regardless of local boundaries.

Drozdowska and Majewska (2015) analyse the impact of social capital on economic development in 100 countries from 2012 to 2013. The results of the studies show that social capital is an important source of raising productivity, but on the condition that the country is already at a later stage of economic development. The results also indicate that without an appropriate ethical behavior, not just in business, productivity growth is hampered. This is because we have to deal with a decrease in the level of trust and willingness to cooperate.

Jalles and Tavares (2015) investigate the relationship between technological progress, trade, scale, and social capital (mainly trust) on a sample of 59 countries in two five-year periods 1970-1975 and 2005-2010. In a panel dataset of developing and developed countries they uncover a positive effect of social capital on a country's rate of technological progress, which is more significant in richer countries. According to endogenous growth theory, they justify their results on the grounds that as a country becomes richer it can move from imitating technology through trade to producing technology.

Loakimidis and Heijke (2016) verify the relationship between social capital in the form of interpersonal trust and country's four types of welfare regimes: social democratic regime, conservative regime, liberal regime and transition regime on a sample of 17 European countries. Their findings show that conservative regimes, liberal regimes, and transition regimes are all associated with a much lower level of interpersonal trust than social democratic regimes. Therefore, their studies confirm that countries with a social democratic regime have a higher level of social capital.

Peiró-Palomino (2016) analyses the role of two social capital indicators – social trust and active participation - on the growth of 237 European regions in the period 1995-2007. The research results suggest that social capital effects are heavily heterogeneous across regions in Europe. In general, for both social trust and active participation, the results show that Eastern and Central Europe regions not only present lower levels of social capital, but also that in some of these regions its effects on growth are negative.

Lee and Law (2017) investigate the roles of formal institutions and social capital in countries' innovation activities, which is a prerequisite for accelerating economic development. The sample consists of 62 developed and developing countries and the research period is 2006-2010. The findings indicate that formal institutions and social capital complement each other in influencing countries' innovation level. The empirical result also suggests that innovation level tends to be higher in countries with higher social capital.

Galaso (2018) presents a review on empirical research and finds evidence regarding the positive impact of collective social capital in the form of networks on the performance of cities and regions. He concludes that collective social capital accelerates territorial development especially by facilitating the diffusion of information and fostering cooperation among actors (e.g., local and foreign firms).

Obert, Theocharis and Deth (2019) study the relationships between economic developments and social capital in 23 European countries in the period 2002-2016. They show that economic decline is associated with a fall in social capital, especially in southern European countries. They also prove that in countries characterised by well-functioning governments social capital is significantly less affected by economic decline.

Madrysz (2020) focuses on the use of social capital for the development and success of social economy initiatives. He presents practical examples of social economy entities operating in Poland. He concludes that in Poland there is a need for strong cooperation between social economy entities and the community in which they operate. In his opinion, this cooperation should be based on shared values and aims as well as understanding of community needs and problems.

Cáceres-Carrasco, Santos and Guzmán (2020) verify whether the effects of social capital on innovation differ in low-income countries in comparison to other more highly developed countries in the research period 2006-2010. The data source is the World Values Survey (WVS). They find that, when an innovation-oriented system exists, the presence of strong social capital will reinforce the innovative trend through higher levels of cooperation and sharing of knowledge.

Kabakçi Günay and Sülün (2021) examine the relationship between the welfare levels of OECD countries and their social capital levels within the framework of the Legatum Prosperity Index in the research period 2009-2019. They prove that social capital is an important input in the difference between welfare levels of OECD countries. Social capital was high in countries with high levels of welfare across OECD countries with the exception of Japan, Poland, the Czech Republic, Greece, Lithuania, and South Korea. While these countries in 2019 were among the top 40 countries in the world in terms of general welfare level, they ranked 100th and above in the world in terms of social capital.

Tekdemir and Varol İyidoğan (2021) examine the impact of social capital on growth depending on the democratization level of 138 countries over the period 2009-2018. They take the annual percentage change in per capita GDP as an indicator of growth. The findings indicate that, in countries with a relatively higher level of democratization, social capital is a significant and positive determinant of growth. But in countries where the democratization level is low, social capital does not have a significant impact on growth. Therefore, they conclude that the establishment and maintenance of democratic structure is one of the substantial policy focuses in the process of social capital-led growth.

Berg (2022) investigates how individual generalized trust in retailers and providers in impersonal markets is affected by the efficiency and performance of consumer authorities. Based on survey data from 28 037 respondents living in 30 European countries collected for the European Commission's *Consumer Conditions Scoreboard*, Berg indicates that fair and effective consumer authorities are strong drivers of better performing markets, measured by safe consumer conditions. According to him, fair and effective consumer institutions enhance individual generalized trust and contribute to more equality in the markets.

Huidobro, Antonioni, Lipari and Tamarit (2022) examine the role of two types of social capital as drivers of GDP growth in 63 economies during 10 years. The first type of social capital is information capital. In their study information capital is a proxy for the ability to acquire valuable information and to spread it to others from such channels of knowledge flow as foreign direct investment, trade and migration. The second one is favor capital, which they define as having neighbors that are supported by a neighbor in common. They identify positive and significant effects of both information and favor social capital on GDP.

Based on the literature review, it can be concluded that there is still a need for more comprehensive research on the impact of social capital on economic development. For example, the authors of *The 2023 Legatum Prosperity Index^{TM}* point out that social capital, especially interpersonal and institutional trusts, is the least explained phenomenon that builds prosperity (Legatum Institute, 2023, p. 12). In response to this need, this study examined eleven components of social capital. To make it possible, own database including their changes in 96 countries over a ten-year period was created. The hope is that this research approach will result in a more holistic view of how social capital can influence economic development.

3. Material selection and research methods

At the beginning, the authors would like to emphasize that the main limitations of any study on social capital are the lack of universally accepted methods of measurement and the availability of data on larger groups of countries over a sufficient long time. It is also difficult to obtain free access to more detailed social capital indicators.

There is also a situation where certain indicators are published for some time and then not continued or you have to pay for them. A good example is our main source of data for indicators of social capital level, i.e. the Global Competitiveness Report. It was published by the World Economic Forum from 2008 until 2019. Currently data is available for a fee.

Due to the availability of data, we included in the studies 96 countries. Recalling they were divided in three groups composed of 32 economies according to their income levels, i.e., low-income, 4465 or less; middle-income, 4466 to 13,845; and high-income countries, 13,846 or more.

The indicators sourced from The Global Competitiveness Reports come from the executive opinion survey in which respondents estimate the presence of a given factor in their country on the seven-point scale, where 1 refers to the lowest level of this factor, and 7 the highest (the best situation).

We decided to verify the impact of the following components of social capital on economic development:

- Diversion of public funds due to corruption (DPF).
- Public trust in politicians (PTP).
- Favouritism in decisions of government officials to well-connected firms and individuals when deciding upon policies and contracts (FGO).
- Transparency of government policymaking that affects business activities (TGP).
- Ethical behaviour of firms in interactions with public officials, politicians, and other firms (EBF).
- Cooperation in labour-employer relations that can be generally confrontational or generally cooperative (CLE).
- Reliance on professional management relating to whether in a given country senior management positions hold relatives and friends without regard to merit, or professional managers chosen for merit and qualifications (RPM).
- State of cluster development (SCD).
- Willingness to delegate authority to subordinates relating to whether in a given country top management controls all important decisions, or authority is mostly delegated to business unit heads and other lower-level managers (WDA).
- University-industry collaboration in R&D (UIC).

Our research also included the World Bank indicator of government effectiveness (GE) because it reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

Referring to the literature on the subject presented in the second part of this study, it is clear that the World Bank indicator of government effectiveness undoubtedly provides an indirect measure of social capital level in the public sector. The World Bank indicator of government effectiveness ranges from -2.5 (weak) to 2.5 (strong) governance performance. These values were converted to the 10-point scale, where 1 refers to the lowest level of this indicator, and 10 the highest.

The economic development measures were gross domestic product per capita in current prices (GDP *pc*), gross domestic product per capita in constant prices (GDPCP *pc*), and gross national income per capita in current prices (GNI *pc*) – all denominated in USD. These measures of economic development are usually treated as indirect indicators of national wealth. The data was taken from the United Nations Conference on Trade and Development’s statistics.

The examined measures of social capital and economic development need to be first standardized for comparison between indicators and countries to be meaningful. Therefore, all variables included in our research were transformed into natural logarithms.

According to the statistical literature, the validity of parametric tests depends on normal distribution of data. So the next step was to check whether the values of our variables are normally distributed. Three types of normality tests, such as the e.g. Kolmogorov-Smirnov (K-S) test, Lilliefors corrected K-S test, and Shapiro-Wilk test, were used for assess whether the elements of social capital and the economic development indicators have normal distributions.

If p-values of the Kolmogorov-Smirnov (K-S) test and Lilliefors corrected K-S test are greater than 0.05, there are no grounds to reject the hypothesis about the normality of the distribution. If the significance correction (Sig.) value of the Shapiro-Wilk test is below than 0.05, the data significantly deviates from a normal distribution. The results of normality tests are shown in Table 1. They indicate that most of the variables in our datasets are not normally distributed (see: Gupta, Kapoor, 2000).

Table 1.
Tests of normality for all researched countries (N = 960)

Variables	Kolmogorov-Smirnov	Lilliefors	Shapiro-Wilk
GE	d=0.14556, p<0.01	p<0.01	W=0.92351, Sig.=0.00000
DFP	d=0.08514, p<0.01	p<0.01	W=0.96565, Sig.=0.00000
PTP	d=0.08243, p<0.01	p<0.01	W=0.97708, Sig.=0.00000
FGO	d=0.08960, p<0.01	p<0.01	W=0.97649, Sig.=0.00000
TGP	d=0.05020, p<0.05	p<0.01	W=0.99122, Sig.=0.00002
EBF	d=0.12822, p<0.01	p<0.01	W=0.95287, Sig.=0.00000
CLE	d=0.07270, p<0.01	p<0.01	W=0.98622, Sig.=0.00000
RPM	d=0.06896, p<0.01	p<0.01	W=0.97126, Sig.=0.00000
SCD	d=0.04455, p<0.05	p<0.01	W=0.98354, Sig.=0.00000
WDA	d=0.09526, p<0.01	p<0.01	W=0.98618, Sig.=0.00000
UIC	d=0.08546, p<0.01	p<0.01	W=0.97720, Sig.=0.00000
GDP *pc*	d=0.08514, p<0.01	p<0.01	W=0.95950, Sig.=0.00000
GDPPC *pc*	d=0.09155, p<0.01	p<0.01	W=0.95774, Sig.=0.00000
GNI *pc*	d=0.08751, p<0.01	p<0.01	W=0.95602, Sig.=0.00000

Note. GE - government effectiveness, DFP - diversion of public funds due to corruption, PTP - public trust in politicians; FGO - favouritism in decisions of government officials, TGP - transparency of government policymaking affecting business activities, EBF - ethical behaviour of firms, CLE - cooperation in labour-employer relations, RPM - reliance on professional management, SCD - State of cluster development, WDA - willingness to delegate authority, UIC - university-industry collaboration in R&D, GDP *pc* - gross domestic product per capita in current prices, GDPPC *pc* - gross domestic product per capita in constant prices, GNI *pc* - national income per capita in current prices.

Source: Authors' calculations.

Therefore, a decision was made to carry out the Spearman's rank correlation analysis to examine the strength and direction of association between the variables. The Spearman's rank correlation coefficient is a nonparametric measure of relationship that exists between two variables. It is used when one or two variables are measured on an ordinal scale or are not normally distributed. It assumes a value between -1 and 1. The closer Spearman's rank correlation coefficient is to 1 or -1, the stronger the analyzed association. If it is positive, then as one variable increases, the other tends to increase. If it is negative, then as one variable increases, the other tends to decrease (see: Baker, 2019).

The Spearman's rank correlation analysis was performed for two types of relationships between variables. Firstly, the strength and direction of the relationship between a given element of social capital and a given indicator of economic development was checked. As a result, statistically significant relations between the changes in a given component of social capital and three indicators of economic development were identified. The correlation coefficients were calculated for a whole set of countries and three income groups.

In this case the correlation analysis was accounted also for the time delays in which the independent variable being the given component of social capital in year t_0, is the cause of a change of the size of GDP *pc*, GDPPC in year t_{+1}, t_{+2} and t_{+3}.

Models that take into account time delays allow checking if there is a statistically significant dependence of one variable on the other variable. They are a kind of substitute for regression analysis when the variables do not have a normal distribution. The research period covered the years 2008-2020. The results of these calculations are presented in tables 3, 5 and 7.

Secondly, we examined the associations between the components of social capital, which turned out to be statistically significant for the change in the level of economic development, and the rest of the analyzed components of social capital. The correlation coefficients were calculated for three income groups of countries. In this case the research period covered the years 2008-2017. Tables 4, 6 and 8 show the values of correlation coefficients obtained for relationships between the studied components of social capital statistically significant for changes in economic development of a given group of countries and other elements of social capital. In these tables the values of correlation coefficients are ranked according to the strength of relationships between the studied components of social capital. The results obtained can be used as guidelines for planning economic policy.

It is worth recalling that the interpretation of correlation coefficients differs according to the number of observations. For smaller samples correlation coefficients can be high and not statistically significant, and for larger samples low and significant. Therefore, in order to ensure the comparability of the obtained results, our research assumed the same size of the income-level groups of countries, which each time gave the number of observations amounting to 320.

We also used a cluster analysis in order to examine similarities and dissimilarities between the analysed income-level groups of countries. Based on this multivariate data mining technique, it is possible to determine which variables have a stronger mutual influence on each other in a given group of countries. The cluster analysis was carried out with the help of the method of agglomeration based on Chebyshev distance, which is a generalised version of Euclidean distance between variables. The results of the cluster analysis have been presented graphically in a dendrogram. The branches of it represent distances between the examined variables (see: Brian et al., 2011).

The statistical analysis was carried out to verify the following hypotheses:

H1: The importance of the studied components of social capital in stimulating the welfare growth changes depending on the stage of economic development.

H2: The influence of the studied components of social capital on economic development is strongest in high-income countries.

H3: Government effectiveness as defined by the World Bank, ethical behaviour and reliance on professional management are necessary conditions for accelerating economic development.

4. Results

The interdependency between higher value of social capital indicators and the increase in GDP *pc*, GDPCP *pc*, and GNI *pc* have been confirmed by Spearman's rank correlation analysis for a whole set of countries. All correlation coefficients are positive and statistically significant on the level of 0.05 (Table 2). Moreover, this positive influence of social capital on economic development continues over time. Therefore, in the situation when coefficients are positive and statistically significant, we can state that social capital development is accompanied by an increase in the national wealth of examined countries.

Table 2.
Spearman's Rank Correlation Coefficients for the Relationship between Components of Social Capital and GDP pc, GDP_{CP} pc, GNI pc in USD, 96 countries, 2008-2020

N = 960	**GE**	**DPF**	**PTP**	**FGO**	**TGP**	**EBF**	**CLE**	**RPM**	**SCD**	**WDA**	**UIC**
GDP pc_{t0}	0.89*	0.64*	0.49*	0.53*	0.62*	0.68*	0.51*	0.69*	0.66*	0.71*	0.74*
GDP pc_{t+1}	0.89*	0.64*	0.49*	0.53*	0.62*	0.67*	0.52*	0.69*	0.66*	0.71*	0.74*
GDP pc_{t+2}	0.89*	0.64*	0.49*	0.54*	0.62*	0.68*	0.52*	0.70*	0.66*	0.71*	0.74*
GDP pc_{t+2}	0.89*	0.65*	0.49*	0.54*	0.62*	0.68*	0.53*	0.70*	0.66*	0.71*	0.74*
GDCP pc_{t0}	0.89*	0.64*	0.49*	0.53*	0.62*	0.68*	0.52*	0.69*	0.67*	0.72*	0.74*
GDCP pc_{t+1}	0.89*	0.64*	0.49*	0.53*	0.62*	0.68*	0.52*	0.69*	0.67*	0.72*	0.74*
GDCP pc_{t+2}	0.89*	0.64*	0.49*	0.53*	0.62*	0.68*	0.53*	0.70*	0.67*	0.72*	0.74*
GDCP pc_{t+2}	0.89*	0.64*	0.49*	0.53*	0.62*	0.68*	0.53*	0.70*	0.67*	0.71*	0.74*
GDP pc_{t0}	0.89*	0.64*	0.49*	0.54*	0.61*	0.67*	0.51*	0.69*	0.66*	0.71*	0.74*
GNI pc_{t+1}	0.89*	0.64*	0.49*	0.54*	0.62*	0.67*	0.51*	0.69*	0.66*	0.71*	0.74*
GNI pc_{t+2}	0.89*	0.65*	0.49*	0.54*	0.62*	0.67*	0.52*	0.69*	0.66*	0.71*	0.74*
GNI pc_{t+2}	0.89*	0.65*	0.49*	0.54*	0.62*	0.68*	0.52*	0.69*	0.66*	0.71*	0.74*

Note. N – number of observations, * $p < 0.05$.

GE - government effectiveness, DFP - diversion of public funds due to corruption, PTP - public trust in politicians; FGO - favouritism in decisions of government officials, TGP - transparency of government policymaking affecting business activities, EBF - ethical behaviour of firms, CLE - cooperation in labour-employer relations, RPM - reliance on professional management, SCD - State of cluster development, WDA - willingness to delegate authority, UIC - university-industry collaboration in R&D, GDP *pc* - gross domestic product per capita in current prices, GDPPC *pc* - gross domestic product per capita in constant prices, GNI *pc* - national income per capita in current prices.

Source: Authors' calculations.

For a whole set of countries an economic development growth is the most strongly positively correlated with an increase in the World Bank indicator of government effectiveness (0.89). The strong correlation coefficients (above 0.60) occur also in the case of the interdependency between an increase in economic development and university-industry collaboration in R&D (1st place), willingness to delegate authority (2nd place), ethical behaviour of firms (3rd place), reliance on professional management (4th place), state of cluster development (5th place), transparency of government policymaking affecting business activities (6th place), and diversion of public funds due to corruption (7th place). On the other hand, the weakest correlation coefficient was obtained for public trust in politicians.

Tables 3 and 4 present the research results obtained for low-income countries. The correlation coefficients are statistically significant and positive for relationships between an increase in economic development and state of cluster development (0.28), willingness to delegate authority to subordinates (0.27), the World Bank indicator of government effectiveness (0.24), cooperation in labour-employer relations (0.21), transparency of government policymaking (0.13), and reliance on professional management (0.12).

Table 3.
Spearman's rank correlation coefficients for the relationship between components of social capital and GDP pc, GDP_{CP} pc, GNI pc in USD, 32 low-income countries, 2008-2020

N = 320	**GE**	**DPF**	**PTP**	**FGO**	**TGP**	**EBF**	**CLE**	**RPM**	**SCD**	**WDA**	**UIC**
GDP pc_{t0}	0.24*	0.04	-0.02	-0.12*	0.09	0.11	0.21*	0.13*	0.28*	0.27*	0.08
GDP pc_{t+1}	0.23*	0.05	-0.04	-0.12*	0.10	0.09	0.20*	0.14*	0.28*	0.27*	0.08
GDP pc_{t+2}	0.23*	0.06	-0.05	-0.12*	0.10	0.09	0.22*	0.17*	0.28*	0.27*	0.06
GDP pc_{t+2}	0.23*	0.06	-0.06	-0.13*	0.09	0.10	0.24*	0.18*	0.28*	0.26*	0.04
GDCP pc_{t0}	0.21*	0.08	-0.04	-0.13*	0.06	0.10	0.20*	0.16*	0.34*	0.31*	0.07
GDCP pc_{t+1}	0.20*	0.08	-0.05	-0.13*	0.07	0.10	0.21*	0.17*	0.34*	0.32*	0.07
GDCP pc_{t+2}	0.20*	0.08	-0.05	-0.13*	0.07	0.11	0.21*	0.18*	0.34*	0.32*	0.07
GDCP pc_{t+2}	0.21*	0.07	-0.06	-0.13*	0.08	0.11	0.22*	0.19*	0.34*	0.30*	0.07
GDP pc_{t0}	0.25*	0.08	0.02	-0.08	0.08	0.10	0.20*	0.11*	0.28*	0.26*	0.07
GNI pc_{t+1}	0.25*	0.09	0.00	-0.08	0.09	0.08	0.19*	0.12*	0.28*	0.26*	0.08
GNI pc_{t+2}	0.25*	0.09	-0.02	-0.09	0.10	0.09	0.21*	0.14*	0.28*	0.26*	0.07
GNI pc_{t+2}	0.25*	0.09	-0.03	-0.10	0.09	0.10	0.23*	0.16*	0.29*	0.25*	0.05

Note. N – number of observations, * $p < 0.05$.

GE - government effectiveness, DFP - diversion of public funds due to corruption, PTP - public trust in politicians; FGO - favouritism in decisions of government officials, TGP - transparency of government policymaking affecting business activities, EBF - ethical behaviour of firms, CLE - cooperation in labour-employer relations, RPM - reliance on professional management, SCD - State of cluster development, WDA - willingness to delegate authority, UIC - university-industry collaboration in R&D, GDP *pc* - gross domestic product per capita in current prices, GDPPC *pc* - gross domestic product per capita in constant prices, GNI *pc* - national income per capita in current prices.

Source: Authors' calculations.

The negative and statistically significant correlation coefficients occur only in the case of favouritism in decisions of government officials to well-connected firms and individuals when deciding upon policies and contracts. However, the negative correlation coefficients for FGO were low and in the case of GNI *pc* not statistically significant.

Taking into account the first 5 places (Table 4), only ethical behaviour of firms in interactions with public officials, politicians, and other firms is statistically significantly correlated with six elements of social capital influencing economic development of the analyzed low-income countries. Diversion of public funds due to corruption ranks second in this category. It is statistically significantly correlated with five of the six components of social capital that are drivers of economic development in this group of countries. Reduction in the scale of DPF is most strongly correlated with an increase in government effectiveness as defined by the World Bank.

The scale of corruption is influenced by many factors, including socially approved behavior of those ruling the country or the lack of social control over the actions of people who have access to public funds. The research results, therefore, indicate that in the group of low-income countries a value system, which constitutes the core of national culture, is already a strategic factor, which can either slow down or accelerate the growth of prosperity.

Table 4.
Spearman's rank correlation coefficients for the statistically significantly relationship between components of social capital, 32 low-income countries, 2008-2017

Place	SCD	WDA	GE	CLE	RPM	FGO
1	UIC: 0.51	RPM: 0.66	DPF: 0.43	EBF: 0.54	WDA: 0.66	PTP: 0.82
2	WDA:0.49	EBF: 0.58	EBF: 0.43	RPM: 0.48	EBF: 0.60	DPF: 0.77
3	EBF: 0.46	SCD: 0.49	PTP: 0.40	TGP: 0.46	TGP: 0.55	EBF: 0.61
4	DPF: 0.43	UIC: 0.47	SCD: 0.39	WDA: 0.40	CLE: 0.48	UIC: 0.49
5	GE: 0.39	DPF: 0.42	UIC: 0.38	DPF: 0.31	SCD: 0.39	TGP: 0.41
6	RPM: 0.39	CLE: 0.40	TGP: 0.35	UIC: 0.29	UIC: 0.37	GE: 0.35
7	PTP: 0.37	TGP: 0.38	FGO: 0.35	SCD: 0.27	DPF: 0.30	SCD: 0.28
8	FGO: 0.28	PTP: 0.30	WDA: 0.25	PTP: 0.26	GE: 0.23	WDA: 0.26
9	TGP: 0.28	FGO: 0.26	RPM: 0.23	FGO: 0.25	FGO: 0.19	CLE: 0.25
10	CLE: 0.27	GE: 0.25	CLE: 0.22	GE: 0.22	PTP: 0.12	RPM: 0.19

GE - government effectiveness, DFP - diversion of public funds due to corruption, PTP - public trust in politicians; FGO - favouritism in decisions of government officials, TGP - transparency of government policymaking affecting business activities, EBF - ethical behaviour of firms, CLE - cooperation in labour-employer relations, RPM - reliance on professional management, SCD - State of cluster development, WDA - willingness to delegate authority, UIC - university-industry collaboration in R&D.

Source: Authors' calculations.

The values of statistically significant correlation coefficients obtained for middle-income economies (Table 5) suggest that the higher level of such indicators of social capital as university-industry collaboration in R&D, state of cluster development, government effectiveness, willingness to delegate authority, and reliance on professional management, the faster the economic development of this group of countries.

In the group of middle-income economies only the negative and statistically significant coefficients occurred for association between cooperation in labour-employer relations and economic development. It is due to the fact that middle-income countries are often industrial societies operating like a factory with a vertical hierarchy structure. Power in such countries is concentrated in the hands of a small number of people who centralise the decision-making process. In other words, there is no question of greater participation of workers or citizens in management, which is characteristic for the autocratic management style.

Table 5.
Spearman's rank correlation coefficients for the relationship between components of social capital and GDP pc, GDP_{CP} pc, GNI pc in USD, 32 middle-income countries, 2008-2020

N = 320	GE	DPF	PTP	FGO	TGP	EBF	CLE	RPM	SCD	WDA	UIC
GDP pc_{t0}	0.25*	-0.12	-0.01	-0.08	-0.07	0.00	-0.20*	0.17*	0.34*	0.19*	0.38*
GDP pc_{t+1}	0.26*	-0.11	0.01	-0.07	-0.03	0.00	-0.19*	0.18*	0.36*	0.18*	0.39*
GDP pc_{t+2}	0.26*	-0.09	0.01	-0.06	-0.03	0.01	-0.16*	0.20*	0.35*	0.18*	0.39*
GDP pc_{t+2}	0.26*	-0.07	0.01	-0.04	-0.05	0.03	-0.15*	0.19*	0.33*	0.16*	0.37*
GDCP pc_{t0}	0.25*	-0.12	-0.02	-0.08	-0.05	0.01	-0.15*	0.21*	0.39*	0.25*	0.39*
GDCP pc_{t+1}	0.25*	-0.11	-0.01	-0.07	-0.04	0.01	-0.14*	0.20*	0.39*	0.24*	0.39*
GDCP pc_{t+2}	0.26*	-0.10	-0.01	-0.07	-0.04	0.00	-0.13*	0.20*	0.39*	0.23*	0.38*
GDCP pc_{t+2}	0.26*	-0.09	-0.01	-0.06	-0.03	0.01	-0.13*	0.19*	0.38*	0.19*	0.38*
GDP pc_{t0}	0.25*	-0.11	-0.01	-0.08	-0.08	-0.00	-0.21*	0.17*	0.34*	0.19*	0.38*
GNI pc_{t+1}	0.26*	-0.10	0.01	-0.07	-0.03	-0.00	-0.19*	0.18*	0.36*	0.18*	0.40*
GNI pc_{t+2}	0.26*	-0.09	0.01	-0.06	-0.03	0.01	-0.17*	0.20*	0.35*	0.18*	0.39*
GNI pc_{t+2}	0.26*	-0.07	0.00	-0.04	-0.06	0.02	-0.15*	0.19*	0.34*	0.16*	0.38*

Note. N – number of observations, * $p < 0.05$.

GE - government effectiveness, DFP - diversion of public funds due to corruption, PTP - public trust in politicians; FGO - favouritism in decisions of government officials, TGP - transparency of government policymaking affecting business activities, EBF - ethical behaviour of firms, CLE - cooperation in labour-employer relations, RPM - reliance on professional management, SCD - State of cluster development, WDA - willingness to delegate authority, UIC - university-industry collaboration in R&D, GDP *pc* - gross domestic product per capita in current prices, GDPPC *pc* - gross domestic product per capita in constant prices, GNI *pc* - national income per capita in current prices.

Source: Authors' calculations.

However, the transition from an autocratic to a democratic management style is a prerequisite for further social development. The research results presented in Table 6 indicate that in the group of middle-income countries the reduction of the scale of confrontational labour-employ relations was most strongly associated with accelerating actions aimed at:

- increasing transparency of government policymaking that affects business activities,
- reducing favouritism in decisions of government officials to well-connected firms and individuals,
- promoting ethical behaviour of firms in interactions with public officials, politicians, and other firms,
- increasing the scale of willingness to delegate authority to subordinates.

Taking into account the first 5 places, again only ethical behaviour of firms was statistically significantly correlated with six elements of social capital influencing the economic development of the middle-income countries. Ethical behaviour by companies was the most positively correlated with an increase in the World Bank's government effectiveness index. Comparing with the group of low-income countries, the strength of this association increased from 0.40 to 0.62. The same trend occurred for the correlations between GE and diversion of public funds due to corruption (increase from 0.43 to 0.60) and public trust in politicians (increase from 0.40 to 0.51).

In the groups of low- and middle-income country group, as increase in reliance on professional management was most strongly correlated with an increase in willingness to delegate authority. In the middle-income country group compared to the low-income country group, higher values of correlation coefficients were obtained for associations between RPM and favouritism in decisions by government officials of well-connected firms and individuals (by 0.22), government effectiveness (by 0.20), public trust in politicians (by 0.14), state of cluster development (by 0.13), university-industry collaboration in R&D (by 0.11), and diversion of public funds due to corruption (by 0.6).

Table 6.
Spearman's rank correlation coefficients for the statistically significantly relationship between components of social capital, 32 middle-income countries, 2008-2017

Place	UIC	SCD	GE	WDA	CLE	RPM
1	SCD: 0.70	UIC: 0.70	EBF: 0.62	RPM: 0.61	TGP: 0.45	WDA: 0.61
2	RPM: 0.48	WDA: 0.60	DPF: 0.60	SCD: 0.60	FGO: 0.40	EBF: 0.56
3	WDA: 0.46	RPM: 0.52	PTP: 0.51	UIC: 0.46	EBF: 0.36	SCD: 0.52
4	EBF: 0.35	EBF: 0.47	FGO: 0.48	EBF: 0.42	WDA: 0.35	UIC: 0.48
5	GE: 0.31	GE: 0.45	TGP: 0.47	CLE: 0.35	SCD: 0.29	GE: 0.43
6	TGP: 0.25	TGP: 0.36	SCD: 0.45	GE: 0.24	PTP: 0.27	FGO: 0.41
7	FGO: 0.24	FGO: 0.31	RPM: 0.43	FGO: 0.23	DPF: 0.25	TGP: 0.37
8	PTP: 0.24	CLE: 0.29	UIC: 0.31	TGP: 0.23	RPM: 0.21	DPF: 0.36
9	DPF: 0.12	PTP: 0.23	WDA: 0.24	PTP: 0.14		PTP: 0.27
10		DPF: 0.17		DPF: 0.13		CLE: 0.21

GE - government effectiveness, DFP - diversion of public funds due to corruption, PTP - public trust in politicians; FGO - favouritism in decisions of government officials, TGP - transparency of government policymaking affecting business activities, EBF - ethical behaviour of firms, CLE - cooperation in labour-employer relations, RPM - reliance on professional management, SCD - State of cluster development, WDA - willingness to delegate authority, UIC - university-industry collaboration in R&D.

Source: Authors' calculations.

Based on this, it can be concluded that the results of our research show how the professional management along with ethical behavior of government and firm are important for accelerating the rate of economic development. For middle-income countries still stuck in the industrial era to achieve this, the social structure must change. In other words, a new model of social stratification should be introduced at the stage of industrial society.

This model of social structure is shaped by the following main principles. One of them is the principle of equality before the law of all members of society. This principle together with universal suffrage forms the foundation of every democratic system. The state should also create such social institutions that would guarantee equal opportunities and ensure an equal start in life. These rules lead to an increase in social mobility and management professionalization. In this case, a social position depends on diligence and willingness to take advantage of the educational system's offers. Then the elites with power are formed naturally and have both informal and formal authority.

In the group of middle-income countries the strongest positive correlation occurred between university-industry collaboration in R&D and state of cluster development (0.70). Recalling there are two elements of social capital that had the greatest impact on economic development of this group of countries in the research period. It is due to the fact that in middle-income countries the innovation activity and the commercialisation of new technologies take place more and more often in various types of clusters, techno-parks, business incubators and technology transfer centres.

These institutional arrangements form an infrastructure that facilitates knowledge sharing and diffusion of technological progress as a result of fostering the cooperation on innovation activities among domestic and foreign enterprises, universities and other scientific research units. All of them can improve social capital, making the cooperation more effective, as well as develop knowledge more focused on the needs of the industry. They are an important part of the National Innovation System (NIS). The NIS should operate as a network of various interconnected institutions of the public and private sectors that constitute inspiring conditions for knowledge acquisition, development and diffusion (compare: Kuczewska, Tomaszewski, 2022; Lis, Majewska, 2016; Nelson, 1998; Nelson, Romer, 1996; Porter 1990).

Table 7.
Spearman's rank correlation coefficients for the relationship between components of social capital and GDP pc, GDP_{CP} pc, GNI pc in USD, 32 high-income countries, 2008-2020

N = 320	GE	DPF	PTP	FGO	TGP	EBF	CLE	RPM	SCD	WDA	UIC
GDP pc_{t0}	0.75*	0.74*	0.73*	0.69*	0.63*	0.71*	0.64*	0.71*	0.62*	0.74*	0.66*
GDP pc_{t+1}	0.76*	0.74*	0.73*	0.69*	0.65*	0.70*	0.66*	0.71*	0.63*	0.74*	0.66*
GDP pc_{t+2}	0.76*	0.75*	0.75*	0.70*	0.67*	0.71*	0.68*	0.73*	0.63*	0.74*	0.66*
GDP pc_{t+2}	0.77*	0.75*	0.75*	0.70*	0.65*	0.73*	0.68*	0.72*	0.62*	0.74*	0.67*
GDCP pc_{t0}	0.77*	0.75*	0.75*	0.68*	0.66*	0.71*	0.67*	0.71*	0.64*	0.74*	0.68*
GDCP pc_{t+1}	0.76*	0.75*	0.75*	0.68*	0.66*	0.70*	0.68*	0.71*	0.64*	0.74*	0.68*
GDCP pc_{t+2}	0.77*	0.75*	0.75*	0.68*	0.67*	0.70*	0.68*	0.71*	0.65*	0.74*	0.68*
GDCP pc_{t+2}	0.77*	0.75*	0.75*	0.68*	0.67*	0.70*	0.68*	0.71*	0.64*	0.73*	0.69*
GDP pc_{t0}	0.76*	0.72*	0.74*	0.70*	0.61*	0.71*	0.64*	0.71*	0.65*	0.75*	0.66*
GNI pc_{t+1}	0.77*	0.73*	0.74*	0.69*	0.64*	0.70*	0.66*	0.71*	0.66*	0.71*	0.67*
GNI pc_{t+2}	0.77*	0.74*	0.75*	0.70*	0.66*	0.71*	0.68*	0.72*	0.65*	0.76*	0.67*
GNI pc_{t+2}	0.77*	0.74*	0.75*	0.70*	0.64*	0.73*	0.68*	0.71*	0.64*	0.76*	0.67*

Note. N – number of observations, * $p < 0.05$.

GE - government effectiveness, DFP - diversion of public funds due to corruption, PTP - public trust in politicians; FGO - favouritism in decisions of government officials, TGP - transparency of government policymaking affecting business activities, EBF - ethical behaviour of firms, CLE - cooperation in labour-employer relations, RPM - reliance on professional management, SCD - State of cluster development, WDA - willingness to delegate authority, UIC - university-industry collaboration in R&D, GDP *pc* - gross domestic product per capita in current prices, GDPPC *pc* - gross domestic product per capita in constant prices, GNI *pc* - national income per capita in current prices.

Source: Authors' calculations.

Table 7 presents the results of correlation analysis for high-income countries. As would be expected in the case of high-income countries, all correlation coefficients are statistically significant, positive, and the highest among the analysed groups of economies. According to country's development path theory, it may be due to the fact that the significant impact of social capital on economic development appears only after a country has accumulated the sufficient stock of it. This requires first planning a long-term policy of social capital development by experts, and then its effective implementation by successive governments.

In the group of high-income countries an economic development growth was the most positively correlated with both a decline in diversion of public funds due to corruption as well as an increase in public trust in politicians and ethical corporate behaviour. The weakest correlation coefficient was obtained for state of cluster development, public trust in politicians, and cooperation in labour-employer relations. However, these correlation coefficients were significantly higher than those calculated for middle-income countries.

The research results presented in Table 8 illustrate the strength and direction of associations between all elements of social capital that occurred in the group of high-income countries. The strongest positive correlation between elements of social capital was 0.93. It appeared first for the relationship between diversion of public funds due to corruption and favouritism in decisions of government officials to well-connected firms and individuals, second for the relationship between ethical behaviour of firms and public trust in politicians, third for the relationship between FGO and PTP.

Table 8.
Spearman's rank correlation coefficients for the statistically significantly relationship between components of social capital, 32 high-income countries, 2008-2017

Place	GE	DPF	WDA	PTP	EBF	RPM	UIC	FGO	CLE	TGP	SCD
1	DPF: 0.84	FGO: 0.93	RPM: 0.88	FGO: 0.93	DPF: 0.93	WDA: 0.88	SCD: 0.75	DPF: 0.93	FGO: 0.78	DPF: 0.86	UIC: 0.75
2	EBF: 0.83	EBF: 0.93	FGO: 0.78	DPF: 0.93	FGO: 0.90	FGO: 0.86	RPM: 0.72	PTP: 0.93	TGP: 0.78	PTP: 0.84	GE: 0.70
3	FGO: 0.81	PTP: 0.93	DPF: 0.77	EBF: 0.88	PTP: 0.88	DPF: 0.85	GE: 0.71	EBF: 0.90	DPF: 0.77	FGO: 0.83	FGO: 0.61
4	PTP: 0.81	TGP: 0.86	PTP: 0.76	TGP: 0.84	RPM: 0.83	EBF: 0.83	WDA: 0.68	RPM: 0.86	PTP: 0.77	CLE: 0.78	CLE: 0.60
5	TGP: 0.77	RPM: 0.85	EBF: 0.75	RPM: 0.81	GE: 0.83	PTP: 0.81	DPF: 0.65	TGP: 0.83	EBF: 0.76	EBF: 0.77	PTP: 0.59
6	RPM: 0.76	GE: 0.84	GE: 0.73	GE: 0.81	TGP: 0.77	GE: 0.76	EBF: 0.64	GE: 0.81	GE: 0.73	GE: 0.77	RPM: 0.59
7	CLE: 0.73	CLE: 0.77	CLE: 0.71	CLE: 0.77	CLE: 0.76	TGP: 0.74	FGO: 0.64	CLE: 0.78	WDA: 0.71	RPM: 0.74	TGP: 0.57
8	WDA: 0.73	WDA: 0.77	UIC: 0.68	WDA: 0.76	WDA: 0.75	UIC: 0.72	PTP: 0.60	WDA: 0.78	RPM: 0.69	WDA: 0.65	DPF: 0.57
9	UIC: 0.71	UIC: 0.65	TGP: 0.65	UIC: 0.60	UIC: 0.64	CLE: 0.69	TGP: 0.58	UIC: 0.64	SCD: 0.60	UIC: 0.58	EBF: 0.56
10	SCD: 0.70	SCD: 0.57	SCD: 0.55	SCD: 0.59	SCD: 0.56	SCD: 0.59	CLE: 0.56	SCD: 0.61	UIC: 0.56	SCD: 0.57	WDA: 0.55

GE - government effectiveness, DFP - diversion of public funds due to corruption, PTP - public trust in politicians; FGO - favouritism in decisions of government officials, TGP - transparency of government policymaking affecting business activities, EBF - ethical behaviour of firms, CLE - cooperation in labour-employer relations, RPM - reliance on professional management, SCD - State of cluster development, WDA - willingness to delegate authority, UIC - university-industry collaboration in R&D.

Source: Authors' calculations.

The findings suggest that the examined high-income countries are already post-industrial societies to a greater or lesser extent. In the context considered in work, knowledge gives access to power in a post-industrial society. Social position depends on diligence and willingness to take advantage of the educational system's offers. Decision makers, i.e., those who have power, are not only professionals, but also people who put the common good over their own self-interest. The science sector is independent from government and business, which is manifested in the freedom of teaching and research. The prevailing political system is participatory democracy. All citizens participate in society according to the same principles. Decisions about the future of society are made with them. Decentralization in the management of the public and private sectors is very common.

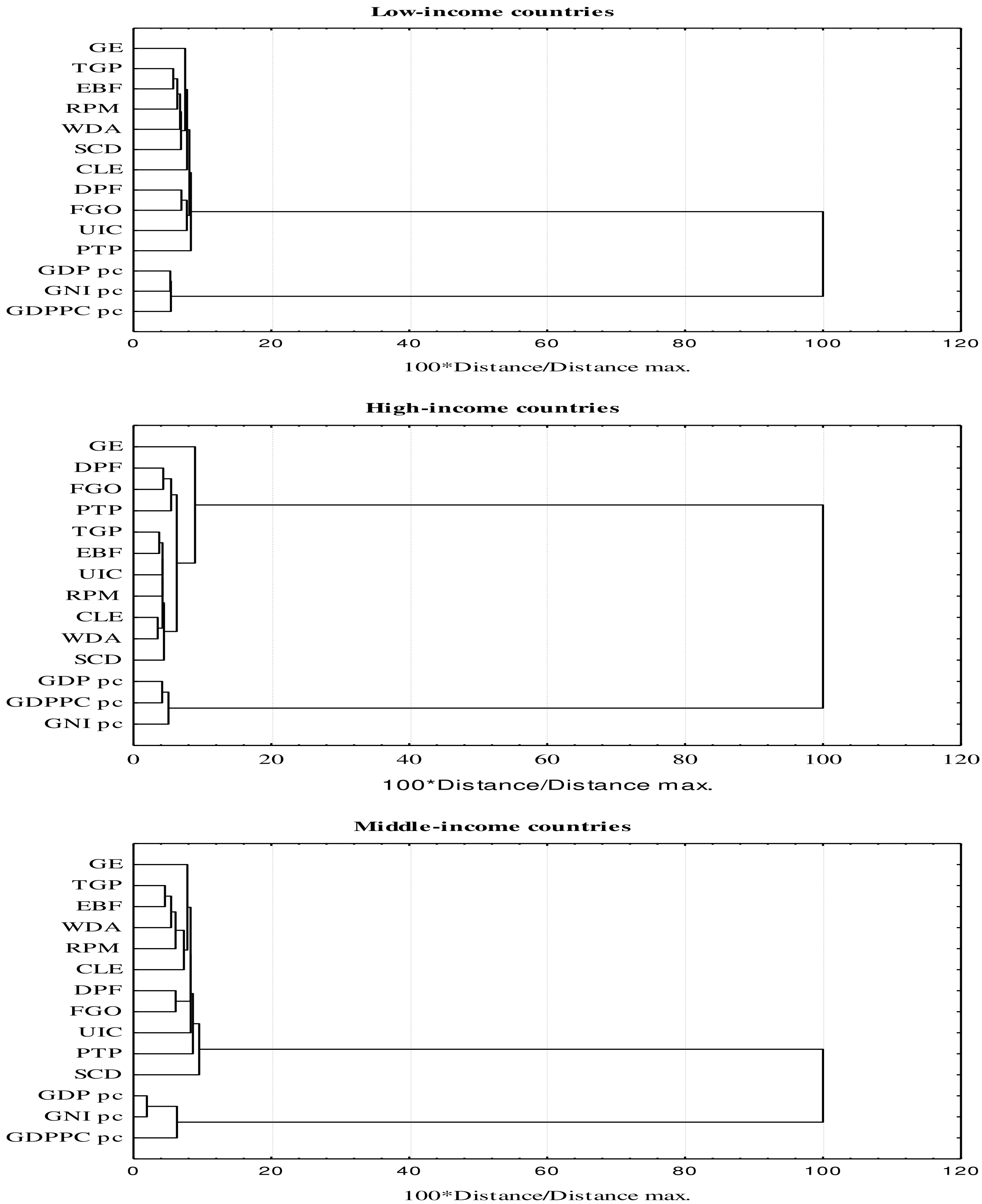
The results of the cluster analysis (Figure 1) carried out with the help of the method of agglomeration based on the Chebyshev distance show that the low-income countries display two main clusters between the examined components of social capital. The first cluster covers the diversion of public funds due to corruption, favouritism in the decisions of government officials, university-industry collaboration in R&D, and public trust in politicians.

The second cluster covers transparency of government policymaking affecting business activities, ethical behaviour of firms, reliance on professional management, willingness to delegate authority, and state of cluster development. At longer distances the cluster is joined by government effectiveness and cooperation in labour-employer relations. In the second cluster, the five components of social capital are closer in terms of distance. This suggests that the variables forming the second cluster may influence one another more strongly.

In the analysed low-income countries, the indicators of economic development join the second cluster of components of social capital and government effectiveness through the first cluster. Hence, the research results indicate that without the implementation of a state policy to improve the studied components of social capital forming the first cluster, the impact of the second cluster on economic development will be lower.

In the group of middle-income countries, we also deal with two main clusters of components of social capital joined at longer nodes by government effectiveness and state of cluster development. The first cluster is created by the transparency of government policymaking affecting business activities, ethical behaviour of firms, reliance on professional management and cooperation in labour-employer relations. In this cluster, transparency of government policymaking affecting business activities and ethical behaviour of firms are closest in terms of distances between them, and this phenomenon is based on the principle that the example often comes from the top. In other words, if politicians are dishonest and get away with it, companies can also behave unfairly in the market.

The second cluster covers the diversion of public funds due to corruption, favouritism in government officials' decisions, university-industry collaboration in R&D, and public trust in politicians. In the second cluster, there are longer distances (weaker links) between variables than in the first cluster. Thus, the components of social capital constituting the second cluster interact less with each other.



GE - government effectiveness, DFP - diversion of public funds due to corruption, PTP - public trust in politicians; FGO - favouritism in decisions of government officials, TGP - transparency of government policymaking affecting business activities, EBF - ethical behaviour of firms, CLE - cooperation in labour-employer relations, RPM - reliance on professional management, SCD - State of cluster development, WDA - willingness to delegate authority, UIC - university-industry collaboration in R&D, GDP *pc* - gross domestic product per capita in current prices, GDPPC *pc* - gross domestic product per capita in constant prices, GNI *pc* - national income per capita in current prices.

Figure 1. Dendrogram for selected variables of surveyed countries clustered using Chebyshev distance in 2008-2017.

Source: Authors' calculations.

The indicators' of economic development first connect with cluster development. Next, they connect through this node with university-industry collaboration in R&D, and then with the rest of the components of social capital. This again shows that in the case of middle-income countries, cluster development with university-industry collaboration in R&D is the engine of technological progress.

Countries with a high level of income explicitly demonstrate a larger similarity to the analysed features. Moreover, indicators of social capital and economic development that we have examined influence one another more strongly in the group of high-income countries than in the groups of economies with lower levels of income. The results of our study again prove that the impact of social capital on economic development is strongest in high-income countries.

In the case of high-income countries, the measures of economic development first connect with the World Bank indicator of government effectiveness, and this node joins the rest of the variables. Therefore, the results of our study illustrate the importance of the quality of government activities in the area of social capital development for increasing the well-being of society.

High-income countries display two main clusters among the examined components of social capital. The first larger and closer cluster contains seven variables for which the distances are smaller and more similar. These variables are transparency of government policymaking affecting business activities, ethical behaviour of firms, university-industry collaboration in R&D, reliance on professional management, cooperation in labour-employer relations, willingness to delegate authority, and state of cluster development. The second cluster includes the diversion of public funds due to corruption, favouritism in the decisions of government officials, and public trust in politicians.

5. Discussion

The findings of our research confirmed that social capital is becoming an increasingly important source of improving a country’s welfare along with achieving the next stage of economic development. Thus, the impact of social capital indicators on economic development is the strongest in countries with high levels of welfare.

It results, among others, from the fact that moving to the next stage of economic development requires growing scale of innovative activity concerning various areas of people's lives, not only the economy. Hence, the interdependency between university-industry cooperation in R&D and economic development appeared only in the case of middle-income countries, and its strength has clearly increased for high-income countries.

Therefore, our findings suggest that without the support of universities and academies, it is impossible to build well-functioning innovation system in developing countries, which would strengthen competitive advantages. Universities and academies not only in developing countries are the important sources of knowledge and should provide staff for the public and private sectors. As a result, the scale of management professionalization is growing. Firstly, it is connected with the participatory decision-making model, which is characterized by willingness to delegate authority to subordinates, i.e. decentralisation of management. Secondly, it is connected with ethical behavior of firms and transparency of government policymaking. Referring to the literature review, the above conclusions are confirmed by the research results of Hvižďáková and Urbančíková (2014), Leeves (2014), Jalles and Tavares (2015), Peiró- Palomino (2016), Lee and Law (2017), Madrysz (2020), Cáceres-Carrasco, Santos and Guzmán (2020), Kabakçi Günay and Sülün (2021).

According to an American sociologist Daniel Bell (1973, 1976), universities and academies to fulfill this task should operate as in the concept of a higher education institution proposed by Wilhelm von Humboldt. Humboldt's dream was to create an education system that would guarantee all social classes better access to education and academic freedom understood as independence of universities and academies from outside governmental and economic constraints.

Humboldt encouraged the University of Berlin to operate according to his concept. The University of Berlin was opened in 1810 and was supposed to educate and conduct research at the same time, which was then a breakthrough innovation in science. The University of Berlin was financed by the state, but spending of the budget was independent of the government. In this situation the University of Berlin could develop according to scientific criteria and not the immediate needs of people in power.

As Bell explains, the condition for accelerating social development is not subordinating scientific research to the goals set by the state or business representatives, but maintenance of autonomy in the operation of universities and other institutions forming the science sector. In fact, people who govern preindustrial and industrial societies may be afraid of scientists and other knowledge workers and do not want to delegate authority to them. In preindustrial and industrial societies formal rather than informal authority gives a higher social position, which is mistakenly identified with wealth and the possibility of centralizing management in the hands of a small group of people. Then we are dealing with negative social capital, which slows down or even reduces economic development. It is worth emphasizing that Bell's considerations written in the 1970s are currently valid and will be in the future, similarly to the previously quoted Bourdieu, Coleman, Putnam and Fukuyama.

This does not mean the hegemony of universities and academies in setting research directions. On the contrary, it becomes necessary to create a platform facilitating communication and cooperation between the government, scientists, economists, entrepreneurs and other entities participating in or using innovation activities. This is important for both sectors in terms of the future ability of the private sector to commercialize research results and legitimize research efforts in the public sector.

As American economist Paul Romer (1990, 1993) explains, it's about not wasting efforts and resources on socially useless goals when there are so many wonderful things to discover. He also emphasizes that an economy must be viewed as a common good. According to him, it means funding by government those research areas that are socially important, such as health care, environmental protection or education. Entrepreneurs may not be willing to cover the costs of such research efforts. Therefore, one can concluded that governments thinking about the development of the country should finance basic research. This is justified because the diffusion of knowledge obtained through such research is important for strengthening the basic knowledge base of a given society, which determines its development possibilities and for improving the quality of life.

The research results indicate also that such dimensions of social capital as honesty, egalitarianism, equality of treatment, and democratic decision making should be adopted as patterns of behaviour in both private and public sectors and in cooperation between them. Without this, social development, including economic development, cannot accelerate. This happens because it is reflected in improving the effectiveness of organisational arrangements applied at the national level and in companies because of the decline in corruption and nepotism and an increase in the professionalism of management. Our conclusions confirm findings obtained for example by Kaldaru and Parts (2005), Cheng and Mittelhammer (2008), Doh and McNeely (2012), Golubović, Džunić and Marinković (2014), Loakimidis and Heijke (2016).

6. Conclusions

Considering the results of our statistical analysis, it is sufficient evidence in the three income group of countries in favour of our first hypothesis (H1) that the importance of the examined components of social capital in stimulating welfare growth changes depending on the stage of economic development. Thus, the results of this research can answer an extremely important question concerning economic development. This is why poor developing countries are unable to catch up with rich developed countries. One of the important reasons can be differences in both the level and effectiveness of investing in social capital development.

Our findings confirm our second hypothesis (H2) that social capital in high-income countries is a more important factor in increasing economic development than in low- and middle-income countries. In other words, social capital is becoming an increasingly important source of improving a country’s welfare and achieving the next stage of economic development.

Hence, countries at earlier stages of economic development should invest not only in physical and human capital but also in social capital. This will allow them to become societies with a higher level of welfare and reduce the risk of being stuck in an industrial society with an outdated production structure powered predominantly by energy from non-renewable sources. Again, it will not be possible without competent and socially - oriented governments, thinking in the long-term perspective and not solely focussing on staying in power and enriching themselves at the expense of society.

The statistical analysis was carried out also to verify our third hypothesis (H3) that government effectiveness as defined by the World Bank and reliance on professional management are necessary conditions for accelerating economic development. In the three income groups of countries, the same four components of social capital are statistically significant and positive: government effectiveness as defined by the World Bank, reliance on professional management relating to whether in a given country senior management positions hold relatives and friends without regard to merit, or professional managers chosen for merit and qualifications, state of cluster development, and willingness to delegate authority. These components of social capital can be called strategic success factors on the way to prosperity. Therefore, we have sufficient evidence to support our third hypothesis.

Moreover, our findings indicate that in low-income countries, a value system, at the core of a nation's culture, is already a strategic factor that can either slow down or accelerate prosperity. Therefore, governments of low-income countries, in addition to improving strategic success factors on the way to prosperity, should especially focus on upgrading the situation in the areas of public trust in politicians, favouritism in decisions of government officials to well-connected firms or individuals, and diversion of public funds due to corruption. These three variables had the lowest values among all the analysed components of social capital in this group of countries.

The findings also allow us to conclude that in the case of middle-income countries state of cluster development together with university-industry collaboration in R&D are the engines of technological progress. Thus, in this group of economies, it is essential to build NSIs. At this stage of economic development, the main tasks of the NSI should be to improve knowledge absorption from abroad and to strengthen activities aimed at its assimilation and implementation in both private and public sectors. This is because the development of knowledge absorption capacity from various channels through which it flows, positively influences an increase in expenditures on R&D activities.

Therefore, transformation to the post-industrial stage of economic development will also not be possible without the development of communication and cooperation skills between people who create and commercialise knowledge as well as rebuilding the trust lost in the industrial age. Coleman (1988, 1990) explains that the condition for enhancing a community's productivity is to develop an appropriate level of trust, communication, and cooperation among its members that should prioritise common interest over self-interest. Coleman indicates that a community with a high degree of trustworthiness, extensive trust, mutual communication, and cooperation can achieve much more than a comparable group with a lack of trustworthiness, trust, communication skills, and cooperation skills.

In the future, the authors intend to analyse the links between various components of social capital occurring at successive stages of economic development. It must be preceded by an in-depth analysis of the literature on the subject and the results of empirical studies conducted by other researchers in this field. Knowledge of the nature and strength of the relationship between the various components of social capital should help the authors express more precise guidelines for planning long-term policies to improve social capital at different stages of economic development.

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SUSTAINABLE GASTRONOMY – A MODEL APPROACH

Ewa MALINOWSKA[1*], Renata PŁOSKA[2], Mariusz CHMIELEWSKI[3], Karol ŚLEDZIK[4]

[1] Uniwersytet Gdański, Katedra Strategicznego Rozwoju, Zakład Zrównoważonego Rozwoju i Nauk o Jakości; ewa.malinowska@ug.edu.pl, ORCID: 0000-0002-9409-7856
[2] Uniwersytet Gdański, Katedra Strategicznego Rozwoju, Zakład Zrównoważonego Rozwoju i Nauk o Jakości; renata.ploska@ug.edu.pl, ORCID: 0000-0002-1716-4496
[3] Uniwersytet Gdański, Katedra Strategicznego Rozwoju, Zakład Zrównoważonego Rozwoju i Nauk o Jakości; mariusz.chmielewski@ug.edu.pl, ORCID: 0000-0002-0775-621X
[4] Uniwersytet Gdański, Katedra Bankowości i Finansów; karol.sledzik@ug.edu.pl, ORCID: 0000-0003-1269-1358
* Correspondence author

Purpose: The aim of this paper was to define the concept and dimensions of sustainable gastronomy.
Design/methodology/approach: The article uses the method of critical literature analysis as well as the method of synthesis and logical inference.
Findings: The article proposes the author's definition of sustainable gastronomy, drawing attention to the necessity of taking into account all three areas of sustainable development (economic, social and ecological), thinking in the perspective of future generations and cooperation of various entities operating within the gastronomy sector, as an important condition for the implementation of the principles of sustainable development in this area. The proposed model of sustainable gastronomy, based on the three classic dimensions of sustainable development, refers to the most important activities that should create this type of gastronomy.
Research limitations/implications: The considerations and conclusions are theoretical, and they are based on the analysis of publications available in full-text form in the e-collections and online catalogue of the University of Gdansk Library and Google Scholar.
Practical implications: The conclusions presented in this paper may be a suggestion for the legislator, local authorities and companies from the catering industry regarding the directions of activities related to the development and promotion of sustainable gastronomy. They can be used to conduct a self-assessment of catering establishments, and its results can be used to strengthen competitive advantage.
Social implications: The considerations and conclusions presented in the article may contribute to raising public awareness of the specifics of sustainable gastronomy, and thus contribute to buyers making more informed decisions regarding the choice of gastronomic offer.
Originality/value: The article is dedicated to the issue of sustainable gastronomy, which is relatively rarely subject of the research. Furthermore authors propose definition of sustainable gastronomy along with its model.
Keywords: sustainable development; gastronomy; sustainable gastronomy.
Category of the paper: conceptual paper.

1. Introduction

In recent years, there has been a trend towards the dissemination of sustainable development principles in various areas of the economy. One of them is the agri-food industry in its broadest connotation.

Food serves to satisfy basic human needs, therefore the food industry and the products it provides play a key role in terms of society's ability to survive and prosper. This industry includes various types of entities that produce, process, manufacture, sell and serve food, beverages and dietary supplements (Akyazi et al., 2020). Many sectors, which are part of the food industry, are the subject of studies proposing solutions for their sustainable transformation. According to the authors, in this context, publications on catering and how it can be adapted to sustainability are relatively limited.

The implementation of sustainable development principles in the field of gastronomy has not only a sectoral dimension, but also a regional one. Indeed, gastronomy contributes to the local economy, supports the development of industries such as tourism, and helps to preserve local traditions and identity. Thus, sustainable gastronomy can be an important element in building sustainable regional tourism products (Scarpato, 2002).

The aim of this conceptual paper is to attempt to define the concept and dimensions of sustainable gastronomy. The proposed concept of sustainable gastronomy is presented as a model approach.

The research was based on the method of critical analysis of the literature and the method of synthesis and logical inference. The literature review was conducted in November and December 2023, using the EDS scientific browser, which allows integrated searching of the e-collections and online catalogue of the University of Gdansk Library and the Google Scholar database. The literature review included publications in English or Polish, available in full-text and peer-reviewed.

2. Idea of sustainable development

The concept of sustainable development is one of the most important ideas presented in socio-economic reality today. As with many such concepts, it is not easy to find its origins. A review of the literature on the subject reveals that some authors go back to the very distant past, arguing that, almost from the beginning, people understood how much their fate and lives depended on their relationship with the environment (Barrow, 1995; Du Pisani, 2006). As an important milestone, from the point of view of the development of the concept of sustainability, we can also point to the 18th century economist Thomas Malthus' reflections on the challenges of ensuring that a growing human population can be fed (Tauzon et al., 2013). Another event related to the development of this concept that is mentioned in the literature is the publication of *Sylvicultura Oeconomica* (*Forest Management*) in 1713 by the chief mining administrator in Saxony, Hans Carl avon Carlowitz, in which he advocated a sustainable approach to forest management (Michelsen et al., 2016; Spindler, 2013). A large number of authors consider the United Nations Conference on the Human Environment held in Stockholm in 1972 as a moment that can be taken as the symbolic beginning of the development of the idea of sustainable development, during which issues relating to the need to protect the environment in the context of development challenges for the world were enshrined in official documents (UN, 1973). The conference coincided with the publication of the Club of Rome report *Limits to Growth*, which drew attention to the problem of depletion of the world's natural resources (Meadows et al., 1972). The aforementioned conference can be considered to have started the process of development and dissemination of the idea of sustainable development, with the following milestones:

- The United Nations Conference on Environment and Development (Earth Summit) in Rio de Janeiro in 1992, which was ground-breaking and culminated in the adoption of the Rio Declaration on Environment and Development (UN, 1992b) and Agenda 21 (UN, 1992a).
- The Millennium Summit in New York in 2000, which defined the tasks facing the world and embedded them in the framework of sustainable development - these took the form of the 8 Millennium Goals (UN, 2000).
- The World Summit on Sustainable Development in Johannesburg in 2002, which placed a slightly greater emphasis than before on social problems, including social inequalities (UN, 2002).
- The United Nations Conference on Sustainable Development in Rio de Janeiro in 2012, which took stock of the results to date in making sustainable development a reality (UN, 2012).
- The UN Summit on Sustainable Development in New York in 2015, which adopted a new, modified list of tasks, this time in the form of 17 Sustainable Development Goals (UN, 2015).

Sustainability is defined in different ways. The definition most often referred to by both authors of scientific publications and other studies in this field is the one proposed in the *Our Common Future* report, also known as the Brundtland report (after the chairwoman of the World Commission on Environment and Development who prepared the study). According to it, sustainable development is 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED, 1987). Integral to the concept of sustainability are its dimensions. There are various proposals in the literature for their number, ranging from as few as two to as many as eight dimensions (Michelsen et al., 2016). By far the most widely accepted, both in academic works and other studies, is the concept of sustainability based on three dimensions: economic, social and environmental (Dziadkiewicz et al., 2022; e.g. GRI, 2022; Rogall, 2010; Schaefer, Crane, 2005; Wisniewska, Grybek, 2022). In the context of the dimensions of sustainability, two different approaches to their importance and hierarchy can also be observed: unidimensional - where one dimension is prioritised - and multidimensional - where all dimensions are treated as equivalent (Michelsen et al., 2016).

As mentioned, the most popular approach is one in which sustainability is based on economic, social and environmental pillars. Each pillar has its own specificities, challenges and objectives. The economic dimension focuses on economic development in the broadest sense, the determinants of which are: economic growth linked to increasing the wealth of societies; the creation of jobs that provide decent wages; increasing the availability and improving the infrastructure necessary for business and society to function; increasing the availability and efficiency of energy use; the efficient use of raw materials and materials; innovation to meet social needs and protect the environment. The social system, in line with the principles of sustainable development, should be built around values such as human rights; the well-being of individuals and societies; equality and the fight against exclusion; decent working and living conditions; access to public services or respect for consumer rights. Within the last pillar, the ecological one, actions are advocated to: protect the climate, including by reducing the carbon footprint; protect water resources and ensure their availability to all; manage natural resources sparingly, including non-renewable resources; reduce waste and harmful emissions to the environment; and protect biodiversity (Duran et al., 2015; Rogall, 2010; Strezov et al., 2017; UN, n.d.). It is worth noting that the indicated pillars of sustainable development are closely interrelated, and the assignment of a challenge to one of the three dimensions: economic, social and environmental, is often conventional (Giddings et al., 2002). This is the case, for example, for human well-being, which can depend on various factors, including economic and environmental ones.

In the aforementioned document - Agenda 21 - there were passages indicating the need for profound changes in the operating model of entire segments of the economy (UN, 1992a). This has resulted in contemporary references to concepts such as sustainable agriculture (e.g.: Farooq et al., 2019; OECD, 2022; Velten, 2015), sustainable tourism (e.g.: Hardy et al., 2002; Meuser, von Peinen, 2013; Stoddard, 2012; UN WTO, 2013), sustainable transport (e.g.: Gudmundsson et al., 2016; UN, 2021), sustainable trade (e.g.: Vadakkepatt et al., 2021) or sustainable fashion (e.g.: Henninger et al., 2016; KPMG, 2019; Niinimäki, 2015). In each of these cases, the aim was to bring about changes that will reduce the negative environmental impact while increasing the positive social impact of these sectors.

3. The concept of gastronomy

The gastronomy term was coined from a combination of two Greek words: gaster - stomach and nomos - law, and defines the art of eating well (Dominik, 2008, p. 5), encompassing everything related to human nutrition (Brillat-Savarin, 1973, p. 36).

One of the more comprehensive definitions of gastronomy, states that it is a separate organized economic activity in the social division of labour, consisting in satisfying the nutritional needs of consumers through the processing of food raw materials, resulting in ready-to-eat food and beverages, offering them to consumers, creating conditions that allow their consumption at the point of sale and providing a variety of services to meet the needs for entertainment, rest, mental regeneration (Sala, 2011, p. 12).

The gastronomy business is one of the branches of the service sector that is growing quite intensively. This is influenced, for example, by the development of tourism services, growing urbanisation, increasing female participation in the labour market, population migration (Czarniecka-Skubina, Głuchowski, 2018; Sio et al., 2021), as well as the intensification of the pace of life and the creation of new patterns of spending leisure time, most often outside the home (Kwiatkowska, Levytska, 2009). It is important to note the existence of constraints on the development of these services, as occurred during the COVID -19 pandemic (Yeast, 2022). Many catering establishments were closed at the beginning of the pandemic, and over time had to adapt to the new conditions, introducing takeaway delivery services and adapting to strict sanitary requirements.

Currently, the situation in the gastronomy market is slowly recovering. In 2021, the total number of catering establishments in Poland was approximately 74.2 thousand, an increase of 15.1% compared to 2020, and in 2022 there was a further increase in the number of establishments to 83.9 thousand, which is more than before the outbreak of the pandemic. The sector's revenues at current prices, in 2021, amounted to PLN 48.7bn, up 29.3% on the previous year (at constant prices, they were 21.6% higher), with a further increase to PLN 64.6bn in 2022 - again, a level of revenues above the pre-pandemic level (PLN 50.9bn in 2019) (GUS, 2022; 2023). The high revenue growth was mainly due to a much shorter period of activity restrictions related to the COVID-19 outbreak than in 2020. However, some barriers can also be noted that lead to a hindrance to the strong growth of this market. This is primarily inflation, with more and more Poles deciding to cut back on spending due to rising prices. In an illuminating study by PMR, it appears that 66% of respondents have cut down on visits to catering establishments and 63% of respondents order takeaway food less frequently (Lemberska, 2022). In addition, factors inhibiting a rapid post-pandemic revival of the sector include the high cost of running premises and the cost of employing staff (Zagórska, Filip, 2022).

Nowadays, it can be emphasised that gastronomy is not only concerned with the art of food preparation but also with its relations with other areas of life, e.g. at the social, cultural, health and environmental levels. Catering services have a significant impact on shaping the consciousness of consumers, by influencing their cultural, social or economic aspects of life. Catering establishments themselves can be a meeting place, fostering the development of communication, strengthening relationships. They can be an integral part of social and cultural events, such as festivals, events, and can also play an educational role by informing customers about healthy eating, the origin of food and sustainable food practices. An increasing number of catering businesses are committed to promoting sustainability by minimising food waste, using local and seasonal produce and adopting organic practices. Catering services can also play a role in promoting social inclusion by offering access to food for different groups, such as those with disabilities.

The catering industry is characterised by certain features, such as volatility. It is an industry that reacts quickly to changes in consumer trends, the seasonality of products and the period of operation of establishments and culinary innovations. On the other hand, it is important to take into account the dynamics of changes in legislation or in trends created by social media. As consumer awareness of sustainability, food ethics, healthy eating increases, catering businesses need to modernise, expand their business strategies.

Looking through the prism of the changes taking place and assuming that the development of services in the 20th century oscillated around level 2.0, it can be suggested that nowadays, in order to meet social, economic and environmental challenges, we can speak of another level of food service activity (3.0), which, among other things, is based on food production and consumption in the light of the laws of ethics and sustainability.

4. Sustainable gastronomy concept

The concept of 'sustainable gastronomy' is relatively rare in the literature. The approaches to the term encountered there tend to emphasise selected aspects, related to sustainability. The concept of sustainable gastronomy does appear in the sustainable tourism literature, where attention is given to gastronomy services as an integral part of the tourism offer, especially in the context of place as a tourism product (Table 1).

Table 1.
Selected approaches to sustainable gastronomy concept in literature

Definition/description	Source
Sustainable gastronomy encompasses the production of environmentally responsible food that appeals to both people's minds and their food.	(Scarpato, 2002)
Sustainable gastronomy focuses on producing food in a way that is not harmful to the environment or health. It also emphasizes preserving the traditional gastronomic heritage, passing it on to future generations and bringing local gastronomic products to light.	(Arslan et al., 2023)
Food and gastronomy seen as elements that can contribute to an economically, socially and economically sustainable place, while increasing its attractiveness and competitiveness.	(Rinaldi, 2017)
Sustainable gastronomy takes into account how it can be incorporated in a manner that is beneficial for the planet and society.	(Richardson, Fernqvist, 2022)

Source: Own elaboration.

Based on the above statements, it can be assumed that sustainable gastronomy should focus on minimising negative environmental impacts, promoting the social and economic well-being of the internal and external customer and the service provider. With these aspects in mind and based on the emerging understandings of gastronomy, sustainability and its dimensions, and gastronomy incorporating sustainability principles in the literature, the following definition of sustainable gastronomy can be proposed:

Sustainable gastronomy is a business activity focused on meeting the nutritional needs of consumers based on the processing of food raw materials into ready-to-eat food and beverages, and offering them to purchasers, also by making them available for consumption at the point of sale (with additional services to meet other needs, e.g. entertainment, leisure), which:

- *takes into account the need to act in the spirit of sustainable development, by applying solutions that favour the economic objectives of the operators and the region, enable the achievement of social objectives and improve the well-being of individuals and communities, and contribute to limiting negative effects on the environment;*
- *takes a long-term view, also taking into account the well-being of future generations;*
- *is based on interaction between different stakeholders.*

In order to highlight the essence of the above definition of a gastronomy, whose activities have an impact on the implementation of sustainable development, it is possible to present the identifying characteristics of the ecological, economic and social dimensions with which it should be characterised in this context.

The most common reference in the literature is the relationship of gastronomy with the wider environment, through the use of raw materials from periodic sources, such as certified sustainable fisheries or organic farming (Nuñez et al., 2023). When analysing the impact of catering operations on environmental pollution, it is important to consider the possibility of reducing energy consumption. In this case, reducing transport by focusing on local vendors can play a significant role. The use of local products contributes to reducing the carbon footprint (Bell, Horvath, 2020), besides being an excellent instrument to support the development of local economic activities. The aspect of resource management, e.g. water and energy during the food preparation process, also draws attention (Malinowska, Szymańska-Brałkowska, 2020, pp. 144-166). The actions of staff who are aware of the need to save resources are important, as well as continuous improvement through the organisation of periodic training. In addition, some reports (cf. Nuñez et al., 2023) show how important it is to preserve biodiversity. Its preservation can lead to far-reaching negative phenomena that can threaten the population and the economy, as well as the proper functioning of the planet's processes (Gorka, 2021).

Another aspect that deserves to be highlighted in the context of sustainable catering is the management of supplies and the related management of stocks and waste. Rationalising the activities of the procurement process involves a meticulous estimation of the products needed and which will be consumed on an ongoing basis. A suitable method, although not always feasible, may be: just in time (cf.: e.g. Ralahallo, 2021). If stocking is too high, then this can lead to waste (Lévesque et al., 2022). Effective inventory management, thoughtful meal planning and use of leftovers can significantly reduce the amount of food wasted (cf.: Malinowska, Szymańska-Brałkowska, 2018).

Sustainable gastronomy concept also takes into account aspects of social responsibility and cultural equality by ensuring fair, decent working conditions for all workers throughout the catering process chain and paying them fairly. Packaging management, reducing the use of plastic and other non-organic packaging materials in favour of reusable or biodegradable ones, is also extremely important.

As can be seen, current considerations of sustainable gastronomy in the literature mainly concert on ecological aspects. It should be emphasised that two more dimensions are important in a sustainable approach: the economic and social dimensions, which must be considered together with the ecological dimension. Therefore, in the authors' opinion, a more holistic view of the idea of sustainable gastronomy is justified, as presented in Figure 1.

The presented model contains all the elements indicated earlier in the proposed definition of sustainable gastronomy: long-term thinking, also taking into account the interests of future generations; action in three areas: ecological, economic and social; the necessity of cooperation of various stakeholders related to gastronomy.

As the above considerations show, gastronomy cannot be treated as a separate element of the economy. Together with other sectors, it has a significant impact on shaping a socio-economic and ecological order whose task is to meet not only the current needs of the environment and stakeholders, but also the future ones. That is why it is necessary to take a close look at the activities of catering organizations today and analyze whether they are in line with the policy of sustainable development. A control tool could be proposed, which could be a self-assessment sheet to determine the extent to which the individual characteristics of sustainable gastronomy are met by the currently operating catering establishments.

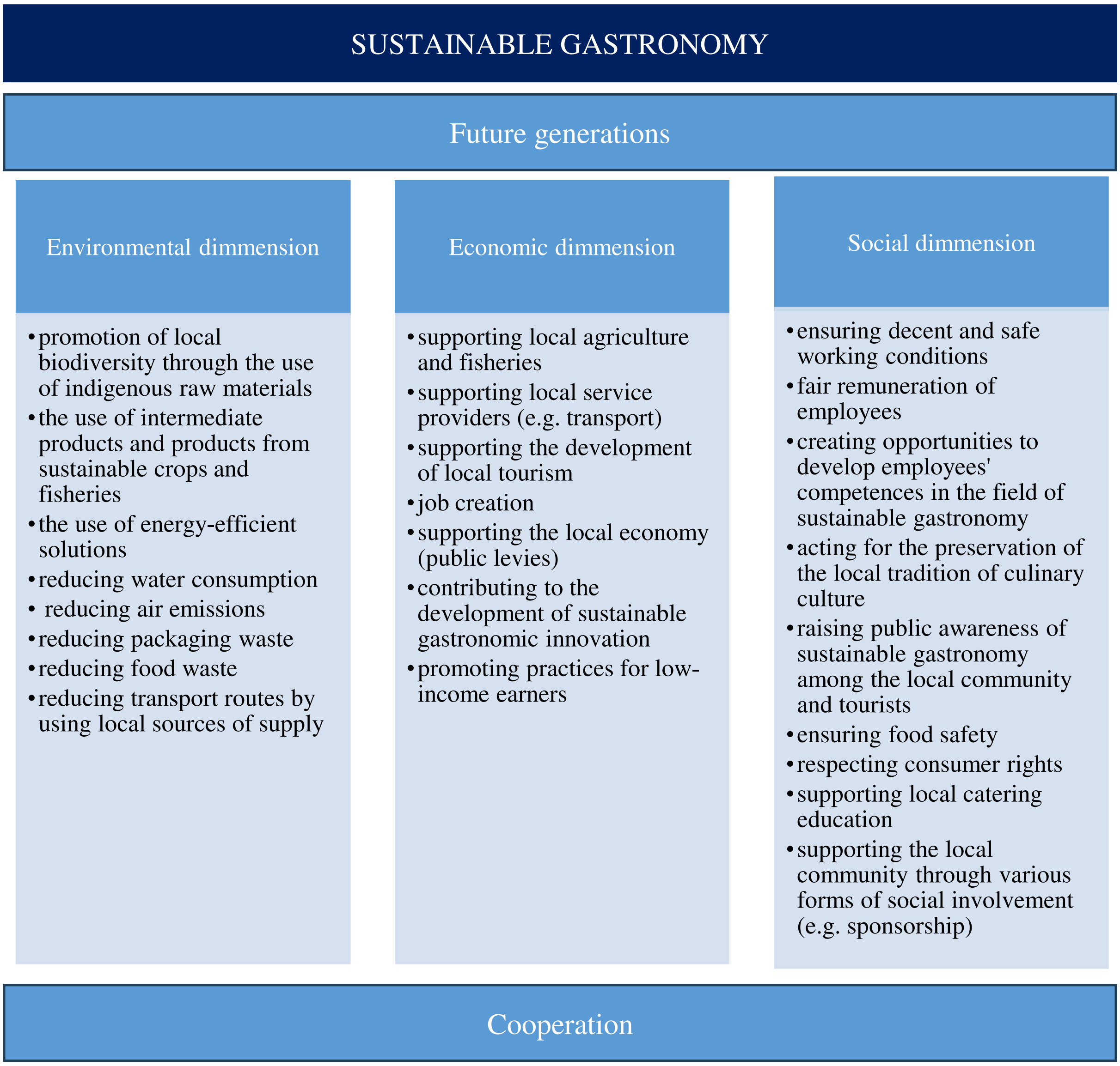

Figure 1. Sustainable gastronomy model.

Source: Own elaboration.

5. Conclusions

Gastronomy is an organized economic activity separated in the social division of labor, which consists in satisfying the nutritional needs of consumers through the processing of food raw materials, resulting in the production of ready-to-eat food and beverages. The perception of this activity in the form of a catering service is based on the characteristics of its duality: material factors (raw materials and food products from which beverages and dishes are prepared, as well as those elements without which the catering establishment itself could not exist) and intangible factors, e.g. the time of preparing meals, the way of accepting and fulfilling orders, as well as relaxation and rest, the atmosphere in the facility, hospitality, friendliness, the opportunity to participate in entertainment etc. (Martin, 2006; Stasiak, 2007). Both the material features and the human activities that make up the service itself are the basis for its impact on the external environment, which is constantly changing in the current era of development. To ensure that these changes do not go in the wrong direction, or to minimize their negative effects, decisive steps should be taken. This is the direction m.in the concept of sustainable development, which serves as a guide for customers, suppliers, entrepreneurs and other stakeholders. Many sectors of the economy are trying to implement principles that are determined by the potential for sustainable development. The broadly understood catering business should also follow this direction and within the framework of the 3.0 concept, not only use advanced technologies of food preparation to encourage consumers, but also be guided by the requirements of sustainable development in order to be able to serve more and more conscious consumers and function in the future.

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BASIC VALUES OF LOCAL GOOD GOVERNANCE IN RURAL AREAS IN POLAND

Małgorzata MARKS-KRZYSZKOWSKA[1*], Wawrzyniec RUDOLF[2]

[1] Uniwersytet Łódzki, Wydział Ekonomiczno-Socjologiczny, Katedra Socjologii Wsi i Miasta; malgorzata.marks@uni.lodz.pl, ORCID: 0000-0001-9430-8476
[2] Uniwersytet Łódzki, Wydział Zarządzania, Katedra Zarządzania Miastem i Regionem; wawrzyniec.rudolf@uni.lodz.pl, ORCID: 0000-0003-0729-7823
* Correspondence author

Purpose: This article contributes to the discussion on local good governance (LGG) by proposing an indicator that takes into account the main values of LGG, measures its level, and considers selected determinants. The considerations were based on an assessment of the actions of local authorities from the perspective of residents in rural areas in Poland.
Design/methodology/approach: A bibliometric analysis of works dedicated to LGG and its main principles was conducted. Additionally, a quantitative data analysis was carried out based on a survey using the Computer-Assisted Telephone Interview (CATI) method among 700 residents of rural areas in Poland.
Findings: The bibliometric analysis revealed a research gap in the issues addressed. The empirical study provides evidence of a moderately positive assessment of actions in terms of credibility, transparency, participatory readiness, willingness to share power, responsiveness, and efficiency. Psychosocial factors significantly influenced the evaluation of LGG. Sociodemographic variables did not significantly differentiate the assessments.
Research limitations/implications: Quantitative research has a general nature. It would be valuable to also apply qualitative methods to deepen the understanding of the interpretation of individual LGG values by both rural and urban communities, taking into account the local context.
Practical implications: The relatively poor assessment of local authorities' activities from the perspective of LGG principles suggests the need to reconsider the introduction of changes in this sphere of public governance.
Social implications: The discussion of the role of LGG values can contribute to greater awareness and solidify these principles among both the authorities and citizens.
Originality/value: The contribution to the development of knowledge includes the characterisation of the dynamics and trends in the international scientific discourse on local governance. It also constructs and empirically verifies the LGG indicator (based on statistical analyses).
Keywords: local good governance, value of governance, rural areas, Poland.
Category of the paper: Research paper.

1. Introduction

Increasingly aware citizens worldwide expect elected authorities to act in line with their expectations (Farazmand, 2004). However, the success of the democratic system depends on the trust that citizens place in it (Houston, Harding, 2013). This trust grows with the increasing assessment of individual governance values such as transparency, accountability, and responsiveness of power (Beshi, Kaur, 2020). It is hard to dispute the thesis that the issue of measuring this phenomenon is becoming increasingly important (Besancon, 2003). Internationally developed principles of good governance are successfully adopted at the local level in many countries and continents (Council of Europe, 2007). However, there is a belief that the unique characteristics of individual countries or regions of the world determine the proposed solutions, for example, the Methodological Guidelines for Local Governance Analysis in Latin America (UNDP, 2008).

The measurement of good governance has been the subject of numerous studies and has resulted in developments that make it possible to quantify its values/dimensions. Below, we list a few of the most promising approaches related to the local level:

- *Good Governance for Local Development* – Representation, Participation, Accountability, Transparency, Effectiveness, Security, and Equity (UNDP, 2009);
- *The Local Governance Barometer* – Effectiveness, Transparency and rule of law, Accountability, Participation and civic engagement, and Equity (Bloom, Sunseri, Leonard, 2007);
- *Indicators of Local Democratic Governance* – Policy-making performance: informed and coordinated decisions; Democratic performance: openness and fairness; Policy implementation: effectiveness; Responsive performance: satisfaction and goal congruence; and The level of service provision as a performance measurement (Soós, 2001);
- *The Urban Governance Index* – Effectiveness, Equity, Participation and Accountability (UN-HABITAT, 2005);

Most studies are based on measurable criteria, while there is a deficit in measurement based on residents' subjective satisfaction with the exercised power, considering the assessment of individual principles. Topics related to good governance in rural areas also attract considerably less attention from researchers, as we will attempt to demonstrate in the next part of the paper. Rural areas still constitute the majority of land in individual countries, and their population is a significant part of societies. It is estimated that more than 76% of the units[1] in European Union countries are classified as rural, and more than 86% of the Union's territory is located in the territories of rural municipalities (Jonard et al., 2009). The population density index for Poland

[1] Communes with a population density of less than 150 km^2.

in 2022 was 121 km^2. Therefore, it can be assumed that the whole country meets the criterion of delimitating rural areas according to the OECD classification. Taking into account the country's internal territorial division, rural municipalities (1513 units) and rural areas of urban-rural municipalities (662) constituted 92% of the total area, and in 2022, 40% of the Polish population inhabited these areas (Statistics Poland). Therefore, it seems that the characteristics of rural communities must be considered in the context of effectively implementing good governance principles.

The purpose of the article is to contribute to the discussion on local good governance (LGG) by proposing an indicator that incorporates the main values of LGG, measures its level, and considers selected determinants. The considerations are based on an assessment of the actions of local authorities from the perspective of residents in rural areas in Poland.

2. Governance at the local level

Governance has been promoted by international organisations for three decades, initially targeting countries with deficits in institutional and democratic systems. Only later did more attention shift to the quality of governance at the local level, which will be further developed in this study. For this article, a bibliometric analysis was conducted, and its methodology is described in the footnote[2].

[2] The bibliometric study focused on scientific articles found in the SCOPUS database on November 4, 2023, with the author-provided keywords "local governance" (976 articles). Subsequently, a reduction was applied by selecting those classified in the field of social sciences and written in English. As a result, 620 articles were further subjected to comparisons and analyses. Additionally, articles (35) were distinguished in which the keywords included both "local governance" and "rural". To visualize the results (keyword map, keyword co-occurrence map, co-authorship network), the VOSViewer program was employed.

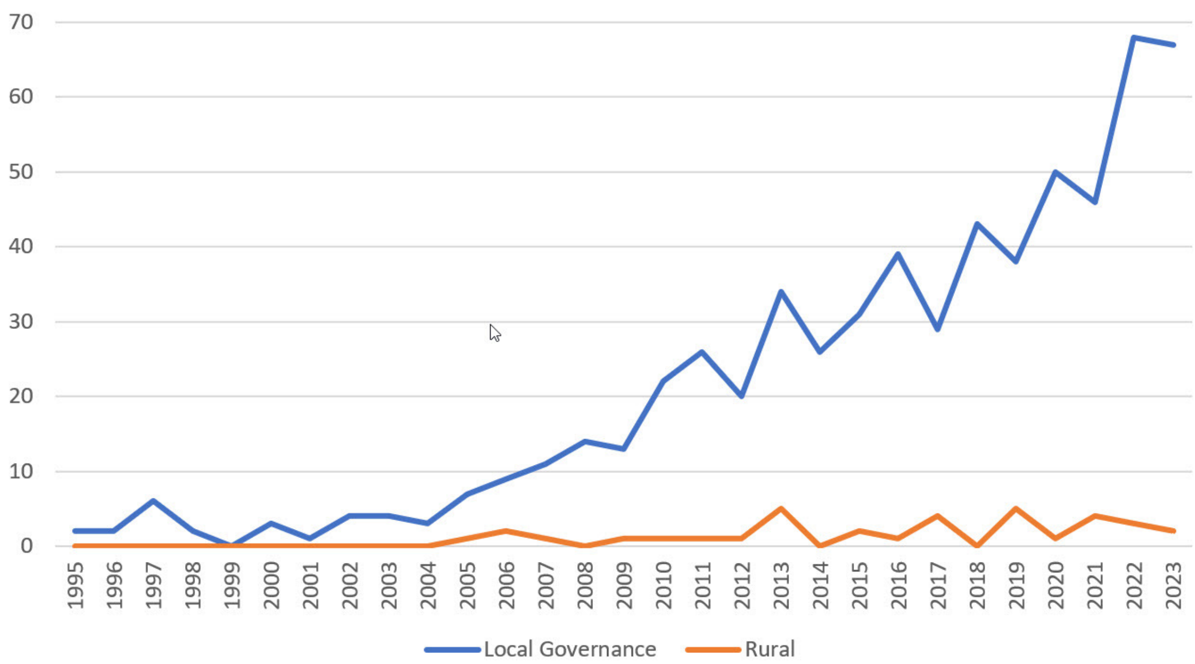

Figure 1. The number of articles related to local governance (n = 620) published annually, as well as the number that specifically focus on rural areas (n = 35).

Source: Own compilation based on 620 records from the SCOPUS database.

The results of the analyses, based on keywords, clearly demonstrate a systematic increase in international researchers' interest in local governance, especially over the last 20 years (Figure 1). The most significant growth occurred in 2021/2022, during the Covid-19 pandemic. This may be because projects initiated before 2020 were being implemented during this time. However, the slightly lower result in 2023 may be associated with the fact that November and December have not been taken into account yet.

Nevertheless, few of these publications (just under 6%) address local co-governance in rural areas. There were 35 academic articles that included "rural" in the keywords. They included terms such as rural area/s (14), rural development (13), rural politics (7), rural policy/ies (5), rural resources (2), and rural livelihoods (2). The first article that included both "local governance" and "rural" in the keywords appeared only in 2005. In subsequent years, there were between 1 and 5 such articles annually (Diagram 1). This moderate scale of literature development on rural governance demonstrates a relative research deficit in relation to rural areas compared to the dynamic growth of literature in the broader category of local co-governance. Publications in this field have been published in a variety of journals. Journals such as World Development, Local Government Studies, the Journal of Chinese Political Science, Environment Development and Sustainability, and China Quarterly each featured two articles. The remaining 25 articles were published in 25 different academic journals, indicating that this subject matter is fragmented and the discourse does not revolve around specific perspectives.

Figure 2. Word cloud based on authors' keywords.

Source: Own compilation based on 620 records from the SCOPUS database.

Figure 2 shows the keywords that co-occur with the term "local governance". Their frequency is reflected in the font size. Particularly prominent are decentralisation, participation, and citizen participation, indicating that most of the social science literature is indeed related to contemporary decentralisation and civic participation. Individual dimensions of good governance, such as accountability, collaboration, transparency, and partnership, also appear. The keywords also include names of territories or countries likely related to the described examples. The most common ones include China, Ghana, Indonesia, and India, as well as broadly defined territories such as Africa and Latin America. This may be related to the fact that the term governance gained popularity in the context of democracy support programmes by international organisations such as the World Bank in countries with lower levels of development.

The VOSviewer programme makes it possible to identify co-occurring keywords in the form of a keyword co-occurrence map. Diagram 3 presents these associations using different colours for the 14 identified clusters. The programme visualised the connections by considering the 54 keywords that appeared the most frequently in the analyzed set of articles.

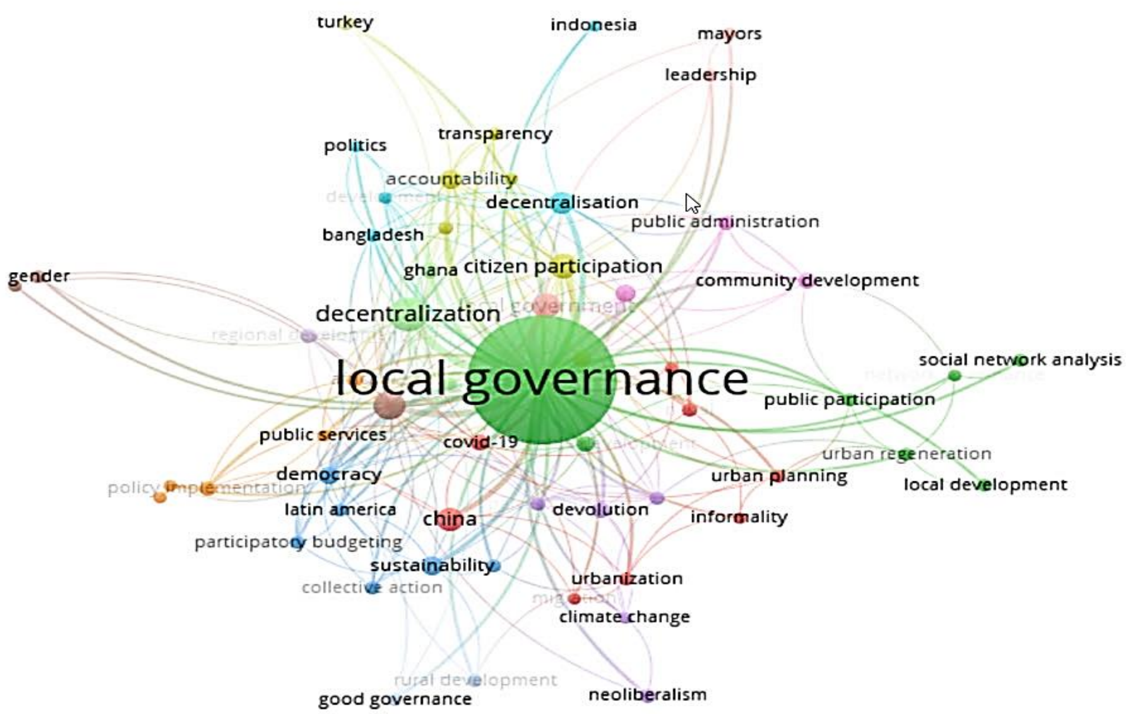

Figure 3. Co-occurrence of keywords for the term "local governance" grouped into 14 clusters.

Source: Own compilation based on 620 records from the SCOPUS database.

In the context of the theme of this article, the blue cluster is noteworthy, as it comprises elements (keywords) such as sustainability, democracy, Latin America, participatory budgeting, collective action, good governance, rural development, and local governance. The term "rural development" appeared sporadically, indicating a research gap that justifies the undertaking of this study.

Among the subsequent notable networks of connections, other noteworthy clusters include the green one (decentralisation, public administration, local development, public participation, urban regeneration, Ghana, local governance), the red one (China, COVID-19, urban planning, urbanisation, climate change, informality, local governance), and the yellow one (citizen participation, accountability, Turkey, local governance).

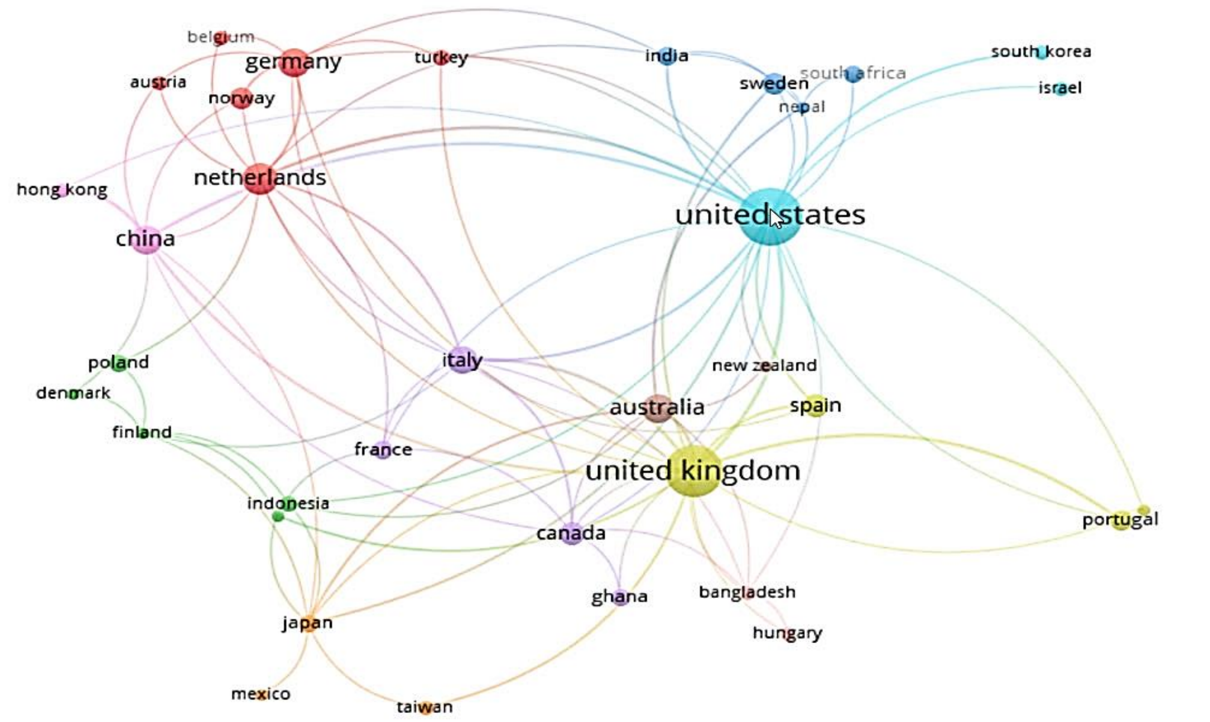

Figure 4. Countries from which scientists are co-authors of articles on local governance.

Source: Own compilation based on 620 records from the SCOPUS database.

Figure 4 visualises the countries around which research networks that focus on local governance are formed. The clear leaders are the United States and the United Kingdom, followed closely by the Netherlands, China, Germany, and Italy. Polish-authored works on local governance seldom gain international academic recognition. Occasional collaborations have been recorded with social scientists from the Netherlands or Scandinavian countries.

In the context of rural areas, the term "governance" first appeared in the late 1990s in articles by authors from the United Kingdom, the United States, Australia, and New Zealand (Goodwin, 2017; Martin, Halpin, 1998; Mattson, 1997; Perry et al., 1997). At the time, these countries were leaders in the development of governance as an alternative to the New Public Management model in public administration (Anders-Morawska, Rudolf, 2015).

In the Polish literature, over the past decade, local governance has emerged in various contexts. The authors of a monograph on the authorities and administration of Polish Voivodeship Cities successfully operationalised governance using marketing processes (Anders-Morawska, Rudolf, 2015). Research on the establishment and functioning of consultative structures in Polish cities demonstrated the practice of governance (see, e.g. Pawłowska, Radzik-Maruszak, 2022). Meanwhile, co-governance in the context of building local partnerships in rural areas has been explored through Leader projects co-financed by the European Union (e.g., Fałkowski, 2013; Furmankiewicz, Macken-Walsh, 2016) or in the context of practical collaboration in ecological agricultural production (Śpiewak, Jasiński, 2020). However, attempts to measure the values of good governance in rural areas in Poland are still rare, further justifying the study described below.

3. Disseminating good governance values

The discussion of the values that constitute good governance is ongoing and varies based on the level of authority or cultural context. A key stakeholder in this discussion is the World Bank, which pioneered the development of a list of dimensions of this concept, although these efforts were initially directed at the national level. Below are the dimensions/values around which the World Bank formulates specific indicators (Kaufmann et al., 2009); these are:

1. Voice and accountability: Captures the perception of the extent to which citizens in a given country can participate in the selection of the government, as well as freedom of speech, freedom of association, and free media.
2. Political Stability and Absence of Violence: Measured by the likelihood of government destabilisation or overthrow through unconstitutional or violent means, including politically motivated violence and terrorism.
3. Government Effectiveness: Assesses the perception of the quality of public services, the quality of the civil service and its independence from political pressures, the quality of policy formulation and implementation, and the government's credibility in pursuing such policies.
4. Regulatory Quality: Evaluates the perception of the government's ability to formulate and implement reasonable policies and regulations that enable and promote the development of the private sector.
5. Rule of Law: Assesses the perception of the extent to which entities trust social principles and adhere to them, particularly the quality of enforcing contracts, property rights, police, and courts, as well as the likelihood of crime and violence.
6. Control of corruption: Evaluates the perception of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as the "capture" of the state by elites and private interests.

The dimensions mentioned above have been a standard in democratic countries for years, and the World Bank's effort was especially directed towards African and South American countries where adherence to these values was lower.

For the countries of the European Union and candidate countries, the provisions of the White Paper on European Governance (European Commission, 2001) are important. The document outlines the following values: openness, participation, accountability, efficiency, and coherence. Coherence is understood as coordination and consistency in implementing programmes, strategies, and policies. In the same way that developing countries must undertake reforms to secure funding from the World Bank, Poland, as a beneficiary of EU cohesion policy, is encouraged to more fully implement the principles of good governance in the shaping and implementation of public policies.

However, guided by the argument that measuring governance should take into account both local and regional conditions, two attempts to operationalise it are presented below. The first was carried out in relation to the regional self-government administration authorities (Czyż, 2009). He adopted overarching values such as openness/transparency, partnership, effectiveness, efficiency, and coherence. In line with these values, he formulated a series of indicators mainly related to evaluating the implementation of tasks and activities of regional administration. By contrast, the second example concerns the creation of a governance indicator system in Poland by ECORYS, as carried out in 2008. An extended list of eight dimensions/values was adopted: the democratic rule of law, transparency, accountability, participation, social inclusion, effectiveness and efficiency, the rule of law, and consensus-oriented management.

4. Research methodology

This research focuses on LGG. Using opinions on values that align with the concept of good governance, an overall LGG indicator is constructed. Opinions on this matter are vital, as they allow for a better understanding of the actual needs and expectations of local communities in the context of LGG. Furthermore, by recognising residents' opinions, the scope and unique characteristics of local government practices can be assessed, and areas for improvement can be identified. This, in turn, can help improve decision-making and the implementation of local policies. Therefore, research in this area can contribute to the development of evidence-based management models.

Based on the purpose of the article, three main research questions have been formulated:

1. How do rural residents assess the activity of local authorities from the perspective of implementing basic values of good governance?
2. Which of the assessed dimensions will prove appropriate for the construction of a synthetic LGG index?
3. Is there any variation in these assessments based on the sociodemographic and psychosocial characteristics of the respondents?

The findings from the Public Opinion Research Center (Oceny działalności…, 2022) indicate that in Poland, local authorities receive comparatively higher evaluations than other public institutions, especially regarding rural areas. Furthermore, half of rural residents positively assess the effectiveness, believing that the funds at the disposal of local authorities are spent appropriately; only 18% believe the opposite (Oceny władz…, 2018). This suggests that a considerable group are satisfied with the actions of the authorities, but also that up to one-third of the population is not interested in these matters. In 2018, 80% of village residents (77% of city residents) declared an interest in the decisions of the commune authorities

(Wybory samorządowe…, 2018). At the same time, fewer residents of villages (48%) than cities (63%) wanted more influence on what happens in their commune. It can be assumed that respondents in the above-mentioned studies will appreciate aspects related to representative democracy more than direct democracy. Other studies also suggest that rural residents highly rate municipal authorities and their past actions; the opinions of men do not differ significantly from those of women (Marks-Krzyszkowska, 2021).

Therefore, we anticipate that the rural residents who participate in our study will generally evaluate the actions of local authorities more favourably, particularly women, respondents with higher education, individuals displaying a heightened interest in municipal affairs, as well as those with better-informed perspectives on municipal issues. Furthermore, we posit that the variables we identified, including transparency, credibility, participation, power sharing, responsiveness, and effectiveness, will be especially relevant within the local framework of the good governance concept.

4.1. Constructing the variables

In our research, we have designated an LGG assessment as the dependent variable. We constructed it following this procedure. First, the following variables that most substantially reflect the core values of local good governance were identified and characterised both substantively and statistically:

- **Credibility**: Understood as the fulfilment of promises made to voters.
- **Transparency:** Residents' ability to control the implementation of authorities' tasks is a fundamental pillar of democracy. The authorities' actions should be carried out transparently, and the effects should be readily accessible to those who are interested. Transparency is understood as the ability to monitor the activities of the authorities.
- **Participation**: The authorities' openness to collaboration, even with entities that hold different views.
- **Power Sharing**: Sharing power with residents is one of the fundamental principles of direct democracy, good governance, and collaborative governance. Not all people in authority, even those who approve of certain forms of public participation, are willing to allow residents to make decisions, even in selected areas. An example could be a village or civic fund.
- **Effectiveness**: Understood as achieving a goal; the goal of local authorities who represent residents is to satisfy their collective needs; the effectiveness of actions can be measured by the residents' level of satisfaction with the actions of institutions managed by the municipal authorities. The quality of public services can directly impact resident satisfaction. Better efficiency and a better understanding of the needs of the community usually translate into greater satisfaction. We assume that this assessment will correspond to the extent that needs are met in this area, hence the effectiveness of authorities.

- **Responsiveness**: The ability of the authorities to adapt to changing circumstances, public opinions, or citizen pressure. The term emphasises the authorities' ability to respond to expectations and feedback from society. In the study, we understand this characteristic as the authorities' readiness to change decisions as a result of citizen intervention[3].

The respondents were asked to assess the dimensions of the actions of local authorities and their effects[4]. In all cases, the evaluations were conducted using a seven-point Likert-like scale ranging from 0 to 6, where 0 indicated the lowest rating and 6 the highest.

The next step in the research procedure was to construct the synthetic LGG assessment indicator. It involved estimating the level of consistency among the partial indices used to create the overall synthetic index. The Cronbach's alpha coefficient for the variables hovered at 0.888, which is deemed satisfactory from the perspective of the reliability of the scale. Therefore, we concluded that components such as credibility, transparency, participation, willingness to share power, responsiveness, and effectiveness reasonably constitute a coherent phenomenon, namely the LGG index.

The independent variables included the following:

- Sociodemographic characteristics (such as sex, age, place of residence, education).
- Psychosocial characteristics, including the level of interest in municipal management (plans, decision making, and task implementation) and the sense of being informed about public life in the commune (such as the municipal authority's plans and decisions and generally important matters happening in the commune). The variables were characterised by comparing their arithmetic means.

To examine the relationship between the dependent variable (the composite index of the LGG assessment) and the independent variables, Pearson's correlation coefficient was used. It allowed us to estimate the strength and direction of the relationship between continuous variables. We used the arithmetic mean to analyse the relationship between a nominal variable (gender, place of residence, education) and a continuous variable.

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[3] The question pertained to the following scenario: "Suppose that the authorities of your commune intend to make a decision that you consider inappropriate or harmful. To what extent is it probable that if you were to attempt individually or collaboratively with others to take action in this matter, the municipal authorities would take such citizen activity seriously and reconsider their decision, reversing the decision?"

[4] The question was formulated as follows: How do you evaluate the following aspects of the municipality's management, where 0 is very low and 6 is very high: 1) the municipal authorities consistently fulfil their promises; 2) the residents' ability to control the implementation of tasks by the municipal authorities; 3) the authorities' openness to cooperate with those who hold different views; 4) the authorities encourage residents to engage and participate in decision-making on all municipality matters, even those solely within the competence of the authorities. The respondents were also asked to indicate their satisfaction with various areas of life in the municipality, such as education, culture, health, road infrastructure, where 0 indicated that they were very dissatisfied, and 6 indicated they were very satisfied.

4.2. Description of the survey

We seek answers to our research questions based on data collected during research conducted between June 1 and June 30, 2023, using the Computer-Assisted Telephone Interview method (CATI) among a sample of 700 adult residents of rural areas in Poland. The sample selection was randomised, with the strata represented by the 16 voivodeships. The number of interviews conducted in each voivodeship was proportional to the population size of rural residents in the structure of the voivodeship, as well as gender and age. Therefore, the results are representative of rural residents in Poland. The survey included all adult individuals registered in the voivodeship and those without a permanent registered address but who had resided there for at least six months in the past calendar year. This article presents a portion of the results related to the respondents' opinions on selected dimensions of local good governance (dependent variable) and their subjective assessment of their interest in the public sphere in the municipality (independent variable).

Most of the respondents resided in rural municipalities (79%), while the remainder were residents of rural areas within urban-rural municipalities (21%). The study included 348 women and 352 men. For comparison, according to Statistics Poland (GUS BDL), in rural areas of Poland in 2022, there were more than 7.619 million men and 7.658 million women, indicating nearly equal gender proportions.

The average age of the respondents was 47 years. In terms of age structure, people between 35 and 54 years old predominated (39%). The second-largest group comprised older people, 55 and older (37%). The youngest participants (18-34 years old) were the least numerous, comprising 25%. The youngest respondent was 18 years old, while the oldest was 78.

Analysis of the educational structure of the respondents leads to the conclusion that there are two better-educated and relatively better-educated groups of respondents, i.e., those with secondary education (47%) and those with tertiary education (32%). Less educated respondents (no education beyond primary or vocational education) constituted a minority of 21%.

5. Results

For a better understanding of LGG, an assessment of individual aspects that constitute this phenomenon is presented (Table 1). Subsequently, an investigation is conducted to determine whether and how strongly they are interconnected. It is assumed that a significant correlation between these elements would indicate that the appropriate variables had been selected to build the LGG indicator.

The level of satisfaction, which served as a measure of the effectiveness of the actions of the authorities, was the highest across all dimensions examined (average rating: 3.49). The question of effectiveness relates to the areas of operation of local institutions managed by municipal authorities, functioning in domains such as education, health, safety, communication, and road infrastructure. It can be assumed that the subject of evaluation is relatively well recognised by respondents compared to others, as they have daily contact with it. However, the result indicates that the assessment of the effectiveness of actions is not high.

Moderately positive evaluations were also given to the credibility of the authorities, i.e., consistently fulfilling promises made to voters (3.32). Responsiveness, understood as the authorities' willingness to reverse decisions due to the intervention of residents, was also relatively positively assessed (3.26). Slightly lower ratings characterise the possibility of citizens controlling the authorities (transparency) (3.23) and the authorities' readiness to share power (3.21). Values such as effectiveness, credibility, and transparency may reflect the principles of representative democracy. Representative democracy assumes that citizens have the right to choose representatives to act on their behalf, meet collective needs, and control their actions, such as fulfilling promises or performing duties correctly.

In this case, the relatively high ratings may mean that people in rural areas are happy with or accepting of these kinds of practices. This is different from the needs of direct democracy, which also values leaders who are willing to share power and talk with groups that often have different opinions. The latter element in our studies received the lowest assessment (3.15). Earlier research (Kalisiak-Mędelska, 2012; Marks-Krzyszkowska, 2017; Marks-Krzyszkowska et al., 2022) supports the notion that there is a low likelihood of Polish rural municipal authorities being receptive to involving residents in co-governance.

In summary, the evaluation of local authorities' performance through the prism of LGG values is relatively low, with averages only slightly exceeding 3. This may suggest that the majority of respondents lack sufficient knowledge on the subject and choose responses from the middle of the scale cautiously, or they perceive weaknesses in the authorities in those aspects. In all LGG dimensions analysed, the respondents assigned similar ratings to the local authorities. The difference between individual dimensions is small, i.e., approximately 1/3 of a point**.**

Table 1.
Assessing the value of local good governance

Item	Feature	
	Average	**Standard deviation**
Effectiveness	3.49	1.238
Credibility	3.32	1.549
Responsiveness	3.26	1.460
Transparency	3.23	1.520
Power sharing	3.21	1.568
Participation	3.15	1.563

Note. N = 700.

Source: Authors's own elaboration.

We used the Pearson correlation coefficient to examine the interrelationship between the variables. The relationships were statistically significant (0p < 0.001) and were characterised by a positive direction and high strength (Table 2).

The strongest relationships were observed between the credibility of the authorities, understood as fulfilling complex promises, and transparency, that is, the possibility of citizen control (0.702) and participativeness (0.684). This implies a fairly obvious dependence: as actions become more transparent – allowing for greater control – the credibility also increases, enabling the verification of the implementation of electoral promises. With a slightly weaker but also relatively high strength, there is a relationship between the assessment of the authorities' willingness to share power and participativeness (0.674) and credibility (0.676). It is understandable that authorities that are open to cooperation with everyone, even the opposition, are perceived as being willing to enable others to effectively influence decisions. Furthermore, active individuals have a better opportunity to control the actions of the authorities. The higher the transparency rating of the authorities' actions, the higher the rating of participativeness (0.648) and power sharing (0.647).

The relationship between variables that identify the effectiveness of actions and other dimensions, i.e. credibility (0.542), transparency (0.544) and power-sharing (0.507), is slightly weak compared to other dimensions. The relationship between the effectiveness of action and the effectiveness of participation is relatively weak (0.498). This suggests that the involvement of other entities in management does not always correspond to the effectiveness of participation by individuals with different views from those of the authorities (Miessen, Choptiany (2016). The weakest relationships characterise responsiveness, effectiveness (0.305), and participativeness (0.384). This may indicate that from the residents' perspective, changing decisions under the influence of public opinion is not always perceived as an action that ensures effectiveness, similar to inviting opponents to the discussion. On the other hand, a difference was found between the willingness to reverse a decision and the willingness to share power (0.422). Therefore, it can be assumed that reversing a decision due to social pressure is not always identified as an act of power sharing.

The dimensions of LGG that we analysed are, therefore, statistically significantly interrelated, although the strength of the relationship between individual dimensions varies. We empirically confirm a phenomenon that is reasonably well described in the theoretical literature.

The sum of the values of all the variables discussed above, divided by their number (6), allowed us to obtain a synthetic index of LGG assessment in rural areas. The mean value was 3.27 (standard deviation: 1.163). This means that, like the partial indices, the LGG assessment was positive, although it only slightly exceeded the midpoint. All variables influenced the value, but the variables that assessed credibility (P = 0.853) and power-sharing (P = 0.845) exhibited the strongest correlation.

Table 2.
Pearson correlation coefficients between sub-variables of (values) of LGG

Item	Feature					
	Credibility	**Trans-parency**	**Partici-pation**	**Power sharing**	**Effective-ness**	**Responsive-ness**
Transparency	**0.702**					
Participation	**0.684**	0.648				
Power sharing	**0.676**	0.647	**0.674**			
Effectiveness	0.542	0.540	0.498	0.507		
Responsiveness	0.370	0.384	0.361	0.422	0.305	
LGG index	0.853	0.840	0.832	0.845	0.705	0.604

All relationships are relevant at the level of <0.001, N = 700.

Source: Authors' own elaboration.

In seeking answers to the next research question, selected explanatory variables related to sociodemographic factors (gender, place of residence, age, education) and psychosocial characteristics of respondents (interest in local government affairs, perception of being informed about local public life) were analysed. Sociodemographic characteristics were encoded as nominal variables; therefore, their impact on the explanatory variable will be examined using nonparametric methods, such as the mean (Appendix , Table 6)[5].

Women tended to give slightly higher ratings than men, but this difference was not significant. An exception is how they evaluated the encouragement of individuals with different views to participate in decision-making, where men gave slightly higher ratings. The assessment of the ability to control authorities was the same regardless of sex. In summary, gender does not significantly differentiate the evaluation of LGG values.

The respondents' place of residence was a key differentiator in assessing the individual dimensions of LGG. Residents of rural areas in urban-rural municipalities generally rated the local authorities' activities higher than residents of rural municipalities. This was especially true for participatory aspects, power-sharing, and responsiveness. Perhaps this is due to the way such municipalities are organised. They are usually slightly larger in terms of population, indicating greater social differentiation and the need to cooperate with various social groups. The environments may be more closed.

The scores were also diverse according to age, although it is challenging to identify a clear pattern in this case. Younger individuals tended to give higher LGG ratings. The ratings given by respondents between the ages of 35 and 54 were lower for power-sharing, participatory aspects, and transparency. This age group represents the peak of public life activity. Older adults (55 years and older) gave the highest ratings to the authorities' effectiveness and credibility, i.e., whether they performed their commitments.

[5] Consciously, despite the lack of methodological foundations for applying correlation coefficients, we attempted to calculate the Spearman or Pearson coefficient for this group of explanatory variables and the LGG index. Analyses indicated no statistical significance (p > 0.005) between them.

Education also influenced the ratings, although in an ambiguous manner. Respondents with a medium level of education tended to give slightly higher scores, while those with a basic education gave lower scores.

The second group of explanatory variables is related to the respondents' psychosocial characteristics. We examine the influence of variables such as:

- Interest in the management of the commune, that is, the authorities' plans, decision-making, and implementation of tasks;
- The degree of feeling informed about the plans and decisions of the commune authorities and about important matters happening in the commune.

Table 3.
Average level of interest in the management of the commune

Management aspects	Feature	
	Average	Standard deviation
Planning	3.92	1.674
Decision-making	3.65	1.655
Implementation and execution of tasks by the authorities	3.86	1.566

N = 700.

Source: The authors' own elaboration.

The level of interest in selected elements of municipal management is not high (Table 3). The respondents were more interested in following future municipal plans (3.92) and the implementation of tasks (3.86). The decision-making process was somewhat less frequently followed. However, the differences between the ratings of these aspects are small. Based on the variables presented, an index of interest in municipal management. The overall mean value for the respondents was 3.81 (with a minimum of 0, a maximum of 9, and a standard deviation of 1.506).

The next group of explanatory variables was related to the sense of being informed about the authorities' actions and important events in the municipality (Table 4).

Table 4.
Average level of interest in public life in the commune

Sense of information about:	Feature	
	Average	Standard deviation
Authorities' plans and decisions	3.22	1.594
Important issues in the commune	3.56	1.519

N = 700.
Source: Author's own elaboration.

The respondents felt relatively well-informed about what important and interesting events were happening in their municipality (3.56). They rated their awareness less favourably in the context of plans and decisions made by local authorities (3.22). Both variables formed a synthetic awareness index, characterised by an average value of 3.39 (min 0, max 6, standard deviation 1.142).

To clarify the relationship between LGG and the interest and awareness of the respondents, Pearson's correlation coefficient was used.

Table 5.
Pearson's correlation coefficients between the sub-variables of the LGG index, interest, and information on issues of the communes

Synthetic variables	Synthetic variables	
	LGG index	**Interest in communes management**
Interest in commune management	0.403	
Being informed about commune affairs	0.589	0.325

N = 700. P <= 0.001 for all correlations.

Source: Author's own elaboration.

The research confirms the positive correlation between the evaluation of the authorities' actions (LGG) and interest in municipal management, as well as the sense of being informed (Table 5). The higher the level of interest and awareness, the more positively the activities of municipal authorities are evaluated in terms of LGG. The relationship is reciprocal. However, the strength of the association with the sense of being informed was higher (0.589) than in the case of interest in management (0.403). The analyses also corroborated a somewhat evident relationship between the level of interest in management-related matters and the sense of being informed (0.325), although this was a relationship of relatively weaker magnitude.

6. Summary

The bibliometric analysis conducted within the field of local governance has facilitated an understanding of the dynamics of the literature development in this domain, shedding light on the research issues addressed and the countries around which scholarly discussions revolve. The findings of this analysis revealed a research gap on the topic of local governance in rural areas, which constituted the subject of exploration in the article.

The empirical study conducted among rural residents in Poland demonstrated a moderately positive assessment of actions in terms of credibility, transparency, participatory practices, and willingness to share power, as well as responsiveness and effectiveness. The difference in the average rating is not substantial (approximately 0.3 points). Effectiveness received the highest rating, while participatory practices, understood as inviting others, including the opposition, to cooperate, received the lowest rating. Rural residents' positive yet moderately evaluated actions of local authorities indicate the need for change. This assertion refers to a situation where both authorities and residents approve of a governance model based on the principles of good governance. However, based on the data, it is not possible to unequivocally determine whether the predominance of ratings toward the middle of the scale indicates a lack of opinion or knowledge among the residents regarding good governance values or if it signifies higher expectations in this area.

Simultaneously, the results of the statistical analyses lead to the conclusion that the values largely reflect LGG in rural areas. From a theoretical perspective, the variables selected for analysis appropriately represent the aspects included in the synthetic index. Empirically, they were based on available and reliable survey research and proved to be significant from a statistical analysis point of view. This was confirmed by the high Pearson correlation coefficients, indicating that each variable contributes value to the overall LGG picture.

The average LGG rating reflected by the indicator is positive but not high (3.3 points on a scale of 0-6). The study suggests that psychosocial factors, such as awareness of local events and interest in local affairs, influence this rating. Social-demographic factors did not have a statistically significant impact, with only certain tendencies observed. Women and younger people with a medium level of education who lived in urban-rural municipalities gave better scores.

The interpretations are subject to limitations, however. We solely employed quantitative methods. Therefore, it would be valuable to expand the analyses to include qualitative methods to deepen our understanding of residents' interpretations of LGG values and how they are represented by their authorities, taking into account their local context. Additionally, a comparison of opinions between urban and rural communities would be interesting to explore.

Acknowledgements

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Appendix

Table 6.
Respondents' evaluation of the LGG by gender, place, education level, and age

Independent variables			Value of LGG: credibility	transparency	participation	power-sharing	effectiveness	responsiveness	LGG index
Gender	Women N=348	**a**	3.36	3.23	3.14	3.23	3.51	3.29	3.30
		st. d.	*1.546*	*1.537*	*1.528*	*1.549*	*1.213*	1.162	1.459
	Men N=352	**a**	3.28	3.23	**3.17**	**3.19**	3.49	3.26	3.23
		st. d.	*1.553*	*1.505*	*1.598*	*1.587*	*1.266*	1.166	1.462
Type of commune	Rural N=551	**a**	3.31	3.23	**3.11**	**3.16**	3.51	3.26	3.26
		st. d.	*1.555*	*1.549*	*1.562*	*1.578*	*1.251*	1.184	1.488
	Rural-urban N=149	**a**	3.34	3.23	**3.3**	**3.4**	3.47	**3.33**	3.27
		st. d.	*1.532*	*1.411*	*1.562*	*1.519*	*1.195*	1.083	1.354
Age	Younger adults N=175	**a**	3.28	**3.34**	3.28	3.33	3.53	3.37	**3.46**
		st. d.	*1.522*	*1.425*	*1.537*	*1.577*	*1.191*	1.101	1.405
	Secondary-aged adults N=269	**a**	3.27	**3.13**	**3.10**	**3.09**	3.35	3.19	3.22
		st. d.	*1.532*	*1.511*	*1.568*	*1.519*	*1.216*	1.164	1.472
	Older adults N=256	**a**	**3.39**	3.27	**3.12**	3.25	**3.64**	3.30	3.17
		st. d.	*1.588*	*1.590*	*1.575*	*1.608*	*1.280*	1.202	1.476
Education level	Basic N=141	**a**	3.23	**3.06**	**3.04**	**3.08**	3.41	3.15	3.06
		st. d.	*1.375*	*1.405*	*1.519*	*1.608*	*1.257*	1.087	1.458
	Medium N=324	**a**	**3.40**	***3.36***	3.24	3.32	3.53	3.36	3.31
		st. d.	*1.546*	*1.491*	*1.535*	*1.567*	*1.246*	1.144	1.495
	Higher N=219	**a**	3.33	3.23	3.16	3.19	3.55	3.30	3.35
		st. d.	*1.621*	*1.604*	*1.626*	*1.535*	*1.173*	1.216	1.374

a – average, st. d. – standard deviation.

Source: Authors' own elaboration.

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PROSPECTS OF USING REMOTE TEACHING IN SCHOOL EDUCATION – RESEARCH FINDINGS

Małgorzata MICHALCEWICZ-KANIOWSKA[1*], Anna KOMARNICKA[2],
Cosmina-Simona TOADER[3]

[1] Bydgoszcz University of Science and Technology, Department of Economics and Marketing, Faculty of Management; malgorzata.michalcewicz-kaniowska@pbs.edu.pl, ORCID: 0000-0003-2154-5838
[2] Bydgoszcz University of Science and Technology, Faculty of Management, Department of Innovative Organization Management; anna.komarnicka@pbs.edu.pl, ORCID: 0000-0003-1705-1376
[3] University of Life Sciences "King Mihai I" from Timişoara, Department of Management and Rural Development, Faculty of Management and Rural Tourism, Calea Aradului No. 119, 300645 Timişoara, Romania; cosminatoader@usab-tm.ro, ORCID: 0000-0003-1564-8558
* Correspondence author

Purpose: The purpose of this paper is to assess the prospects of using distance teaching for various forms of education as perceived by teachers. The study also sought to provide feedback on how remote instruction was provided and to identify methods and forms of instructional work preferred by teachers during the period under study.
Design/methodology/approach: To achieve this purpose, a quantitative method has been employed, based on a survey conducted electronically using Google tools. The survey respondents were 9,070 teachers employed in the Kuyavia-Pomerania region of Poland, who represented nearly 30% of the total teacher study population in the area.
Findings: The results of the study indicate that more than 50% of the teachers recognise the significance of the potential of distance teaching, although only a small group of the teachers (less than 10%) consider it feasible to completely replace conventional classes with remote classes. The preferred methods and forms of remote instructional work are multimedia presentations (over 50%) and playback of classes in video format (33%). The overwhelming majority of the teachers (60-70%) emphasise the importance of conducting live classes. In every aspect of the study, about 30% of teachers did not express their opinions, which may suggest their lack of knowledge of distance learning possibilities.
Practical implications: Results of the study may be of interest to both researchers and practitioners investigating the evaluation and development of potential applications of distance teaching in various aspects of education. The findings may serve to develop solutions that address actual challenges faced by teachers in the distance learning process more adequately, contributing to the improvement of this educational process.
Originality/value: This study may contribute to the discussion on the role, benefits and challenges of distance teaching in the educational system. Concomitantly, it offers an important contribution to the debate on adjustment of national and regional distance teaching strategies to the specific needs of teachers working in different types of schools.
Keywords: education system, distance learning, e-learning, teachers' attitudes, distance teaching methods.
Category of the paper: Research paper.

1. Introduction

The economic and social progress seen in recent years is heading towards a digital world, where the importance of knowledge is emphasised and all people who have knowledge and skills are the most sought after in the labour market. Thus, when knowledge is the key, education is the means to acquire new knowledge (Bušelić, 2012).

Although changes are being noticed in all spheres of people's lives, in many cases education is lagging behind. This is due to the fact that teaching and learning methods are not always up to date, whereas the rate of development is faster than the rate of adoption of the methods (Burdina, Krapotkina, Nasyrova, 2019).

Another aspect that ought to be mentioned is that the information needs and knowledge of students are frequently mishandled. Moreover, teachers' knowledge and skills are oftentimes outdated or perhaps inadequate to current needs, and in some countries and regions the level of socio-economic development is low (Oliver et al., 2010).

Concerns about education and behaviour in the education market vary from generation to generation due to different values, ambitions and work styles (Figure 1).

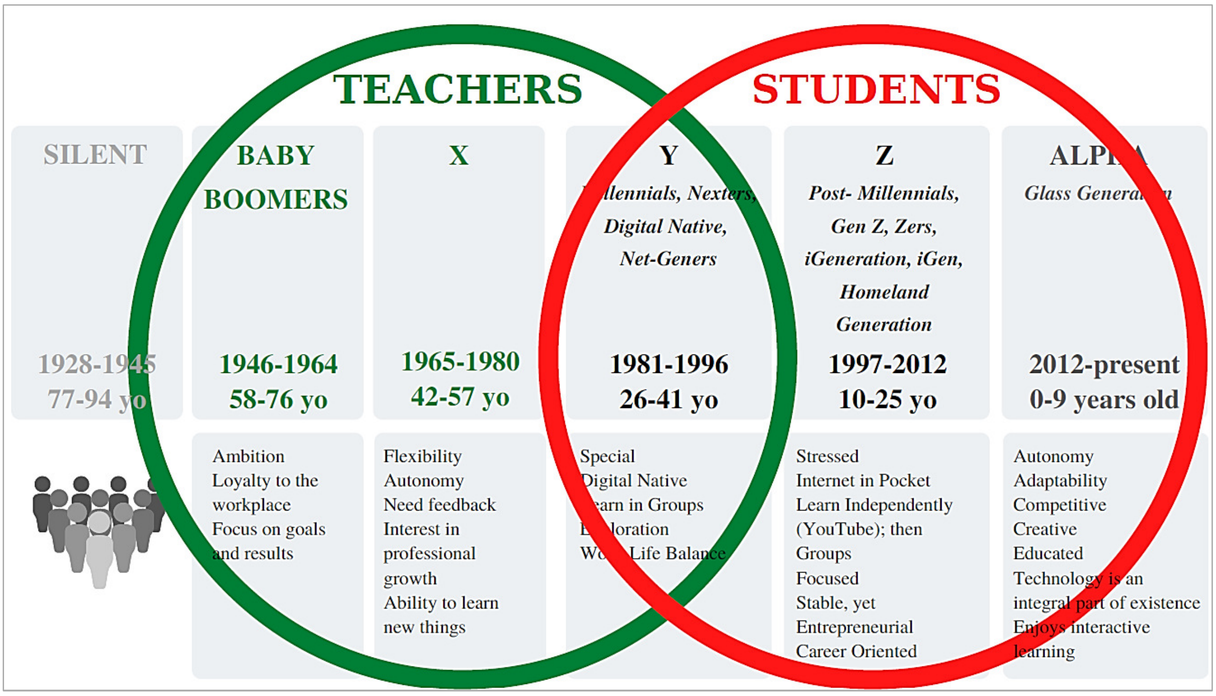


Figure 1. Generational differences in education: from the Baby Boomers to Generation Alpha.
Source: own work based on (Dimock, 2019; Generations in Higher Ed., 2018; dos Reis, 2018).

Presently, there are four generations "active" in the education system, or even five, if we include Generation Alpha. Teachers belong to Baby Boomers (those born between 1946 and 1964), Generation X (born between 1965 and 1979) and Generation Y (born between 1980 and 1989) while students and pupils belong to Generations Y, Z (born between 1995 and 2010) and Generation Alpha (born after 2010) (Dimock, 2019; Generations in Higher Ed., 2018; dos Reis, 2018).

Persons from the generation of Baby Boomers are ambitious and associate success with unremitting work, dedication, acceptance of authority, concern about one's status and acceptance of a hierarchical work structure. Baby Boomers are loyal to their workplace, competitive as well as goal-oriented and results-driven (Hayes et al., 2018; Leslie et al., 2021).

Generation X are characterised by flexibility, autonomy, a sense of belonging, the ability to work as a team, the ability to learn new things, the need for feedback, a strong interest in professional development, entrepreneurship and earning rewards in a short period of time (Gursoy, Chi, Karadag, 2013).

Members of Generation Y are self-confident and intelligent, digitally literate and multitasking, preferring teamwork, passive approach to problem solving; they are also reliant on others to solve problems.

Those who belong to Generation Z are independent, they dislike authority, maintain a global perspective and are tolerant. They are technology consumers and admirers of the digital world. For Generation Z, learning is an active experience that includes participatory activities; they show a tendency to socialise and learn online; they consume and produce digital information and they are oriented towards a personalised career. For Generation Z, school is not just a period of intellectual development but rather a time for preparing for a career, with curiosity being the primary motivating factor for choosing a course of study. As far as the concentration span of Generations Y and Z is concerned, the difference between them is 4 minutes. In comparison to Generation Y, Generation Z have a shorter concentration span, which amounts to 6 minutes (Karakas, Manisaligil, Sarigollu, 2015).

As for Generation Alpha, let us mention that some members of this generation have not even been born yet, so the set of their traits is still "open". The main characteristics of Generation Alpha are autonomy, adaptability, competitiveness, creativity, practicality, intelligence, courage, leadership, impatience, agility and a strong desire for new challenges. Generation Alpha members will be hard-wired to the Internet and are likely to be better educated than the other generations (Apaydin, Kaya, 2020).

While previous generations were considered part of a homuter (homo + computer) community, today's pupils and students can now be classified as belonging to a mobile community, as for them mobile phones, iPods and tablets are the main channel of communication and learning (Rammert, 1996).

Rapid proliferation of technology has led to virtualisation (Huda et al., 2017). With virtualisation, basic social needs are satisfied through computers and mobile devices, which is indicative of a new phenomenon – cybersocialisation (Gaol, Hutagalung, 2017). In an increasing number of educational institutions around the world, computer literacy is being introduced as a separate subject studied since the early years at school (Ng, 2011).

In this context, the current pace of virtualisation leads to finding new approaches and methods of teaching and learning, and one of these approaches is distance learning. Remote learning can make education accessible to a larger population and the implications of factors such as distance or level of development can be reduced.

2. Literature review

The COVID-19 pandemic has led to major changes throughout the world, in all sectors of the economy, and has indirectly left its mark on the lives of everyone. The measures put in place during the pandemic also affected the education system (Toader, Licaj, 2021).

To continue to hold classes meant a transition to an online environment, with digital classes supplanting face-to-face classes. In this context, distance learning was an alternative to proceeding with class teaching during the lockdown, which has led to a new approach to teaching and learning on the part of teachers and students alike (Picca et al., 2021).

On top of that, as individuals were switching to telecommuting, they began to increasingly pursue digital learning in order to develop the skills required to adapt to today's world.

The COVID-19 pandemic has fast-paced our rapidly changing world, where technologies such as artificial intelligence and automation continue to bring major changes to labour markets.

In this context, access to high-quality online learning is an essential step in supporting people to acquire skills for the future and to seek and find new opportunities for growth and development.

With a surge in people opting for online education, demand for online courses is continuing to grow after the pandemic. In 2021, 92 million learners registered on the global education platform Coursera, a 29% increase over the year before. A majority of Coursera learners are striving to gain or improve their professional skills in order to enhance their prospects for employment on the labour market (2021 Impact Report. Serving the world through learning, 2021).

Remote education is not a new concept; numerous educational institutions have already developed curricula for various levels of education by way of remote education (Traxler, 2018).

Over time, remote education has developed into its present form due to technological development. What at first was correspondence courses has evolved into today's media-based or Internet-based learning through the use of a variety of devices (Bashitialshaaer, Alhendawi, Lassoued, 2021).

Remote education is predominantly prevalent in adult education. In recent years, this form of education has been developing impressively owing to digital technology (Traxler, 2018).

According to specialist literature, remote education has had several definitions over the years. Remote education has been defined by Holmberg as a method that encompasses those levels of education in which students do not have direct contact and continuous supervision by teachers, as is the case in face-to-face classes, and the entire process is planned, organised and directed by teachers in the relevant institution (Holmberg, 1977).

The United States Distance Learning Association (USDLA) has defined remote education as “the process of acquiring knowledge through a variety of media used to transfer education and information, including all types of technology and various forms of education level for distance learning” (Definition of distance learning, 2004).

The concept of remote education is considered an approach of the education system that does not fit entirely into the philosophy of education. This concept presupposes the progression of the educational process without direct contact between the teacher and the students – the students are free to join classes when they want and from wherever they want. In that scenario, nowadays, technology is the link/interface between all participants in the educational process (teachers, students) and without it they cannot interact with each other (Bashitialshaaer, Alhendawi, Lassoued, 2021; Moore, Dickson-Deane, Galyen, 2011).

Remote education involves adopting methods differing from those of the traditional education system. In this regard, Al-Saleh and Amira present methods used in the learning process, such as flexibility in acceptance and learning, as students can benefit from this type of education anytime and anywhere (Al-Saleh, 2013; Amira, Tarshoun, Olayan, 2019).

That is why nowadays remote education is an educational system where exchange of information between the teacher and the students has to be supported by digital infrastructure for training and learning, educational materials as well as digital skills of the teacher and the students (Singh, Thurman, 2019).

Online learning is thought of as learning conducted in synchronous and asynchronous settings using technology (an array of devices such as mobile phones, tablets, laptops). In this way, students can be anywhere while learning and interacting with teachers, in the meantime sharing experiences with their classmates.

To provide this kind of instruction under optimal conditions, in addition to digitally literate students and teachers who have high digital qualifications, a secure and sustainable digital infrastructure is needed (Al-Saleh, 2013; Amira, Tarshoun, Olayan, 2019).

An upward trend today is to use mixed-mode and distance teaching based on digital technologies for knowledge transfer (Salasan et al., 2021).

The emphasis on remote education is pressuring teachers into incorporating new technologies into teaching, introducing new pedagogical and evaluation methods, a new system in which integration will be greatly facilitated for persons with disabilities. The fact that the new system will be more easily accessible to disadvantaged groups will be advantageous for the community as a whole, leading to greater equality in certain populations. However, one issue that deserves particular attention is the improvement of infrastructure.

Drawing on surveys on students' and teachers' opinions regarding distance education in different countries, a plethora of articles have been written (Abdallah, Abdallah, 2022; Andronic et al., 2012; Barış, Çankaya, 2016; Carpinelli et al., 2006; Çalış Duman, Aksoğan, 2020; Karakoyun, Kavak, 2009; Porozovs, Valdemiers, 2019; Psychogyiou, Karasimos, 2019; Solpuk Turhan, 2019; Rizwan, Iftikhar, 2019) addressing different levels of education (Kochan, 2021; Petek, 2021).

A number of articles have been written in the context of the COVID-19 pandemic (Ferraro et al., 2020; Gayvoronskiy, 2020; Erdoğan, Ayanoğlu, 2021; Boronina, Baliasov, Sholina, 2021; Marek, Chew, Wu, 2021; Todri et al., 2020; Васильченко, Шацька, 2021; Winiarczyk, Warzocha, 2021; Sałatarow, 2020) and certain authors have emphasised the challenges faced by students and teachers (Diana, Suhendra, Yohannes, 2020; Dietrich et al., 2020; El Refae, Kaba, Eletter, 2021; Toader, Licaj, 2021; Weltrowska et al., 2022; Domagała-Zyśk, 2020) and have highlighted the challenges of distance learning (Düzgün, Sulak, 2020; Poláková, Klímová, 2021; Türkan, Leblebici, Önal, 2020; Urlica et al., 2021; Ismail, Nazeri, Mohamad, 2021; Zajdel et al., 2021; Kochan, 2020).

Most of the studies have employed quantitative methods for data collection, with the research method being a questionnaire and the research instrument – an online survey. Before deployment, the questionnaires had been tested by administering them to a small group of individuals in order to identify errors and correct them (Marek, Chew, Wu, 2021; Rahmadi, 2021).

3. Materials and Methods

This study was conducted as the first and only comprehensive regional study in Poland within the framework of the project titled "Conditions, potential and prospects of using distance teaching in the modern education system" in one of Poland's 16 regions – the Kuyavia-Pomerania Province. The project is being carried out in cooperation with the Bydgoszcz Board of Education.

The study involved all primary and secondary school teachers, school principals and first-year students of the UTP University of Science and Technology who were the first secondary school-leavers to have taken classes remotely for a full semester at a secondary school. The main objective of the study within the framework of the project under way was to identify determinants of the instructional process carried out remotely and to investigate the potential of this form of teaching and of using it to improve the quality and attractiveness of the educational offer of schools and educational institutions. Specific objectives of the present study included the following: (1) identify the determinants of the instructional process carried out remotely, (2) investigate the potential of remote teaching and (3) determine possibilities for using remote teaching to improve the quality and attractiveness of classes.

Findings of a prior study published earlier on have made it possible to assess the workspace and technical conditions as well as the manner in which the teachers conducted remote classes; what forms of distance education were used by the teachers; what was the teachers' evaluative opinions on the general idea of remote teaching, with an attempt to indicate and assess potential determinants of conducting remote classes and conditions of providing students with remote instruction (Zajdel et al., 2021).

The present paper focuses on findings of a study into prospects of using remote teaching in the opinion of teachers.

The research instrument consisted of a survey questionnaire, which in the first stage of the research process was submitted for consultation to experts of the Bydgoszcz Board of Education and the teachers. After conducting a pilot study among the teachers, the survey questionnaire proper was developed; it covered the following thematic areas: (1) workspace and technical conditions of the remote classes taught, (2) potential determinants of distance teaching and (3) potential possibilities for use of distance teaching. The study questionnaire included open-ended, semi-open, closed-ended and semi-closed questions. Questions with an ordinal bipolar rating scale were the most common. The method of data collection from primary sources was an online survey. The survey was conducted by electronic means using tools provided by Google. In total, the link to the survey questionnaire was shared via the Information Panel of the Board of Education (PIKO) with 32,155 teachers in the Kuyavia-Pomerania Province.

As the scope of the survey covered the entire study population of teachers, it was not necessary to select a sample from this population. This has ensured that the study is exhaustive by nature, as it includes the entire population under study, preventing sampling errors such as lack of full representativeness or random errors.

An important stage in the summary of the first stage of the scientific research conducted jointly with the Kuyavia-Pomerania Superintendent of Schools in Bydgoszcz was organisation of the 1st National Scientific e-Conference titled "Uwarunkowania, potencjał i perspektywy wykorzystania zdalnego nauczania w systemie nowoczesnej edukacji" (Conditions, potential and prospects of using distance learning in a modern education system). The conference was addressed to the scientific community, teachers and headteachers of public schools of all types, school superintendents and inspectors in Poland, local government units as well as all those who were interested in the process of remote education. This 1st e-conference was held under the auspices of the Minister of Education and Science and the Marshall of the Kuyavia-Pomerania Province, which significantly raised its status while emphasising that the topic, its importance, relevance as well as the scale of the research and its usefulness are crucial in shaping national educational policy. On account of the fact that the e-conference was a presentation of scientific achievements of great importance and nationwide scale, it was broadcast live on YouTube on 10 March 2021, from 3.00 p.m. to 5.00 p.m. The conference was attended by 1250 persons and to date the event has been viewed by more than 4300 persons (https://www.youtube.com/watch?v=AxKABIaCQ90). The research conclusions and recommendations were forwarded to the Ministry of Education and Science and authorities of the Kuyavia-Pomerania region.

4. Results

The object of the study was the group of all teachers employed in the Kuyavia-Pomerania region in Poland. Among the educational institutions were primary schools, vocational schools, general secondary schools, post-secondary schools as well as special schools of all kinds and technical schools. The study has encompassed 32,155 teachers in total. A total of 9070 teachers directly participated in the study, representing just under 30% of the total study population. The largest number of study participants was observed in the group of primary school teachers (71.11%) and in general secondary and technical schools, accounting for a total of 21.64% (Table 1).

Table 1.
Respondents grouped by age and school type

BREAKDOWN	WOMEN	MEN	TOTAL	
	[%]	[%]	NUMBER	[%]
vocational school	1.72	1.11	**257**	2.83
general secondary school	6.37	2.27	**784**	8.64
primary school	61.57	9.55	**6450**	71.11
post-secondary school	0.45	0.14	**54**	0.60
special schools of all kinds	3.15	0.66	**346**	3.81
technical school	8.69	4.31	**1179**	13.00
TOTAL	81.95	18.05	**9070**	100.00

Source: own work based on conducted research.

The most numerous group (3416 respondents – 37.66%) were the 41-50-year-old teachers, while the second most numerous group (2845 respondents) were, in turn, the 51-60-year-old teachers (31.37%). Nearly every fourth teacher was aged 31-40 (28.84%). It could therefore be established that in all schools and educational institutions, 41-60-year-old teachers are the most prevalent group, comprising about 70% of all teachers. It is worth noting that in primary schools, the largest share is held by teachers in the age group of 41–50 years (35.67%) and 51-60 years (33.21%). Teachers aged 41-50 constitute the dominant group in both high schools (45.54%) and technical schools (41.90%). The study showed that 3153 (34.76%) of respondents are employed in schools and institutions in the rural areas, with 2907 (45.07%) respondents working in primary schools. In towns with up to 50,000 residents, the most numerous groups were vocational school teachers (107 persons – 41.63%), secondary school teachers (267 persons – 34.05%), and technical school teachers (477 persons – 40.46%).

At the first stage of the research process, it has been demonstrated that more than 80% of the teachers have used their own private technical devices, including more than 90% of teachers using their laptops and approx. 75% of teachers – their smartphones (Zajdel et al., 2021).

Every third teacher utilised school-provided classrooms at least once, or every second teacher in the case of vocational schools. It should be noted that the assessments of both the stability and the speed of internet connection have not shown significant variations in the teachers' opinions in the context of localisation of the school, with both parameters having been rated as relatively poor. With consideration of school location, the average rating of the connection stability was 3.35 on a scale from 1 to 5, while the average rating for its speed was 3.42. The most significant challenge in remote classes, as perceived by teachers, was the unstable parameters of the internet connection, particularly among those residing in smaller towns and rural areas.

Moving on to the area of prospects for using distance teaching, the analysis first referred to supporting traditional classes with this form. There is no doubt that the remote form of teaching can be used in various forms, such as in the preparation for external examinations, in conducting so-called compensatory classes and additional classes for interested students, in conducting remote classes by specialists as well as the use of remote teaching in individual teaching or pedagogy for parents.

The analysis of the collected material shows that one in three teachers believes that distance teaching can support the preparation for external examinations and compensatory classes. It is worth noting that, similarly, one in three teachers has no opinion on the subject (Figure 2).

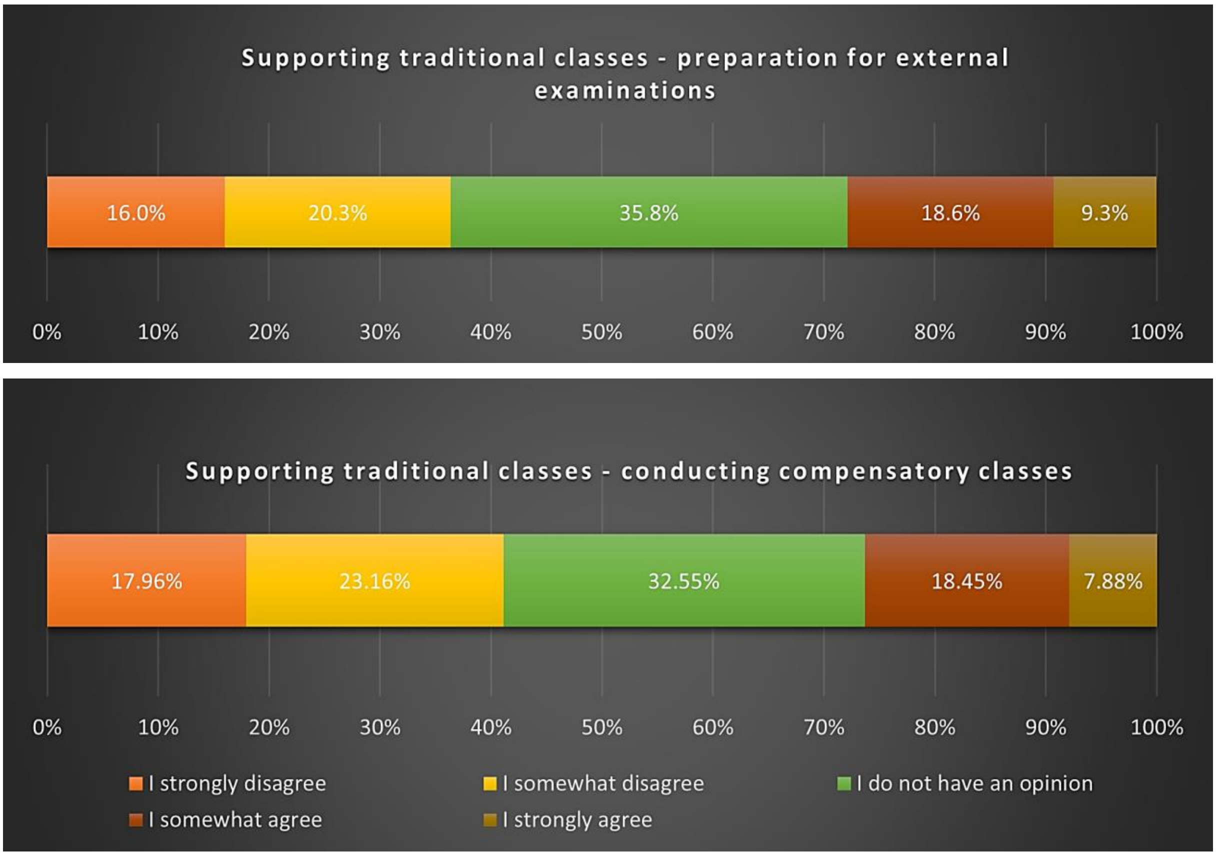


Figure 2. Possibilities of using distance teaching in preparation for external examinations and conducting compensatory classes.

Source: own work based on conducted research.

Every second teacher believes that distance teaching can support the provision of additional classes for interested students and almost 40% of teachers acknowledge the participation of specialists in classes. Similarly, one in three teachers has no opinion on the subject, which may indicate a low level of knowledge in this area (Figure 3).

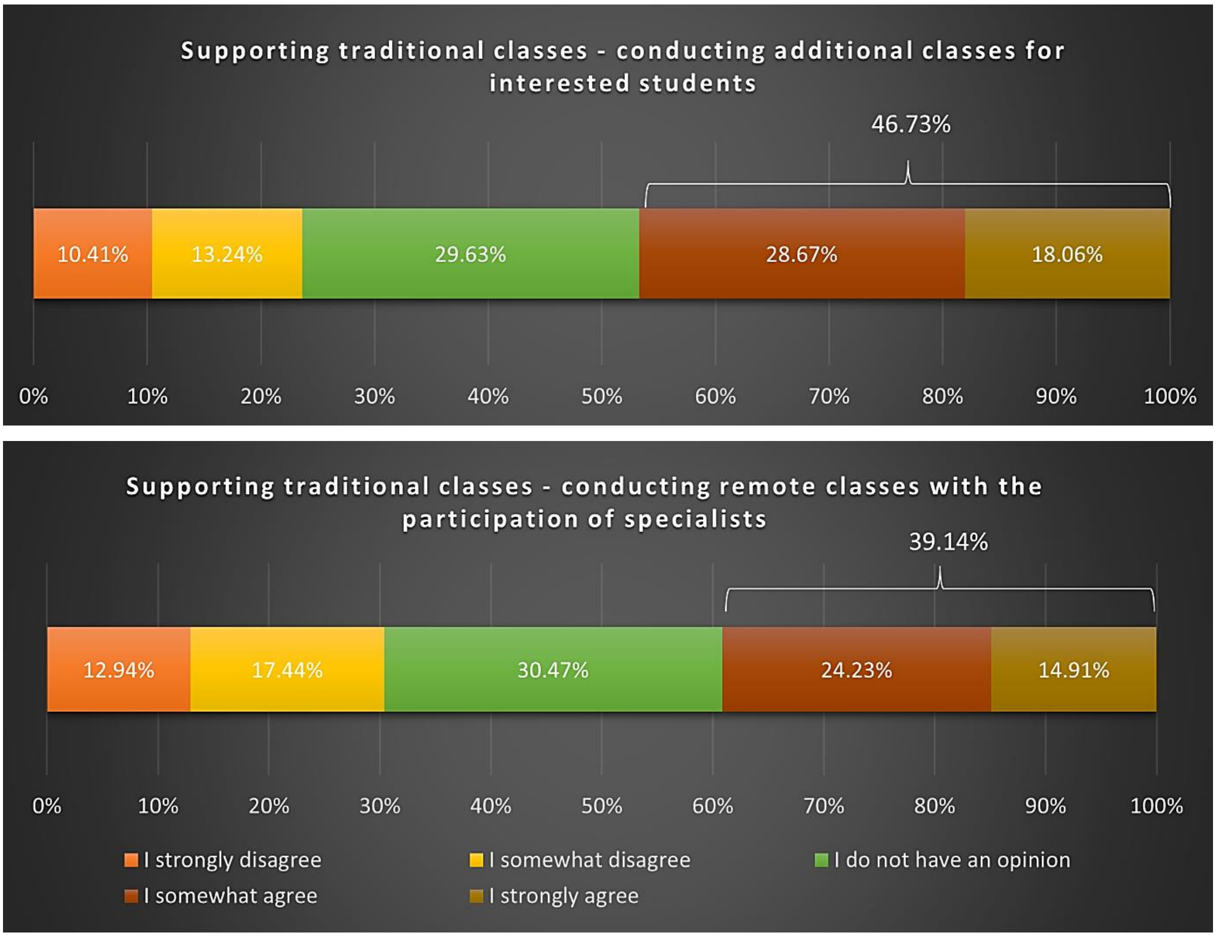
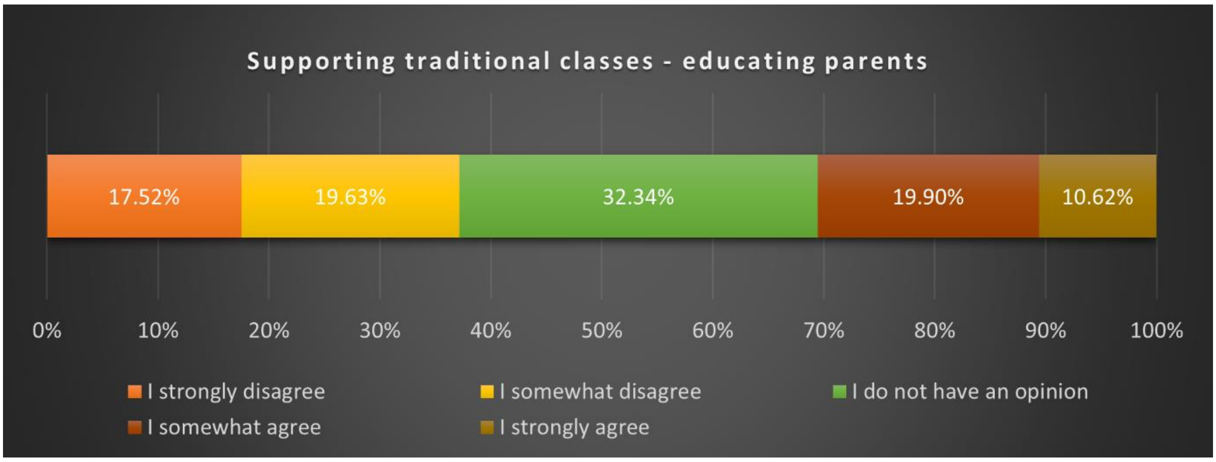


Figure 3. Possibilities of using distance teaching in conducting additional classes and classes involving specialists.

Source: own work based on conducted research.

According to 50% of teachers, distance teaching can support individual instruction and about 30% of teachers see the possibility for pedagogues to participate in meetings with parents (Figure 4).



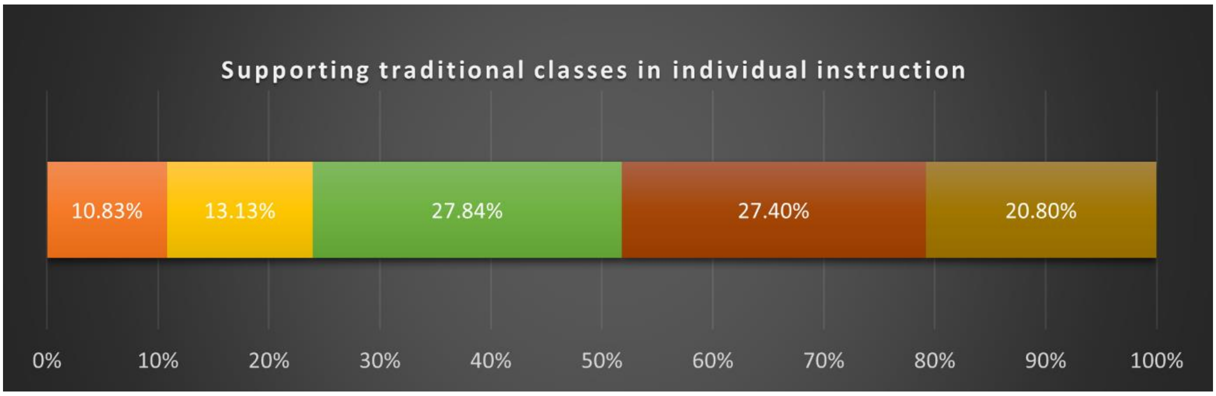


Figure 4. Possibilities of using distance teaching in individual instruction and educating parents.

Source: own work based on conducted research.

The use of distance teaching for various forms of education was rated with an average score of 3.04. Above-average scores were given to: individual instruction (3.34), additional classes (3.31) and involvement of specialists (3.11) (Figure 5).

A detailed analysis of the problem shows that about 25% of the teachers exclude the possibility of using distance teaching in the future, while more than 50% see it as a possibility. Considering the analysis of the problem in the context of different categories such as age of the teachers, type of school or location, the same trend in evaluation was observed.

The question of teachers' attempts to indicate the share of classes that could be taught remotely for different instructional forms deserves to be addressed. One in two teachers, regardless of the type of school, recognises the possibility of teaching up to 20% of classes remotely. Less than 10% of teachers fully recognise the possibility of replacing traditional classes with remote classes. Of the surveyed population, 15.34% rated the possibility of giving individual instruction at 81 to 100%. One in ten teachers (10.34%) believed that additional classes could be conducted in the same setting. Focusing on the indication of the lack of possibilities for distance teaching, it is worth noting that 28.84% of the teachers referred to lesson teaching, 27.23% of the teachers – to compensatory classes, 16.39% to additional classes, 13.56% to individual support and 22.91% to preparation for external examinations (Figure 6).

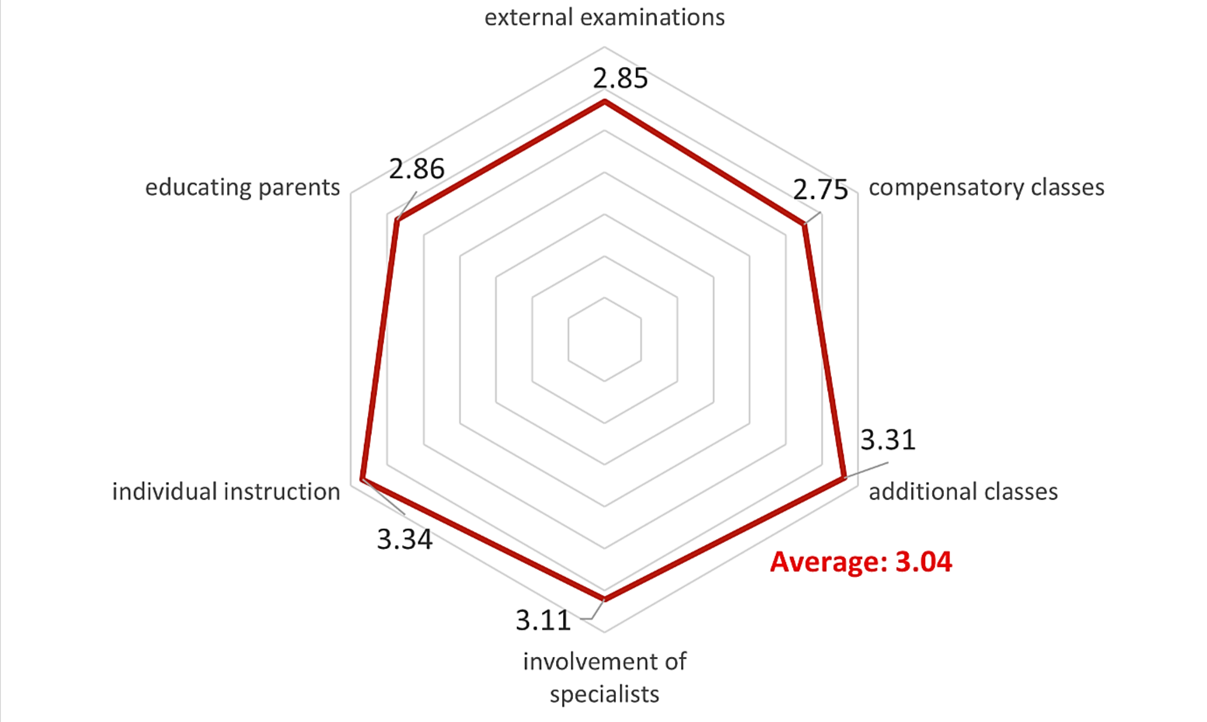


Figure 5. Overall evaluation of the possibilities of using distance teaching according to teachers.
Source: own work based on conducted research.

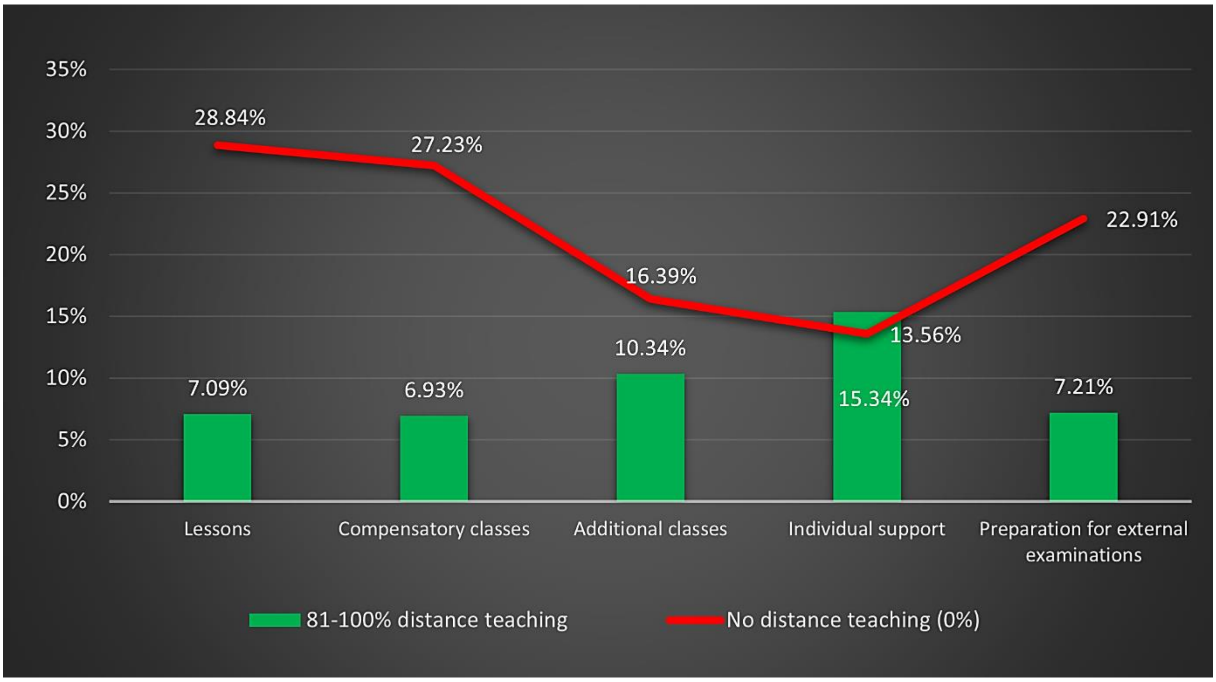


Figure 6. Overall evaluation of the possibilities of using distance teaching according to teachers.
Source: own work based on conducted research.

The study also sought to provide answers on how remote classes were conducted and which methods and forms of instructional work were preferred by teachers during the period under study. The results of the study show that 65.05% prefer live classes. More than 53% of teachers point to the use of a multimedia presentation and more than 35% to playback of classes in video format (Figure 7).

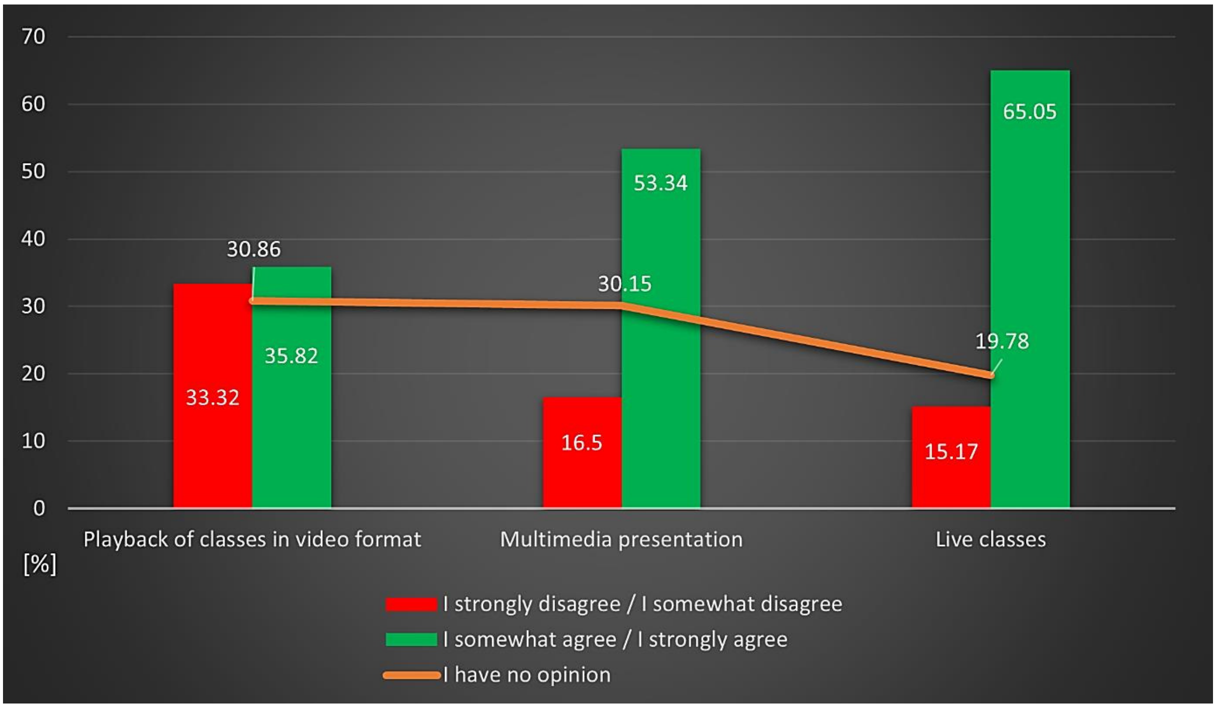


Figure 7. Selected and preferred methods of instructional work used in distance teaching.

Source: own work based on conducted research.

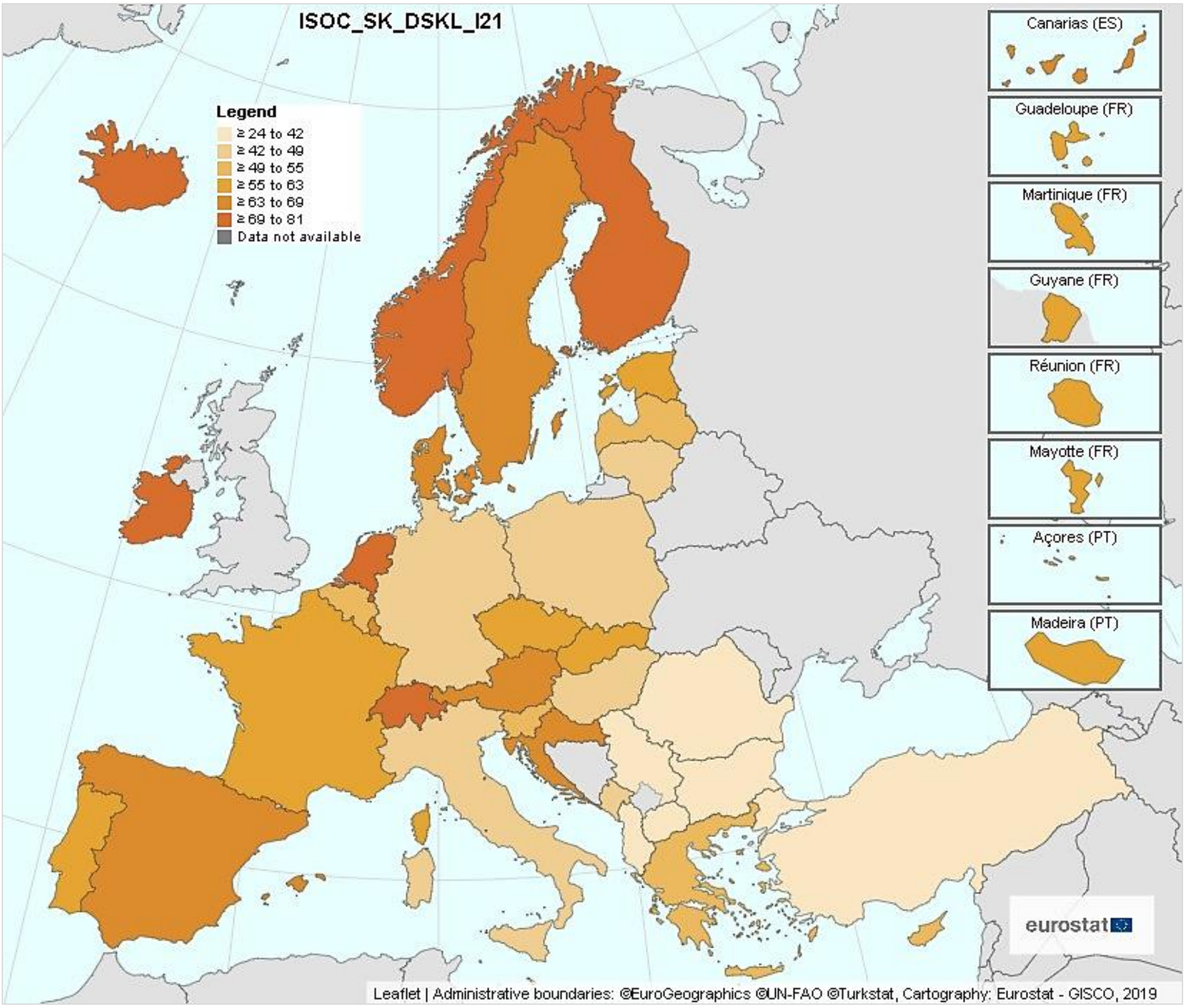
All teachers, regardless of the type of school, overwhelmingly prefer live classes (60-70%). Distance learning is a didactic challenge, so it is more difficult for teachers to evaluate students or organise teamwork. Elements of the educational process conditions such as efficiency of knowledge acquisition, learning independence and student concentration were rated negatively by the respondents.

5. Summary

In the current conditions, it is necessary to focus efforts on development of remote education in order to practise distance learning under optimal conditions but we must not forget that the level of economic development varies from country to country, from area to area, and the development of distance education may face a number of constraints (personal, pedagogical, technical, financial and organisational) (Bashitialshaaer, Alhendawi, Lassoued, 2021).

Nowadays, digital education action plans and distance teaching development programmes have been developed in many countries around the world to allow experimentation with the manner in which information is presented and interaction options. For example, at EU level, The Digital Education Action Plan (DEAP) 2021-2027 has been developed, offering a strategic vision for high quality, inclusive and accessible European digital education. DEAP priorities are promoting the development of a high-performance digital education ecosystem and improving digital skills and competences for digital transformation (Digital Education Action Plan (2021-2027), 2020).

According to information provided by Eurostat, in 2021 54% of EU citizens aged 16 to 74 possessed basic digital skills. The EU countries recording the highest percentage of persons with basic digital skills are the Netherlands and Finland (79% each) and Ireland (70%), with Romania (28%), Bulgaria (31%) and Poland (43%) at the other end of the ranking (Eurostat. Individuals' level of digital skills, 2021) (Figure 8).



Note: Overall digital skills refer to five areas: information and data literacy skills, communication and collaboration skills, digital content creation skills, safety skills and problem-solving skills. To have at least basic overall digital skills, people must know how to do at least one activity related to each area.

Figure 8. People with basic or above basic overall digital skills in 2021 (% of people aged 16-74).

Source: Eurostat. Individuals' level of digital skills (from 2021 onwards), 28 September 2023.

Due to the pandemic and the measures adopted to continue instructional activities, many young people and teachers took online courses, which forced them to use and even improve their digital skills. Thus, in 2021, according to Eurostat, in the EU 71% of young people aged 16 to 24 had basic or greater digital skills, which is 17% higher than among those aged 16 to 74 (54%) (How many citizens had basic digital skills in 2021?, 2022).

Among EU Member States in 2021, Finland and Malta had the highest proportions of 16 to 24-year-olds with basic or greater general digital skills (93%), followed by Croatia and Greece (88%), and Portugal (86%). The lowest percentages were recorded in Romania (47%) and Bulgaria (51%) (How many citizens had basic digital skills in 2021?, 2022).

There are differences at EU level in terms of possession of digital skills, analysed by gender, place of residence, level of education, living in a household with or without children. The gap between men and women is small, with 56% of men and 52% of women in the EU having digital skills. The percentage of those living in cities and having digital skills is 61%, those living in cities and suburbs – 52% and those living in rural areas – 46%. Significant differences are noted in relation to education level, with 79% of those with high-level formal education being digitally competent, those with moderate-level formal education at 58% and those with no or low-level formal education at 32%. Those living in a household with children and having digital skills achieved a share of 62%, while those living in a household without children achieved a share of 51%.

Digital skills indicators are some of the key performance indicators of Digital Decade, established by the EU's vision of digital transformation. By 2030, the Digital Compass has set a goal – 80% of EU citizens aged 16 to 74 to have basic digital skills.

Remote education can be a way to move towards digitalisation, and digitisation of education, and therefore development of the education system and the digital skills of graduates, in order to meet current labour market requirements.

Based on this study, it can be concluded that more than 50% of teachers recognise the importance of the potential of distance teaching in the education of students. Less than 10% of teachers fully recognise the possibility of replacing traditional classes with remote classes. However, significantly, more than 50% of teachers see the possibility of teaching 20% of classes remotely. Among the methods and forms of instructional work in remote form, multimedia presentations were preferred by more than 50% of the teachers, and 33% pointed to the playback of classes in video format. All teachers, regardless of the type of school, overwhelmingly preferred conducting live classes (60-70%). In the opinion of about 50% of teachers, the greatest prospects for using distance teaching in the current instructional process concern both support for additional classes and individual instruction. The participation of specialists in remote classes is appreciated by about 40% of teachers, and their participation in meetings between pedagogues and parents – by nearly 30%. The survey showed that in each of the surveyed aspects, about 30% of teachers had no opinion, which may be due to a lack of knowledge about the possibilities of using remote teaching. In the context of the conducted research, it may be considered justified to study the effectiveness of remote education and to try to develop a system for evaluating the quality of remote education in schools.

The pandemic situation may have an impact on the evaluation of distance teaching and therefore may be a determining factor. The study showed that it is not possible to clearly assess whether distance teaching is a good or bad alternative to standard classes. Among teachers, there is a predominance of those who positively evaluate distance teaching as an alternative to traditional classes. As many research findings indicate, distance teaching is a didactic challenge, as it is more difficult for teachers to both evaluate students and organise teamwork. Important elements of the conditions of the remote education process, such as the efficiency of knowledge acquisition, learning independence and student concentration are evaluated negatively in the opinion of teachers.

Considering the process of preparing national and regional education strategies, it is necessary to take into account simultaneous development of an appropriate programme for the development of educational policy, which in its implementation will ensure that systemic measures are taken, guaranteeing effectiveness of the educational process in schools of all types. It is certainly also necessary to give consideration to development of the most pessimistic scenarios, assuming that classes will be conducted only in this form. It is advisable to define procedures for the occurrence of emergency situations, where the process of distance teaching will be necessary. However, it is also advisable to implement scenarios in which distance teaching is part of and complementary to, and thus can enhance the quality of, traditional education.

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ELEMENTS OF CRISIS MANAGEMENT DURING THE COVID-19 PANDEMIC IN POLAND

Małgorzata MICHALCEWICZ-KANIOWSKA[1], Monika ODLANICKA-POCZOBUTT[2], Aleksandra SZYSZKA-SCHUPPIK[3], Anna KOMARNICKA[4], Anna MURAWSKA[5*]

[1] Bydgoszcz University of Science and Technology, Department of Economics and Marketing, Faculty of Management; malgorzata.michalcewicz-kaniowska@pbs.edu.pl, ORCID: 0000-0003-2154-5838
[2] Silesian University of Technology, Faculty of Organization and Management; monika.odlanicka-poczobutt@polsl.pl, ORCID: 0000-0001-7834-1188
[3] Silesian University of Technology, Faculty of Organization and Management; aleksandra.szyszka-schuppik@polsl.pl, ORCID: 0000-0002-6535-4059
[4] Bydgoszcz University of Science and Technology, Faculty of Management, Department of Innovative Organization Management; anna.komarnicka@pbs.edu.pl, ORCID: 0000-0003-1705-1376
[5] Bydgoszcz University of Science and Technology, Department of Economics and Marketing, Faculty of Management; anna.murawska@pbs.edu.pl, ORCID: 0000-0002-3944-7657
* Correspondence author

Purpose: Contemporary threats are characterized by unpredictability, vehemence and interpermeation, and affect almost all areas of society functioning. The emergence of the Covid-19 pandemic, caused by the SARS-CoV-2a virus, resulted in crisis threats associated with possible loss of life, health or material possessions, destabilization of economic development, or loss of conditions for free existence. The lack of clear guidelines on how to deal with such a situation has revealed the inadequacies of the crisis management systems, which are - by design - aimed at efficient prevention of such situations as well as safety assurance and development of conditions for further advancement, i.e., containment of threat escalation, to the extent possible. The historical review of various events, analysis of the examined organizations' practices as well as overview of the legislation have led the Authors to address the issue of personal data protection throughout the ongoing pandemic. The article is thereby aimed at cataloging the risks and development of guidelines for operation during the COVID-19 pandemic, with respect to personal data protection.
Design/methodology/approach: For the purpose of the article, multiple case studies were conducted in various organizations, where one of the article co-authors acted as a professional Data Protection Officer. The research was carried out in 20 entities of different business profiles.
Findings: The main problems identified involved: body temperature measurement consents, virus test result or immunization data sharing, introduction of COVID-19 questionnaires and visiting regulations, employers' epidemiological proceedings conduct, and remote work models.
Practical implications: The study resulted in the formulation of recommendations, regarding the steps to be taken by organizations in order to establish a catalog of risks via the following: identification of the actual risks, conduction of a risk assessment, development of a catalog of appropriate undertakings and procedures, preparation and maintenance of forces and resources,

as well as definition of the principles for interaction of the actors involved. Further, a recommendation for implementation of a schedule of operation, based on the crisis management guidelines, has been formulated. Consequently, the basis for effective organizational operation involves ongoing verification of the procedures against the Chief Sanitary Inspector's and the Ministry of Health's guidelines, as well as observation and ongoing update of the trends in the crisis management changes.
Originality/value: By identifying a catalogue of risks and formulating guidelines for action during a COVID-19 pandemic in relation to data protection, this article can contribute to the discussion on appropriate practices and strategies in this area. Simultaneously, it provides a valuable perspective on the adaptation of organizations to the dynamic changes in crisis management in the context of the COVID-19 pandemic.
Keywords: personal data protection, crisis management, Data Protection Officer, Covid-19, pandemic.
Category of the paper: Case study.

1. Introduction

The continuous progress in various fields improves the overall living conditions, but it can also result in certain undesirable situations, such as industrial failures, construction disasters, traffic accidents, public order disturbances or even terrorist acts. In addition to natural hazards, such situations can constitute a potential source of crises, which adversely affect the level of personal, property or environmental security, as well as cause significant limitations in the operation of relevant public administration bodies, as a result of inadequate forces and resources (Kancelaria Sejmu, 2007, pp. 1-20). Such effects were also brought about by the Covid-19 pandemic, which emerged unexpectedly in 2020, affecting the entire globe. Infectious disease epidemics continue to plague societies (Baker et al., 2020) and are the leading cause of death worldwide, accounting for from a quarter to a third of all mortality. The numerous outbreaks of infectious diseases in the 21st century, including the Creutzfeldt-Jakob disease, hand-foot-and-mouth disease, severe acute respiratory syndrome (SARS), avian influenza (H5N1), or swine flu (H1N1), inter alia, have become the subject of numerous scientific studies (Keogh-Brown et al., 2010; Keogh-Brown, Smith, 2008) and have, understandably, heightened the fears of a more serious pandemic.

The emergence of the Covid-19 pandemic, caused by the SARS-CoV-2 virus which affected almost every country in the world, transpired as an unexpected crisis. The rapid increase in positive diagnoses, followed by an increase in secondary outbreaks in many countries around the world, led the World Health Organization (WHO) to declare a state of global pandemic on March 11, 2020 (Ferraro et al., 2020; Poláková, Klímová, 2021; Coronavirus disease (COVID-19): Mass gatherings, 2023). The unprecedented global travel bans, as well as implementation of 'stay-at-home' restrictions and assembly bans, affected nearly 90% of the world's population (Czech et al., 2020).

The contemporary threats are characterized by unpredictability, vehemence, multidimensionality, volatility and interpermeation, and affect almost all areas of society functioning. They can, in consequence, result in the loss of life, health or material possessions, destabilization of economic development, or loss of conditions for free existence and development (Falecki, 2016). They can be also difficult to determine in scope, intensity and duration of occurrence, as well as result in unpredictable repercussions. The task of countering these threats and limiting the potential losses requires the use of the interdisciplinary forces and resources possessed by state, which, inter alia, constitutes the reason for the emergence and dynamic development of crisis management.

Many publications have also been devoted to the impact of the coronavirus on human health and psyche or entrepreneurship (Litvinova, 2022), while less attention has been devoted to the inadequacies of administrative operations and the lack of proper crisis management guidelines.

Undoubtedly, the reason for the adverse impact on those affected by the pandemic was the restrictions imposed over subsequent months, including the restrictions on movement, the disruptions to employment, education and health care, as well as the continued isolation and distancing (Oswald et al., 2021).

Studies are now emerging, indicating that the effect of the pandemic may entail exacerbation of post-traumatic stress disorder (PTSD) symptoms, experienced by persons who have not been diagnosed with mental illnesses. The results of these studies, however, are not consistent with the hypothesis that research participants who have been diagnosed with depression are more susceptible to pandemic-related stress (Golińska et al., 2021). The research on the effects of the pandemic will continue to be conducted over the next few years, and perhaps then we will obtain answers to the questions regarding the impact of the pandemic on people.

The magnitude and nature of crises, as well as the number of the actors involved in ensuring the safety of citizens and the functioning of state structures, yields the need to organize, coordinate and cooperate within those structures (Majchrzak, 2018). Crisis management is aimed at preventing such emergency situations and assurance of national security, through pre-planned actions, by creating conditions for further development, i.e., containment of the threat escalation, to the extent possible.

Crisis management in Poland is based on the activities of public administration bodies, consisting in emergency situation prevention, preparation to take control through planned actions, response in the event of crises, and restoration of infrastructure or its original character (Kancelaria Sejmu, 2007, pp. 1-20). Important elements determining effective crisis response include the scale of the crisis and the course of its development as well as its characteristics (Wróblewski, 2007).

The emergence of the Covid-19 pandemic has enabled verification of whether the crisis management system in place is proper. The crisis management in force during the pandemic in virtually all countries around the world, which was based on the introduction of various types of constraints, from school closures, through office closures, cancellation of sporting and cultural events or restrictions on travel, to the introduction of curfews, has not been backed by the results of ongoing studies (Yanovskiy, Socol, 2022).

The pandemic has shown how important the processing of personal data, or rather, the proper protection of this type of data during a pandemic is. According to the Regulation of the European Parliament and of the Council (EU) 2016/679 of 27 April 2016 on the protection of individuals with regard to the processing of personal data and on the free movement of such data, repealing Directive 95/46/EC (General Data Protection Regulation, hereinafter GDPR), the term ‘personal data’ refers any information about an identified or identifiable natural person (‘data subject’). The same directive defines an identifiable natural person as one who can be identified directly or indirectly, in particular by means of such an identifier as a name, an identification number, location data, an online identifier, or by one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of the natural person (Parlament Europejski i Rada Unii Europejskiej, 2016). Such data therefore can be a person’s first name, last name, identification number, location data, Internet identifier, as well as National Identification Number or bank account number (Dörre-Kolasa, 2020). This type of data also includes health information, i.e., information on whether a given person is infected with Sars-Cov-2 or has been vaccinated.

The GDPR imposes a number of obligations on Controllers - that is, natural or legal persons, public bodies, individuals or other entities that alone or jointly determine the purposes and means of personal data processing (Parlament Europejski i Rada Unii Europejskiej, 2016) Chapter IV of the GDPR is devoted to data security, i.e., Article 32(1). This chapter imposes an obligation on Controllers to implement technical and organizational measures to ensure an adequate degree of security, in relation to the identified risk of infringement of the rights and freedoms of natural persons (Dziennik urzędowy, 2020, pp. 1-17).

In order to understand the principles of personal data protection, the sources of this data need to be known. This is especially true for those who are required to apply these principles in practice. The times when an individual's privacy was defined and secured by the extra-legal, customary, cultural or religious norms shaping human conduct will not return. The changing environment, shaped by the development of information technology in particular, leads to the fact that the only way to ensure the protection of personal rights is through legal regulation of this area (Kopff, 1972). The issue of information security is not a new topic, nevertheless, attempts to systemically standardize the practices in this domain have only been undertaken since the early 1990s. Comprehensive attentiveness to information security is a new subject in business practice, but the scale and scope of the problems arising from failure to take, inter alia, the risks arising from the loss of information assets into account, cannot go unnoticed by executives (Odlanicka-Poczobutt, Szyszka-Schuppik, 2018).

Due to the existing research gap, the Authors undertook analysis of the issue of information security and, more specifically, the protection of personal data during the Covid-19 pandemic in Poland, by which they also indicated what problems entrepreneurs have faced during the pandemic.

The article thereby has been intended to establish a catalog of risks and develop guidelines, with respect to personal data protection, for operation during the COVID-19 pandemic.

An attempt was also made to develop priority recommendations.

2. Materials and methods

The basis of the research methodology entailed a historical review of various related events, analysis of the practices used, and overview of the legislation in force. The data protection system inadequacies identified during the research and described in this article such as the unclear legal basis for such system operation, the deficiencies in the organization of interaction and coordination of activities, the drawbacks in the adopted procedures and rules of operation, but above all the lack of knowledge on how to proceed and the lack of awareness of the consequences - can inspire improvement of the Data Protection Management System (DPMS), as part of crisis management.

Employers have faced a crisis no one had expected. Practically overnight, some organizations were shut down, while others faced problems of proper protection of their employees against contagion.

Literature studies indicate that a crisis management system should substantially encompass:

- identification of crisis threats, by establishment of a catalog of possible threats, conduction of a risk assessment, determination of the negative consequences for people, property, the environment and critical infrastructure;
- development of a catalog of structural-organizational and functional undertakings aimed at preparing the state and local government administration, including the state resources, for effective response to the resulting threats;
- development of procedures for dealing with the emergent crisis situation;
- preparation and maintenance of resources (forces and means), for use in crisis situations;
- establishment of the principles of interaction for the entities involved in crisis response.

The process of crisis management should involve the following stages (Michałowska, Stankiewicz, Danielak, 2015):

1. Goal formalization - precise definition of the intended objective. During a pandemic, the goal is to ensure the safety of employees and the continuity of company operations.
2. Diagnostic stage - identification of key problems and risks. At the beginning of the pandemic, this mainly pertained to the problems with the supply of personal protective

equipment and disinfectant fluids, as well as the challenges associated with reorganization of work, such as implementation and coordination of remote work, the need to develop new work, cleaning or disinfection schedules.
3. Decision stage - this includes assessment of the alternatives selected and selection of an optimal solution. At this stage in the pandemic, a fair share of employers decided to introduce employee rotation or remote work, faced the need to provide disinfection of premises, and/or reduced working hours so that employees at a given shift did not come into contact with other shifts, making additional changes to increase the workstation spacing.
4. Design stage - in most companies, this stage was limited to mere establishment of a schedule for the upcoming few days. It was not until a few weeks after the introduction of the restrictions that employers began to realize the situation was not temporary and the coronavirus was here to stay for longer.
5. Implementation stage – carried out on an ongoing basis, as new guidelines from the Ministry of Health and the Chief Sanitary Inspector emerge.
6. Control and correction stage - as of today, it is hardly fair to talk about control and conclusion drawing. The scientific knowledge on the coronavirus is still insufficient; the World Health Organization (WHO) has been issuing new guidelines every so often. Inspections by the State Labor Inspectorate are more regular, however, including verification of 'occupational risk assessment' topicality (whether the risk of coronavirus has been taken into account) as well as verification of adherence to the rules of social distancing, mouth covering or disinfectant availability for employees.

Efficient effectiveness of a crisis management system depends on a number of factors, the main ones among which include: appropriate legal regulations, effective structural solutions and organizational linkages, adequate competence powers of key system functionaries, relevant planning that enables development of crisis management plans, taking the forces and means available for use in a crisis situation into account, as well as the procedures for action, the means of resolving hypothetical crisis situations, the rules for activity coordination and cooperation, or proper monitoring, to ensure timely provision of complete and reliable information about threats. Systematical training of the system managers and coordination of the system elements as well as optimal decision making in an accurate and timely manner are important determinants as well. A crisis management system cannot be established once and for all, as it requires systematic improvement, resultant from research and analyses, due to the aforementioned unpredictability and variability of potential threats, the technological development and the changes in legal acts.

Construction of a crisis management system should incorporate phases of prevention, preparation, response and reconstruction, and encompass such problem areas as: the challenges and threats, legal solutions, organizational structures, planning, the decision-making process, organization of interaction, coordination of activities, organization and conduct of training, acquisition and exchange of experience, the consequences of negligence and omission, people's behavior in crisis situations, possible ways of limiting the effects of crises, or the scope of functionaries' competence and responsibility.

The President of the Data Protection Office (DPO) has announced that the processing of health data, in connection with the measures to prevent the spread of the COVID-19 virus, is regulated by specific legislation, inter alia, by the so-called 'special purpose Act'. The regulations indicated do not conflict with the principles of data processing and do not violate the GDPR. What is more, they correspond with the regulation, which also provides for situations related to the protection of health and prevention of the spread of infectious diseases, i.e., Article 9(2)(d) and Article 6(1)(d). Nevertheless, various situations have been arising in other countries, which result in penalties for violations in this regard. The Danish Data Protection Agency submitted a report to the police regarding the magistrates of Gladsaxe and Hørsholm, following a finding that the magistrates failed to ensure an adequate, in accordance with the GDPR, level of data security. Fines of 100 000 Danish kroner (about 13 380 euros) and 50 000 Danish kroner (about 6700 euros) were proposed to be imposed on the magistrates of Gladsaxe and Hørsholm, respectively (Urząd Ochrony Danych Osobowych, 2020a).

For the purpose of the article, multiple case studies were conducted in various organizations, where one of the co-authors acted as a professional Data Protection Officer. The research involved 20 organizations of different business profiles. The main problems identified entailed body temperature measurement consents, virus test result or immunization data sharing, introduction of COVID-19 questionnaires and visiting regulations, social distancing and remote work.

3. Analysis of the crisis situation in Poland with regard to data protection

3.1. Pandemic crisis in Poland - genesis

The news of a mysterious disease spreading across China emerged in early 2020. The first cases of diagnosed Covid-19, caused by the SARS-CoV-2 virus, emerged in province of Wuhan. Television reports informed about increasing numbers of deaths, the closing down of cities and the introduction of additional protective measures – face masks were ubiquitous, just as the use of the apps monitoring the citizens' movements or their disease symptoms. Some countries attempted short-term forecasting of the COVID-19 pandemic trend (e.g., South Korea) to gain insights on effective response strategies, (Ko, Yoon, 2021) while other attempted effective research on containing the spread of the pandemic (Farhadi, Lahooti, 2021).

In January 2020, the first case of Covid-19 was confirmed in Germany (Majewska, 2020). At the same time in China, the official death toll was already at 106, with 4000 people infected. There were still no confirmed cases of coronavirus in Poland at the time. The Chief Sanitary Inspector Jaroslaw Pinkas continued his assurances that Poland was prepared for the arrival of the virus and there was no reason to panic. New Chief Sanitary Inspectorate recommendations were announced - enhanced hand hygiene, rest, outdoor activity, healthy diet and reduction of stress (Informacyjna Agencja Radiowa, 2020).

As the time passed, new Government announcements emerged regarding, inter alia, restrictions on travel to China, Italy, South Korea and other countries affected by the SARS-CoV-2 outbreak. Poland's borders, however, remained open, and no restrictions were imposed on the movement of citizens. The Chief Sanitary Inspectorate did, however, advise the citizens returning from affected areas to be vigilant about self-observation and frequent hand washing. The Inspectorate published infographics with instructions on proper handwashing procedure (Czub-Kiełczewska, 2020). Poland was slowly preparing for the arrival of the epidemic; e.g., on March 5, an Official Journal of the Minister of Health was published, containing a list of medicinal products, foods for special medical purposes and medical products at risk of unavailability in Poland (Dziennik urzędowy, 2020, pp. 1-17). The list included a number of drugs - painkillers and antipyretics. Despite the Government's appeals - Poles were buying up the medicines in the pharmacies, in fear of limited availability. The panic was also visible in stores - groceries were disappearing from store shelves (rice and pasta were probably the most popular products), as well as canned and tinned goods or toilet paper.

Disturbing news were coming from Italy, which had recorded its first case of SARS-CoV-2 infection on January 31, 2020. On February 24, based on a decision by Prime Minister Giuseppe Conte, a lockdown of 11 municipalities in the Lombardy and Veneto regions was imposed. As of March 8, Italy introduced additional prevention and control regulations, including a ban on mass events and restrictions on the operation of restaurants, fitness clubs and other places where Italians gathered in large crowds, subsequently declaring a nationwide quarantine (Mann, 2020). On the same day, the death toll in Italy stood at 827, while the number of infected people was 12462.

Poland already had certain procedures in place at the time, but only for passengers arriving from the People's Republic of China (e.g., location forms or passenger cards and temperature measurement). The forms the returning citizens were obliged to fill out contained such data as, inter alia, the first name, last name and the National Identification Number. Alas, from the perspective of personal data protection, these forms contained many irregularities. Essentially, it was not clear who was to act as the Controller of the data contained therein, or how long, and for what purpose, was the data going to be processed. The Controller did not fulfil the information obligation resulting from Article 13 of the GDPR.

The first testing for the virus among the Polish population began on January 31, 2020. ‘Patient zero’ was confirmed on March 4, 2020 - the man, who had returned from Westphalia, Germany, (Bucea-Manea-Ţoniş, Andronie, Iatagan, 2018) was admitted into a hospital in Zielona Góra. Along with the first COVID-19 patient, the subject of privacy and personal data processing in light of the GDPR surfaced.

During a broadcasted press conference, the State District Sanitary Inspector released information about ‘patient zero’, which it was not authorized to disclose, based on, inter alia, the patient's family relations (Polska Agencja Prasowa, 2020). The press conference recording initially brought smiles to the faces of the Data Protection Officers, followed by consternation - at a time when all Poles were already familiar with the GDPR regulations, such announcements should not be taking place. The most disappointing aspect of the entire incident, however, entailed the fact that the author of the whole commotion herself was not too aware of the committed disclosure of the patient’s private information which should have never seen the light of day.

Poland, just like other countries around the world, found itself in a crisis, which may have been foreseeable (it was predicted by Bill Gates) (Dziennik Zachodni, 2020), but it was such an absurd vision that no one took it seriously. The situation in which the whole world, including Poland, found itself, resulted in the need for implementation of crisis management during a pandemic.

The beginning of March saw the introduction of further restrictions in Poland. Perhaps the biggest surprise was the pace of the introduction thereof – as early as March 11, the Prime Minister of the Republic of Poland Mateusz Morawiecki announced educational institution closure for a period of two weeks. On March 12 and 13, parents were still able to use the childcare provided by schools, kindergartens and nurseries, but on March 15, complete closure of those institutions until March 25 was announced. Shopping mall closure and border closure were announced as well, followed by closure of hairdressers, massage parlors, beauty salons and other services. The Government introduced senior citizen's hours (between 10:00 a.m. and 12:00 p.m. stores were open for people over 65 only) and restrictions on the number of persons in stores, as well as ordered hand disinfection or use of disposable gloves. These orders, along with the obligation to wear masks introduced on April 16, 2020, remained in force even after some of the restrictions were lifted, as part of the restrictions imposed unfortunately had to be endured by citizens for a few subsequent months.

The subject of the GDPR was put on the back burner for a while. New Covid-19 death statistics in Europe were announced daily, while Poland was preparing for a war with the ‘invisible enemy’. The forces of the Polish state were directed at ensuring adequate amounts of protective equipment for medical personnel and ensuring an adequate number of hospital beds and respirators. Long-forgotten words - quarantine or isolation – reappeared. The number of infected people was rising systematically, and the fatalities count was increasing.

3.2. Absence or inadequacy of official guidelines regarding information on morbidity

In the early days of the pandemic, employers were not able to employ any official guidelines. In the absence of the Government's position on extending the validity of existing medical certificates and the limited operation of Occupational Medicine Clinics which suspended medical examinations for employees, they first needed to face the struggle of dealing with the problems concerning employee medical examination (initial and periodic examinations as well as check-ups). Similar problems employers had to face regarding health and safety training - it was only after a few weeks that the Government changed the law, extending the validity of health and safety examinations and trainings until post pandemic (selected tests and trainings remain valid for a period of 60 days from the date of an official announcement of the end of the epidemic).

Employers were considering introduction of COVID surveys for employees and visitors. In the first days of March 2020, the questionnaires were aimed at obtaining information regarding travel abroad; the Controllers were particularly interested in whether the surveyees' had recently visited China or Italy. Such questionnaires also included questions about the surveyees' health and possible symptoms of infection, i.e., cough, shortness of breath or elevated temperature. All the questionnaire and statement forms included personal data, i.e., in addition to the person's name, the respondents were asked to provide a contact telephone number. The phone number requirement was justified by the potential need to inform a given person of a possible case of a SARS-CoV-2 virus carrier among the Controller's employees, in which case the Sanitary Inspectorate would need to track down the persons who were in contact with the infected employee.

Regrettably, employers did not always consult the content of the questionnaires introduced with Data Protection Officers, who very often only found out about such data processing activity, when they visited the premises of a given organization and were then asked by a security officer to fill out such a questionnaire. The questionnaires did not include the information obligation directly required by Article 13 of the GDPR; the questionnaire retention (storage) period was not specified either - there were no procedures for handling and storing such questionnaires after they had been filled out. Currently, many Controllers are questioning the validity of introducing such questionnaires at all, since, firstly, the pandemic had already been declared and acquisition of information regarding the country of residence is pointless, and secondly, it is unlikely that a person who was actually sick or showed Covid-19 symptoms would provide accurate, complete and true information. Keep in mind, however, that late March and early April 2020 was a period of more questions than answers, when new, terrifying new numbers of virus victims worldwide were announced on the news daily. Under these specific conditions, somewhat in a panic, Controllers were trying to implement solutions which they thought would increase the health security of their employees.

With the emergence of the virus, on the 30th of January 2020, the Chief Sanitary Inspectorate published guidelines for airports, which clearly stated what body temperature (i.e., 38°C) indicates a possible respiratory infection (Grupa Robocza…, 2018). Employers, fearing for the lives and health of their employees, were thus considering introduction of temperature measurements for visitor and/or employees. Visitors were allowed in extremis only – the cult of remote work reigned around, in accordance with the Government's 'stay-at-home' recommendation.

More and more employers introduced temperature measurements. The issue of temperature measurement, however, was just one of the challenges employers had to face in the age of coronavirus. Many introduced temperature measurements without considering its compliance with the GDPR, and without a plan for a situation when an employee/visitor actually had elevated temperature. GDPR experts were deliberating on whether body temperature was personal data. Claims emerged that it could constitute personal health data, within the meaning of Article 4 of the GDPR, i.e., the personal data concerning an individual's physical or mental health, including the provision of healthcare services, which reveals information about the individual's health status (General Data Protection Regulation (GDPR), 2020). In the early days of the outbreak, however, no DPO guidance indicating the solutions to be adopted in order to make the data processing compliant with the GDPR was provided. The laconic information posted on the DPO website did not provide answers to the questions troubling the Controllers and Data Protection Officers (Urząd Ochrony Danych Osobowych, 2020b). According to the law in force, Controllers, who are obliged to comply with the information obligation, must clearly indicate the legal basis for data processing. If a Controller decides to regard information on body temperature as ordinary data, the legal basis should be sought in Article 6(1) of the GDPR. Some Controllers resorted to indicating Article 6(1)(c) of the GDPR in conjunction with Articles 207 §1 and 304 of the Polish Labor Code as the legal basis justifying their right to process temperature measurement data. The first of these Articles specifies that employers are responsible for the health and safety at work establishments and thus are obliged to protect the life and health of their employees, by ensuring safe and hygienic working conditions, in particular through organization of work in a manner ensuring such working conditions and enabling response to occupational safety and health needs (Article 207 §2 of the Polish Labor Code). Article 304, on the other hand, refers to the employer's obligation to contractors and other persons employed under civil law contracts: "The employer is obliged to ensure the conditions of health and safety at work as referred to in Article 207 §2 to individuals performing work on a basis other than an employment relationship in a work establishment or in a place designated by the employer, as well as to anyone conducting business activity on their own account in the work establishment or in a place designated by the employer." The legal basis quoted does not apply to visitors. Here, the legal basis to be used by Controllers is Article 6(1)(f) - i.e., the Controller's legitimate interest, which is to ensure the safety of employees and others on premises. One very important element, which most

Controllers have forgotten about, needs to be addressed in this regard though – each Controller who invokes the provisions of Article 6(1)(f), must conduct the so-called balancing test, prior to the data processing. The test involves an analysis comparing the legitimate interests pursued by the Controller in connection with specific personal data processing activities, with the interests or fundamental rights and freedoms of the person whose data is being processed.

The above-indicated legal basis can be used by Controllers who claim that the data they are processing as not special category data within the meaning of the GDPR. The issue, however, was complicated by an announcement of the President of the DPO, published on the Office website, in which he stated that: "In the case of, for example, a body temperature measurement or collection of data on a person's health, followed by recording, transmission and collection thereof, such activity will be qualified as special category data processing" (Urząd Ochrony Danych Osobowych, 2020a) [translated from the original by MOP]. As the supervisory body recognized this type of information to be special category data, the Controllers had to resort to seeking the legal basis for personal data processing in Article 9 of the GDP in conjunction with Article 6 of the GDPR. First, the Controllers were deliberating on the issue of informed consent. According to Article 4 of the GDPR, such consent must be voluntary, specific, informed and unambiguous. In the case of employee personal data processing by an employer, the voluntariness of such consent is questionable, due to the imbalance of the employment relationship (Chief Sanitary Inspectorate, 2020). Moreover, as per the wording used in Article 221b of the Polish Labor Code, employers may process special category data based on the employee's consent, provided that the processing takes place on the initiative of the employee. The authors of a comprehensive study on enterprise operation in the era of the coronavirus, have indicated that data are processed on the basis of Article 207 of the Polish Labor Code, in accordance with Article 9(2)(b) of the GDPR (Koronawirus a prawo, 2020).

The DPO specified that Controllers may process personal data on the basis of Article 9(2)(i) - that is, special category data may be processed when "processing is necessary for reasons of public interest in the area of public health, such as protecting against serious cross-border threats to health or ensuring high standards of quality and safety of health care and of medicinal products or medical devices" (General Data Protection Regulation (GDPR), 2020), if its provided for by the law. This provision thus corresponds to the national regulations on combating the COVID-19 pandemic, as per Article 17 of the Act of March 2, 2020 on Special Solutions for Preventing, Counteracting and Combating COVID-19, Other Infectious Diseases and Emergencies Caused by Them (Journal of Laws, item 374, as amended) (Urząd Ochrony Danych Osobowych, 2020b).

The announcement published on the DPO website contained a very important statement: "In a situation where, for example a person's body temperature is measured, or data concerning his or her health is collected, and then this information is recorded, transmitted and collected, a special category of personal data will be processed" (Urząd Ochrony Danych Osobowych, 2020a). Analysis of this provision, as well as analysis of the wording in Article 2(1) of the

GDPR: “[t]his Regulation applies to the processing of personal data wholly or partly by automated means and to the processing other than by automated means of personal data which form part of a filing system or are intended to form part of a filing system” (General Data Protection Regulation (GDPR), 2020), allows a thesis that no personal data processing takes place, as long as the temperature measurement results are not recorded, in which case the GDPR does not apply. This is probably the most common solution, which the Authors of this article consider suitable.

An interpretation that the legal basis for the processing of temperature measurement data lies in Article 9(2)(b) in conjunction with Article 6(1)(b) - i.e., the processing is necessary for the fulfillment of the legal obligation incumbent on the Controllers, which results from the employment contract concluded with the employee, (Rodomaniacy, 2020) is common. Another, much different, interpretation points to the fact that this issue raises very many doubts and Controllers should receive support from the President of the DPO in this regard.

On April 23, 2020, Guidelines for the operation of industrial plants during the COVID-19 epidemic in Poland (Leśniak, 2020) were published on the Chief Sanitary Inspectorate’s website, and then on the websites of the Provincial Sanitary and Epidemiological Stations (Chief Sanitary Inspectorate, 2020), which explicitly, under priority recommendations, suggested: “Implementation of non-contact employee/visitor temperature measurement at work establishment entry. Temperature measurement shall be carried out outside the work establishment building, if possible, and the queuing employees must maintain a distance of at least 1.5 meters. If an elevated temperature (above 38 degrees C) or obvious signs of illness, such as persistent coughing, malaise, difficulty breathing, are detected, the person in question must not be allowed to enter the work establishment. In such a case, the Chief Sanitary Inspectorate’s recommendations must be followed. In the interim period, before the facility purchases thermometers, it is recommended that employees measure the temperature on their own." [translated from the original by MOP].

An Epidemiological Risk Assessment Questionnaire template - a form used to collect such data as name, information on quarantine or diagnosed Coronavirus infection, including information on detailed symptoms – was made available. Unfortunately, the author of the form failed to reflect on the protection of personal data. The main problem here was not the non-fulfillment of the information obligation itself, which the GDPR indicates explicitly in Article 13, but the fact that the form lacked guidelines ensuring respect for the privacy of those subjected to temperature measurement. This primarily pertained to cases of elevated temperature results. Such information was immediately shared and, sadly, ‘took on a life of its own’, which in turn could have caused harassment of that particular person. The problem seemed to be noticed only in mid-May 2020. The checklist published by the Central Institute for Labor Protection (CILP), i.e., Occupational Safety and Health during the COVID-19 epidemic, included a point posing an important question: Are there procedures in place to prevent exposure to stigmatization of persons who are/were COVID-19 positive

(Urząd Ochrony Danych Osobowych, 2020; Jaroszewska, Ołdak, 2022). Another problem arose in the context of occupational health and safety, namely the question of securing the people carrying out the temperature measurements, i.e., what personal protective equipment should be arranged for them? What should be the procedure for not allowing a person suspected of being infected to enter the premises? What should follow in terms of dealing with a suspected virus carrier? Should he/she be detained, and the appropriate services notified, or should he/she be sent home? It was not until the aforementioned CILP publication that the need for specific, employer-dedicated solutions was made clear. Employers needed to focus not only on the actual temperature measuring, but, above all, on ensuring the privacy of employees and others, as the phenomenon of social stigma, against not only those infected, but even those in quarantine, emerged (Derda, 2020).

Regrettably, the entry quickly disappeared from the Chief Sanitary Inspectorate's website. The Inspectorate mitigated this fact by pleading that the document published was only a draft version, which had seen the light of day due to human error (Chief Sanitary Inspectorate, 2020). Guidelines providing a basis for development of dedicated solutions for specific employers were still non-existent.

The issue of informing the employees at a particular work establishment that a virus positive person has been identified among the employees posed a very significant problem as well. Controllers were wondering whether they were authorized to inform the other employees that a case of coronavirus had been detected, and whether they could disclose the infected person's name. They split into two groups: those who believed that disclosure of the infected person's name could, first of all, be in conflict with the GDPR and, secondly, it could end up exposing this person to harassment from other employees – risking possible panic among employees, they decided not to disclose the names of infected persons; and those who decided to disclose such data for the sake of the public, based on Article 6(1)(e) of the GDPR - processing is necessary to act in the public interest. The same legal basis, i.e., Article 6(1)(e) of GDPR, was used by employers who decided they had the right to use an employee's private phone number or private email address to provide them with information about an identified case of Covid-19 (Czub-Kiełczewska, 2020). It should be noted, however, that the DPO's position acknowledges the fact that employers have the right to use an employee's private contact information only with his/her consent (Article 6(1)(a) of the GDPR). The DPO also stresses that without an employee's express, preferably written consent, employers cannot use the contact data provided by e.g., a job candidate whom they hired, in which case, the purpose of data processing has changed, and the employee's consent is required for further data processing (Urząd Ochrony Danych Osobowych, 2020c). The guidelines of the European Data Protection Board (EDPB), published on the DPO website, do not explicitly indicate what specific actions Controllers should take. The EDPB merely accentuates the need to respect the dignity of employees. Even a thorough study of the guidelines does not provide any ready-made solutions, as in most part, the document refers the reader to the norms under national law (Urząd Ochrony Danych Osobowych, 2020c).

3.3. Remote work

The Act of March 2, 2020 on Special Solutions for Preventing, Counteracting and Combating COVID-19, Other Infectious Diseases and Emergencies Caused by Them introduced the concept of remote work into the Polish legal system. As employers began to implement remote working solutions, new risks emerged. Firstly, many employers were not prepared for the remote work option - one major problem transpired in the scarcity or lack of computer equipment, in which case, the only option was to bypass the existing ban on the use of private equipment. The Bring Your Own Device principle, consisting in the use of private computers for business purposes, was thus introduced. The main problem the DPO and IT departments had to face entailed proper configuration of hardware, which proved to be quite a challenge when it came to private computers, as appropriate technical measures had to be put in place to prevent outsiders from accessing data - such as Virtual Private Networking (VPN).

These changes also necessitated risk analysis with regard to the processing of personal data in the form of remote work. Such analysis should be carried out by a team of experts who would correctly identify the possible risks, as well as determine what preventive measures should be taken to minimize the risk of violating the rights and freedoms of data subjects. The results of the analysis would need to be documented. Many organizations proceeded to conduct such analyses in accordance with the procedures in force in Companies, while other resorted to implementing ready-made solutions (Ochocki, 2020).

One very good solution, also implemented by the DPO, was to disseminate appropriate guidelines reminding the users of proper personal data processing when working remotely. Such guidelines were developed by the DPO and made available on 17.03.2020 (Urząd Ochrony Danych Osobowych, 2020). The first DPO guidelines in this respect, however, lacked information on the processing of personal data in paper form; such guidelines were only published on 04.05.2020. Those guidelines emphasized the importance of, inter alia, proper transfer, storage and destruction of documents. Employers, however, needed to normalize their remote work conduct policies in more detail – the internal regulations defining the principles of remote work needed to include not only the rules for personal data processing, but also the rules for work attendance verification, the rules for accounting treatment of overtime, the employee and employer rights and obligations, as well as the health and safety aspects covering, inter alia, the rules for post-accident proceeding in a remote work system.

The subsequent months of the fight against the pandemic only added to the chaos. The autumn of 2020 brought further disturbing news - almost every day, more countries, including Poland, hit record morbidity and, sadly, reported record death tolls. Virtually no week went by without new solutions, recommendations, definitions and ultimately restrictions being introduced. On the day we finished writing this article, Poland was on the eve of another ‘Lockdown’, i.e., a ‘national quarantine’ along the lines of what had happened at the beginning of the year. Other European countries had already either introduced such ‘mini-Lockdowns’ or were planning to do so in the near future. Each country determined its own strategy, however - unlike at the beginning of the pandemic. Everyone was wondering whether such a lockdown would be effective and whether the scale of the pandemic could be slowed down by even a bit. Certainly, introduction of further restrictions was much more difficult, as coronasceptics and people who claimed outright they would not go into a lockdown a second time were growing in numbers. It was the people's attitude, their self-discipline, the specter of penalties for not complying with the recommendations, as well as the general fear, which could have played a key role in combating the threat.

4. Discussion and recommendations

The advent of Sars-Cov-2 vaccines had significant impact on the curbing of the pandemic. The subsequent months brought waves that impacted the affected countries with greater or lesser force. Governments were imposing restrictions that were no longer as restrictive. Gradually, the coronavirus began to be treated as a seasonal disease, such as influenza.

Work is currently underway to permanently introduce provisions on remote work into the Polish Labor Code, which will in turn eliminate telework from the Code, as the concept of remote work is a much broader term (Pokutycka, 2023). Despite the passage of months, employers still have not been provided with clear guidelines indicating whether the actions undertaken are accurate or not. Even the social distancing guidelines are not the same – recommended distance ranges from 1.5 to 2 meters. The steps for organizations to follow when developing a threat catalog should entail the following:

- identification of actual crisis risks;
- performance of risk assessment (identification of negative effects on people, property, the environment and critical infrastructure);
- establishment of a catalog of pragmatic actions for effective response to the resulting threats;
- establishment of procedures for dealing with each crisis situation;
- making provisions for and maintenance of the forces and resources to be used in crisis situations;
- development of principles of interaction for the entities involved during a crisis response and establishment of the responsibilities thereof;

The action plan should include the following scheme:

1. Precise definition of the intended goal – assurance of employee safety and company operation continuity;
2. Identification of key problems and threats;

3. Assessment of selected alternatives and selection of an optimal solution (e.g., decision on employee rotation, introduction of remote work, disinfection of premises, reduction of working hours, spacing between workstations, etc.);
4. Development of day-by-day, week-by-week, month-by-month schedules;
5. Implementation of recommendations and guidelines on an ongoing basis - as new guidelines from the Ministry of Health and the Chief Sanitary Inspector emerge;
6. Control and correction - including verification of occupational risk assessment topicality, and verification of adherence to the rules, with regard to the optimal solution alternatives used (e.g., social distancing, mouth covering, disinfectant availability, remote work).

The only thing left for employers is to keep their procedures up to date and under review with the Chief Sanitary Inspectorate and the Ministry of Health guidelines. The catalog of possible treats is not a closed catalog and must be updated on an ongoing basis. The Authors' experience shows that a pervasive chaos still reigns, and only establishment of a catalog of risks, followed by development of guidelines for operation during the COVID-19 outbreak, with regard to personal data protection, can support the activities of organizations wishing to comply with the rules and regulations imposed.

It seems that crisis management should be viewed as management under pressure, resolving various types of emergencies and restoring stability to the functioning of a community, organization, state or group of states. It should be oriented at averting the emergence of a crisis situation through preventive and preparatory crisis management, and, in the event of crisis emergence - at responding effectively, in order to minimize its negative impact on the subject of the security measures undertaken.

The need to reduce the risks associated with emergence of possible threats and a crisis situation, as well as to establish efficient mechanisms for controlling those threats through reasonably planned actions, and thus ensure security, calls for employers to create such catalogs of threats and develop guidelines for operation during the COVID-19 epidemic, with particular regard for personal data protection

Employers should, therefore, first determine what solutions they wish to put in place to ensure employee safety and business continuity. They can choose between organizational and technical measures. The organizational measures include introduction of mandatory temperature measurements for employees and work establishment visitors. The measurement procedures should be communicated beforehand. Employers should deliberate on and decide whether the measurement results are to be recorded or not. From the perspective of the GDPR, it is better not to record the measurement results - no processing of personal data takes place in such case. Very often employers forget about the privacy of the people subjected to temperature measurement. In fact, the problem only arises when the measurement shows a result above the standard set by the employer. In practice, temperature measurements are made by security workers, and as employees are subjected to the measurement, there is no way to keep the information about possible elevated temperature case a secret - all other employees will, sooner or later, find out about the person in question. The person's privacy will be severely violated, plus the person may become a target of harassment and heckling. There are no DPO guidelines for employers on how to protect the privacy of such a person.

Employers should also ponder on introduction of Covid surveys. Introduction of such a questionnaire is very controversial from the perspective of the GDPR, which the Authors of the article have already indicated. In the Author’s opinion, introduction of visiting regulations, which would precisely define the rules of entering company premises during a pandemic, would be a better solution. The content of such regulations should include, inter alia, provisions requiring the persons showing symptoms of coronavirus infection, as well as those who have had contact with an infected person, to cancel any meetings planned. This would help avoid problems with the legality of data processing under GDPR.

Internal regulation of remote work constitutes an important element of management during a pandemic. Employers should therefore introduce regulations that complexly regulate the principles of such a work system. Such regulations should first and foremost set out the rules for secure processing of data - many employers have so far allowed employees to work on a ‘home office’ basis, but for other this work arrangement has proved to be quite a novelty. Many employers had to modify their security regulations, by allowing employees to use private equipment, which, in turn, involved the need to configure the equipment accordingly. Specification of the rules for handling printed documents is another important element such regulations should include - employers should specify the rules for securing and destroying paper documents. As already mentioned, such regulations need to be comprehensive, i.e., they should define the organization of remote work, including the rules for work attendance verification and work accountability. Another important element to be included entails regulation of such health and safety issues as possible site visiting if an employee suffers an accident.

Employers should additionally deliberate on the rules for returning to offices after remote work. They should take the current guidelines for maintaining person-to-person spacing or the rules for equipping employees with face and nose shields into account. Non-standard measures should be introduced in certain situations. Additional shifts, breaks or employee rotation, remote work or hybrid work (remote work alternating with regular work) can be taken into consideration as well.

5. Conclusion

The article was aimed at establishing a catalog of risks and development of guidelines for operation during the COVID-19 outbreak, with regard to personal data protection. An attempt was also made to develop priority recommendations. The Authors have indicated what problems entrepreneurs have faced during the pandemic. Despite the fact that the pandemic has lasted for more than two years - specific guidelines for employers, which would clearly indicate what is allowed and what would contradict the current regulations, have still not been developed. Currently, the Poland is at the stage of ‘loosening the restrictions’, with the only the order to cover the mouth and nose in health facilities and pharmacies in place. We do not know, however, whether the situation is just temporary and whether restrictions, of one kind or another, will be re-announced.

The Authors, driven by their interest in the subject, declare to continue to follow the legislative changes and seek optimal solutions for organizations. As of the date of writing this article, we are still awaiting the anticipated update of the Polish Labor Code provisions, which, after the two years of the pandemic, is expected to finally regulate remote work.

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ASSESSMENT OF THE IMPACT OF THE PROJECT IMPLEMENTED ON THE COMMUNITY OF THE CITY OF BYDGOSZCZ

Małgorzata MICHALCEWICZ-KANIOWSKA[1*], Małgorzata ZAJDEL[2], Izabela WIELEWSKA[3], Martyna KOZŁOWSKA[4]

[1] Bydgoszcz University of Science and Technology, Department of Economics and Marketing, Faculty of Management; malgorzata.michalcewicz-kaniowska@pbs.edu.pl, ORCID: 0000-0003-2154-5838
[2] Bydgoszcz University of Science and Technology, Department of Economics and Marketing, Faculty of Management; m.zajdel@pbs.edu.pl, ORCID: 0000-0003-4535-2897
[3] Bydgoszcz University of Science and Technology, Faculty of Agriculture and Biotechnology; izabela.wielewska@pbs.edu.pl, ORCID: 0000-0002-1721-6890
[4] Bydgoszcz University of Science and Technology, Student of Management at the Faculty of Management; markoz016@pbs.edu.pl
* Correspondence author

Purpose: Since the accession of Poland to the European Union, there has been a rapid increase in the implementation of projects supervised and funded by the European Union. Social and educational projects pursuing activation and development of youth enjoyed great popularity, in particular the social project entitled ‘Moje Boisko – Orlik 2012’, conceived for building 2012 modern and multi-functional sports pitches throughout the country by 2012. The project has received great recognition from the society, and the resulting sports facilities have won the affection of the beneficiaries. The purpose of the study is an attempt to assess the utilisation degree of 23 sports facilities designed within the framework of the ‘Moje Boisko – Orlik 2012’ project in the city of Bydgoszcz in the context of evaluation criteria, including adequacy, effectiveness, and efficiency.
Design/methodology/approach: The study employed a technique of analysis of primary source documents – desk research. As part of this technique, an analysis of the existing data was carried out. The analysis of the quality of accessible information under the separated evaluation categories of websites was carried out to assess the information contained in ‘Orlik’ type facility websites.
Findings: The analysis of website accessibility showed that the Orlik facility websites are not adapted for use by people with any type of disability. The functionality analysis of the Orlik facility websites indicates they have few functions or do not have any function at all. In turn, the usability analysis of the facility websites showed that they are easy to browse and intuitive. It turns out that an effective project policy requires not only adaptation to the environment, but also active involvement of the community and flexibility in responding to varying needs and expectations of various social groups.
Originality/value: The article focuses on analysing the function, usability and timeliness of the content of the websites of the Orlik pitches in Bydgoszcz, highlighting the need to improve the accessibility of the information. The article encourages measures to improve the quality of

information and effective use of sports facilities, using the example of Orlik type pitches, making it useful and practical for pitch managers, the local community and potential users.
Keywords: social project, evaluation, evaluation criteria.
Category of the paper: Research paper.

1. Introduction

Social projects are the type of projects that cover activities addressing social needs introducing permanent changes to the diagnosed issues in the respective social groups and the environment. Achieving effects allows one to build new relations, and to deepen and develop the existing ones. Social projects may be implemented in different areas, through different environments or organisations, then funding options are broad and much diversified and diversified. Since projects can be implemented both in the private and public sectors, some initiatives are funded partially or entirely from commercial sources (Kołodziej-Hajdo, 2019, p. 42). Activities under social projects encompass all areas of life important to society, i.e. infrastructure, labour market, safety, culture, education, and health care (Grewiński, 2017; Szot-Gabryś, 2012; Markowicz, 2019; Mazurek-Łopacińska, 2015; Skubiak, 2016; Wronka-Pośpiech, 2015). The European Union has introduced a set of financial mechanisms to support innovative activities for any and all social issues. Social projects are implemented under the European Social Fund (ESF), as part of which Poland has been allocated 11 billion EUR between 2007-2013 and 11 billion EUR between 2014-2020 (Ministerstwo Funduszy i Polityki Regionalnej, 2020).

Assessment of an undertaking – project is carried out according to certain standards, which are the evaluation criteria closely related to key questions coming up during the evaluation, and should be precisely formulated, addressing the objectives and effects. The relevance criterion serves to assess to what extent the adopted objectives and methods for project implementation correspond to the identified issues or actual needs of the beneficiaries. The effectiveness criterion is utilised to assess to which extent the project objectives have been achieved, and the undertaking can be regarded as effective or effectively implemented if it has fulfilled its objectives. The efficiency criterion provides an assessment of the degree to which the expenditures incurred relate to the results obtained and the results of the implemented undertaking. The utility criterion answers the question about the extent to which the implementation of the activities under review has actually contributed to solving the identified issues, or whether it has brought benefits to the beneficiaries, and the sustainability criterion indicates if the positive effects of the evaluated project could survive its completion, and whether it is possible to sustain the impact of the undertaking in the long term (Polskie Towarzystwo Ewaluacyjne, 2021).

Evaluation depends on the project management run, precisely on such activities as monitoring, verification of the effectiveness of activities throughout the project, as well as completion and conclusion of the project (Kisielnicki, 2013). At this stage, evaluation proves the emergence of and the need for the project (Hughes, Baumgartl, 2005). For the EU, evaluation is an opinion that clarifies the project performance with regard to the effects, interactions and requirements necessary for improvement. The purpose of evaluation is to check if the tasks have been done well, and to provide representatives, who manage projects and are involved in the decision-making process, with a data resource that enables them to improve elements or the overall project (Kisielnicki, 2013, pp. 331-332). Evaluation is an attempt to understand whether our actions have been effective, or whether they are likely to produce effects in the future. Nevertheless, its scope should not be limited only to measuring the final effects of the project. It is also important that a cause-and-effect approach be employed to analyse the relationship between the actions taken and the results obtained. The effects of social projects are a change in society.

Projects implemented within the framework of the Human Capital 2007-2013 programme covered 9.6 million Poles. Positive changes were noticeable in the areas of education, science, higher education, adaptability of enterprises and their employees, social integration, good ruling, and health care. According to the evaluation studies conducted in the area of employment and labour market, the projects implemented have resulted in the establishment of 245,745 new companies, 1,300,000 persons completed their participation in professional activation, 300 nurseries 31 kids clubs were built, and 49 day care institutions were founded. In the area of counteracting social exclusion, the projects supported 367,203 people at such risk. Support was also provided to 15,200 social economy enterprises, 786 social cooperatives were established. Under the projects implemented in the area of education, 6500 preschool education centres received subsidiaries, 173,500 kindergartners were supported, development programmes were introduced in 17,600 elementary, lower secondary and high schools, 183,800 students took part in internship and apprenticeship programmes. The projects implemented in the area of higher education and science have resulted in 94,700 students starting their studies in with ordered specialties such as automation and robotics, as well as construction, biotechnology, design, and IT. In the area of adaptability of enterprises and their employees, the projects have achieved the following effects: 1,100,000 people benefiting from different types of vocational training and 215,484 enterprises partaking training projects (Ministerstwo Rozwoju, 2017, pp. 104-108). Projects implemented under the Knowledge Education Development Programme between 2014-2020 achieved such effects as: support of reforms in the employment area, reinforcement of the health care system, educational development. Within the framework of the POWER (Operational Programme Knowledge Education Development), 2 million people received support (Ministerstwo Funduszy i Polityki Regionalnej, 2021).

The facilities designed under the government project entitled ‘Moje Boisko – Orlik 2012’ were evaluated both during the programme and following it. According to the evaluation studies carried out in 2012 at the request of the then Minister of Sports and Tourism through the Social Project 2012 of the Institute of Sociology of the Warsaw University, the facilities meet all the evaluation criteria. The evaluation covered 20 facilities located within 10 provinces, 10 of them are situated in rural areas and 10 in cities. The studies showed that the construction of the facilities meets the social demand for a place to practice sports and enjoy recreation and meet with friends. Polish villages, small towns and housing developments of large cities were characterised by the lack of friendly and publicly available space for meetings. Institutions such as community centres or libraries cannot function as places for casual meetings in every situation, while places like cafes or restaurants are not widely available. This problem was paramount, since the way a community functions depends largely on the surroundings, the characteristics of the space, and whether the residents have places to meet. The evaluation shows that Orlik facilities are exemplary in filling the said gap by becoming places for meetings, contact points and landmarks for everyone. Although access to the facility itself is limited due to the number of people who wish to use it and sign up for a specific time, staying within or in the vicinity of the complex should be free. In addition to people using the facility at any given time, there may be spectators, i.e. players’ families and friends. In some of the communes evaluated, community events are organised next to the facility, and this shows how naturally it has become a central place for community life. The studies to date indicate that it is owing to Orlik facilities that ties in the local community are strengthened and ideas are exchanged (Ministerstwo Sportu i Turystyki, 2012). The effective policy of social projects not only adapts to the surroundings, but also engages the community and adapts to varying needs and expectations of various social groups. In other words, the effectiveness lies in an interactive approach to the environment, which takes into account the active participation of the society and the flexibility in responding to their diverse needs and expectations.

2. Material and methods

The subject of the study was sports and recreational facilities developed as part of the programme launched in 2009 by the Ministry of Sports and Tourism for the creation of sports infrastructure. Among them was the idea of Orlik type sports facilities aimed at providing children and adolescents with access to modern sports infrastructure and allowing them to develop their physical activity under supervision of an animator. The purpose of the study is an attempt to assess the utilisation degree of 23 sports facilities built under the ‘Moje Boisko – Orlik 2012’ project in the city of Bydgoszcz in the context of evaluation criteria including adequacy, effectiveness and efficiency. When evaluating the functioning of Orlik facilities, it is necessary that the profile of beneficiaries who use them be determined. In the first years following completion of the facilities, they were very popular, yet interest in them has decreased over time. Therefore, activities taken by managers and city authorities that focus on promoting the facilities should be identified.

The main research problem is to find an answer to the question: How are these sports facilities used in Bydgoszcz? One can assume that the dynamic development of mass media and technologies has contributed to decreasing physical activity of society. As the statistics show, e.g. from October 2020 to September 2021, only 38.8% Poles participated in sports or recreational activities, this includes 36.7% of women and 41.0% of men (Główny Urząd Statystyczny, 2022). The 'Moje Boisko – Orlik 2012' programme ended in 2012 and since then the built facilities have not been modernised, and they are still used by students during their physical education classes and by football clubs.

The study employed a technique of analysis of primary source documents – desk research. As part of this technique, an analysis of the existing data was carried out, a check was made to find the way such sports facilities are managed on the basis of an interview with the school management which implements the tasks of the 'Education Development Programme for the City of Bydgoszcz for 2021-2030'. The analysis of the quality of accessible information under the separated evaluation categories of websites was carried out to assess the information contained in 'Orlik' type facility websites in terms of their usability, understood as timeliness, completeness and credibility. The analysis of accessibility was also aimed at determining whether it can be used by people with any type of disability, e.g. visual impairment or blindness, deafness, motor limitations. During the evaluation, methods of evaluating the quality of websites were applied on the basis of research conducted by B. Hyssa and D. Zdonek, included in the publication titled 'Quality Assessment Criteria for Websites of Public Hospitals' (Hysa, Zdonek, 2014). Websites were analysed for selected website functionality assessment criteria.

Based on the separated five assessment categories, as part of the evaluation of the first category 'General information', covering, among other things, a basic range of information on the facility: the period of construction, how it is used, a description of sports events held. The category 'Schedule of use' contains a full description of the operation of the facility: opening months, days and hours. The 'Regulations for use' are general rules of using the facilities, while they also include the 'Functioning rules in connection with COVID-19'. The 'Reservation method' is information on who and with whom the facility can be reserved, along with the inclusion of contact details. The last category of information evaluated was 'Photographic documentation' containing an overview of recorded events taking place at the Orlik facility and of the facility itself. A research hypothesis was assumed in the paper according to which the level of interest in the utilisation of Orlik facilities among the residents of Bydgoszcz has decreased, and the measures taken to promote and advertise the facilities are insufficient. The main beneficiaries of the facilities are students of schools at which they operate.

The functionality analysis consisted in determining the number of functions, options or possibilities of a given website, e.g. whether ‘Orlik’ facility sites feature online facility reservations or a form to contact the facility manager. The usability analysis was carried out to evaluate how easy a given site can be browsed, i.e. easy and intuitive navigation and clarity of the site. The appearance of websites is inextricably linked with their usability. It is assessed on the basis of the colour scheme used, the layout, and the first impression upon entering the site. Data from primary sources was collected by way of an individual interview with the manager of one ‘Orlik’ facility in Bydgoszcz. The facility is located at the Elementary School No. 38. The school was selected to participate in the evaluation as it implements the tasks of the ‘Education Development Programme for the City of Bydgoszcz for 2021-2030’ under 3.8 Supporting health and physical activity of children and adolescents.

3. Results of the study

During the use of the facilities, a problem with limited accessibility was noted, perhaps due to the limited variety of activities, since initially ‘Orlik’ facilities had been wrongfully associated with football only. Certainly, the multifunctionality of the facilities should have been emphasised. Orlik facilities began to lose their attractiveness due to their deteriorating technical condition, with much doubt as to the maintenance and preservation of the facilities, and the question of payment for using them. The city and the management of the Orlik facilities in Bydgoszcz do not run promotional campaigns and the facilities themselves do not receive positive feedback from the users. The study on the implementation of a strategy for gaining a competitive advantage indicates that the promotion of cities through sports is an attractive element of social life and an effective tool for attracting media attention (Wiśniewski, 2012; Rogala, 2011; Smura, 2012; Waśkowski, 2011).

Therefore, the analysis began with identification of sports and recreational facilities established under the government ‘Moje Boisko – Orlik 2012’ programme (Mamcarczyk, 2013). The study showed that there are 23 Orlik type facilities in Bydgoszcz, which are placed at educational institutions located in 16 of 29 city housing developments. The analysis of the content of the websites of the schools at which the facilities are located indicates that each school and 18 facilities (78.2%) have their own website.

In order to analyse data, facilities which do not have their own website or have a website which does not contain information, were marked analogously as ‘No website’ or ‘No information’. The analysis of the content on the websites of Orlik facilities in terms of their usability for the users indicates the included schedules in 16 facilities making up 69.5% are up to date. It turns out that only 8 websites (35%) still contain the described rules of using the Orlik facilities during the COVID-19 pandemic, which needs to be updated or deleted due to the lifted restrictions. Only 56.5% of the evaluated facilities have their general year-round regulations for use of Orlik facilities available on the websites. Only 30% of the Orlik facilities have information on the facility reservation method, means of contact or contact details of the person responsible for hiring the facility.

The 26% of the websites provide general information on the attractions ensured by an Orlik facility, events that take place there and a historical outline of the facility. Photographic documentation of events held at Orlik facilities is kept only by the Orlik facility at Węgierska 11 Street. In addition, only two facilities out of all have all the information, except photographic documentation. These are Orlik facilities at Gdańska 122 Street and Kościuszki 37a Street. The remaining 65% do not provide information that could be useful to potential eager users of the facilities.

The analysis of website accessibility showed that the Orlik facility websites are not adapted for use by people with any type of disability. The websites do not meet accessibility conditions included in WCAG 2.1, i.e. they do not feature screen readers, alt tags, captions and transcriptions, or alternative versions of the pages. The functionality analysis of the Orlik facility websites indicates they have few functions or do not have any function at all. None of the websites under evaluation allowed the user to make online reservations or contact the facility manager or animator through a contact form.

The usability analysis of the facility websites showed that they are easy to browse and intuitive. The predominant colours are: white, red and green. The graphic layout of the websites is simple and clear, yet poor. Most of the analysed websites contain texts only. There is no graphic or multimedia elements that would attract the users' attention. They include: graphic arts, slides, presentations, or audio and video files. According to an interview with the manager of one of the Orlik facilities in Bydgoszcz, the facility enjoys considerable interest among local residents, despite the lack of promotional activities. On weekdays, the facility is used by children and adolescents, both during their physical education lessons and after school. In the afternoon and evening, the facility is used by football schools and senior citizens. Cyclical special events are organised at the facility to attract new users, and they include: tournaments of volleyball, table tennis and football, and athletic competitions.

Despite the passage of almost a decade since the opening of the facility, it is in perfect technical condition and is safe for its users. The surfaces and equipment are subject to regular inspections, both by the animator employed at the facility and by the manager, maintained and replaced. The facility, which was built in compliance with the guidelines included in the 'Moje Boisko – Orlik 2012' programme, includes a required football pitch, a multifunctional court, height-adjustable steel basketball hoops, a sanitary and cloakroom building with separate locker rooms for each team along with a hygiene and washing unit, an equipment storage, a utility room, and a room for the facility manager and animator. Furthermore, the facility manager ensured the Orlik facility has been adapted for the disabled.

The studies have shown that interest in physical activity and sports culture is gradually increasing as a result of the implementation of EU and local programmes, the example of which is the ‘Strategy for Bydgoszcz Development Until 2030’, which includes postulates on the development of physical activity among the residents of Bydgoszcz.

Multifunctional Orlik facilities designed for practicing a variety of sports address the needs of the city residents by offering a wide range of possibilities. According to the objectives of the ‘Moje Boisko – Orlik 2012’ programme, the facilities were supposed to create opportunities to develop physical activity, promote sports among adults and adolescents, and provide easy and free access to professional sports infrastructure.

4. Conclusions

The analysis of the content and quality of the Orlik facility websites showed that the content posted on the websites is for the most part incomplete and insufficient, and thus becomes barely useful to the users of the Orlik facilities. The range of basic information necessary to access the facility and plan activities, including to determine the day and time of availability, reservation methods and contact details, is mostly unavailable. An important element that is also scarcely available is the regulations for use of the facility, while some websites still display the facility functioning rules during the COVID-19 pandemic, despite the fact that the restrictions were lifted several months earlier. This indicates the data is not up-to-date, which can lead to misleading the users of the facilities. It can be concluded that the Orlik facility websites do not perform a marketing function. Reports of special events, family festivals, tournaments and sports competitions held at the facilities, which could encourage the residents of the city to take part in the indicated activities and promote the facility as a place of recreation for people of all age groups, are available on a few websites among those evaluated.

However, an assessment of the Orlik facilities in Bydgoszcz for adequacy showed that the facilities meet this criterion. The Orlik facilities located in Bydgoszcz meet these assumptions by continuous use of the facilities for various sports activities. The last evaluation criterion under which the Orlik facilities in Bydgoszcz would be evaluated, is that of efficiency. In order for the facilities to serve their users and be safe for them, constant technical inspection and maintenance are required. The expenditures incurred by the facility managers are then considerable, both in terms of funds and the use of human resources. On the other hand, however, expenditures incurred on marketing and promotion of the Orlik facilities are low, and yet, as the study shows, the facilities enjoy great popularity and interest. Thus, the expenditures incurred for the facilities equalise with the demand for the use of the facilities, recognising that they are used intensively, holding both physical education lessons and special mass events for the local community.

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UNDERSTANDING THE RELATIONSHIP BETWEEN FIRMS' LEVEL OF KNOWLEDGE ON THE SMART CITY CONCEPT AND THE SIZE OF THE FIRM – AN EMPIRICAL STUDY

Sandra MISIAK-KWIT[1*], Małgorzata WIŚCICKA-FERNANDO[2]

[1] Institute of Management, Faculty of Economics, Finance and Management, University of Szczecin; sandra.misiak-kwit@usz.edu.pl, ORCID: 0000-0002-0621-7097
[2] Institute of Management, Faculty of Economics, Finance and Management, University of Szczecin; malgorzata.wiscicka-fernando@usz.edu.pl, ORCID: 0000-0001-9928-3335
* Correspondence author

Purpose: On the one hand, companies become consumers of a smart city, but on the other, they are also co-creators and/or initiators of new goals. The implementation of the smart city concept requires specific knowledge, especially from businesses, who are active participants in the process. The aim of the paper is to gain new knowledge about the relationship between firms' level of knowledge on the smart city concept and the size of the company.
Design/methodology/approach: The survey was carried out in 2021 using the CATI, CAWI interview method on a random sample of 217 companies in the West Pomeranian region in the Republic of Poland. The Chi-square test for independence and the Kruskal-Wallis test were conducted.
Findings: A Kruskal-Wallis H test revealed no statistically significant difference in the level of smart city knowledge across the five analyzed groups based on company size. The study results indicate no significant association between company size and the four selected statements regarding smart city concept. The presented data could be the basis for the preparation of an appropriate strategy for sustainable operation, taking into account the important factor, which is people, including entrepreneurs.
Research limitations/implications: The authors suggest conducting the same analysis with a larger sample size to generalize the phenomena. The authors believe that it is worth examining the level of knowledge not only of companies from the West Pomeranian voivodeship, but also from all over Poland, which may precisely illustrate the level of understanding of the smart city concept.
Practical implications: Research results are important not only for regional policymakers but also for researchers interested in the field of strategic smart city development. Due to changes taking place in the perception of the city's role, the concept of a smart and sustainable city is becoming increasingly important not only for city authorities but also for businesses.
Social implications: The implementation of the smart city concept requires conscious and thoughtful steps, but also created in cooperation with all participants, especially residents and businesses, who are active participants in the process.

Originality/value: Addressing a research gap in association between company size and the knowledge about the smart city concept, this study sought to provide valuable insights.
Keywords: smart city, sustainable development, companies, sustainability.
Category of the paper: Research paper.

1. Introduction

A smart city is a concept that, at its core, is understood as the implementation of modern technologies related to both IT and the construction of networks or databases, as well as platforms for communication (Sugandha et al., 2022; Townsend, 2013). The development has led the concept of a smart city to a point where, alongside modern solutions and technology implementation, there is a focus on sustainable development and the realization of social goals (Mappiasse, 2015; Aurigi, Odendaal, 2021). In the contemporary concept of a smart city, various ideas are present, such as smart city development, including service innovation, urban intelligence, urban sustainability, urban openness, infrastructure integration, urban innovation, collaborative partnership, and smart city governance (Gil-Garcia, Pardo, Nam, 2015; Lai, Cole, 2022).

In the literature, the prevailing belief is that the quadruple helix model is the best to activate all stakeholders. This model brings together four key players: government, citizens, solution-providing corporations, and SMEs for local solution implementation (Kummitha, Crutzen, 2019).

It is also important to emphasize that the process of urban development is necessary to improve life quality in the city of the growing urban population (56% of the world's population lives in cities) (World bank, 2023). Therefore, modernizing the city's operations becomes essential to meet the needs of residents and address the challenges of large metropolitan areas (Homer, 2023).

Implementing modern solutions in cities allows for addressing complex social and environmental issues. However, modern technologies are not capable of solving all urban problems and can simultaneously create issues related to human factors and constraints in implementing a human-centered city concept. (Aina et al., 2019). Especially, if we take into consideration that there is no equal access for each human to high-tech.

The concept of a smart city is a relatively new idea and encompasses various scientific disciplines, often being associated with the concept of a sustainable city. This is because modern technologies are intended to support a city in providing a better life for its citizens and preventing issues related to the unsustainable development of urban agglomerations (Schiavo, Magalhães, 2022).

Therefore, the main research trends in the field of smart cities focus on technological development, urban development, and awareness of sustainable development. This combined concept is referred to as the hybridization of a smart sustainable city (Höjer, Wangel, 2015).

In addition, efforts are being made to conceptualize the smart city, but empirical research is still lacking (Ahvenniemi et al., 2017). This paper tries to fill in that research gap and provide knowledge related to the understanding of the smart city concept among companies.

The current concept of smart city has advanced to the third level - Smart City 3.0, which focuses on co-creating smart cities with residents and gaining their acceptance. The earlier Smart City 2.0 concept referred to activities that combined smart cities with sustainable urban development, while the original Smart City 1.0 concept was about implementing modern technologies to create an intelligent city (Giela, 2023).

Unfortunately, there is no single blueprint to follow that can be adopted to create successive smart cities, even as the availability of various technologies increases (Kummitha, 2019).

The increasing involvement of citizens in the smart city concept suggests that businesses operating within a city can also play a significant role in this concept. On one side, they are market entities, but on the other hand, they are entrepreneurs, and often residents of the city as well. This dual role of local entrepreneurs is seen as both implementers of modern technologies in their companies, contributing to the city's development, and as recipients of services offered by the smart city.

At this point, it should be emphasized that the development of a smart city depends on business growth. The size and quantity of corporations also have a significant impact on the implementation of the smart city concept. Without the development of entrepreneurship, the progress of a smart city cannot take place, as the inflow of private capital will condition both the city's revenues and its development. Entrepreneurship development is closely related to the smart city concept as well (Yigitcanlar, Velibeyoglu, Martinez-Fernandez, 2008; Richter, Kraus, Syrjä, 2015).

The relationship between smart cities and entrepreneurial activities is synergistic. This means that a smart city cannot function without innovative, forward-thinking businesses. Companies focused on growth and new technologies seek opportunities and a business-friendly environment provided by smart cities. Companies with similar structures also gravitate toward each other, and industries unite around common visions. It is also important to highlight that cities that tailor their environment to current needs and provide access to creative, talented individuals become attractive to innovative businesses (Marchesani, Masciarelli, Bikfalvi, 2023).

Examples of such initiatives include industry clusters, networks, start-ups, or collaborative development of local applications. To stimulate innovation among small and young businesses, hackathons are organized by city authorities.

Addressing a research gap in association between company size and the knowledge about the smart city concept, this study sought to provide valuable insights. Therefore, the aim of the paper is to gain new knowledge about the relationship between firms' level of knowledge on the smart city concept and the size of the company. This paper consists of five sections. In the second section 'Methods' two conceptual frameworks and five hypotheses were described. The third section focuses on presenting research results regarding self-evaluation of understanding the smart city concept, perceived characteristics of a smart city, association between company size and the chosen characteristics of a smart city and the difference between the level of knowledge across five group of companies based on the company size. The next section, 'Discussion', provides primary conclusion with the reference to other studies. The paper finished with the summary.

2. Methods

To guide the study, two conceptual frameworks were devised. First, the authors explored companies' perspectives on four distinct aspects of a smart city, considering variations based on company size (Figure 1). The chosen dimensions encompass 'modern technologies used in the city', 'the city's impact on improving the quality of life for its residents', 'the city's capacity for analyzing, monitoring, and utilizing data', 'the city's commitment to working for the benefit of future generations'.

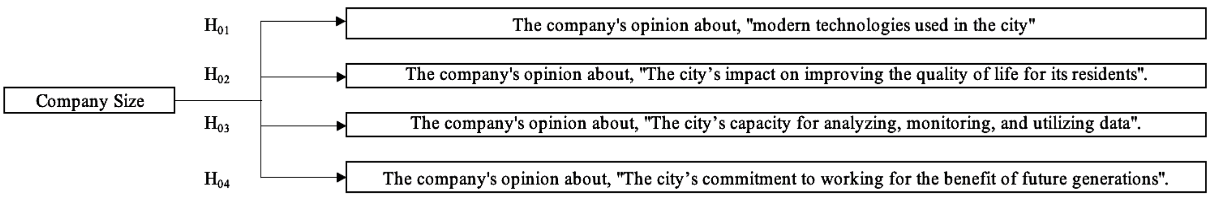

Figure 1. Conceptual framework of study I.

Source: own elaboration.

Accordingly, formulated hypotheses are:

H01: The company size and the company's opinion about modern technology used in the city are independent.

Ha1: The company size and the company's opinion about modern technology used in the city are not independent.

H02: The company size and the company's opinion about the city improving the quality of life of its residents are independent.

Ha2: The company size and the company's opinion about the city improving the quality of life of its residents are not independent.

H03: The company size and the company's opinion about the city analyzing, monitoring, and using data are independent.

Ha3: The company size and the company's opinion about the city analyzing, monitoring, and using data are not independent.

H04: The company size and the company's opinion about the city working for future generations are independent.

Ha4: The company size and the company's opinion about the city working for future generations are not independent.

Further, the authors examined whether the median knowledge levels differed among various groups. Guided by conceptual framework of study II, the authors ran a Kruskal-Wallis H test (Figure 2).

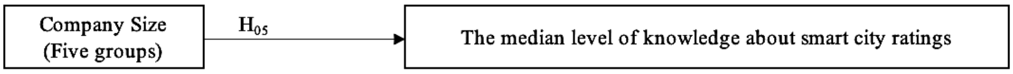

Figure 2. Conceptual framework of study II.

Source: own elaboration.

Companies were categorized into five size groups: one-person company, micro company (1-9 employees), small company (10-49 employees), medium company (50-249 employees) and large company (250 employees and above). Formulated hypotheses are:

H05: The median knowledge about smart city ratings across the five groups is equal.

Ha5: At least one of the median knowledge about smart city ratings is different from the others.

The survey was conducted in 2021 using Computer-Assisted Telephone Interviewing and Computer-Assisted Web Interviewing methods on a random sample of 217 companies in the West Pomeranian region in the Republic of Poland. The sampling frame was a database of companies from the Flow Research Centre. The research was anonymous. In this paper 3 out of 21 questions from the questionnaire were utilized. The analyzed questions pertains to the self-evaluation of understanding the smart city concept, the perceived characteristics of a smart city and the size of the company. This regional research was carried out in two largest city in the region – Szczecin and Koszalin which are the only cities in the region with population exceeding 100 thousand. According to the research methodology of the regional study, this sample can be considered as representative (Bazarnik, Grabinski, Kaçiak, 1992). The data represented ordinal and ration scale. The authors used nonparametric tests (Stevens, 1946). The Chi-square test for independence (alpha = 0.01) and the Kruskal-Wallis test were both conducted.

3. Results

The total number of respondents was 217 companies. Out of the total 271 respondents, 128 were one-person companies, 60 were micro companies, 19 were small companies, 5 were medium companies and 5 were large companies (Table 1). In the initial phase, entrepreneurs were queried about their self-assessment of knowledge regarding smart city concept.

Table 1.
Self-evaluation of understanding the smart city concept

Size of the company	Count	Sum	Average	Variance
One-person company	128	8405	65.66	692.68
Micro company	60	3944	65.73	538.94
Small company	19	1205	63.42	566.7
Medium company	5	339	67.8	565.2
Large company	5	299	59.8	99.7

Count – number of respondents (sample size).
Sum – the summation of the scores given by the respondents based on the scale from 0 to 100.

Source: own study based on the survey.

The respondents were instructed to provide answers on a scale from 0 to 100, where 0 indicated a lack of knowledge ad 100 represented a comprehensive understanding of the smart city concept. The average self-assessment of knowledge ranged from 59.8 for large companies to 67.8 for medium companies.

Further, respondents were given the opportunity to express their opinion on whether four selected statements accurately characterize the broadly understood concept of a smart city (Table 2). The authors employed a Likert scale for this question.

Table 2.
The perceived characteristics of a smart city by the respondents

Statement		Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	Sum
Modern technologies are used in the city	f	18	32	19	64	84	217
	%	8%	15%	9%	29%	39%	100%
The city improves the quality of life of its residents, responds to the needs of its residents	f	25	27	20	62	83	217
	%	12%	12%	9%	29%	38%	100%
The city analyzes, monitors and utilize data	f	24	29	26	54	84	217
	%	11%	13%	12%	25%	39%	100%
The city works for the benefit of future generations	f	26	30	21	54	86	217
	%	12%	14%	10%	25%	40%	100%

f – frequency,
% – percentage.

Source: own study based on the survey.

Upon analyzing the data presented in Table 2, it is evident that respondents predominantly agreed or strongly agreed with the selected statements characterizing a smart city. The respondents most frequently associated a smart city with the use of modern technologies and least frequently with a city's capacity for analyzing, monitoring, and utilizing data. However, the variations in responses are subtle.

Furthermore, the authors sought to investigate the association between company size and the four selected statements (Table 3).

Table 3.
Summary of the chi-square test of independence

Hypotheses	Chi-Sq test Statistic	df	α	p-value	Observation	Decision
H01	11.65	16	0.01	0.767	p-value > α	Fail to reject the null hypothesis
H02	10.72	16	0.01	0.826	p-value > α	Fail to reject the null hypothesis
H03	17.13	16	0.01	0.377	p-value > α	Fail to reject the null hypothesis
H04	9.21	16	0.01	0.904	p-value > α	Fail to reject the null hypothesis

df – degree of freedom,
α – type I error.

Source: own study based on the survey.

A chi-square test of independence showed that there was no significant association between company size and the company's opinion about modern technology used in the city, $\chi 2(16, N = 217) = 0.767$, $p > .01$ (see Table 3). Thus, the researchers failed to reject the null hypothesis.

A chi-square test of independence showed that there was no significant association between company size and the company's opinion about the city's impact on improving the quality of life for its residents, $\chi 2(16, N = 217) = 0.826$, $p > .01$. Thus, the researchers failed to reject the null hypothesis.

A chi-square test of independence showed that there was no significant association between company size and the company's opinion about the city's capacity for analyzing, monitoring, and utilizing data, $\chi 2(16, N = 217) = 0.377$, $p > .01$. Thus, the researchers failed to reject the null hypothesis.

A chi-square test of independence showed that there was no significant association between company size and the company's opinion about the city commitment to working for the benefit of future generations, $\chi 2(16, N = 217) = 0.904$, $p > .01$. Thus, the researchers failed to reject the null hypothesis.

Lastly, the authors endeavored to explore whether the median knowledge about the smart city concept varies based on the company size.

Table 4.
Summary of the Kruskal-Wallis H test

Company Size	n	Mean rank	χ2	df	Sig.	α
One-person company	128	111.50	1.28	4	0.865	.01
Micro company	60	108.10				
Small company	19	101.21				
Medium company	5	110.00				
Large company	5	84.40				

n – sample size,
χ2 – Chi-square test Statistic,
df – degree of freedom,
Sig. – p-value,
α – type I error.

Source: own study based on the survey.

A Kruskal-Wallis H test showed that there was no statistically significant difference between the level of smart city knowledge across these five groups of companies based on the company size, $\chi2(4) = 1.28$, $p = 0.865$, with a mean rank of knowledge about the smart city of the group one (one-person companies) was 111.50, group two (micro companies) was 108.10, group three (small companies) was 101.21, group four (medium companies) was 110.00 and group five (large companies) was 84.40.

4. Discussion

A primary conclusion drawn from the study is that a chi-square test of independence revealed no significant association between company size and the company's opinion on the various aspects of a smart city, including 'modern technology used in the city', 'the city's impact on improving the quality of life for its residents', the city's capacity for analyzing, monitoring, and utilizing data' and 'the city's commitment to work for the benefit of a future generation'. In the authors' opinion, the obtained results challenge the common belief that larger companies, equipped with greater resources (knowledge/specialization), possess a more profound understanding of the smart city concept. This raises a research question regarding the cause of the lack of a significant association between company size and the company's opinion on various aspects of a smart city. Could the absence of a correlation be attributed to the fact that small companies, such as start-ups, may have innovative solutions, while large specialized firms may possess knowledge in areas such as urban infrastructure planning? In both cases, companies are acquainted with and have knowledge about different aspects of the smart city.

It could be argued that the multifaceted nature of the smart city concept, as indicated in the literature (Lai, Cole, 2022; Homer, 2023; Szczepańska et al., 2023), may influence the state of knowledge, i.e., 'everyone knows something/some.' It is also noteworthy that the entrepreneurial ecosystem of the smart city (Mitra et al., 2023) has not been fully explored, and there is a lack of comprehensive studies on this topic. Consequently, the obtained results are challenging to compare with other researchers' works, and this observation is associated with the need to identify underlying causes.

The research aimed to bridge a gap in understanding the relationship between company size and knowledge about the smart city concept. This emphasizes the importance of educating and raising awareness about the smart city concept. Relating to the literature review, it is highlighted that corporate solutions may not always be universally suitable for addressing specific urban challenges (Kummitha, 2019).

The authors aspire that the knowledge about the smart city concept among the identified group of entrepreneurs will serve as a source of inspiration for other researchers. The authors emphasize the difficulty of implementing the smart city concept if stakeholders lack a comprehensive understanding of it. In general, knowledge management is crucial for multinational companies, influencing global competitiveness and, in turn, the quality of life for people (Vetrakova, Smerek, 2019). To improve quality of life, all components involved in the city must be optimally managed (Ruiz-Vanoye et al., 2023). The importance of such activities is highlighted in the literature review, as the improvement of the overall quality of life and sustainable economic development are the main objectives of a smart city (Oladunmoye, Obakin, 2023).

The topic warrants further research, as presenting new case studies can contribute to the ongoing development of the smart city concept and facilitate the implementation of tailored actions in diverse urban settings (Kummitha, 2019).

In the study, an evaluation was undertaken of a significant stakeholder in the smart city context, namely, the company. Taking into consideration fact, that in the literature the Citizen-Centric Smart City model is recommended (Lim et al., 2023), it might be worthwhile to broaden the groups of stakeholders and include citizens. This new group could provide additional insights into how other stakeholders understand a smart city, and the obtained results could be compared accordingly.

5. Summary

The primary objective of this paper was to advance the understanding of the relationship between company's level of knowledge on the smart city concept and its size. Addressing a research gap in association between company size and the knowledge about the smart city concept, this study sought to provide valuable insights.

A Kruskal-Wallis H test revealed no statistically significant difference in the level of smart city knowledge across the five analyzed groups based on company size. The average self-assessment of knowledge ranged from 59.8 for large companies to 67.8 for medium-sized companies, with 100 indicating a comprehensive understanding of the smart city concept. This suggests that there is room for improvement in the general knowledge regarding the smart city concept, highlighting the need for actions related to knowledge sharing and the promotion of the concept.

The study results indicate no significant association between company size and the four selected statements regarding smart city concept. These statements encompassed 'modern technologies used in the city', 'the city's impact on improving the quality of life for its residents', the city's capacity for analyzing, monitoring, and utilizing data', 'the city's commitment to working for the benefit of future generations'. Respondents predominantly agreed or strongly agreed with these statements. However, a question emerges regarding future research directions: With which characteristics entrepreneurs associate the smart city, if not with the usage of modern technology or a commitment to work for the benefit of future generations? The percentage of companies that do not associate the smart city with the selected statements ranged from 23% to 26%.

The study has notable limitations, primarily stemming from the restricted sample size and geographic scope. To overcome this, the authors recommend conducting the analysis with a more extensive sample size, covering all major cities in Poland, to enhance generalizability of the findings. Despite these limitations, the presented data can serve as a foundational basis for formulation a sustainable operation strategy, considering a pivotal factor: people, including entrepreneurs. The research outcomes carry significance not only for regional policymakers but also for researchers delving into the realm of strategic smart city development. As the perception of a city's role undergoes transformation, the concept of a smart and sustainable city is gaining heightened importance, not only for municipal authorities but also for businesses. Implementing the smart city concept necessitates deliberate and thoughtful actions, fostering collaboration with all participants, particularly residents and businesses, who play active roles in the process.

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ATTITUDES OF POLISH MANAGERS TOWARDS INFORMATION AND COMMUNICATION TECHNOLOGIES – SELECTED ISSUES

Marta MISZCZAK

Military University of Technology in Warsaw; marta.miszczak@wat.edu.pl, ORCID: 0000-0001-7194-3493

Purpose: The aim of this article is to diagnose the attitudes of Polish managers towards the implementation and use of ICT technologies.
Design/methodology/approach: The paper is based on a review of the literature in the field on the application of ICT in the work of managers, research reports on the digitization of enterprises and an own research. The survey was conducted in 2001 among 163 companies located in Poland (16 provinces). The survey used a diagnostic survey method, CAWI technique and an author's survey questionnaire. The research results presented in the article are part of a research subject on digital leadership.
Findings: The analysis of the literature and the results of surveys indicate that managers have a low level of involvement in the process of digitization of enterprises. Despite their knowledge of the need to implement modern technologies, they do not take real steps in this direction. The results of the survey show that managers appreciate the facilitation of ICT, and what might seem to be an obstacle, such as the unlimited availability of the manager, is not a problem. Among the obstacles to the effective use of electronic means of communication, managers see first of all the low competence of employees and supervisors.
Research limitations/implications: Regarding the limitations of the digitization of organizations, it would be useful to know the perspective of employees. It should be especially concerned with the evaluation of digital competence of managers. The research results presented in the article are the result of self-assessment of managers, which may explain to some extent the high evaluation of their own digital competence in relation to other employees.
Originality/value: The paper has cognitive value. The results of the study can serve as a reference for further research aimed at identifying the degree of digitization of enterprises and the role of managers in it.
Keywords: Information and Communication Technologies (ICT), attitudes of managers towards the use of ICT, digitalization of organizations, means of electronic communication.
Category of the paper: research paper.

1. Introduction

Interest in the digitization of businesses undoubtedly stems from the benefits of ICT implementation, but also from the inevitability of the process. Nowadays, if a company wants to be competitive, it must incorporate modern technologies in its relations with stakeholders. In the Polish reality, an additional reason to pay attention to the problem of digitization of companies, is the need to catch up with the digital backwardness in relation to western companies.

According to the DESI (Digital Economy and Society) 2022 index, Poland is ranked 24th out of 27 EU countries participating in the survey in terms of digital competence. While we have managed to narrow the gap between EU countries in terms of human capital, Poland still has a long way to go in terms of integrating technology into businesses.

The pandemic caused by the SARS-COV-19 virus has forced the acceleration of enterprise digitization. The subsequent crisis related to the war in Ukraine, has contributed to the increased interest of Polish managers in cloud solutions. However, the crisis due to inflation may slow down the momentum of IT deployment. Already the 2023 survey shows, compared to 2022, a dramatic decrease in the percentage of companies declaring an increase in digital transformation spending from 21% to 14% (Digital Business Transformation Monitor, 2022, pp. 23-24 and 39, Digital Business Transformation Monitor, 2023, p. 3). The risk of a deceleration of digital transformation is very real, in line with the regularity indicating that companies' interest in ICT most often during and just after a crisis, after which the interest declines (Burgess, Conell, 2020).

The success of digitization of enterprises depends on many factors, among which the human factor is mentioned. This article pays special attention to managers, as those who are important applicants or decision makers of the purchase of modern technologies in the organization and should be the leaders of change. Managers' perception of the need and possibility of using modern means of electronic communication in the implementation of professional tasks, seems to be crucial. Superiors, more than once, are the reference point for employees on how actively and effectively modern means of electronic communication are or can be incorporated into work.

Research on the need for digital transformation of enterprises usually refers to determining the general level of awareness of managers in this regard. On a small scale, the reasons determining the diagnosed level of digital awareness of managers are inquired. The aim of the article is to diagnose the attitudes of Polish managers towards the implementation and use of ICT in enterprises in the aspects analysed. To achieve the goal, the analysis of secondary materials (research reports, compact publications, journals and Internet sources) and the results of our own survey, conducted among 163 companies located in Poland, were used. The survey used the diagnostic survey method and the CAWI technique. The article presents some of the results obtained within the framework of the research topic on digital leadership.

2. The role of the manager in the digitization of the organization and selected challenges faced by the manager

Companies investing in the purchase of modern information technology (IT), expect at least a return on their costs. "The productivity paradox of information technology" (the productivity paradox of information technology), widely discussed in the literature (e.g. Brynjolfsson, Hitt, 1998, pp. 49-55; Acemoglu, Dorn, Hanson, Price, 2014, pp. 394-399; Korzyński, 2018, p. 17; Wozniak, 2020, p. 108), and which consists in the lack of correlation between the amount of expenditures on implemented information technology (IT) solutions and measurable productivity indicators (Jelonek, 2016, p. 205), may constrain some managers.

Questions about the productivity of IT investments, however, do not necessarily end with a positive answer, since "all IT projects produce results, but not all results are evaluated as benefits" (Peppard, Ward, Daniel, 2007, p. 4 as cited in Jelonek, 2016, p. 212). Do not look for a direct translation of IT investments into productivity, as the success of IT implementation depends on the complementarity of changes in many areas (Arendt, 2016). E. Brynjolfsson (2005) lists seven, and clearly emphasizes human capital among them. Similarly, J. Peppard, J. Ward and E. Daniel, formulating 5 principles of value creation through IT implementation, point to the important role played by enterprise managers and users (2007, p. 4).

The human factor, in addition to technological and organizational, is cited as crucial to the success of an organization's digital transformation (Orłowska, Żołądkiewicz, 2018, pp. 97-99; Wozniak, 2020, p. 119), with management determination and having the right strategy emphasized (Digital Business Transformation Monitor, 2022).

In Polish companies, according to J. Wozniak, the integration of ICT into the management process in organizations is slow, and this is due more to a lack of managerial motivation than to technological or financial obstacles (Wozniak, 2020, p. 119). Therefore, it seems necessary to change the mentality of supervisors as responsible for the implementation of ICT into the organization and controlling and enforcing the correct use of ICT. According to research and literature, the problem concerns not only Polish managers (Burgess, Conell, 2020). The challenge in the digitization of the enterprise is to overcome the conservatism, inertia and resistance of managers to change, but also the reluctance of employees to what is new (Burgess, Conell, 2020; 13 Facts about Digital Transformation, 2020, p. 15; Digital Business Transformation Monitor, 2022, p. 42). What emerges from the 2019 survey is a conservative silhouette of the Polish manager who knows that the advancing technological revolution is necessary. "However, he does not want to get ahead of the rushing reality, preferring to safely go with the trend" (All Secrets..., 2019, p. 3). He relies on his own opinions, is reluctant to take inspiration and suggestions, and is reluctant to communicate with employees (All Secrets..., 2019, p. 4).

KPMG's 2022 research reports that awareness of the need for digital transformation among Polish managers is not exceptionally high. 67% of respondents answered that they attach great or very great importance to digital transformation. However, these declarations are not reflected in action. Companies strive to maintain the status quo (Digital Business Transformation Monitor, 2022, p. 14).

However, the process of integrating ICT into professional tasks is inevitable. In the case of a manager, it makes no sense today to talk about digital and non-digital leaders. ICT technologies have penetrated so heavily into private and professional life that today everyone must have digital competence at least to a basic degree. One can only speak of a digital leader native or immigrant (Sidor-Rządkowska, Sienkiewicz, 2023, pp. 225-226). The first has proficiency with modern technologies, among other reasons, because he grew up among them. The second had to learn how to function in the world of modern technologies, so the use of electronic means of communication is not always natural for him and does not come easily.

A manager's resistance to change as a consequence of the application of modern technologies in the organization may be related to reluctance or inability to change habits formed over decades. ICT technologies are redefining the forms and ways of doing work and the relationship between supervisor and employee. Telework, hybrid work, platform work, among others, are emerging (Śledziewska, Włoch, 2020, pp. 172-179; Sidor-Rządkowska, Sienkiewicz, 2023, pp. 39-40). Performing work remotely can raise questions about employee control, managerial authority and clout, clarity of communication or building strong teams, among others. Leading those performing remotely means for a manager needs to work based on trust and learn to evaluate work performance rather than behaviours which shows employee work. (Sidor-Rządkowska, Sienkiewicz, 2023, p. 163). Working with ICT means also poses a work-life balance challenge for both managers and employees (Cecchinato, Cox, Bird, 2015; Mikolajczyk, 2023, pp. 11-30). The possibility of using IT devices outside the workplace carries the risk of the manager being constantly available and overloaded with information. This is accompanied by excessive multitasking and stress, with a consequent decrease in efficiency (Mikolajczyk, 2023, pp. 11-30). These kinds of experiences can influence aversion to new technologies.

What is feared also brings benefits that managers should not forget, e.g. employment flexibility, increased employee engagement, satisfaction and motivation, time and money savings, competitive advantage, wider access to potential employees (Diaz, Chiaburu, Zimmerman, Boswell, 2012; Moczydłowska, 2021, pp. 41-43). The beneficial effect of working with ICTs was particularly noticeable during the Covid-19 pandemic.

3. Attitude of managers towards ICT in the organization - own research

3.1. Survey methodology and characteristics of the survey sample

The results presented here are part of the research conducted within the framework of the research grant entitled. "Leadership in light of the determinants of modern intellectual capital management and its impact on national security" (UGB No. 865/2021). The study was carried out by a diagnostic survey method using the Computer Assisted Web Interview (CAWI) technique and a proprietary survey questionnaire. The survey, was commissioned to the IPC Research Institute Ltd. Implementation of the survey took place in October and November 2021.

The responses of 149 individuals representing various companies were analysed. The selection of companies for the study was stratified randomly and included companies from 16 provinces in Poland.

IT managers (21 people), board members (24 people), company owners (26 people) and managers (78 people) were invited to the survey. Represented small enterprises with 10 to 49 people (40 respondents), medium-sized enterprises with 50 to 249 people (59 respondents) and large enterprises with more than 250 people (50 respondents). The following industries were included in the survey: trade (46 people), manufacturing (49 people) and services (54 people). The form of company ownership was also taken into account. A partnership was represented by 69 people, while a corporation was represented by 80 people. Companies with predominantly or exclusively Polish capital (122) and predominantly or exclusively foreign capital (27) took part in the survey. The degree of computerization of the company was also asked. No or low level of computerization of the company was declared by 5 people. A medium level of computerization of their company was indicated by 56 people, a high level by 63 people and a very high or total level by 25 people.

The PS IMAGO PRO 6.0 program was used to calculate the results. A certain limitation with the research results presented in the article is that only percentage results can be presented, without indicating correlations between variables.

Analysis of the literature and research reports, allows us to conclude that Polish managers are insufficiently involved in the digitization of the organization. The material presented in the article is an excerpt from the author's study and the basis for answering the research question: What reasons may underlie the low involvement of managers in the process of ICT implementation at work? The research hypothesis was adopted that says that managers are reluctant to implement ICT due to the fact that their time is too much absorbed and the distance between superior and subordinate is shortened.

3.2. Results of the survey

The effectiveness of modern electronic communications largely depends on correctly diagnosing the needs of the organization or target group and adapting modern electronic communications to them. Following fashions unthinkingly can result in financial losses, resulting from the purchase of hardware or software that no one will use. Managers are important applicants or decision-makers for the purchase of modern technologies in the organization, so their perception of the need and possibility of using modern means of electronic communication in the performance of professional tasks seems crucial. The attitude of managers to modern electronic communication means is also worth taking into account for the reason that superiors often, provide a reference point for employees on how actively and effectively modern electronic communication means are or can be incorporated into work.

Some of the questions in the survey questionnaire were devoted to the issue of managers' perceptions of modern means of electronic communication. It was also interested in the motives of managers to reach for them (Figure 1).

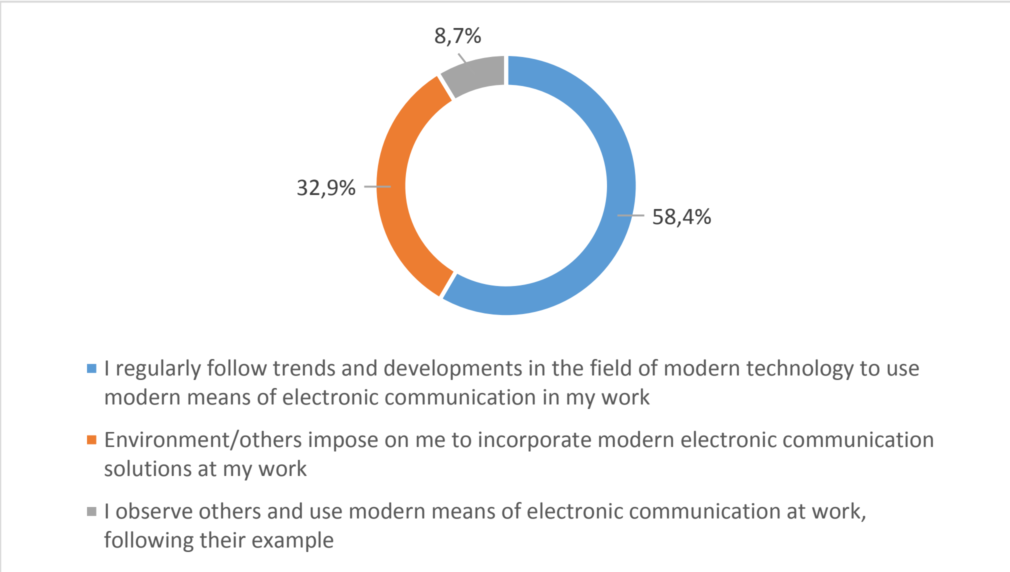

Figure 1. Motivations for using modern electronic communications at work - responses of managers (N = 149).

Source: own study.

In most cases (58.4%), respondents indicate that they are actively seeking news in the area of modern technologies. In other cases, others are the determinants for respondents to reach for modern technologies. Often through the need to adapt, for example, to customers, competitors, cooperators (32.9% of respondents), and sometimes by imitating other users in this regard (8.7% of respondents). Based on the responses that it is others who impose the incorporation of modern electronic communication solutions into the manager's work, we can conclude that in this group of respondents IT measures are adapted to the needs of the audience. However, it is puzzling to what extent the assumption of the need to adapt modern technologies to the needs of the organization and the environment is fulfilled among the remaining respondents (67.1% of respondents).

How managers approach modern IT at work can be learned from Figure 2.

Figure 2. Basis for the use of modern technology in the manager's work (N = 149).

Source: own study. The results of the survey do not add up to 100%, due to the possibility of the respondent selecting more than one answer.

According to the survey, managers use modern technology most often as an element, supporting their work and complementing their direct contacts with employees (55.0% of respondents). This is understandable, as in many professions nowadays it is difficult to imagine working without support from IT means. The group of respondents indicating that modern technology is a necessary requirement in the organisation they represent (41.6%) accounts for a quarter of the respondents. Further groups of surveyed managers treat modern technologies at work as the main way they interact with employees (40.3% of respondents) or as a curiosity that they encourage employees to use (36.9% of respondents). A smaller group of managers use modern technologies as a basis for decision-making (20.8% of respondents). At a time when teleworking has become a more popular phenomenon than before, it may be surprising that a small proportion of respondents (19.5% of respondents) identified modern technology as a basis for collaborating with employees in remote workplaces (e.g. homework, another part of the country, the world). It is possible that part of the respondents' choices regarding this issue was included in the answer indicating IT as the main way to interact with employees. However, it is worth noting that when performing work tasks directly at the workplace, communication via IT may be the main means of collaboration.

On the one hand, digital tools streamline a manager's work (Flak, Hoffmann-Burdzińska, 2017), but on the other hand, they can act as a distractor, distorting information and limiting the building of group bonds, especially those supported by trust (Korzyński, 2018, pp. 17-23). The research conducted was interested in how managers evaluate the implementation of professional tasks through IT (Figure 3).

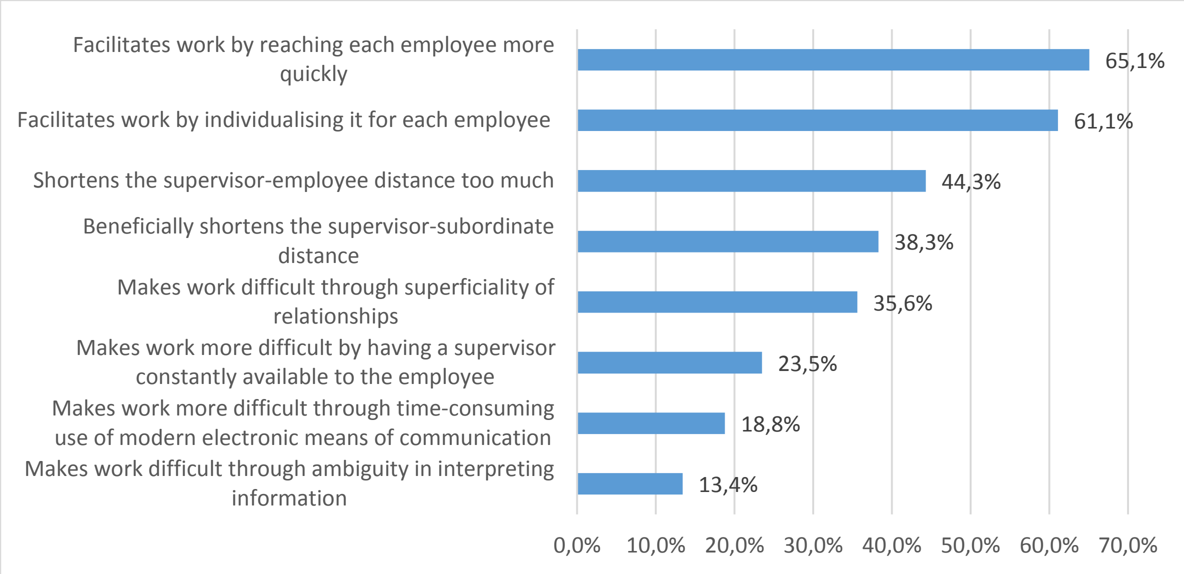

Figure 3. Perceptions, accompanying the evaluation of the manager's work, using modern means of electronic communication with the employee (N = 149).

Source: own elaboration. The results of the survey do not add up to 100%, due to the possibility of the respondent selecting several answers.

Summarising the responses of respondents positively assessing the manager's work using modern electronic communication means, it should be noted that respondents perceive the benefits of this mode of collaboration to a greater extent than the disadvantages, which is in line with the literature and other studies (Moczydłowska, 2021, p. 47). According to the surveyed managers, modern means of electronic communication facilitate work by reaching each employee faster (65.1% of respondents), and by individualising it to the employee (61.1% of respondents). In addition, some believe that this form of communication positively shortens the supervisor-subordinate distance (38.3% of respondents). A slightly larger group of respondents (44.4% of respondents) took the opposite view on the issue of distance in professional relations. They considered that communication by electronic means of communication shortens the superior-subordinate distance too much. Another disadvantage was the superficiality of the relationship (35.6% of respondents), which also hinders work. Some people are disturbed by the constant availability of the supervisor (23.5% of respondents) and the time-consuming use of modern means of electronic communication (18.8% of respondents), which is characteristic of IT-enabled communication. Compared to face-to-face communication, electronic communication often emphasises its impoverishment by non-verbal signals or sparing situational context, which can introduce ambiguity in the interpretation of information. This hindering aspect was highlighted by 13.4% of respondents (Figure 4). The research hypothesis adopted in the article can be partially verified positively. Time-consuming is not the main obstacle to the use of ICT by managers. The more important barrier for managers to use ICT is shortening the distance in relationships between supervisor and employee.

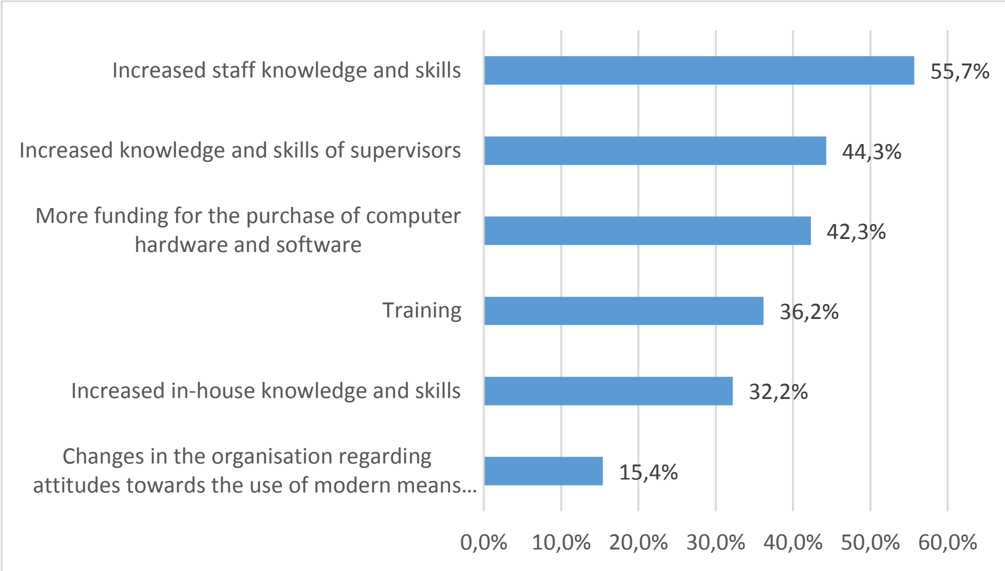

Figure 4. Factors influencing the improvement of the use of modern means of electronic communication in manager's contacts with employees (N = 149).

Source: own study. The results of the survey do not add up to 100%, due to the possibility of the respondent selecting several answers.

The surveyed managers rate their knowledge and skills in the use of modern means of electronic communication at work better, compared to the knowledge and skills of employees and supervisors. In their opinion, a higher level of competence of employees (89 people) and superiors (73 people) would improve the use of IT in carrying out professional tasks. Respondents further mention the need to improve their own competence. Some respondents (67 people) see the problem in insufficient funding for the purchase of computer equipment and software. Other responses highlight the need for training (59 people) to be able to use IT effectively at work. A small proportion of respondents (24 people) indicate the need for a change in attitude towards the use of modern means of electronic communication. This last group of responses raises an extremely important but also extremely difficult factor to change.

4. Summary and conclusions

The digitisation of enterprises is a necessity and a challenge that managers have to face. The literature as well as the results of the available research indicate that managers have little involvement in the process of implementing ICT in the work of the organisation. Despite the fact that managers are aware of the inevitability of ICT use, they follow a conservative approach in their decisions.

The survey shows that managers mostly follow trends and developments in the area of modern technology on a regular basis. On this basis, they decide to use ICT, most often as a complementary/supportive element in their work. The respondents' answers show that few of the surveyed managers use ICT for decision-making and collaboration with employees in remote locations. These results may be surprising given the rise in popularity of remote working and Decision Support System technology (Digital Business Transformation Monitor, 2022, p. 23).

Respondents mainly perceive the benefits of using ICT at work: reaching the employee more quickly, individualising work or the beneficial shortening of the supervisor-subordinate distance. Although this last aspect of working with IT is not viewed positively by all. In implementing IT at work, managers are not bothered by the risk of constant availability, the labour-intensive nature of using IT or the risk of ambiguity in interpreting information.

There is an emerging discrepancy in assessing the degree of digitization of Polish companies. According to the results of the DESI (Digital Economy and Society 2022) survey, Poland, among EU countries, has been ranked one of the last in terms of digitization for years. On the other hand, according to the surveyed managers, the companies they represent have a fairly high level of informatization. The survey questionnaire lacked indicators on the basis of which it would be possible to assess the degree of digitization of the enterprise. The assessment presented by the managers, can be considered subjective, but nevertheless tells us one of the reasons why managers' involvement in the digital transformation of the organization is low. If the level of digitization of the enterprise is rated highly, managers are unlikely to recognize the need for change.

Another dissonance may be puzzling. The surveyed managers mostly see the positives of using ICT, but the research shows (e.g., All Secrets..., 2019) that they are reluctant to implement it intensively in the organization. Perhaps this is related to finances, which were identified in the presented survey as one of the main obstacles to better use of ICT. The first place among the barriers, however, was occupied by human resources.

Managers do not see a problem in the mentality associated with the use of modern technology in the organisation. Likewise, they see little need to improve their skills in using electronic means of electronic communication. However, they draw attention to the low digital competence of employees and supervisors. They believe that more of their knowledge and skills would significantly improve their use of modern means of electronic communication with managers. Such a high evaluation of digital competence of managers is probably due to self-assessment. It would be worthwhile to address the evaluation of managers' digital competences from an employee perspective. However, the best practice for any organisation is to assess the digital competences of the employees it employs in order to make the most of their potential and training. Despite the fact that 55% of the organisations surveyed take technological factors into account in the digitisation of their businesses and in 34% non-technological factors (13 Facts about Digital Transformation 2020, p. 28), it should be emphasised that human resources are one of the main factors determining the success of digital transformation.

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STATE SUPPORT FOR THE IMPLEMENTATION OF PEASANTS' LAND RIGHTS IN UKRAINE IN THE CONTEXT OF EUROPEAN INTEGRATION

Lubov MOLDAVAN[1], Olena PIMENOWA[2]*, Piotr PRUS[3]

[1] Department of Forms and Methods of Management in Agri-Food Complex of SI, Institute of Economics and Forecasting of National Academy of Sciences of Ukraine, Kyiv, Ukraine; lmoldavan@ukr.net, ORCID: 0000-0002-5347-2699
[2] Department of Agronomy, Faculty of Agriculture and Biotechnology, Bydgoszcz University of Science and Technology, Bydgoszcz, Poland; olena.pimenowa@pbs.edu.pl, ORCID: 0000-0002-5531-6155
[3] Department of Agronomy, Faculty of Agriculture and Biotechnology, Bydgoszcz University of Science and Technology, Bydgoszcz, Poland; prus@pbs.edu.pl, ORCID: 0000-0002-4447-4019
* Correspondence author

The purpose of the article is to justify, on the basis of the theoretical foundations of the economic and social function of land property and generalization of the European practice in this area, the directions of changes in Ukraine's agrarian policy with a view to creating conditions under which small and medium-sized producers will remain participants of the agrarian market and will be able to realize their right to purchase land for agricultural production and fulfil their mission of maintaining the country's agri-food security and preserving the well-developed rural areas.
Methods/methodology/approach. In the course of the study, the following methods were used: monographic (analysis of land use by small and medium-sized farms and their production); comparative analysis (identification of the peculiarities of institutional models of state support for the realization of peasants' rights to land in Ukraine and EU member states); empirical (assessment of the consequences for small and medium-sized agribusiness of the current legislation on liberalization of the agricultural land market); abstract and logical (generalization and formation of the main conclusions and recommendations).
Findings. The results of the study indicate the importance of implementing radical changes in Ukraine's agrarian policy concerning small and medium-sized farms, which is the main factor in the formation of the farming agricultural system and the suspension of further development of the processes of financialization of agricultural land and the formation of an oligarchic-latifundist type of land use. The impossibility of small and medium-sized farms to participate in the land market due to lack of access to long-term credit has been proven. Recommendations have been developed to bring the institutional model of state support for the financial capabilities of small and medium-sized farms to expand land use as an important factor in increasing their competitiveness in line with the Western European legal framework and practice, which is required by Ukraine's expected European integration.

Originality/scientific novelty. The scientific novelty of the study lies in the substantiation of the state policy aimed at socializing the agricultural land market in Ukraine by forming an institutional model of financial support for the realization of peasants' rights to land in the context of European integration.
Keywords: peasants, right to land, state support, farms, Ukrainian European integration.
Category of the paper: Research paper.

1. Introduction

In the current century, the processes of "land grabbing" - the seizure of fertile land by national and transnational companies, including through the use of legal investment methods - are gaining global prominence in various countries. Specialized companies, private equity funds, pension funds, hedge funds and other entities are involved in the process.

The term "financialization of land" has been coined in scientific literature, meaning the transfer of an investment asset from owners for whom the land is the main means of production and a social good for the family to owners whose main motive for gaining control over the land is to make profits to increase their wealth. In this case, the land becomes a capital that can be traded like any other good.

This violates the basic law of the market turnover of agricultural land, which is formed on the basis of recognition of the primary and fundamental importance of land as a public good, not just a good whose functions are determined by the market. Land has the characteristics of a good, but it is not a good in its classical sense, since it is reproducible, cannot be replaced by any other means of production, and without it, it is impossible to provide people with food. Land is spatially limited, which in economic terms means that there is a lack of areas characterized by a combination of certain properties and natural conditions that are most favorable for food production. The spatial limitation of land in terms of free circulation means that its supply cannot be increased even in the face of a significant increase in land prices. Therefore, the market turnover of agricultural land is based on the priority of the public function of land ownership, namely:

- ensuring the realization of fundamental human right to safe food and sufficient food of national production;
- ensuring the realization of peasants' right to decent livelihoods in their place of residence as a fundamental human right (Borodina, 2019).

International capital is buying up agricultural land by exploiting legal loopholes and shady deals, even in developed countries where peasants' land rights are well protected. In the European Union, for example, it has become possible to acquire land by purchasing the statutory capital or shares of a corporate farm. In France, for example, European and international companies conducted transactions worth EUR 1.2 billion in 2019 in this way.

The SAFER Agency was unable to prevent the development of these processes, as its functions did not extend to the regulation of owners of shares in corporate farms. To remedy the situation, the law "On Emergency Measures to Regulate Access to Farmland through Corporate Structures" was adopted, which recognized the above processes as a threat "to the country's food sovereignty, the future of agriculture, farming development and territories". To address the problem, the law extends the SAFER pre-emptive right to shares and stakes in agricultural corporate structures, provides for measures to strengthen administrative control over the corporate market, regulates mechanisms to encourage land sales in favor of family farms, ensures control over price compliance in local land markets, imposes administrative penalties and cancels illegal transactions with shares or stakes in corporate farm statutes and a number of other (Law No. 2021-1756 of 23.12.2021).

According to the analytical company Land Matrix Partnership, more than 250 million hectares of arable land have been bought in developing countries since 2001. An analysis conducted by Oxfam in 56 third world countries showed that the concentration of land in hands of big business has led to the eviction of local people, the disappearance of farms, deterioration of land quality and food crises (Unkovska, 2019). The conclusions of this and a number of other international organisations are as follows: *the purchase of agricultural land by foreign investors and large national agricultural holdings is one of the biggest threats to the livelihoods of the rural population, rural development and food security of countries receiving this type of investment.*

In Ukraine, national and multinational companies began to build up their land banks under the moratorium on leasehold purchases and sales starting in 2003-2004. Currently, according to various studies, they control from one third to one half of agricultural land (no official statistics are available). The average size of land use in corporations that lease more than 10 thousand hectares is more than 23 thousand hectares and the 16 largest of them have concentrated between 100 and 600 thousand hectares in their hands. On average, each of these companies owns more than 200 thousand hectares of land.

In accordance with the Law of Ukraine "On Amendments to Certain Legislative Acts of Ukraine on the Turnover of Agricultural Land" No. 552-IX dated 31.03.2020, the moratorium has been lifted. From July 1, 2021, until 2024, individuals, individual entrepreneurs engaged in agricultural activities and farms will be able to exercise the right to a land plot by purchase. Since January 1 of this year, enterprises of various organizational and legal forms, including agro-industrial and trading companies, banks, etc. have been participating in the land market. The law allows one person to purchase up to 10,000 hectares of land (for comparison, in Poland and Hungary this figure is 300 hectares, in Germany - up to 500 hectares).

The law also does not provide for any other restrictions on access to agricultural land, as is the case in EU land legislation (sale to individuals engaged in agricultural production, meeting qualified conditions and living in rural areas, limiting the concentration of land in one hand, etc.).

In Ukraine, land use regulation remains diametrically opposed to the principles of a fair human rights-based approach and is focused on supporting large-scale agricultural production.

2. Methods of the study

In the course of the study, the following methods were used:

- The monographic research method involves a thorough analysis of land use by small and medium-sized farms, including their production practices and efficiency. The authors systematize and critically evaluate scientific literature and statistical data aimed at understanding the peculiarities of the economic activities of the above-mentioned business entities in the context of European integration.
- The method of comparative analysis is used to study institutional models of state support for peasants' land rights by comparing the regulatory systems in Ukraine and EU member states. Not only formal legal norms are analyzed, but also their real impact on market relations and protection of peasants' land rights in Ukraine.
- The method of empirical research is used to obtain specific data and facts about the impact of the current legislation on land market liberalization on small and medium-sized agribusinesses.
- The method of abstract and logical research is used to formulate generalizations and logically sound conclusions. The authors use abstraction and logical analysis to develop theoretical concepts, summarize the results and provide scientifically sound recommendations based on the data and analysis.

Social impacts: State support for the realization of peasants' land rights creates the fundamental basis for poverty reduction, which is in line with the first Sustainable Development Goal (SDG 1). Support for small and medium-sized farmers increases the availability of balanced food for local consumption and improves the resilience of production systems, which contributes to SDG 2. Given the fact that the vast majority of rural women are employed in agriculture, targeted lending for the acquisition of land for star or expand an existing farm increases their economic opportunities and thus contributes to gender equality and the empowerment of all women and girls (SDG 5). Strengthening the financial capacities of small and medium-sized family farms promotes full and productive employment and decent work for rural people, especially youth (SDG 8). A civilized land market helps to prevent corrupt practices and institutional capacity create efforts aimed at improving access to justice for peasants (SDG 16) (UN Policy Brief, 2020).

Practical significance. The practical value of the study lies in the development of recommendations for priority European integration measures to identify private peasant households in the status of farms, to regulate the criteria for determining agricultural producers as small and medium-sized and restrictions on land use by one business entity, to form an institutional model of financial and credit support for the purchase of agricultural land, primarily by small and medium-sized farms. Using the recommendations to modify agricultural policy will help harmonize it with the EU's Common Agricultural Policy, which is required Ukraine's orientation on European integration.

3. Results and Discussion

In European Union, the support for small and medium-sized agricultural producers is an important component of the Common Agricultural Policy, due to the indispensability of such farms in ensuring food security, rural employment and preserving the settlement and development of rural areas. The category of small and medium-sized farms in Ukraine is represented by household farms, which, cultivating 38% of the land, produce 40-42% of gross agricultural output. They account for 72 to 98% of milk, beef, fruit and berries, vegetables and potatoes. Household farms are mainly private peasant farms (hereinafter referred to as PFHs). As a result of the merger of land shares received in the process of reforming collective agricultural enterprises, more than 1 million individual farms have formed their own land plots of 1 to 10 hectares or more, of which about 150,000 have more than 5 hectares and 60,000 have more than 10 hectares. In Western European countries, households of 1 hectare or more are considered farms, i.e., entrepreneurs. In 10 EU member states, such farms form the agricultural system. *According to the current Ukrainian legislation* (Law of Ukraine "On Personal Peasant Farming", 2003), *the activities of these farms are not considered entrepreneurial*, although their land is marketable, where products are produced to generate income (profit).

The unregulated status of marketable PFHs as business entities results in the lack of state policy to support such farms, loss of income due to the lack of official status, uncertainty of development prospects, social insecurity of PFHs members, etc. The European integration of Ukraine requires the immediate adoption of the Law "On Agricultural System", which is currently missing, as well changes and amendments to existing legislative acts related to the regulation of entrepreneurial activity of PFHs in the status of farms. At the same time, it is necessary to regulate the criteria for defining agricultural producers as small and medium-sized, taking into account the specifics of agriculture and established European practice.

The competitive environment objectively motivates small and medium-sized farms to increase the number of plots and fields of crop rotation to use more powerful machinery and new technologies, reduce individual costs for the formation of the necessary material and technical base in order to strengthen the economic situation and ensure the competitiveness of production. As a rule, farmers purchase land plots with borrowed funds. In Ukraine, it is almost impossible for small and medium-sized farms to apply to bank lenders for a long-term loan.

Banks agree to work only with those who own 500 hectares or more of agricultural land. The main factors that hinder lending for the purchase of land plots by small and medium-sized producers include: the lack of statistics on their loan repayments; untested procedures for foreclosing on agricultural land plots in case of default by small farms on their loan agreements; high cost of bank operating expenses for credit risk assessment; problems of farmers with providing liquid collateral in addition to the pledged land plot, which is acceptable to the bank etc. Another restrictive factor is the low liquidity ratio of land as a pledged asset - according to the National Bank of Ukraine Resolution No. 351, it is 0.35, i.e. 35% of the price of the pledged land plot. The National Bank of Ukraine considers that this liquidity ratio reflects an objective level of compensation that the bank can expect in case of default by the borrower. The reasons for the significant losses in the sale of the pledged land received by the bank are related to lengthy and costly foreclosure and sale procedures. Thus, for one hectare of purchased land, the bank will have to pledge almost three hectares of land, or two-thirds of the value of the purchased land of other liquid property, which is impossible for a farmer, let alone a private farm that owns only the land received as a share. Thus, the lack of additional liquidity for small and medium-sized farms makes it impossible for them to obtain long-term loans to buy land.

For small farms, lending rates are also a deterrent to land purchases, as they are significantly higher for individuals than for corporate loans. Lending rates are also higher for small and medium-sized farms. According to the National Bank of Ukraine, in 2020, the weighted average interest rate on loans in agriculture was 13.9% per annum, and for small and medium-sized agribusinesses it was on average 20-22%.

In EU countries, lending for the purchase of agricultural land is usually provided through the *system of cooperative banks*. In France, this is the Credit Agricole network of cooperative banks, in the Netherlands it is Rabobank, in Romania it is Creditcoopbank, in Spain it is Coopérative de Credito, and in Germany it is the Deutsche Gesellschaftsbank system. Poland's rural cooperative credit system includes 596 cooperative banks with 3.3 thousand local branches, which cover 80% of the credit needs of their member farmers, including long-term loans for land purchase.

Such an approach can be seen not only in European or North American countries (the Farm Credit System is the main lender in the US), but also in developing countries such as India's cooperative system of long-term land purchase loans, which includes 67% of farmers (880 thousand farms), 20 state cooperative banks and 2841 district cooperative banks (Kotomina, 2018).

Credit cooperatives are both public and specific financial institutions. They are a form of mutual financing (or collective self-financing) that emerged as a response by small and medium-sized enterprises to the lack of access to commercial bank loans. The advantages of credit cooperative institutions compared to commercial banks are: lower interest rates than all other banking structures; the possibility of obtaining both small and large loans for the purchase of land as collateral on the basis of guarantees from cooperative members (the loan circle);

a simpler loan arrangements procedure and easy access to loans at any time and a number of other advantages.

Lower interest rates than commercial banks (in Poland, for example, 2%, Germany - 3%, Spain - 3.5%) are ensured by the non-profit status of cooperative banks. Their purpose is to provide their members with services at rates that do not provide for banking profits, as is the case in commercial banks.

EU cooperative banks provide loans for the purchase of agricultural land secured by any farm property, including land, which, in case of default, is often transferred not to the bank but to the farmer, a member of the "loan circle". At the same time, the liquidity ratio of the pledged land is 80-100%, not as in commercial banks.

The system of preferential long-term cooperative lending for farmers' purchases of agricultural land is complemented by state *non-bank lending institutions*.

In the UK, in addition to cooperative lending institutions, the Agricultural Mortgage Corporation (AMC), established under the Agricultural Credit Act to provide long-term mortgage loans to revive land tenure, especially for young farmers, lends to farmers to purchase real estate. The corporation includes 5 banking institutions that provide mortgage lending to farms. The interest rate on the loans is 2.5% and is either fixed for the entire term of the loan agreement or floating, which is reviewed annually depending on market conditions in the interests of farmers. The lower interest rate is provided by government subsidies. Another benefit is that the loan principal and interest rate are not paid for the first 12 months. The term of a long-term loan is up to 40 years. The minimum loan amount is 25 thousand f.s. Debt obligations are transferred from generation to generation or through the family.

AMC works directly with farmers through its network of land agents and specialized regional agricultural managers, with whom all the details of obtaining a long-term loan to purchase a land plot are discussed in compliance with the legal restrictions (Agricultural Mortgage Corporation; Bondarchuk, 2020)**.**

Cooperative and state institutions specializing in lending for land purchases by farms provide long-term loans for periods ranging from 15 years (Poland) to 50 years (Denmark). The loan amount ranges from 60% to 100% of the value of the land plot for which the loan is used. The liquidity ratio of the pledged land plot is 70-75%.

The realization of peasants' rights to land significantly depends on the presence of state institutions on the land market with the functions of market regulation and state land governance. In Poland, this is the Agricultural Real Estate Agency (ANR), in Hungary - the National Land Centre (Nemzeti Földügyi Központ (NFK), in Latvia - the Latvian Land Fund, and in France - the Agency for Land Management and Rural Development (SAFER).

Land market regulatory agencies have a pre-emptive right to purchase land plots put up for sale, which gives them the ability to influence on the price situation in the interests of farmers.

There is no agricultural credit cooperative in Ukraine. The legal regulation of the establishment and operation of cooperative banks is limited by Article 8 of the Law of Ukraine "On Banks and Banking Activities" No. 2121-III of 07.12.2000 (Law of Ukraine "On Banks and Banking Activities", 2000), which refers to the current cooperative legislation. However, the Laws of Ukraine "On Cooperation" No. 1087-IV of 10.07.2003 (Law of Ukraine "On Cooperation", 2003) and "On Agricultural Cooperation" No. 819-IX of 21.07.2020 (The Law of Ukraine "On Agricultural Cooperation", 2020) do not mention cooperative credit institutions. Therefore, agricultural cooperative banks cannot be registered as service cooperatives with non-profit status.

The regulation of the minimum capital for a cooperative bank is also not worthy of criticism. While in Poland it is EUR 1 million, in Ukraine it is UAH 200 million, i.e. within EUR 5 million, which makes it almost impossible for agricultural producers to create such structures.

This proves the need to make significant changes and additions to the current banking legislation, or to adopt a separate framework Law of Ukraine "On Agricultural Cooperative Credit" with a focus on the formation of a European system of long-term lending to agricultural producers by cooperative banks with a closed cycle of mortgage operations.

The legislation on credit unions also contains significant gaps. First of all, cooperative legislation does not regulate them in the status of a non-profit service cooperative. According to the Law of Ukraine "On Credit Unions" No. 2908-III of 20.12.2001(Law of Ukraine "On Credit Unions", 2001), these entities are non-profit organizations. However, the Law of Ukraine "On Financial Services and State Regulation of Financial Services Markets" No. 2664-III of 12.07.2001 (Law of Ukraine "On Financial Services and State Regulation of Financial Services Markets", 2001) legalizes credit unions as financial institutions on a par with banks and other institutions that provide services for profit. Also, credit unions do not fit into the articles of the Tax Code of Ukraine that relate to the requirements for non-profit organizations. As a result, credit unions are not eligible for inclusion in the Register of Non-Profit Organizations (Credit unions, 2017). As a result, they pay taxes and set interest rates for loans at the level of commercial banks.

The contradictions in legislation regarding the economic (non-profit) nature of credit unions fundamentally change the natural essence of these credit institutions, making it economically disadvantageous to establish them.

Without the creation of this institutional model to support the financial capacities of agricultural producers, the Conceptual Directions for reducing the cost of loans to agricultural producers for the purchase of agricultural land in cooperation with commercial banks approved by the Government have not been implemented. The Government's intentions do not correspond to the interests of commercial banks, which set unbearable requirements for borrowers of concessional loans, as evidenced by the current practice in Ukraine. The mechanism of partial compensation of interest rates on loans from private banks has been in place in the agricultural sector since 2000. However, farmers hardly ever use this program due to the high upper limit of the compensated loan rate, the high amount of mortgages (up to 300% of the loan amount), the requirement of up to 30% down payment and the loan terms that farmers cannot meet.

The creation of a favorable institutional model of financial and credit support for the purchase of land plots by farms should be complemented by legislative regulation of the restriction of land concentration in the hands of one business entity. According to our calculations, taking into account the national peculiarities of organizational and legal land use, the size of a land plot on the basis of ownership and/or lease should be up to 500 hectares for an individual and up to 5000 hectares for a corporate farm.

The institutional model of financial and credit support for the purchase of land by agricultural producers, in particular small farms, is formed, in addition to cooperative banks, as shown above, by state institutions specialized in these functions.

Ukraine has a non-bank specialized financial institution, the Ukrainian State Farm Support Fund (Ukrderzhfond). However, its functions are, firstly, limited to small amounts of short-term credit resources, which are mostly used to replenish fixed assets. Up to a quarter part of the loans are used to purchase machinery and equipment, and a fifth part of them are used for production activities. There is no mention of targeted long-term loans through the Ukrderzhfond for the purchase of land plots to expand an existing farm or set up a new one. Secondly, the Fund's functions do not apply to servicing PFHs.

An important and urgent task for the government is restructuring and expanding the functions of this non-bank financial institution to include preferential long-term lending for the purchase of land by farms and private households, as well as granting the Ukrderzhfond the status of a guarantor of repayment of loans issued by other financial institutions, including banks, based on the experience gained abroad.

Without the implementation of these and other measures, small farms with land use of 1 hectare or more (Table 1), which number within 800 thousand, will not be able to expand their land plots and transform into medium-sized farms and adapt to the European space in the process of Ukraine's EU membership.

Table1.
Distribution of agricultural enterprises by the area of land in their use in 2021

Indicators	**Number of farms, %**	**Land area in use, %**
Farms with land area, ha:		
up to 0.50	51,3	11,3
0,51-1,00	26,5	15,3
1,01-5,00	18,3	30,1
5,01-10,00	2,1	11,9
10.01 and more	1,4	31,4

Source: Main agricultural characteristics of farms in rural areas, 2021. P.3.

Regulation of these institutions as well as mechanisms to ensure state support for the realization of peasants' rights to land, their protection from unfair competition in the land market will help to avoid such negative consequences in the future as: concentration of land in the hands of big capital and landlessness of peasants; speculation on acquired land, using it as a way of enrichment, rather than for its main purpose - ensuring the country's food sovereignty and the viability of rural areas; transfer of ownership of land to the lender as a result of the inability of small and medium-sized borrowing farms to repay mortgage loans secured by land plots; deepening agricultural specialization, rising rural unemployment, decline of rural settlements and rural development in general as a result of the dominance of monoculture production; exhausting, environmentally hazardous land use for the sake of obtaining short-term benefits from the permanent cultivation of the most profitable crops.

4. Summary and Conclusions

1. Small and medium-sized farms play a significant role in ensuring food security, preserving rural settlements and developing rural areas, which leads to institutional, legal, financial and organizational support for their business activities. The European integration orientation of Ukraine requires to change of emphasis in the state agricultural policy to support the development of marketable private peasant farms as entrepreneurs and to implement the extensive practice of such support in Ukrainian legislation.
2. The analysis of scientific literature and practical foreign experience shows that the formation of favorable institutional conditions for the realization of peasants' rights to land is an objectively determined system component of the EU Common Agricultural Policy. The institutional model is based on cooperative credit banking structures, non-bank financial state institutions and agencies with the functions of regulating the land market and disposing of state land with their specific activities.
3. State agencies that regulate relations between land market participants and governance state land use mechanisms that significantly affect pricing and facilitate the acquisition of land by small farms. In EU countries, the most common practices include: selling land plots at prices lower than those for private plots; selling land to a leasing farmer for a price significantly lower than the market price; using the pre-emptive right to purchase a land plot which put up for sale to control and stabilize land prices, etc.
4. In Ukraine, the lifting of the moratorium on the sale and purchase of agricultural land took place in the absence of an institutional environment favorable to the acquisition of land by small and medium-sized producers, primarily **PFHs** and the main part of farms. The mechanisms of credit support for the purchase of land by small farms

proposed by the Government are, firstly, inaccessible according to the criteria set for them, and secondly, their implementation is supposed to be carried out in partnership with commercial banks, which almost nullifies the goal due to the unacceptable conditions for obtaining loans for the purchase of land by farmers.

5. According to the authors, the priority measures to solve the problem include legal identification of **PFHs** as family farms, regulation of the criteria for defining agricultural producers as small and medium-sized, taking into account the specifics of agriculture and European practice as well restrictions on the concentration of land in the hands of one business entity, creation of a state non-bank institution for preferential lending on the basis of the Ukrderzhfond and creation of a state-owned farm credit institution.

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CREATIVE METHODS AS AN OBLIGATORY COMPONENT OF THE TECHNICAL SPECIALISTS EDUCATION IN THE POST-INDUSTRIAL ERA

Valentyna MOLOKANOVA[1], Vitalii PETRENKO[2], Valeriy KUZNETSOV[3],
Vitalii KUZNETSOV[4], Agnieszka KRÓL[5], Marzena KACPRZAK[6],
Izabela WIELEWSKA[7*], Barbara WYRZYKOWSKA[8]

[1] National Technical University "Dnipro Polytechnik", Dnipro, Ukraine; molokanva.v.m@nmu.org.ua,
ORCID: 0000-0002-4353-4948
[2] Ukrainian State University of Science and Technology, Dnipro, Ukraine; petrenko_v@email.ua,
ORCID: 0000-0001-5017-1674
[3] Railway Research Institute, Warsaw, Poland; vkuznetsov@ikolej.pl, ORCID: 0000-0003-4165-1056
[4] Ukrainian State University of Science and Technology, Dnipro, Ukraine; witjane20002014@gmail.com,
ORCID: 0000-0002-8169-4598
[5] Warsaw Management University; agnieszka.krol@mans.org.pl, ORCID: 0000-0002-5685-7578
[6] Warsaw University of Life Sciences; marzena_kacprzak@sggw.edu.pl, ORCID: 0000-0002-0680-8241
[7] Bydgoszcz University of Science and Technology, Poland; wielewska@pbs.edu.pl,
ORCID: 0000-0002-1721-6890
[8] Warsaw University of Life Sciences, Poland; Barbara_wyrzykowska@sggw.edu.pl,
ORCID: 0000-0002-7025-0799
* Correspondence author

Purpose: The article's objective is formalization of the model, the main stages and creative methods of training technical specialists, the definition of features and directions for further education development in the post-industrial era. The article is aimed at revealing the nature of creativity, highlighting the essence of the functions of methods of creative activity and their importance for students of technical specialties.
Design/methodology/approach: The work uses critical analysis of scientific and methodological sources, system and convergent analysis methods, generalization and systematization of practical experience. The method of convergent generalization made it possible to identify key indicators of the model of creative competencies. The conceptual model of creative competence was developed based on the results of cooperation on the frame of master's programs for the project managers training. For the practical part of research, a qualitative method was used (participant observation, individual interview, tests).
Findings: The need to train technical specialists in the methods of creative search using modern technologies, which allows to achieve the effects of the intellectual potential development for the individual, the state and society, is justified. An experiment on training project managers of two Ukrainian institutes in creative technologies proved the feasibility of implementing such training. Based on the calculation of the creative competencies' development of the first- and second-year study technical specialists, the need to add a mandatory creative component to educational programs has been determined.

Implications/Recommendations: To assess the quality of training, a methodology for assessing the level of competence has been applied. This made it possible to identify a low level of some competencies and, at the stage of improving the curriculum, plan the necessary corrective actions for the development of weak components of competencies. Since project-oriented learning is used, the model is similar to the model of the classical project life cycle and will be especially useful in the implementation of innovative projects in production. The article presents a framework for teaching students creative competence, which can be used by other educational institutions.
Originality/value: The review of literary sources proved that so far very little attention has been paid to the development of creative competencies in students of technical specialties, although these competencies will be the competitive advantage of a person in the competition with artificial intelligence. The model of creative competencies for the technical specialists training is presented, which is divided into four areas, which in turn are divided into four components. These areas relate to the sampling and systematization of knowledge; adaptation to user requirements; awareness and dissemination of hidden knowledge; transition to the active use of knowledge.
Keywords: creative competencies, learning models, post-industrial era.
Category of the paper: research article.

1. Introduction

The development of our society demonstrates that humanity clearly does not keep up with the changes taking place. Unexpected events of society exacerbate the situation very quickly and become the subject of analytical research when they need immediate solutions. Consequently, it is becoming increasingly clear that with the old models of thinking humanity cannot achieve sustainable development, which will provide conditions for the survival of future generations.

Since the beginning of the twenty-first century, there has been an intensive search for a new strategy for the survival of mankind in conditions of limited natural resources, the growth of the world's population and the aggravation of political, social and environmental problems. To meet the basic needs of mankind, not only a new wave of economic growth is needed, but also a deterioration in the natural conditions of human existence. For the safety of human existence as a biological species, not only economic growth, but also new products of innovative thinking are necessary. The problem of the future development of civilization in a changing reality has come to the forefront of scientific research and social consciousness. The development of the digital economy, based on the emergence and consumption of information, causes great socio-economic shifts, including in the field of labor relations, while changing the type and professional activity and nature of labor itself. Since not only simple physical labor, but also complex calculation algorithms machines perform faster and more efficiently than a person, they are increasingly displacing not only poorly qualified, but also sufficiently competent workers from the labor market. In the digital economy, the nature of work is associated with the constant professional development of employees, their constant training and creative communication. The development of science and innovative technologies poses fundamentally new classes of cognitive problems for researchers, for the solution of which it is necessary to comprehend convergent and divergent technologies that bring together and interpenetrate into science, technology and man's life (Bushuyev et al., 2010; Rach, Medvedeva, 2015).

Modern education at the moment is the sphere in which the main task is to bring up a creative, capable of self-realization, and constantly learning person. From time to time, the situation of training specialists determines the presence of a contradiction in it: on the one hand, the training of a specialist is based on the acquisition of knowledge and skills in subjects within the framework of the "Educational Program", and on the other hand, the social situation requires that each person develop systemic thinking to solve complex problems. The solution to this contradiction is possible if, while maintaining the necessary content of the educational process forms, and methods of training specialists will contribute to the development of a creative and self-actualizing personality (Molokanova, 2007; Rybak, 2005).

The article's objective is formalization of the model, the main stages and creative methods of training technical specialists, the definition of features and directions for further education development in the post-industrial era. The article is aimed at revealing the nature of creativity, highlighting the essence of the functions of methods of creative activity and their importance for students of technical specialties.

The article covers the methodology of the research, presents the main empirical findings, and outlines the implications for the economy and business. It also indicates further research directions in this area.

Main research problems: Do creative methods fulfill their role in the training of technical specialists in the post-industrial era?

What is the relationship between changes in the economy and business and changes in educational systems at the university level?

2. Unsolved aspects of the problem

In the second half of the twentieth century, the views of non-classical science have become more common, the object of study of which are complex systems dependent on human behavior. At the same time, the subject of management and the system of its values become the main subject of attention of researchers. At the same time, modern management abandons rigid hierarchical management structures and moves to dynamic project-oriented systems, which are enshrined in new standards for project management (A guide to the project management body of knowledge (PMBOK® guide, 2017; Individual Competence Baseline for Project, Programme & Portfolio Management, 2015). This is supported by the recognition of the importance of human resource management not only in the European and American, but also in the Japanese system of knowledge on project management P2M (P2M: Management of projects and programs, 2009). Over time, the popularity of value-based management increases, which determines and structures a value-oriented approach in projects (Molokanova, 2015).

Manuel Castels, an authoritative social thinker and researcher of the modern world, one of the first paid attention to the phenomenon of growing convergence in modern society (Castels, Himanen, 2006). In the book "The Information Age: Economics, Society and Culture", he points to the existence of a complex interaction between technology and society. what affects the man’s life. The meaning-forming factor of the new world, according to M. Castels, is a new technological paradigm built around information technology. It can be assumed that our future is connected with the interdisciplinary organization of science and cognitive technology (Run, 2008).

To meet this need, problem-based learning (PBL) was introduced as a method that promotes the development of critical thinking skills, the ability to solve complex problems. This may give technicians opportunities to find work in the future, as artificial intelligence cannot yet solve such problems on its own (Duch et al., 2001).

The methodology of knowledge management is becoming increasingly human-oriented, as the cause and factor of effective work in conditions of uncertainty. This opens a wide field for studying the personality of a modern technical specialist: his views, creative thinking, reactions to events occurring in life, that is, deeply individual factors (Wach, 2015; Nowiński et al., 2020).

Today, there is already a general understanding in the scientific community that curricula must be constantly updated in order to adapt to dynamic changes in the environment. Education should prepare the future specialist for such work, which does not exist and cannot yet be clearly defined, so it is not clear which skills should become the most important in the curricula. According to the authors, the development of personal qualities of students should be aimed primarily at forming a systematic understanding of the world construction and the need for constant development of the creative function.

In the history of knowledge, many attempts are known to reveal the nature, mechanisms and essence of the processes of creative activity. The majority of these attempts are characterized by a tendency to present the nature of creative search based on mechanical, biological, technocratic, psychological and similar views. In training specialists in technical specialties, teaching creative activity is practically absent in Ukraine, or is perceived with some skepticism. Such deformed ideas about the essence, tasks, and possibilities of innovative search methods have a very negative impact, both on the system of cognitive activity and on the processes of development of the intellectual potential of the individual, the state, and society.

The orientation of higher education to the formation of a holistic, creative, morally mature personality, as the highest value of society, is determined by one of the strategic directions of state policy in the field of higher education (On higher education: Law of Ukraine, 2014). In Ukrainian education, it is now more necessary than ever to find its way of reform to play the role of a locomotive in the society transformation (Zinkovsky, 2010).

3. The purpose of the work

The purpose of the work is the formalization of the model, the main stages and creative methods of training technical specialists, the definition of features and directions for the further development of education in the post-industrial era. To achieve the goal of the study, the following tasks were set:

1. To determine the features and main aspects of advanced education.
2. Analyze the relationship between the current and future model of the knowledge economy and changes in educational systems.
3. Conduct an experimental verification of the proposed approach, identify its logic, essence and basic rules.

4. Research Methodology

One of the most important factors that led to the transformations of the twentieth century was the creation of a new phenomenon of convergence of science, technology and society. The first attempts to comprehend this process were manifested in the concepts that arose with the assertion of the arrival of a fundamentally new type of society, which is so far called differently: information society, knowledge management society, post-industrial era, the era of digitalization, gig-era etc.

Most of the authors of these theories talk about the onset of the era of convergence, which introduces new "rules of the game" not only into the technological sphere, but also into the social, cultural, existential one. Although the term "era of convergence" does not appear in the theories of society, but the concept of convergence, convergence of technologies is present in a number of modern concepts. Science is already such forms of disciplinary integration of knowledge as interdisciplinarity, multidisciplinarity, polydisciplinarity are known (Kryvoruchko et al., 2014).

Convergence in a broad sense is the interweaving, interaction and interpenetration of various spheres of society, as a result of which new synergistic effects arise, leading to rapid transformations of scientific, technical and social development of society. causing, ultimately, not only scientific and technological progress, but also the dangers and risks of the very existence of human civilization.

A special role in the implementation of convergence processes is played by creative search technologies. Today there is not a single developing industry without the use of innovative technologies (Telyuk, 2023). Methodologically, they became a common methodological basis for the search for innovative solutions. At present, information technologies have also appeared, uniting the existing highly specialized science and industry economy into a single picture of understanding the world.

A qualitative design was used in the study. The empirical data comes from the analysis of the curricula of two Ukrainian institutes training technical specialists in the development of creative competence. Our work uses the method and critical analysis of scientific and methodological sources, methods of system and convergent analysis, generalization and systematization of practical experience. The application of the creative model indicated the need to implement changes in educational programs shaping future managers in order to make them more easily adaptable to the labor market and to integrate the educational field with the business field.

5. Results and Discussion

Today, when Ukraine has already received the status of a candidate for accession to the EU and the country faces a hundred times more complex economic, political, social tasks, the question of improving the integral competence of future specialists is very acute. We have to consider a set of common strategic challenges related to innovation processes and quick response to the current state of the country.

Project management is a productive activity aimed at solving complex problems through the implementation of innovative projects. Project management is an ideal means of transforming the world by creating a project product (Doppelt, 2003). For the development of project education in Ukraine, the creativity of project managers is also very important, as it has not yet been integrated into the management methodology. Therefore, teachers and scientists face an important task of integrating into the methodology of technical specialists training numerous methods of creative search and means of organizing teamwork.

In the era of digitalization and the knowledge economy the transition of organizations to an innovative type of development becomes a matter of survival. The decisive role in this process belongs to the human resources of organizations, because the intellectual and creative abilities of a person are the driving force behind the creation of new ideas that launch the innovation process.

Creativity is one of the most important conditions for success in creating innovative products and services. Without a powerful and continuous influx of fresh ideas, organizations lose their pace of development and position in the market. Creativity concerns any aspect of the organization's activities: company management, customer relationships, marketing, finance, human resource management. Non-standard approaches allow us to find ways of rational organization of work, original ideas give rise to bold plans, and readiness for innovative search turn the organization into a successfully developing creative unity.

In the context of the implementation of student-centered learning, almost all the leading universities and business schools in the world integrate a project-oriented approach into their curricula (Obradović et al., 2018). Why is this approach so important and widespread? As we know, a project is born out of an awareness of the existence of a problem, an environmental challenge or opportunities that suddenly appeared. Awareness of the problem and the formation of imagination about the product of the future project is a poorly structured creative process. Therefore, the first conceptual phase of the project has the greatest degree of uncertainty and requires creative abilities.

The conceptual (pre-investment) phase of the project can be either the initial stage of the project or act as an independent project. At the conceptual phase, a "linguistically designed" model of the future project is first built, and then well-known methods are applied to it to develop alternative versions of the project plan in accordance with existing standards (A guide to the project management…, 2017). The general task of the conceptual phase, in fact, can be divided into two sub-stages, which differ in management models.

The first stage is the formation of a common vision of the project product, and the second is the project analysis and selection of alternative ways to achieve the project result. Particular attention should be paid to the fact that the concept of the project should be formed by presenting the largest number of alternatives, so as not to disregard promising project options. After all, if a company chooses the wrong project, it cannot succeed in its development, even if it successfully achieves the goal of this project. The success of a wrong or poorly conceived project can only lead to the destruction of valuable corporate resources of companies.

The management model of the first stage of the conceptual phase (pre-feasibility stage) can be attributed to the class of abstract models. Abstract modeling is often the only means of forming an idea of the product of a future project. Such models are sometimes called symbolic. The basis of this simulation is a set of symbols of individual concepts, taking into account which a symbolic description of the object is presented. This stage of forming a vision of the project requires the greatest degree of application of methods of creative search and system thinking. Until now, there is no clear formalized mechanism that allows the imagination of a specialist to form an image of the future product of the project. The search for means of intensifying innovation was carried out by many internationally recognized scientists, whose works are well known in the global business environment. It is the achievements of these scientists that are now actively cited by Ukrainian researchers and studied in Ukrainian universities and business school. Modern education actively uses the thesis "Learning – by - doing". It is when we interact with information, try to recall it, reproduce it, we remember (Istévez-Ayres et al., 2015). Therefore, tests, practical tasks and business games are always present in training. One of the powerful interactive teaching methods is case solving. This is a method that trains the brain to find solutions in different situations (Kovalyova, Various, 2014). To intensify this process, various methods of activating creative activity are used, allowing to accelerate the process of creative transformation of the surrounding world. Some well-known methods and technologies of creative search are provided in Table 1. Each of these methods has its own history of development, scope, its advantages and disadvantages.

Table 1.
Methods and technologies of creative search

№	Method name	Authors	Features
1	**The simplest methods**		
1.1	Analogy method	Democritus	These are the first known methods
1.2	Dialogues to identify contradictions	Socrates	
1.3	Combining	Archimedes	
1.4	Splitting a problem into separate tasks	R. Descartes	
1.5	Formalization of operations on concepts	G. Leibniz	
1.6	Means of resolving contradictions (40 special and 3 universal)	G. Altshuller	
2	**Associative methods**		
2.1	Methods of control questions	A. Osborne, T. Eloart, D. Poya	Differ in the list of questions
2.2	Methods of morphological analysis	F. Zwicky	
2.3	Method of matrices of inventions	A. Mole	There are many modifications of these methods
2.4	Brainstorming method	A. Osborne	
2.5	Synectics method	W. Gordon,	
2.6	Focal object method	C. Wyting	
2.7	Associative chain method	Mr. Bush	
2.8	Lateral thinking method	E. De Bono	
3	**System methods**		
3.1	Method of orderly search for solutions	J.K. Jones	Methods of self-organization of thinking in solving complex problems
3.2	Fundamental design method	E. Metchet	
3.3	Cumulative strategy method	D. Page	
3.4	Algorithm for solving inventive problems	G. Altshuler	
3.5	Theory of solving inventive problems	G. Altshuler	
3.6	Functional-cost analysis	L. Miles	

Source: own study.

Employers are now increasingly concerned about the inadequacy of the knowledge acquired by students, since this knowledge changes every year and becomes outdated, sometimes before students can master it. They are much more concerned about the lack of specialists who are able to independently improve their knowledge and skills in various fields, because this is what they will have to do all their conscious lives.

According to such trends, the individual development of human potential is becoming increasingly important all over the world. Improving the quality of human capital, its creative abilities and focus on intellectual innovative work today are becoming a key factor in economic development.

To help students thrive in a rapidly changing world, Singapore's Ministry of Education has identified competencies that are becoming increasingly important in the XXI century (Framework for 21st century leaning, 2023). These competencies, presented in Figure 1, are the basis of the holistic education that schools provide to better prepare students for the future. It is assumed that teachers and students should work hand in hand to help develop 21st century competencies.

Within the framework of this study, we consider it appropriate to pay attention to another methodology that is successfully used by the world's leading companies and has proven its effectiveness in influencing the growth of both financial and non-financial parameters of business success – design management (The New Design Frontier…, 2023). This methodology can also be considered as a new direction or subsystem of management, formed at the intersection of the theoretical background and tools of different schools and concepts to help companies find and implement ideas for innovative development of their business.

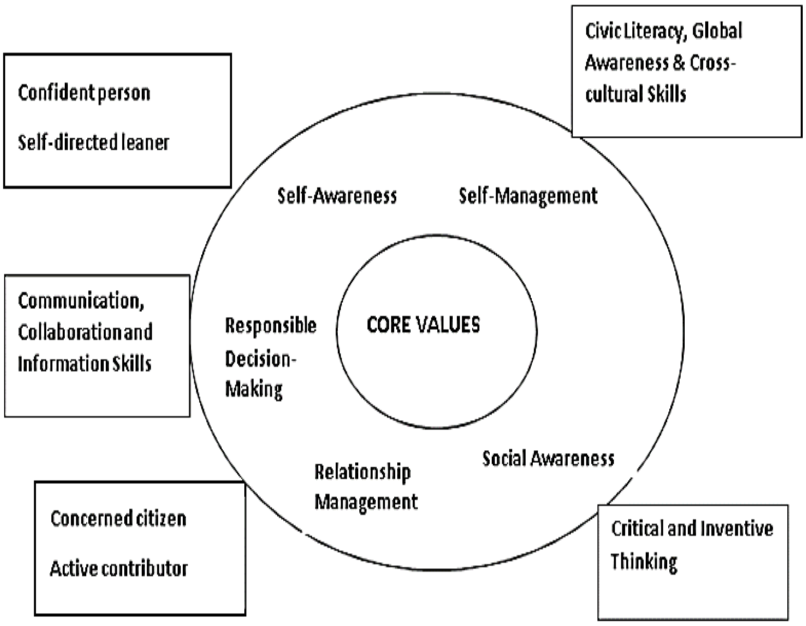

Figure 1. Framework for 21st century competence.

Source: Framework for 21st century leaning. Retrieved from: http://www.p21.org/our-work/p21-framework.

The term "design management" is practically not common in Ukraine, but the study of foreign sources allowed us to get acquainted with this methodology and divide the four stages of its development, from the board of corporate design to the board of design, as the basis for innovation (BS 7000-2:2008 «Design management systems - Part 2; BS 7000-3:2008 «Design management Systems — Part 3). Thus, design management is a constantly organized process of creating or improving a product or service, which involves a deep understanding of the needs of stakeholders. The introduction of a customer-oriented approach to design thinking with a project management methodology creates a synergistic effect that ensures the satisfaction of the interests of all stakeholders' groups and the success of the organization in general.

Back in 1984, David Kolb first proposed a model according to which there are four phased of adults learning (Kolb, Fry, 1975). The principle of Kolb's theory is that the "direct and concrete experience" of an adult is the basis for "observation and reflection". These "observations and reflections" are transformed into "abstract concepts" that provide a new meaning of active actions that can be "actively tested", which in turn again gives new experiences, and then again in a circle (McCarthy, 2023).

The principle of Kolb's theory is that the "direct and concrete experience" of an adult is the basis for "observation and reflection". These "observations and reflections" are transformed into "abstract concepts" that provide a new meaning of active actions that can be "actively tested", which in turn again gives a new experience, and then again in a circle (Figure 2).

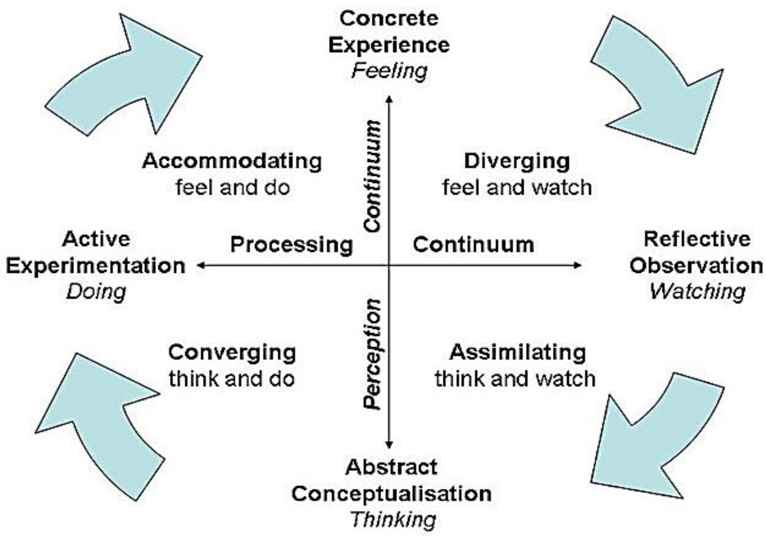

Figure 2. Model «step-by-step» for adult education.

Source: Kolb, Fry, 1975.

In the real practice of knowledge management, firms most often use a conceptual model with four areas of competence:

1. Externalization - sampling and systematization.
2. Internalization - adaptation to user requirements.
3. Socialization (intermediation) - the spread of hidden knowledge.
4. Cognition – transition to active use in in automatic mode.

Project-oriented learning is a learning process that provides opportunities to combine all four components of D. Kolb's model. Throughout the project life cycle, the project manager changes from an idea generator to a simple administrator, from a significant guiding analytical role to a position dedicated to practical stakeholder integration. Thus, project-oriented learning is a tool for uncovering natural talents and providing students with opportunities for their development through planning skills and experience in applying basic - system competencies. In this way, project management can be useful in providing talented learners with an understanding of their capabilities and creating a supportive environment that enables them to learn, maintain, and create innovation.

The approach to achieving a particular goal depends on the situation. Initial search guidelines are elements of sampling and system analysis of information used to build a solution. This practice is based on the fact that, first of all, we need to study the already available solutions, and then create an image of the best solution. This can be defined as technological and functional architecture. When there are many uncertainties and a changing context, it is often impossible to specify goals and requirements for the result. Therefore, various agile approaches are used, which are, in fact, a guiding algorithm, with how the problem is gradually solved (Bushuyev et al., 2020; Agile Practice Guide: Paperback, 2017).

Based on the principle of decomposition for the proposed model, key indicators for each component of creative competence were developed. The conceptual model of creative competence was developed based on the results of cooperation on the frame of master's programs for the project managers training at the Dnipro Regional Institute of Public Administration and the National Metallurgical Academy of Ukraine (Dnipro, Ukraine). There were two groups of students from these institutes which during this program were evaluated on four components of the creative competencies model. After assessing the level of creative competencies of first-year students, competencies were determined where the level of assimilation is quite low. Therefore, educational programs were developed with the addition of subjects to develop relevant creative competencies After improving educational programs in the following year, the same assessment was conducted for second-year students. The results of the assessment of the creative competencies level for the first and second-year students are provided in Table 2.

Table 2.
Results of the assessment of the creative competencies level for the first and second-year students

Assessment of the competencies after the first-year students		Assessment of the competencies after the second-year students	
Competencies	**Assessment level**	**Competencies**	**Assessment level**
Externalization			
Knowledge acquisition Creativity and innovation Product modeling Vision of the future	8 5 5 3	Knowledge acquisition Creativity and innovation Product modeling Vision of the future	8 7 8 5
Internalization			
Strategy of behaviour Culture and values Planning Risks management	6 4 5 3	Strategy of behaviour Culture and values Planning Risks management	9 8 8 7

Cont. table 2.

Intermediation			
Empathy Impact Teamwork Leadership	3 4 3 4	Empathy Impact Teamwork Leadership	6 8 7 7
Cognition			
Result orientation Initiative Flexibility Self-realization	4 4 4 2	Result orientation Initiative Flexibility Self-realization	7 7 8 9

Source: own study.

Comparison of the results of assessments of the assimilation of creative competencies by students of the first and second year of study is provided in Figure 3. Analysis of the data obtained suggests that after completing the training of the second year, there was an effort to develop the creative abilities of students. Even taking into account that any diagnostic method has a degree of error, the study showed that on the basis of the individual's desire for creativity, it is possible to create effective tools for training technical specialists.

Let's pay a little attention to the competencies for the master's educational program "Design Management of Innovations", which is implemented in the Ukrainian State University of Science and Technology (Dnipro, Ukraine).

Figure 3. Comparison of the assessment of the level of creative competencies of the first and second year of study.

Source: own elaboration.

There are four groups of competencies that an ideal knowledge management manager should have. It should perfectly perform four different functions, first proposed by I. Adizes (2008). (P – manufacturer, A – analyst, E – entrepreneur, I – integrator). PAEI functions differ in their ability to be productive or efficient and in their focus on short-term or long-term goals. These functions correspond to the four phases of the project life cycle, where at each stage one of the four functions manifests itself more strongly than the others. Each of these stages for the case of project management requires the following steps:

1. In order to more fully use all the advantages of intelligent technologies, it is necessary to clearly present the main goal of the project on the basis of preliminary analysis. At this stage, the creative abilities of the listener (function E – entrepreneur) are most pronounced.
2. At the planning stage, there is a transition from the idea of the project to the real product. The essence of planning is to determine how to achieve goals by forming a set of works to be implemented. At this stage, the analytical skills of the listener (function A – analyst) are most important.
3. The third phase of the project, the most time-consuming. Management at the implementation phase is based on monitoring all project subsystems. Here it is especially important to show the ability to perform the amount of planned work in accordance with the project plan. At this stage, the manufacturer's abilities (function P – manufacturer) are most pronounced.
4. The last phase is the project life cycle closure. The purpose of this phase of the project is to verify and disseminate information about the compliance of the finished product with the expectations of customers. At this stage, the abilities of the integrator (function I – integrator) are most demanded.

Thus, during the training, students must demonstrate the skills of modern management thinking and systemic knowledge in the field of project management, the ability to professional project activities, which involves understanding their own potential in the form of project implementation.

6. Conclusions

In the context of the accelerating development of information technologies in modern education, there is a fundamental change in the goals and objectives of education. Engineering students are increasingly required to be creative in their ability to prepare for international careers, research, and global problem-solving.

Education for the Future plays an important role in supporting the local and above local economies, thanks to which the labor market is entered by highly qualified workers with competencies responding to the real needs of business.

The article presents an example of teaching students creative technologies in two educational institutions, and the presented results may not necessarily have an identical effect if they are implemented in another institution. To confirm the effectiveness of the proposed training model, it is necessary to conduct additional research in other similar institutes.

In the work on the proposed model of creative competencies for the training of technical specialists, which includes four blocks of competencies. These blocks relate to the sampling and systematization of knowledge; adaptation to user requirements; awareness and dissemination of hidden knowledge; transition to the active use of knowledge in practical activities. In addition, every block, in turn, allocated with its own set of competencies. To assess the quality of training, a methodology for assessing the level of competencies was applied. This made it possible to identify a low level of some competencies among technical specialists and, at the stage of improving the curriculum, plan the necessary corrective actions for the development of weak program components. Since project-oriented learning is used, the model of creative competencies is similar to the model of the classical project life cycle. Teaching creative technologies according to the proposed model should become a starting point for further in-depth research in the field of technical education.

As directions for future research, the following issues should be highlighted:

– the development of individual blocks of creative competencies with the help of modern information technologies for project management;
– the creation of effective models and tools for assessing creative competencies for each subject area separately.

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SHORT-TERM RENTAL AS AN ALTERNATIVE TO HOTEL SERVICES IN LARGE POLISH CITIES

Agnieszka MROZIŃSKA

Department of Investment and Real Estate, Poznań University of Economics and Business; agnieszka.mrozinska@ue.poznan.pl, ORCID: 0000-0002-6164-5983

Purpose: Short-term rental is one of the forms of rental that has become extremely popular in recent decades. Perceiving residential real estate also through the prism of possible benefits from renting has enabled real estate owners to compete with organized services provided by hotel facilities. The article aims to analyze the supply of the short-term rental market in selected large Polish cities about the offer of hotel services.
Design/methodology/approach: The offer of short-term rental apartments was analyzed based on the data of active real estate properties published on the Airbnb portal over 12 months, i.e., from October 2021 to September 2022. Data from the Statistics Office and the Ministry of Tourism and Sports were used.
Findings: The analysis showed that large Polish cities are similar in terms of the structure and quality of short-term rental supply and do not differ from the trends typical of large cities around the world. Large cities in Poland usually offered small, autonomous, and well-equipped facilities where you could stay for any number of days, and which were available at attractive prices - often lower than the prices of rooms in even the highest standard hotels.
Research limitations/implications: Short-term rental offers should be monitored not only because of their competitiveness in the hotel industry but also because of the possibility of changes in the functional structure of large cities.
Originality/value: In the face of changes in the world, alternative services that were not so popular until recently may become increasingly important for the global economy. The article may be of interest to entrepreneurs from the hotel industry, users, and providers of booking platforms, as well as researchers of the sharing economy phenomena. The originality of the publication lies in its approach to booking platforms as an alternative to classic hotel services.
Keywords: short-term rental, reservation services, hotel services, large cities.
Category of the paper: Research paper.

1. Introduction

The turn of the 20th and 21st centuries was a time of intense changes in the real estate market. Perceiving a house or apartment not only as a place of everyday life but also as an investment object has given residential buildings new functions. A special case of significant changes in the real estate market is the idea of short-term rental, which has become an alternative to traditional hotel services. Its development was possible, among others, thanks to new possibilities of financing investments and the popularization of the Internet as a place of business or communication between market parties. Good conditions for the development of short-term rentals are offered by large cities and attractive tourist areas, which generate demand for tourist services and attract many tourists.

The article aims to analyze the supply of the short-term rental market in selected large Polish cities about the offer of hotel services. The supply of short-term rentals was analyzed based on data on active real estate offers posted on the Airbnb portal over 12 months, i.e., in the period from October 2021 to September 2022. To characterize the hotel offer, data from the Central Statistical Office and information from the Ministry of Tourism and Sport were used.

2. Short-term rental as an alternative to hotel services

Residential real estate and their perception have become the subject of changes resulting from the process of commodification of products such as apartments and houses (Rolnik, 2013). Greater availability of mortgage loans and the internationalization of the real estate market have contributed to the rapid increase in the number of properties whose main purpose is not to meet the owner's housing needs. The concept of "not for housing" housing has become widespread in the literature and refers to residential properties that are purchased for investment purposes and their main task is to bring profits to the owner (Doling, 2019; Kadi et al., 2020, after Adamiak, 2022). Potential profits are basically to be generated primarily by lease, i.e., putting the property into use by the tenant for a specified or indefinite time in exchange for the benefit of the lessor in the form of the agreed rent.

Renting real estate can be divided according to the rental duration into short-term and long-term. The first type usually lasts no longer than 30 days and can be understood as an alternative to renting a hotel room. Short-term rental is suitable for people who value privacy and expect a homely atmosphere from the place to stay because the offered properties are often decorated as cosy, fully equipped, and ready for permanent residence. Most often, this lease is sporadic, especially when it concerns tourists. It may take a cyclical form when it is related to professional duties performed outside the place of permanent residence.

Long-term rental, unlike short-term rental, is characterized by a longer rental period than in the case of short-term rental. Typically, this period exceeds one year, and the purpose of such a lease is primarily to fulfil a residential function. Sometimes there is also a medium-term lease, the length of which is shorter than one year, but also longer than a dozen or so days (Górska, Mazurczak, Strączkowski, 2021, pp. 25-27; Kamiński, 2019, pp. 67-68).

As mentioned earlier, the buyer of short-term rental services is usually a modern tourist who is increasingly willing to choose short-term rental offers from private individuals or organized entrepreneurs rather than traditional hotel services. In contrast to the hotel service, the tenant, under such a lease, is provided with a property resembling a fully equipped apartment, where he or she can feel comfortable in a usually larger area than in a hotel room. In most cases, they also have access to the kitchen, where they can prepare their meals. Naturally, the tenant functions as if he were in a traditional apartment, omitting the need to use additional hotel services, such as the gastronomic offer of hotel restaurants and bars or laundry, which in turn reduces the costs of the trip.

Market needs also forced the creation of entities specializing in short-term rental services. Many such companies operate in attractive tourist areas and support development investments, offering holiday apartments, hotels, and apartments. The activities of these companies make it easier for owners to manage their properties: supervising the reservation calendar, servicing, cleaning, and ongoing repairs, and, in turn, streamlining the formalities related to their stay for tourists. A similar function was taken over by booking portals and their mobile applications, which connected the supply and demand sides. Online platforms not only enable landlords to present their offers to potential customers but also contribute to communication between both parties and ensure the efficiency and credibility of the reservation process and service provision. Moreover, built-in mechanisms for assessing landlords and their properties contribute to building trust between the parties (Dolnicar, 2018). The most popular portals include Airbnb, Booking.com, CouchSurfing, HomeAway, HouseTrip, and Onefinestay. In Poland, the most popular are Airbnb and Booking.com.

Airbnb is one of the most recognizable short-term rental websites. It was founded in 2007 in the United States and initially, its activities were limited to local scope. The portal was one of the first to be created in response to the gap related to servicing a new type of housing stock, which did not include the traditional market of private apartments and houses. As Pawlusiński (2017) writes: "Airbnb was born as an attempt to take advantage of the supply gap in the accommodation services market, typical in certain periods of the year for large cities, where the demand for accommodation was growing rapidly to a level exceeding the city's maximum reception capacity" (Kowalczyk-Anioł, Pawlusiński, 2018, p. 16). Therefore, it can be said that the activities of portals such as Airbnb or Boooking.com have their origins in problems typical of large American cities, which over time were also noticed in other parts of the world, including in attractive tourist destinations. Pawlusiński points to the supply gap in the accommodation services market as one of the reasons for Airbnb's success, hence it is natural that short-term rental has become competitive with hotel services.

The activity of booking portals has therefore met with dissatisfaction from representatives of the hotel industry and accusations of strengthening the processes of urban gentrification, which is said to be occurring due to the pressure of tourist traffic on the traditional residential functions of the centres of large cities (Freytag, Bauder, 2018; Kowalczyk-Anioł, 2018; Wachsmuth, Weisler, 2018). The fact is that tourist flows are directed to areas whose leading function has so far been residential. Despite the wave of negative opinions regarding the violation of the urban fabric of cities, the popularity of short-term rentals via online portals is not decreasing.

Short-term rental, not so long ago carried out on a smaller scale as part of providing private accommodation or partly agritourism activities, has its origins in large cities. It has been observed that it also functions in tourist attractive areas. According to Adamiak (2022), tourist apartments in Poland were concentrated primarily in the largest cities, as well as in the coastal and mountain areas. This author's research shows that Warsaw, Kraków, and Tricity accumulated over 40% of offers from all over Poland. Wrocław Poznań and other provincial cities accounted for a total of 14% of real estate. However, one-third of all offers concerned the two most important holiday regions of the country - the seaside area (Kołobrzeg and Puck counties and the city of Świnoujście) and the mountain area (Tatra and Karkonosze counties) (Adamiak, 2022, pp. 16-17).

3. Tourism and Hotel Accommodation in Major Polish Cities

Poland is a country with diverse tourist attractions, as evidenced by its equally diverse tourist traffic. The most frequently visited regions of the country can be considered the northern coastal area and the mountainous regions in the south of the country. Although there are also other attractive tourist regions on the map of Poland, such as lake districts and places with an important historical past, large cities are among the most frequently visited tourist destinations. In terms of the number of visitors who stayed overnight, the capital of the country is the clear leader, with over two million tourists arriving in 2021 (Table 1).

Table 1.
Number of tourists staying overnight in large cities in 2021

	City	Number of tourists staying overnight		City	Number of tourists staying overnight
1	Warszawa	2 029 847	7	Szczecin	255 097
2	Kraków	1 228 178	8	Lublin	248 655
3	Gdańsk	790 253	9	Katowice	230 294
4	Wrocław	757 954	10	Toruń	208 538
5	Poznań	518 536	11	Białystok	179 248
6	Łódź	323 417	12	Rzeszów	152 989

Source: Local Data Bank of the Central Statistical Office.

The second most frequently chosen city by tourists was Kraków. Gdańsk came in third place. Even if we also took into account the number of tourists visiting Sopot and Gdynia, the Tricity area would still be in third place in the ranking, as it was visited by almost 1.2 million tourists. Slightly fewer tourists visited Wrocław than Gdańsk, and Poznań was the last group of large cities with over half a million tourists. It is worth noting that the first four cities in the ranking hosted more people in 2021 than the number of inhabitants of these cities, and Poznań was close to joining this group. Over three hundred thousand Łódź also hosted tourists, and over 200,000 tourists came to Szczecin, Lublin, Katowice and Toruń.

Tourist traffic is spread throughout the year, but cities are prepared to welcome tourists and provide them with accommodation. The offer of entities providing hotel services is diverse. Within the registered tourist traffic, we can distinguish hotels, motels, and guesthouses, as well as, for example, hostels, holiday resorts, and camping sites. Hotel operations are responsible for over 66% of tourist traffic in Poland. According to data from the Central List of Hotel Facilities, the city in which the most hotels were located was Kraków (Figure 1). At the end of the third quarter of 2022, there were 205 hotel facilities in this city, which is almost twice as many as in Warsaw (116). In the remaining three cities, the number of hotels ranged from 62 in Poznań to 69 in Wrocław. In all five cities, hotels of various categories could be found, but the dominant group of facilities were 3-star hotels (from 43% in Warsaw to 56% of all hotels in Poznań). There were more 4-star hotels in each city than 2-star hotels. Facilities with the highest category accounted for 12% of facilities in Wrocław and 11% of facilities in Warsaw.

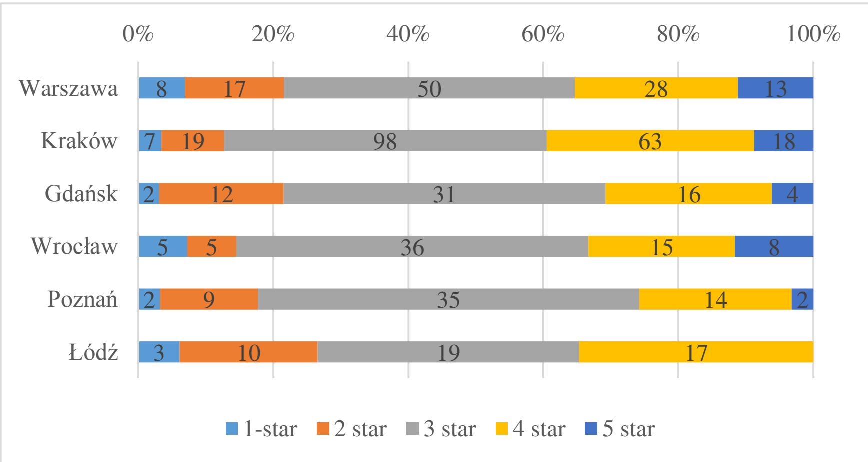

Figure 1. Number of hotel facilities by category in 2022.

Source: Central List of Hotel Facilities, Ministry of Sport, and Tourism, as of September 30, 2022.

The largest number of beds available in hotels was in Warsaw - over 31,000 (Figure 2). Even though there were more hotel facilities in Krakow, they offered a total of over 23,000 rooms. places, i.e., almost one-third fewer places than in Warsaw. Over ten thousand places were available in Gdańsk, and Poznań, which had fewer facilities available than in Wrocław, offered almost a thousand more beds than in the capital of Lower Silesia. Most hotel rooms were available in 3- and 4-star hotels, but every fifth place in Warsaw and Wrocław was available in a 5-star standard.

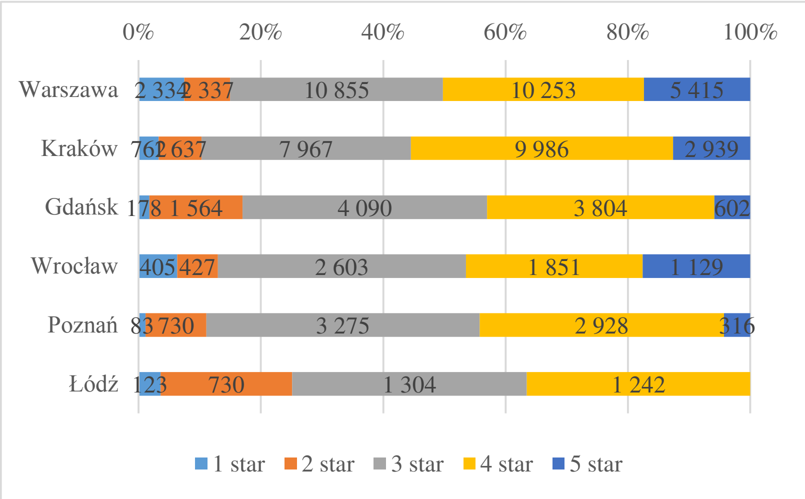

Figure 2. Number of hotel beds by category in 2022.

Source: Central List of Hotel Facilities, Ministry of Sport, and Tourism, as of September 30, 2022.

4. Supply of short-term rental properties presented on Airbnb.com in large Polish cities

In addition to the offer of hotel facilities, tourists are increasingly using accommodation services under short-term rental, which is becoming more popular with the development of websites such as Airbnb.com or Booking.com. Offers posted on these websites often contain the same advertisements, so to avoid duplication of offers, data from one platform - Airbnb.com - was used for the analysis as at the end of the third quarter of 2022. The largest number of single rental offers could be found in Warsaw - 6630 (Table 2). In Kraków and Gdańsk this number was similar and amounted to over 5.1 thousand. ads. There were over 2000 in Wrocław. offers, which was only one-third of the number of offers from the capital, and in the case of Poznań, less than 1.2 thousand, i.e., approximately one-fifth of the result in Warsaw.

Properties offered for rent in large cities are mainly entire apartments or houses, and room-sharing offers are rare (Table 2). The lowest percentage of offers for renting the entire property available to guests was recorded in Poznań - just under 82%. In the capital of Greater Poland, the highest share of room-sharing offers could also be observed (1.17%), although, in the other cities covered by the study, this percentage was much lower and did not exceed 1%. In Warsaw, Gdańsk and Wrocław it did not even exceed 0.5%.

Table 2.
Number and size of properties on Airbnb.com in 2022

City	Number of offers	Offered property [%]				Size of rented property [%]						
		House/ apartment	Private room	Shared room	Total	Studio	1	2	3	4	5+	Total
Warszawa	6630	83,85	15,67	0,48	100	20,22	59,44	15,65	3,76	0,74	0,20	100
Kraków	5157	90,30	9,13	0,56	100	21,99	47,58	20,59	6,53	1,91	1,40	100
Gdańsk	5143	91,13	8,61	0,25	100	15,75	56,50	21,51	4,91	0,90	0,45	100
Wrocław	2113	84,57	15,10	0,33	100	27,42	51,76	15,33	3,92	1,34	0,22	100
Poznań	1193	81,98	16,85	1,17	100	22,19	59,00	15,03	2,66	0,61	0,51	100

Source: Airbnb.com (as of September 30, 2022).

It can be said that the offer was dominated by small properties - up to two rooms. Most advertisements concerned one-room properties, i.e., so-called studio apartments. They accounted for approximately 46% of all offers in Kraków to almost 60% in Warsaw (Table 2). Almost one-fifth of all advertisements in the analyzed cities concerned properties called "studios". It is a type of studio apartment, which usually consists of only two rooms - a bathroom and a multifunctional room that serves many functions. In studio buildings, there is also a kitchen that is only visually separated in the room, while traditionally a studio apartment has a separate kitchen. The division into these two categories: studio and 1-room property is conventional, but both groups together accounted for 70% in Krakow to over 82% in Poznań of all properties offered.

Two-bedroom properties usually accounted for 15% to approximately 20% of all properties. Much larger properties, i.e., those with five or more rooms, were not represented in such large numbers among the offers. They had the largest share in Kraków, where they accounted for approximately 1.4% of all offers. It is worth mentioning that in other large cities, the percentage was usually lower than 0.5%. Small, compact properties dominated in large cities, which is not surprising due to the specificity of urban tourism. Guests often come to large cities for business purposes or to see cultural heritage, monuments, museums, and exhibitions, and these stays are usually shorter than traditional holidays. Large facilities are characteristic of very attractive natural areas, often off the beaten path and in the so-called "oases of peace" where you can spend your holiday away from the hustle and bustle of the city and in larger groups. Therefore, it can be noticed that the properties available on booking portals are similar in size to hotel rooms, but what distinguishes them from hotel services is a greater sense of intimacy in autonomous facilities.

Factors that may determine the selection of a particular offer, apart from the location of a given property, include the previously mentioned sense of greater intimacy than in a hotel, theoretically larger available space, and functionality of the property. These characteristics may influence the perception of the facility as a fully equipped apartment. Figure 3 shows the percentage of facilities that had the selected amenities. The most common type of convenience was the ability to connect to the Internet (over 90% in each city). Because most offers concerned the rental of an entire apartment or house, a significant percentage was also observed in the case of a kitchen, heating, and, for example, a washing machine. These amenities rarely found in hotels in single rooms (except heating), are typical of facilities that are fully equipped and ready for permanent residence. In the analyzed properties, you were less likely to find a hairdryer, satellite TV, or air conditioning. Occasionally you could count on the luxury of a swimming pool or jacuzzi. The studied cities were characterized by similar percentages of equipped properties in terms of access to the Internet, kitchen, heating (high values) or hair dryer, swimming pools, and jacuzzi (low values).

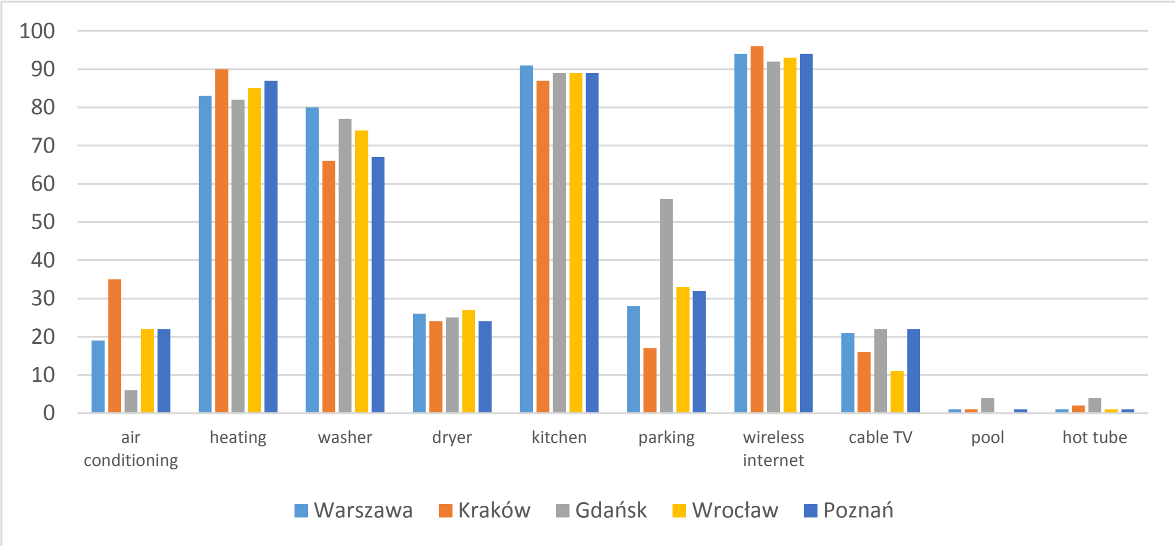

Figure 3. Percentage of properties with amenities on Airbnb.com in 2022.

Source: Airbnb.com (as of September 30, 2022).

The biggest differences between the studied cities could be observed in the case of air conditioning and parking availability. Properties with air conditioning accounted for one-third of all offers in Kraków, but only 6% in Gdańsk. In Warsaw, Wrocław, and Poznań, approximately 20% of facilities were air-conditioned. Such an observation can be justified by the maritime, and therefore colder, type of climate in Gdańsk, and the hot summers in the continental types of climate in other cities. An important convenience for modern tourists is the possibility of parking a car, especially when the accommodation is in the city centre. More than half of the facilities in Gdańsk had a parking space, and the smallest percentage of facilities with guaranteed parking was in Kraków. On average, in the cities surveyed, every third property offered amenities for mobile customers.

Due to the economic optimization of short-term rental activities, owners determine the minimum length of stay in the property. The longer the stay, the lower the costs related to, for example, customer service or cleaning. Most properties in large cities did not specify a minimum stay, so it was 1 day by default. The highest percentage of facilities without a minimum limit was recorded in Poznań (68%), and the lowest in Gdańsk (46%). In Gdańsk and Kraków, every third facility had to be rented for at least 2 days. The smallest percentage was represented by facilities that were rented for at least a month. An interesting situation was observed in Gdańsk. It turned out to be a city where landlords, more often than in other cities, imposed a stay of at least 2-4 days. This can be justified by the location of Gdańsk in the coastal area, which is often chosen by tourists as a place for a longer stay. As a rule, in strictly tourist and naturally attractive locations, landlords can only count on full occupancy during the season and, to avoid situations in which the property is empty, they set limits forcing tourists to stay longer.

Table 3.
Structure of offers on the Airbnb.com according to the minimum stay duration and occupancy of facilities per year in 2022

City	Structure of the minimum stay in days [%]						Occupancy structure of facilities throughout the year [%]			
	1	2	3	4	7	30	1-90 days	91-180 days	181-270 days	271-365 days
Warszawa	54	22	9	5	6	3	57	23	15	6
Kraków	53	32	7	3	3	1	51	24	16	10
Gdańsk	46	34	12	6	2	1	66	20	12	3
Wrocław	60	24	6	6	6	1	59	22	15	4
Poznań	68	19	5	4	4	1	48	27	19	6

Source: Airbnb.com (as of September 30, 2022).

The occupancy of facilities throughout the year allows us to find out the number of days in a year thanks to which the property brings profits and may also indirectly indicate that tourists are satisfied with the offer. Most properties in large cities were only occupied for at most ¼ of a year. 66% of facilities in Kraków were busy for 1 to 90 days, so they were profitable, 59% in Wrocław, and only 48% in Poznań. Properties rented for longer than 3 months but no longer than half a year accounted for approximately 20-27% of all offers. The highest percentage of properties earning money for most of the year, i.e., over 271 days, was recorded in Krakow (10% of all offers), and properties occupied for more than half of the days a year in this city accounted for as many as 26%, which proved that Krakow was a very attractive place for renters.

The profitability of short-term rentals can be assessed using financial characteristics as well as the occupancy rate of individual properties. Analyzing the average fee per day, i.e., the average fee that a person wanting to rent a given property had to pay, in large cities it ranged from PLN 261 in Poznań to PLN 323 in Gdańsk (Table 4). These amounts are the average daily fee for the entire stay and include additional fees, e.g., for cleaning the facilities. The data refer to the last 12 months in which the properties were on the market. It is worth noting that in Warsaw and Krakow the average fees per day were at the same level and were lower than in Wrocław. It is worth adding that in Gdańsk the cheapest room in a 5-star hotel at the end of September 2022 cost approximately PLN 251, in Wrocław approximately PLN 290, in Kraków PLN 361, in Gdańsk PLN 251 and Poznań PLN 569. The average daily fee for short-term rentals in Warsaw and Poznań was lower than the lowest daily fee in a 5-star hotel. In other cities, it was more profitable for tourists to stay in a hotel.

Table 4.
Financial characteristics of rental properties on Airbnb.com in 2022

City	Average fee per day [PLN]	Median occupancy [days]	Median monthly income [PLN]
Warszawa	268	76	4059
Kraków	270	74	4426
Gdańsk	323	65	4540
Wrocław	297	67	4155
Poznań	261	67	3900

Source: Airbnb.com (as of September 30, 2022).

The median occupancy value, i.e., the number of days on which the lease was carried out taking into account the total number of days when the property was available for rent, did not vary much in large cities (Table 4). In half of the properties in Poznań and Wrocław, the number of days a year in which the facilities were profitable was lower than 67, and in the other half, it was higher or equal to 67. The highest median was 74 and was recorded in Warsaw.

The median monthly revenue, which included fees for each rented day and cleaning fees, did not include mandatory taxes, service fees, and other additional fees. By analyzing this value, you can find out to what extent short-term rental is a profitable activity for the owner and competitive with hotel activity. In addition, it also allows you to compare the benefits of short-term rental to the potential benefits of renting the same property in the long term. The highest value of the median monthly income was recorded in Gdańsk and amounted to PLN 4540 (Table 4). Half of property owners in Krakow could expect slightly less, at least PLN 4426. The lowest media level was recorded for properties located in Poznań, and this value was only PLN 159 lower than in Warsaw. Of course, the median value indicates that only half of the tenants could count on values higher than those indicated in Table 4. According to the money. pl website, the monthly rent rates for renting a one-room apartment, i.e., the one most often on offer in large cities, were in September 2022 from PLN 1807 in Poznań to PLN 2670 in Gdańsk. For the remaining cities, it was PLN 2623 in Warsaw, PLN 2239 in Kraków, and PLN 2492 in Wrocław. In all large cities, the average rent for a studio apartment was significantly lower than the median monthly income of the owner of a studio apartment rented for a short period using Airbnb.com. Therefore, it can be said that short-term rental was beneficial not only for the tourists themselves but also for a large part of property owners who benefited from this form of rental.

5. Summary

Short-term rental was created and functions as a complement to the offer of hotel services. Both forms of accommodation services are characterized by unique features that respond to the challenges posed by the client. In line with the global trend, most short-term rental facilities were in large Polish cities. Most lease offers concerned properties located in Warsaw, Kraków and Tricity. At the same time, these were also the cities with the largest number of hotel facilities. On the Airbnb website, the most represented offers were exclusive rentals of entire properties, but they were small - only one-room properties. It can be said that in Kraków and Warsaw, the number of available hotel rooms was more than four times higher than the number of short-term rental offers, and in Poznań as much as six times higher. In Gdańsk, proposals from the Airbnb portal constituted greater competition for hotels, because the ratio of the number of places in hotels to the number of rental offers was two.

Because the properties offered most often were fully equipped apartments or houses, they were accompanied by amenities that were replaced in hotels with additional services. The availability of a kitchen, washing machine, and dryer theoretically contributed to reducing the cost of stay compared to hotel services. In large cities, the least common amenities were a swimming pool or jacuzzi, as well as air conditioning. Differences in parking availability were identified between the analyzed cities - on average, every third property was rented. A parking space in large cities was an appreciated convenience. Gdańsk stood out from other cities, where parking space belonged to more than half of the properties. Most property owners did not indicate the minimum stay duration, considering the nature of business trips. Gdańsk again contrasted with other cities due to the more restrictive policy of owners than elsewhere, who more often imposed a stay of at least 2-4 days. Most properties in large cities were occupied only for at most 3 months a year, remaining at the owner's disposal most of the time. Krakow turned out to be the best place for real estate owners because facilities occupied longer than half of the year in this city accounted for as much as 26%, which makes the city a leader in this category.

The average fee per night for short-term rentals in large cities ranged from PLN 261 in Poznań to PLN 323 in Gdańsk. This fee in Warsaw and Poznań was lower than the lowest daily fee in a 5-star hotel. In other cities, it was more profitable for tourists to stay in a hotel, because the prices for accommodation in a hotel of the highest standard were lower than in the case of short-term rental.

From the point of view of the profitability of short-term rental, it is important to know that half of the properties in Warsaw were rented for less than 74 days a year. For Poznań and Wrocław, this number was even lower and amounted to sixty-seven. The landlord had to consider that his property did not always bring profits, but also that they were not evenly distributed throughout the year.

The highest median monthly revenue among large cities was recorded in Gdańsk and amounted to PLN 4540. Half of property owners in Krakow could expect to receive at least PLN 4426 per year. The lowest media level was recorded for properties located in Poznań, and this value was only PLN 159 lower than in Warsaw. The profitability of offering your properties on the Airbnb website can be proven by the fact that the rent rates for a classic, long-term studio apartment rental were significantly lower than the median monthly income of the owner of a studio apartment rented for a short period using the website.

Although short-term rental and hotel services are ultimately suitable for providing accommodation for a guest, each of them has its advantages and disadvantages, both for the owner and the tourist. Competition between both forms has a positive impact on the quality of services provided and, despite objections from the hotel industry, short-term rental is still gaining popularity. Large Polish cities most often visited by tourists are similar in terms of the structure and quality of the supply of short-term rental properties and do not differ from the trends typical of large cities around the world. These cities usually offered small, autonomous, and well-equipped facilities where you could stay for any number of days, and which were available at attractive prices - often lower than the prices of rooms in even the highest standard hotels.

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THE IMPACT OF REGIONAL VARIATION IN ECONOMIC CONDITIONS ON CONSUMER ATTITUDES AND BEHAVIOR DURING THE CRISIS

Anna MURAWSKA

Bydgoszcz University of Science and Technology, Faculty of Management, Department of Economics and Marketing; anna.murawska@pbs.edu.pl, ORCID: 0000-0002-3944-7657

Purpose: The main purpose of the article is to assess the impact of regional variations in economic conditions on consumer attitudes and behavior during the crisis. The study was carried out using the example of Polish voivodeships.
Design/methodology/approach: In order to implement the study goal formulated, an analysis of the indicators characterizing the economic and income situation of Polish voivodeships was conducted. The assessment of the crisis-related consumer attitudes and behaviors, including the regional variation thereof, was carried out based on a CATI survey of a randomly selected group of 1000 respondents in Poland, relative to 2023. The differentiation and disparity across voivodeships, with respect to the phenomena surveyed, was subjected to calculation. The surveyed objects were clustered using the Ward's method, to verify the impact of the economic differentiation and indicator levels on consumer attitudes and behavior during the crisis.
Findings: Poland remains significantly regionally differentiated in terms of the economic level of voivodeships as well as household and consumer incomes. The crisis is clearly of no subsidy in reducing these disparities. Particularly substantial disparities are found between the poorest voivodships of eastern Poland and the richer ones of western Poland. The economic and income standing of the voivodeships is reflected in consumer attitudes and behavior. Concerns associated with the deterioration of the material position and income, often accompanied by reduced sense of security and stability of employment, are considerably more often expressed by residents of voivodeships characterized by inferior economic indicators and lower income.
Research limitations/implications: The Implication behind the survey entailed the examination of whether the crisis has caused changes in the attitudes and behavior of Polish consumers, as well as whether their concerns and constraints have been influenced by the economic and income condition of the regions.
Practical implications: The conclusions drawn in the study can serve as a useful tool for public and utility entity managers, enabling more effective application of remedial and intervention measures, relative to the residents of regions characterized by unfavorable economic conditions and crisis-related negative sentiment.
Social implications: The article provides useful insights on the economic and income indicators, as well as the on impact of existing regional differences on consumer attitudes and behavior amid the crisis, which the voivodship managers as well as the central authorities in Poland should familiarize themselves with.

Originality/value: The added value of the article lies in the evaluation of recent secondary and primary source data on the differences in the economic condition of the voivodeships in Poland, including the impact of these differences on consumer attitudes and behavior, relative to their work, financial situation and sense of security during the crisis.
Keywords: economic development, income, crisis, consumer behavior, attitudes, voivodeship.
Category of the paper: research paper.

1. Introduction

The performance of socio-economic factors leads to variations in the economic situation of countries and their regions, and thus to different levels of planning and development (Malina, 2020). Significant disparities in the economic potential of regions, with multiple underlying reasons, have been for years observed also in Poland (Murawska, 2009; Bożek, Szewczyk, Jaworska, 2021). Apart from historical conditions, other factors should be mentioned, such as: the volume of production, the effectiveness of new investment implementation, development of educational opportunities and new job generation, the inflow of foreign capital, the level of population income, the level of technical and social infrastructure, etc. Regional economic conditions shape the immediate and distant environment affecting consumption and consumer behavior, as well as determine the degree to which needs are satisfied (Grzega, 2011a, 2011b; Murawska, 2014). They exist independently of the subjects of consumption, and arise from e.g., the economic situation of the country, the state of the economy or the political trends. Consequently, regional development translates directly into the level and quality of the residents' lives.

The current crisis, sparked by the outbreak of the Covid-19 pandemic in 2020, has been marked by surprisingly extensive and profound negative consequences, which are reflected in the economic indicators characterizing the socio-economic development of countries and regions. Crisis symptoms, on the macroeconomic level, may include a decrease in GDP, high inflation, decline in production and investment, reduction in wages, increased budget deficit and public debt, reduction in the rate of exports, etc. (Malinowski, 2008). In microscale terms, social-dimension symptoms of a crisis include: an increase in unemployment, rising prices, a decline in real income and consumer purchasing power, changes in the structure of consumption or behavioral patterns, as well as states of severe anxiety and depression resulting from the fear of losing employment, difficulties in finding new employment, deteriorating financial and income standing, as well as difficulties in repaying loans or meeting basic needs (Berbeka, 2006; Burgiel, 2011; Zalega, 2011). Since the outbreak of the pandemic in 2020, a cycle of negative events has begun, reflected in the above-mentioned effects. The causal links between the economic indicators making up the macro environment of economic agents and the consumer sentiment, attitudes and behavior are of further indirect, yet not less significant than the proximate direct factors, relevance.

Taking the above premises into account, the main objective of the article entailed the assessment of the impact exerted by regional variation in economic conditions and the impact thereof on consumer attitudes and behavior during the crisis. Several specific objectives were defined within the scope of the main objective:

- assessment of regional differentiation in the economic situation of Polish voivodeships;
- characterization of the attitudes and behaviors of the consumers residing in the various voivodeships, relevant to the current crisis, and concerning such aspects as the sense of employment security and the financial situation, including the residents' stance towards the rationalization of consumption and the changes in shopping habits;
- assessment of the relationship/correlation between the variation in the economic condition of Polish voivodeships and the range of positive and/or negative attitudes, including the crisis-affiliated concerns and behaviors indicated by the residents of these voivodeships.

The study carried out was intended to verify the following hypotheses:

- H1. The economic crisis has caused a change in the attitudes and behavior of Polish consumers as well as increased the concerns over loss of employment and livelihood, maintenance of income, family financial situation, the onward satisfaction of needs at an appropriate level, and the sense of security.
- H2. During the crisis, consumers have reduced the level of personal and household consumption, altered their shopping habits, and their consumption has become more rational.
- H3. Crisis-related concerns, anxieties and constraints, including changes in purchasing behavior and greater rationalization of consumption, are traits exhibited relatively more often by residents of poorer voivodeships characterized by unfavorable economic conditions.

2. Literature review

Crises are among the causes of specific consumer behaviors, which are determined by the consumer attitudes and moods prevalent at a particular time (Burgiel, 2011). Solomon defines consumer behavior as the process of selecting, purchasing, using, accepting or rejecting products, ideas or experiences, to satisfy needs or desires expressed by an individual or a group (Solomon, 2006). Antonides and van Raaij, in turn, note that consumer behavior encompasses the mental and physical activities, including the underlying motives and causes, performed by individuals and groups throughout the consumption cycle, in pursuit of their goals and values, resulting in satisfaction and well-being, taking the individual and social effects of these behaviors into account (Antonides, Raaij, 2003). A term parallel, and somewhat synonymous, to consumer behavior is consumer attitude. Both signify relatively constant tendencies to adopt a positive or negative attitude toward the object of that attitude, i.e., a concrete or abstract thing, person, or event. Attitudes can also be formed based on emotions and beliefs, which in turn constitute the object of experience with the object of the attitude (Stasiuk, Maison, 2014). Attitude is identified as a predisposition to respond and pre-exists behavior, that is, it makes way for and precedes the behavior, yet it does not fully equate with it (Jeżewska-Zychowicz, 2010). As Sobczyk (Sobczyk, 2018) notes, attitudes are thus related to the evaluation of something or someone, whereas consumer behavior refers to the manner of acting throughout all phases of satisfying the physiological and psychological (emotional) needs. Attitudes influence consumer behavior, and are shaped by one's own experiences or opinions created by the environment.

Consumer attitudes and behaviors are formed under specific social, cultural and economic circumstances, which vary from country to country or region to region (Kieżel, 2010). Economic conditions, both in the macro- and micro-environment, play an important role. What started to consistently effect changes in consumer attitudes and behavior from 2020 onward was the intensifying economic crisis precisely.

A crisis implies a momentum, a breakthrough or a change in the previous development trends of a particular phenomenon. It often entails a period of serious difficulties, manifested by a sharp decline in economic activity (Malinowski, 2008). The term economic crisis is most often used in the context of sudden and unfavorable developments in the social, political, economic and medical spheres (Derkacz, 2020). Within the economic sphere, a crisis is defined as an economic slump. It represents an economic cycle phase characterized by a decline in the volume of production, a reduction in capital expenditures, a decrease in the population's real wages, and an increase in the unemployment and inflation rates. The financial situation of the affected state deteriorates, which is often accompanied by an increase in the budget deficit and public debt (Czech et al., 2020). A crisis can involve not only a decline in GDP growth, but also growing inequality in income and opportunity, increasing financial market instability, environmental problems, and the decay of human, social, as well as moral capital (Horodecka, 2017).

A crisis can arise as an aftermath of some negative event, such as an accident, a quarrel, a stock market crash, a disagreement in a coalition, but it can also manifest as a symptom of mass-scale events, such as wars or pandemics. Crisis as a state of the psyche is characterized by a high degree of emotional tension, largely experienced as a state of fear or disturbance of mental balance (Czech et al., 2020). During a crisis, the threat of employment loss or lower income intensifies, which in turn affects consumers' sense of economic stability. This is directly reflected in the buying behavior on the goods and services market. Consumption behavior modification during a period of crisis is mainly driven by deteriorating consumption sentiment, reduced sense of security and, consequently, less optimistic attitudes towards the future (Zalega, 2012). Hence, as Grzega notes (Grzega, 2011a), an economic crisis as a macroeconomic determinant, is only to some extent an occurrence independent of individual consumption actors, and these actors very rarely realize that their market actions contribute to the existing crisis situation.

The impact of the last major economic crisis, the so-called “financial crisis” of 2008-2009, on consumer consumption, attitudes and behavior in Poland and worldwide (Słaby, 2009; Mazurek-Łopacińska, 2010; Rudawska, 2010; Taraszkiewicz, Bistram, 2010; Burgiel, 2011; Zalega, 2011; Kosicka-Gębska, Gębski, 2013; Başev, 2014), as well as on the process of consumption decision-making (Małysa-Kaleta, 2011) or the changes in purchasing (Sowa, 2011), has been studied by many authors. These authors emphasize that the significant increase in prices, resulting from recession and the consequent decrease in consumers' purchasing power, can be expected to trigger various negative emotional states, ranging from anxiety to shame at not being able to satisfy one's needs at the same level as before the crisis (Słaby, 2009). This does not apply to all consumer groups, however. High-income households, for instance, are characterized by reasonably weak, on an individual level, emotional impact of financial crises, as they are able to sustain relatively higher levels of *per capita* income, and their consumption structure is more modern, which is reflected in lower shares of expenditures on food, and higher shares of expenditures on broadly defined services, in total expenditures (Zalega, 2011).

Economic crises hinder the functioning of all market players, including households, which face many dilemmas as a result, i.e., decisions must made on what portion of income should be allocated to consumer spending and what portion to savings for securing future consumption. The deteriorating income situation of households renders such decisions a challenge (Śleszyńska-Świderska, 2013). Occurrence of unexpected changes in the macroenvironment forces companies to undertake measures aimed at adapting to the new situation as well as consider changes in their routines, habits or established modes of operation (Chlipała, Żbikowska, 2021). As emphasized by Burgiel (Burgiel, 2011), crises are, on the one hand, associated with a massive collapse in sentiment and a sense of uncertainty, yet, on the other hand, it is the consolidation of such states in the minds of the market players as well as the expanding wave of pessimism, which contribute to the deepening of recessions (Rozmus, 2009). The opposite applies during periods of recovery – economic prosperity raises hopes for the future, which shapes specific behaviors of the market players (e.g., higher purchasing propensity), while the optimism embraced by an increasing number of customers becomes one of the sources of actual economic improvement, as the consumer decisions that are positive for the economy are replicated by more players (Burgiel, 2011).

In consequence of the crisis surrounding the outbreak of the COVID-19 pandemic in 2020, successive works have been written, describing changes in consumer attitudes and behavior (Kalinowski, Wyduba, 2020; Oana, 2020; Sheth, 2020; Stanciu et al., 2020; Chlipała, Żbikowska, 2021; Karaboga, Ozsaatci, 2021; Rabbi et al., 2021; Marciniuk-Kluska, 2022; Maciejewski, 2023). A study of consumers in Turkey showed that sub-dimensions of the consumer perception of crisis, such as frugality and caution, had a significant impact on purchasing behavior (Karaboga, Ozsaatci, 2021). By contrast, authors examining consumer shopping behavior in Bangladesh (Rabbi et al., 2021) concluded that the higher intensity of Covid-19's impact translates into greater food stress associated with reduced income and higher food prices, whereas food stress directly affects consumers' shopping and consumption behavior.

As mentioned earlier, all economic and social phenomena are significantly differentiated on a regional level. Substantial differences also exist in the subjective attitudes and behavior of consumers and households. This is attributable to the richness and heterogeneity of the natural, social and human environment. Regional economic disparities are inevitable, for different regions are subject to different conditions, and a certain degree of regional disparities can actually foster each region's individual advantages, promote the overall coordinated development of regional economy, and optimize the allocation of resources. Moderate regional differences can mobilize economic vitality and improve development efficiency, but excessive differences can lead to social instability and even turbulence (Li, 2021).

Differences in regional development have been an ever-present issue attracting much attention from researchers (Willis et al., 2020). Spatial differentiation in the level of economic development has been studied by many Polish authors over the past years, based on the example of regions, voivodeships or municipalities both in Poland (Murawska, 2009, 2010; Wlaźlak, 2010; Rokicki, 2016; Wójtowicz, 2016; Wyszkowska, Serwatka-Bober, 2018; Malina, 2020; Zaród, 2020; Spychała, Spychała, 2022) and other countries (Sun et al., 2020; Buchholz, Bathelt, 2021; Floerkemeier, Spatafora, 2021; Grillitsch et al., 2021; Tan, Lv, 2022). Although efforts have been made over the years to bridge regional differences (Michoń, 2017), some regions remain much more developed than others. Conclusions from ongoing studies confirm the significant disparities between the eastern and western parts of Poland (Dębowski, 2013; Wyszkowska, Serwatka-Bober, 2018; Malina, 2020; Spychała, Spychała, 2022). The authors also debate whether policymakers should focus on improving the economic performance of less developed regions or, conversely, accept the existence of regional disparities and instead support the households in less developed regions through transfer payments, investments in education, health care and other basic services as well as by facilitating migration (Floerkemeier, Spatafora, 2021).

Regional development differentiation is a measurable multidimensional phenomenon, yet it is examined very diversely. It can be analyzed at various levels of generalization, in different temporal and spatial cross-sections, and in relation to various fields of socio-economic activity. Regional differences are ever present, but they become even more pronounced during certain limited time periods, such as during an economic crisis (Global Economic Prospects, 2023). An unstable environment, in turn, conditions the fears and anxieties associated with the crisis and, consequently, determines more rational and frugal consumer behavior, which further translates into decreased demand, lower economic development and crisis aggravation. It is therefore of significant research relevance to analyze the above issues within the context of regional differences.

3. Research methodology and process

To determine the variation in the economic conditions across Polish regions as well as the regional differences in consumer attitudes and behavior, including the relationship thereof to the phenomena under study, both secondary and primary sources were used. Consideration of the right data sources and selection of proper indicators is of utmost importance, as it ensures study results providing reliable and credible conclusions on the issues under analysis.

To assess the differentiation in the level of economic development and consumer income in the voivodeships of Poland, at the NUTS 2 level, the indicators collected by the Central Statistical Office (GUS, 2023a) were used. Nine indicators (variables) and 16 Polish voivodeships (cases) were studied. The analysis of economic data covered the period of 2020-2021 (Table 1).

In order to collect information on the current crisis-related consumer attitudes and behavior, a direct questionnaire survey was conducted among 1000 Polish residents. The sample selection for the survey was random, representative of both the socio-demographic characteristics of the Polish population (gender, age) and the administrative division of the country into NUTS 2 voivodeships. The survey was carried out by means of the CATI method, using an authorial questionnaire, developed for the purpose of implementing the research project No. 2022/06/X/HS4/01158 and funded by the National Science Center in Poland, entitled "Deconsumption as an alternative trend in behavior rationalization in the era of the global economic crisis" [Dekonsumpcja jako alternatywny nurt racjonalizacji zachowań w dobie globalnego kryzysu gospodarczego]. The survey was conducted among a representative group of Polish residents aged 18 and over, with the support of the research company ASM – Centrum Badań i Analiz Rynku Spółka z o. o. Apart from the voivodeship of residence, the characteristics adopted in the survey included such socio-demographic characteristics as the respondents' age, gender, education, occupational status, income level and indebtedness. The average survey respondent was a 56-year-old or older (37.6%), with a college degree (49.2%), employed (68.0%), living in a city of up to 50000 residents, head of household (79.7%), financially comfortable (49. 0%), with savings and no debts (45.2%), averaging a net monthly income per household member within the range of PLN 2501 to 4500 (33.0%) and the same level of personal monthly take-home income (29.0%). The questionnaire consisted of several thematic blocks addressing consumer attitudes and behavior during the crisis. For the purposes of the present article, questions regarding the respondents' place of residence, socio-demographic characteristics, and opinions on their current crisis-related feelings, concerns and behavior were included as well.

Table 1.
Indicators factored into the assessment of regional economic condition variation in Poland (NUTS 2 level)*

No.	Index/Variable designation	Abbrev.	year
1	gross domestic product *per capita* in PLN	GDP	2020
2	gross value added per working person in PLN	GVA	2020
3	nominal gross primary income *per capita* in PLN	NGPI	2020
4	nominal gross disposable income *per capita* in PLN	NGDI	2020
5	registered unemployment rate in %	RUR	2021
6	average monthly gross earnings (wages and salaries) in PLN	AMGE	2021
7	average monthly gross pensions and annuities in PLN	AMGP	2021
8	average monthly available household income *per capita* in in PLN	AMAI	2021
9	average monthly disposable household income *per capita* in PLN	AMDI	2021

* The data derives from sections 05, 06, 07, 19 of the Statistical Yearbook of Voivodeships 2022 [PL: Rocznik Statystyczny Województw 2022].

Source: own elaboration based on (GUS, 2023a).

The data collected was subjected to statistical analysis (Luszniewicz, Słaby, 2003; Wysocki, Lira, 2005). Among other factors, coefficients of variation (V_s), measures of distance (D) and spread (R), skewness, kurtosis, correlation coefficients (r_{xy}) as well as coefficients of determination (R^2) were calculated. Using the correlation coefficient r_{xy}, an attempt was made to verify whether the changing values of economic indicators in each voivodeship are reflected in consumers' greater or less frequent declaration of a sense of security and stability, relative to their employment as well as personal and household financial/income standing, and whether the crisis has shifted consumption habits toward greater rationalization. After analyzing the economic (GDP, GVA, NGPI, NGDI, RUR) and income indicators (AMGE, AMGP, AMAI, AMDI), they were weighed against the percentage of indications for selected survey questions, with respect to individual voivodeships in Poland. The voivodeships were grouped by both the economic conditions and the consumer crisis-related attitudes, using the Ward's method. The results of the correlation analysis were further summed up, in order to demonstrate the impact of voivodship economic conditions on consumer crisis-related attitudes and behavior.

4. Survey results and discussion

Consumers purchasing and consumption decisions are made under a specific setting of economic conditions. The economic indicators most commonly taken into account in order to present the level of national and regional economic development are gross domestic, nominal gross primary and disposable income *per capita*, as well as gross value added per 1 working person. To assess the labor market and its regional differentiation, ideally, the registered unemployment rate should be factored in.

Poland's economic development is differentiated regionally, as evidenced by the V_s, R and D coefficients of variation. The 2020 coefficient of variation calculated for gross domestic product (GDP *per capita*) for the 16 voivodships was $V_s = 25.0\%$. In 2020, GDP *per capita* in Poland amounted to over 61 thousand PLN, gross primary income (GPI) - over 40 thousand PLN, and disposable income - over 38 thousand PLN. The gross value added, in turn, totaled over 141 thousand PLN per 1 working person in Poland (Table 2). It should also be noted that Covid-19 ended almost three decades of uninterrupted economic growth. In Poland, severe reduction in economic activity occurred in the second quarter of 2020, resulting in an 8.4% decrease in GDP, compared to the same quarter in the previous year. The biggest negative contributor to the reduction in GDP growth was the strongly declining consumer demand, the decline of which was driven by households' adjustments to new, (i.e., difficult) circumstances (Nazarczuk, Cicha-Nazarczuk, Szczepańska, 2022).

The coefficients of variation calculated for the other economic indicators - GVA, NGPI and NGDI - also exceeded $V_s > 10\%$, which indicates significant variation among the voivodeships under study. The highest level of economic development in Poland, assessed based on GDP *per capita*, is invariably observed in the Mazowieckie Voivodeship (over 97 thousand PLN *per capita*), whereas the lowest - in the Lubelskie and Podkarpackie Voivodeships (42 thousand PLN) (Figure 1). The greatest distance between the Mazowieckie Voivodeship, on one side, and the Lubelskie and Podkarpackie Voivodeships, on the other, is also observed in nominal primary and gross disposable income as well as in the formation of gross value added per 1 worker (Table 2).

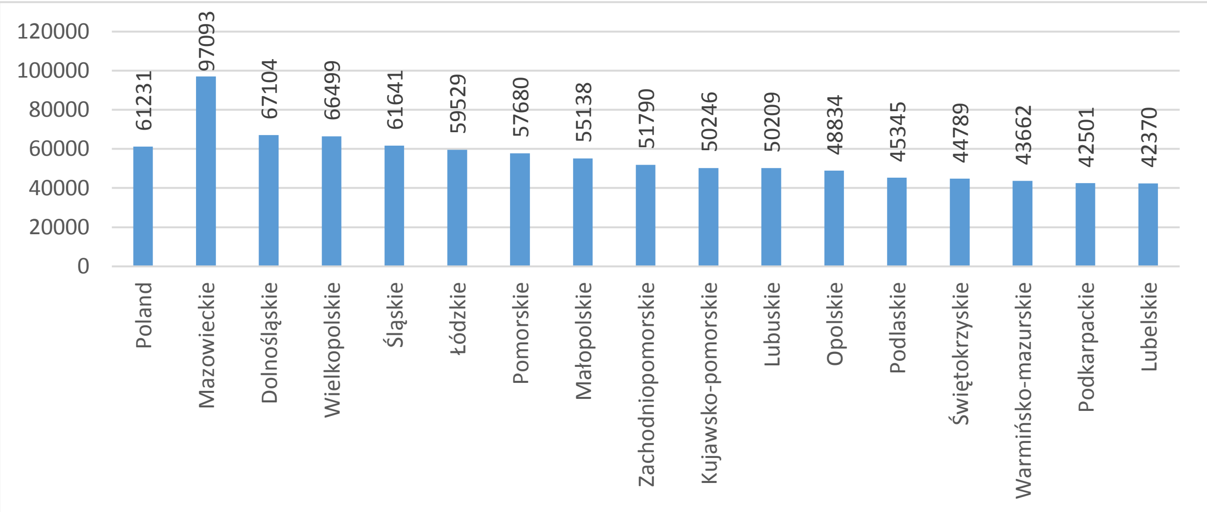


Figure 1. Voivodeship ranking by GDP *per capita* in 2020 – Poland.

Source: own calculation based on (GUS, 2023b).

Another indicator reflecting the economic development of regions is the unemployment rate. Economic crises intensify unfavorable economic circumstances, including unemployment and poverty, which in turn reduce, after a certain period of time, the consumption capacity of economic agents. Unemployment among household members directly translates into their income situation, which is reflected in consumer spending, consumption and, as a result, in the standard of living. Absence of unemployment among household members markedly improves the agent's foothold on the market. The rate of employment determines the extent of the earned income underpinning the welfare of the employed (Berbeka, 2006).

Poland ranks among the countries with the lowest unemployment in Europe (EC EUROPA, 2023). Lower than in Poland unemployment is only observed in the Czech Republic (2.6% in 2020, and merely 2.2% in 2022). According to Eurostat, Poland's unemployment rate was 3.3% in 2020, 3.4% in 2021, and only 2.9% in 2022. According to the Central Statistical Office data taken into account in this article, the 2021 registered unemployment rate (RUR) was 5.8%. Considering the relatively low percentage values, the indicator featured is characterized by a distinctively high coefficient of variation V_s = 30.7%. The highest rate of registered unemployment is observed in the Podkarpackie Voivodeship (9.9%), and is three times higher than in the Mazowieckie Voivodeship (3.2%) (Table 2).

Table 2.
Basic statistics of the economic indicators characterizing Poland's economic and income disparities at NUTS 2 level

Specification	Poland (GUS data)*	$\overline{x}$ NUTS2	*Min*	*Max*	V_s	R	D	S	K
GDP	61231	55277	42370 (Lubelskie)	97093 (Mazowieckie)	25.0	54723	2.3	2.0	5.1
GVA	141948	133292	109275 (Lubelskie)	181370 (Mazowieckie)	13.3	72095	1.7	1.3	2.7
NGPI	40190	37740	30510 (Podkarpackie)	53573 (Mazowieckie)	14.9	23063	1.8	1.5	3.1
NGDI	38473	36525	30227 (Podkarpackie)	48367 (Mazowieckie)	12.3	18140	1.6	1.2	2.0
RUR	5.8	6.5	3.2 (Wielkopolskie)	9.9 (Podkarpackie)	30.7	6.7	3.1	0.1	-1.2
AMGE	5682.97	5346.90	4884.89 (Warmińsko-Mazurskie)	6735.13 (Mazowieckie)	8.8	1850.24	1.4	1.9	4.2
AMGP	2623.26	2469.96	2269.05 (Podkarpackie)	3044.95 (Śląskie)	7.7	775.90	1.3	2.0	5.1
AMAI	2061.93	2000.87	1690.86 (Opolskie)	2450.37 (Mazowieckie)	9.7	759.51	1.4	0.4	0.7
AMDI	2014.61	1954.11	1628.18 (Opolskie)	2394.84 (Mazowieckie)	9.8	766.66	1.5	0.4	0.7

Notes: descriptions of abbreviations are provided in Table 1, V_s – coefficient of variation in %, min – minimum value, max – maximum value, R – spread in PLN or %, D – distance between objects [-], S – skewness [-], K – kurtosis – [-].
* GUS [PL: Główny Urząd Statystyczny] – Central Statistical Office.

Source: own calculation based on (GUS, 2023a).

Alongside the indicators characterizing economic development, indicators of income also play a significant role, as they determine the proper level of consumers' and households' satisfaction of needs, as well as specify the relevant level and quality of regional residents' lives. Four indicators measuring the level of consumer income are covered in the present article:

average monthly gross earnings (AMGE), average monthly gross pensions and annuities in PLN (AMGP) as well as average monthly available (AMAI) and disposable (AMDI) household *per capita* income. According to the 2021 data, these indicators do not vary as much on a regional level, compared to those characterizing economic development, and do not exceed V_s = 10%. Nonetheless, even insignificant differences in income can exert a considerable determining effect on consumption attitudes and behavior, or can be largely determinative of concerns and anxieties, caused by difficult circumstances, e.g., a crisis.

Statewide, the average monthly salary in 2021 was PLN 5346.90, with the highest in the Mazowieckie Voivodeship (PLN 6735.12) and the lowest in the Warmińsko-Mazurskie Voivodeship (PLN 4884.89). Poland's average monthly gross pensions and annuities, in turn, totaled PLN 2469.96 in 2021. The largest distance in this regard has been observed between the Śląskie Voivodeship - ranked first, with a pension level of PLN 3044.95 - and the Podkarpackie Voivodeship - ranked last, with a pension level of merely PLN 2269.05. The 2021 average monthly available and disposable household income *per capita* amounted to PLN 2061.93 and 2014.93, respectively, with the highest in the Mazowieckie Voivodeship invariably (2.4 thousand PLN), and the lowest in the Opolskie Voivodeship (1.6 thousand PLN) (Table 2).

Clear differences across all Polish voivodeships, as well as similarities within specific groups of voivodeships, both illustrated in Figure 2, can be observed with regard to the economic conditions analyzed. The diagrams show agglomerations/clusters/groups of voivodeships with similar levels of economic development (tree diagram 1) and similar levels of income determinants (tree diagram 2). The clustering was defined by Ward's method, with the use of the Euclidean distance metric. The grouping of voivodeships into clusters was performed halfway through the first and second ties. Tree diagrams 1 and 2 show four groups of voivodeships. With respect to economic development, clusters comprising the following voivodeships were formed:

- Cluster 1: Mazowieckie Voivodeship (outlier to the other voivodeships - very high level of economic development);
- Cluster 2: Dolnośląskie, Łódzkie, Pomorskie, Zachodniopomorskie, Śląskie and Wielkopolskie Voivodeships (6 voivodeships - high level of economic development);
- Cluster 3: Kujawsko-Pomorskie, Lubuskie, Opolskie, Małopolskie and Warmińsko-Mazurskie Voivodeships (medium level of economic development);
- Cluster 4: Lubelskie, Podkarpackie, Podlaskie and Świętokrzyskie Voivodeships (low level of economic development).

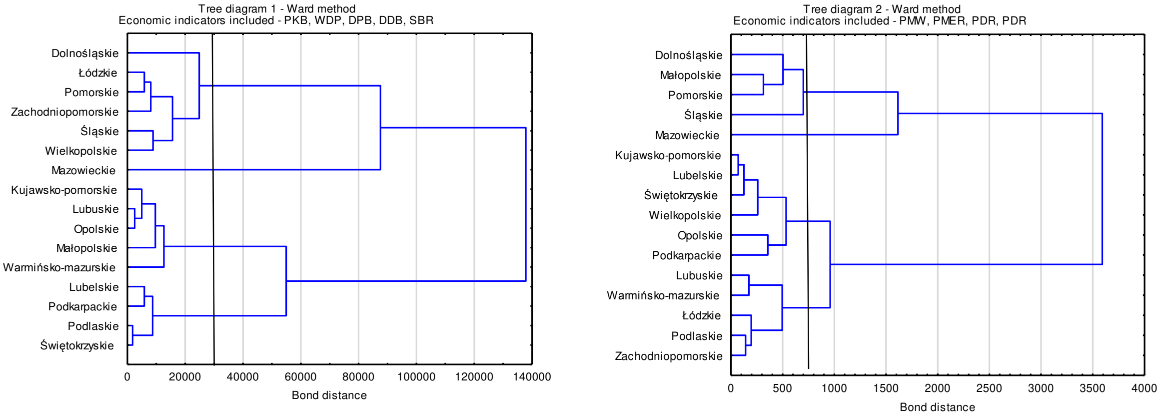


Figure 2. Clustering/agglomeration of Poland's voivodeships using Ward's method - analysis of the economic indicators characterizing the economic (tree diagram 1) and income situation (tree diagram 2).

Source: own calculation based on (GUS, 2023a).

Tree diagram 2, by contrast, which reflects income indicators, produced clusters of the following voivodeships:

- Cluster 1: Mazowieckie (outlier voivodeship - very high level of income);
- Cluster 2: Dolnośląskie, Małopolskie, Pomorskie and Śląskie Voivodeships (high levels of income;
- Cluster 3: Kujawsko-Pomorskie, Lubelskie, Świętokrzyskie, Wielkopolskie, Opolskie and Podkarpackie Voivodeships (medium levels of income);
- Cluster 4: Lubuskie, Warmińsko-Mazurskie, Łódzkie, Podlaskie and Zachodnio-pomorskie Voivodeships (low levels of income).

The Mazowieckie Voivodeship is noticeably distinct from the remaining regions and does not merge with any other voivodeships. Both the level of economic development as well as the level of residents' income are much higher in this voivodeship, compared to the remaining provinces (Figure 2).

Studies by other authors also confirm the significant disparities in regional development, which pose as one of the more acute problems faced by modern economies (Spychała, Spychała, 2022). These authors note that development disparities are not a new phenomenon, and economic disparities in regional development have been a persistent trend for many years. The development disproportions across regions in Poland are quite high. The literature typically refers to a division into the thriving Western Poland and the developmentally backward Eastern Poland (Miszczak, 2013; Wójtowicz, 2016). Better-developing voivodships have for years been those located in western and central Poland (Mazowieckie, Wielkopolskie), while less-developing are still those located in eastern Poland (Lubelskie, Podlaskie, Warmińsko-Mazurskie) (Malina, 2020). There are still regions in Poland which should be assisted in equaling their residents' prospects for a better life (Wyszkowska, Serwatka-Bober, 2018). The regions of central, southern and western Poland (i.e., Mazowieckie, Śląskie, Dolnośląskie and Wielkopolskie) are dominant, whereas eastern Poland regions (i.e., Lubelskie, Podkarpackie, Podlaskie and Warmińsko-Mazurskie) are at the opposite pole. The development outlook does not prompt conclusions indicating any reprofiling of the development trends in the near future (Dębowski, 2013).

The economic indicators factored into the analyses of economic development and population income levels correlate significantly. All of these indicators, except the unemployment rate (RUR), are stimulants, i.e., higher values thereof intensify economic development and increase the level of needs satisfaction. The correlation relationship between the two is positive and, depending on the value of r_{xy}, medium/moderate, strong or very strong (practically functional relationship). The only negative correlation relationship is observable between the unemployment rate (RUR) and the other indicators, as this indicator acts as a destimulant, i.e., the higher the unemployment rate, the lower the economic development in these regions (Table 3).

Table 3.
Correlations between economic determinants in Poland at NUTS2 level

Variable	r_{xy} coefficients of correlation between economic indicators - data for objects at NUTS 2 level								
	GDP	GVA	NGPI	NGDI	RUR	AMGE	AMGP	AMAI	AMD
GDP	1.00	0.94*	0.98*	0.95*	-0.70*	0.91*	0.58*	0.70*	0.69*
GVA	0.94*	1.00	0.94*	0.93*	-0.69*	0.87*	0.66*	0.71*	0.69*
NGPI	0.98*	0.94*	1.00	0.98*	-0.73*	0.90*	0.65*	0.72*	0.71*
NGDI	0.95*	0.93*	0.98*	1.00	-0.72*	0.86*	0.74*	0.72*	0.71*
RUR	-0.70*	-0.69*	-0.73*	-0.72*	1.00	-0.60*	-0.68*	-0.44	-0.44
AMGE	0.91*	0.87*	0.90*	0.86*	-0.60*	1.00	0.62*	0.69*	0.68*
AMGP	0.58*	0.66*	0.65*	0.74*	-0.68*	0.62*	1.00	0.48	0.47
AMAI	0.70*	0.71*	0.72*	0.72*	-0.44	0.69*	0.48	1.00	1.00*
AMD	0.69*	0.69*	0.71*	0.71*	-0.44	0.68*	0.47	1.00*	1.00

Descriptions of abbreviations: GDP, GVA, NGPI, NGDI, RUR, AMGE, AMGP, AMAI, AMD are provided in Table 1.
* Marked correlation coefficients are significant at $p < 0.05$, $N = 16$ (Missing data were removed by cases).

Source: own calculation based on (GUS, 2023a).

As mentioned earlier in the methodological section, in order to elicit consumer opinions on crisis-related behavior and concerns, a survey was conducted among a group of 1000 respondents residing in Poland. The survey of the respondents' opinions was carried out in all 16 voivodships of Poland, which allowed regional analysis of the data obtained.

Similarly to the previously analyzed economic indicators, the respondents' crisis-related attitudes are differentiated regionally. A relatively high percentage of the respondents express concerns over their future family financial situation (60.1%) as well as their own and their families' security (60.0%) during the ongoing crisis. One in two respondents (50.7%) feel that once a crisis kicks in, nothing can be planned. The above concerns were expressed least often in the Lubuskie, Pomorskie and Zachodniopomorskie Voivodeships, and most often in the Warmińsko-Mazurskie and Kujawsko-Pomorskie Voivodeships. A much smaller percentage of respondents expressed concerns regarding their employment. The reasons for this can be attributed to the lowest in decades unemployment in Poland. In fact, 44.6% of the respondents expressed the opinion that they have become more respectful of the jobs they have during the current crisis, less than 34.3% are worried that their employment conditions will worsen and/or their earnings will decline, 25.2% of the total number of respondents worry that they will lose their jobs and livelihood, while 23.0% have become more active in seeking new employment. The scale of responses varies from province to province in this case, but the least concern over losing employment is expressed by residents of the Mazowieckie Voivodeship, while the residents of the Podlasie region have become more active in seeking new employment.

The respondents who confirmed their crisis-related fears and concerns were additionally inquired whether they worry about security, income or employment as frequently, less frequently or more frequently as before the crisis. It turned out that every second respondent who confirmed such concerns have become even more worried about their families' future financial situation (47.5%) and security (49.7%) than before the crisis, while almost 40% of the respondents expressed the opinion that they more frequently than prior to the crisis feel that nothing can be planned. The respondents were much less likely to report that they had begun to worry more about losing employment. The largest percentage of the respondents whose negative feelings were further exacerbated by the crisis reside in the Warmińsko-Mazurskie and Kujawsko-Pomorskie Voivodeships, while the smallest percentage reside in the Northwestern Poland, i.e., the Zachodniopomorskie, Pomorskie and Lubuskie Voivodeships (Table 4).

Table 4.
Consumer crisis-related perceptions and concerns – V_s variation at NUTS 2 level in Poland

Specification	Poland	min	max	V_s
Percentage of respondents confirming crisis-related perceptions and concerns				
I am worried about losing my job/source of income	25.2	14.8 (Mazowieckie)	34.4 (Łódzkie)	22.2
I respect more the job I have	44.6	26.9 (Opolskie)	56.5 (Wielkopolskie)	16.4
I feel that nothing can be planned	50.7	38.5 (Lubuskie)	76.3 (Warmińsko-Mazurskie)	16.4
I worry about the future financial situation of my family	60.1	50.8 (Pomorksie)	73.6 (Kujawsko-Pomorskie)	10.5
I worry about my and my family's security	60	51.1 (Zachodniopomorskie)	69.8 (Kujawsko-Pomorskie)	9.5
I am worried that my employment conditions will deteriorate/I will earn less	34.3	23.1 (Lubuskie)	44.2 (Dolnośląskie)	17.5
I have become more active and begun looking for a new job/new sources of income	23.0	12.5 (Świętokrzyskie)	33.3 (Podlaskie)	26.0
Percentage of respondents confirming that their crisis-related perceptions and concerns have intensified, compared to pre-crisis levels				
I am worried about losing my job/source of income	19.9	11.3 (Mazowieckie)	30.2 (Kujawsko-Pomorskie)	26.1
I respect more the job I have	15.0	6.6 (Pomorksie)	21.9 (Łódzkie)	32.2
I feel that nothing can be planned	39.3	26.7 (Zachodniopomorskie.)	65.8 (Warmińsko-Mazurskie)	21.7
I worry about the future financial situation of my family	47.5	40.0 (Zachodniopomorskie)	63.2 (Warmińsko-Mazurskie)	12.7
I worry about my and my family's security	49.7	42.2 (Zachodniopomorskie)	62.3 (Kujawsko-Pomorskie)	12.6
I am worried that my employment conditions will deteriorate/I will earn less	28.4	15.4 (Lubuskie)	36.4 (Dolnośląskie)	21.4
I have become more active and begun looking for a new job/new sources of income	16.4	7.1 (Podkarpackie)	30.0 (Podlaskie)	34.4

Source: own study and elaboration.

The vast majority of Polish residents are pessimistic about the course of the crisis. As many as 88.4% of the respondents believe that prices will continue to rise, 75.6% - that the crisis has only just begun, 69.5% - that the crisis is more dangerous than people think, 68.3% - that it will continue to worsen, and 51.5% - that it is better not to postpone major spending until the crisis is over. The smallest percentage of pessimistic statements expressed by the surveyed residents was recorded in the Zachodniopomorskie Voivodeship, whereas the biggest pessimists, as regards the crisis, are residents of the Warmińsko-Mazurskie and Podlaskie Voivodeships. Interestingly, compared to other regions, the residents of the Lubelskie and Świętokrzyskie Voivodeships show relatively the greatest optimism as to the ongoing crisis, despite the unfavorable economic and income indicators. Every third person residing in this voivodeship, and only every tenth person in the Warmińsko-Mazurskie Voivodeship, expressed the opinion that "the crisis is already over" (Table 5 and Figure 3).

Table 5.
Pessimistic crisis-related consumer statements –V_s variation at NUTS 2 level in Poland

Specification	Poland	min	max	V_s
Crisis-related pessimistic statements				
The crisis is only just beginning	75.6	62.2 (Zachodniopomorskie)	89.5 (Warmińsko-Mazurskie)	10.0
It will get progressively worse	68.3	50.0(Świętokrzyskie)	81.6 (Warmińsko-Mazurskie)	12.5
It is better not to postpone major spending until the crisis is over	51.5	37.5 (Podkarpackie)	66.7 (Podlaskie)	17.5
Prices will continue to rise	88.4	73.3 (Zachodniopomorskie)	96.4 (Podkarpackie)	6.8
The crisis is more threatening than people think	69.5	57.8 (Zachodniopomorskie)	81.6 (Warmińsko-Mazurskie)	9.9

Source: own study and elaboration.

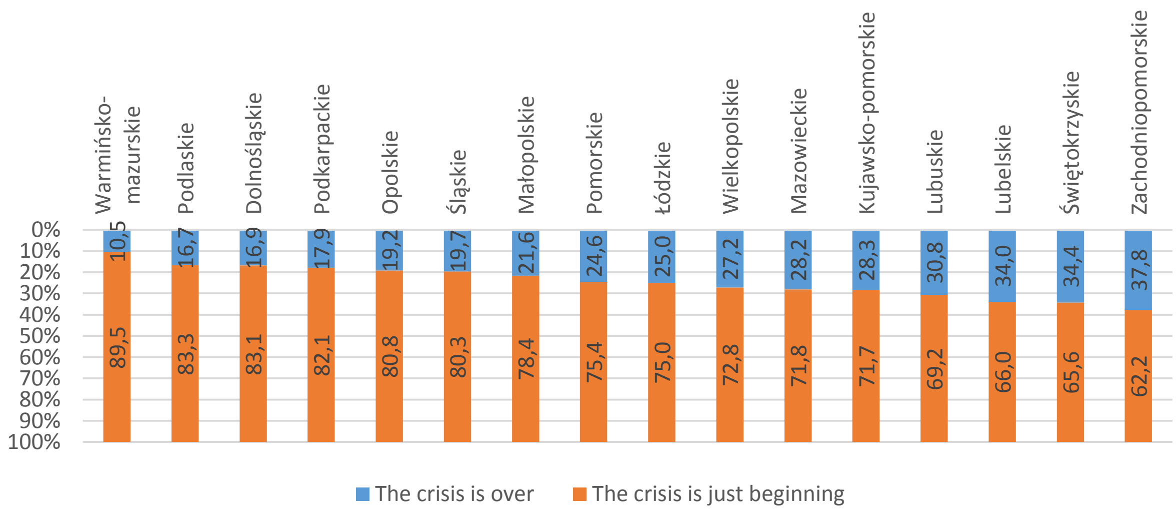
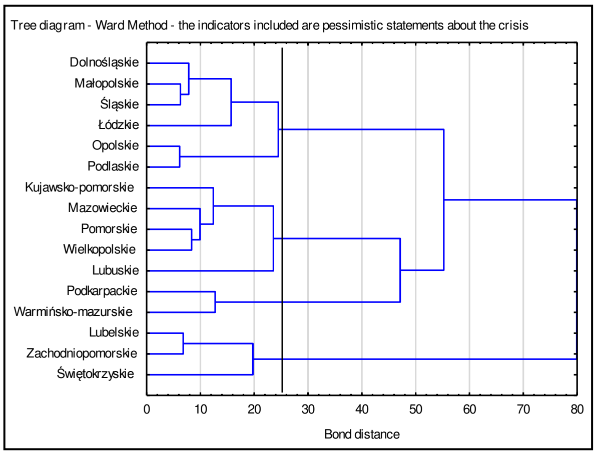


Figure 3. Ranking of Poland's voivodeships by subjective assessment of the crisis duration.
Source: own study and elaboration.

Taking the respondents' crisis-related pessimistic opinions into account (5 variables– see Table 5), four groups of voivodeships most similar in this regard were formed using the Ward's method:

- Cluster 1: Dolnośląskie, Małopolskie, Śląskie, Łódzkie, Opolskie and Podlaskie Voivodeships;
- Cluster 2: Kujawsko-Pomorskie, Mazowieckie, Pomorskie, Wielkopolskie and Lubuskie Voivodeships;
- Cluster 3: Podkarpackie and Warmińsko-Mazurskie Voivodeships;
- Cluster 4: Lubelskie, Zachodniopomorskie and Świętokrzyskie (Figure 4).



* the clustering of voivodeships were performed halfway through the first and second ties.

Figure 4. Clustering/agglomeration of Poland's voivodeships using Ward's method – analysis of crisis-related pessimistic statements.

Source: own study and elaboration.

The survey showed that 16.3% of the respondents reported a "strongly deteriorated" household income situation, compared to the pre-2020 period, and 39.5% responded that it has "rather deteriorated". Only 8.9% of the surveyed feel that their income situation will "strongly deteriorate" and as many as 32.9% believe that it will "rather deteriorate" in the next two years. Similarly to the previous answers, the largest number of the respondents declaring "strong deterioration" of the economic situation, both in the past as well as in a two-year perspective (34.2% and 26.3%, respectively), reside in the Warmińsko-Mazurskie Voivodeship. In contrast, the least severe deterioration of the financial situation was declared by residents of the Świętokrzyskie Voivodeship (6.3%), while the greatest optimists in this regard are the residents of the Podlaskie Voivodeship, where only 3.3% of the total number of the surveyed declared strong deterioration of their material situation in the perspective of the upcoming two years (Table 6).

Table 6.
Consumer crisis-related perceptions and concerns – V_s variation at NUTS 2 level in Poland

Specification	Poland	min	max	V_s
Please assess your household's economic/income situation relative to before 2020				
it has deteriorated strongly	16.3	6.3 (Świętokrzyskie)	34.2 (Warmińsko-Mazurskie)	38.9
it has rather deteriorated	39.5	23.1(Lubuskie)	53.8 (Opolskie)	20.9
Please assess whether your household's economic/income situation will change over the next two years				
it will strongly deteriorate	8.9	3.3 (Podlaskie)	26.3 (Warmińsko-Mazurskie)	59.5
it will rather deteriorate	32.9	15.1 (Lubuskie)	44.6 (Podkarpackie)	27.2

Source: own study and elaboration.

The crisis has prompted as many as 56.1% of the surveyed residents of Poland to reduce the level of personal consumption, 49.5% to reduce the level of household needs satisfaction, as many as 64.3% to alter their shopping habits, while 72.4% of the total number of respondents declared that their consumption behavior has become more rational. Relatively least frequently, the above opinions were expressed by the residents of the Lubuskie Voivodeship, and again most frequently by the residents of the Warmińsko-Mazurskie and Podlaskie Voivodeships (Table 7).

Table 7.
Percentage of consumers reporting reduced and altered behavior relative to pre-crisis (pre-2020) - regional differences at NUTS 2 level

Specification	Poland	min	max	V_s
	Sum of "definitely yes" and "rather yes" indications			
Reduction in the level of personal consumption	56.1	37.7 (Lubelskie, Lubuskie)	81.6 (Warmińsko-Mazurskie)	18.0
Reduction in the level of household needs satisfaction	49.5	30.8 (Lubuskie)	58.1 (Śląskie)	12.9
Altered shopping habits	64.3	42.3 (Lubuskie)	81.6 (Warmińsko-Mazurskie)	14.6
Rationalization of consumption behavior	72.4	53.8 (Lubuskie)	90.0 (Podlaskie)	11.7

Source: owns study and elaboration.

The primary objective throughout the article was to verify whether the economic development and residents' incomes in the various voivodeships of Poland affect the consumers' concern, attitudes and behavior during the current crisis. Detailed analyses of the correlations were performed with respect to all variables covered by the study. The article, however, discusses only those variables which display visible correlation. Since the relationships between the economic indicators taken into account during the survey, and presented in Table 3, show strong correlational linkages, selected variables were included in the further analysis of their impact on consumer concerns and behavior: GDP *per capita* (GDP), registered unemployment rate (RUR), average monthly earnings (AMGE), average monthly pensions and annuities (AMGP) and average monthly available income (AMAI).

The analysis of the correlation coefficients presented in Table 8 yielded specific insights. The impact of the regional variation in selected economic indicators on regional differences in the expressed crisis-related consumer concerns can thereby be confirmed. Although correlations do occur, however, they are not sufficiently strong to conclusively confirm the significance of this impact.

Table 8.
Correlations between selected economic indicators and crisis-related consumer concerns - regional analysis at NUTS2 level

Variable	r_{xy} correlations							
	GDP	RUR	AMGE	AMAI	GDP	RUR	AMGE	AMAI
	confirmed concerns				declaration that concerns are more prevalent than before the crisis			
I am worried about losing my job/source of income	-0.36*	0.10	-0.35*	-0.02	-0.39*	0.25*	-0.29*	-0.22*
I respect more the job I have	0.16	0.05	0.00	0.19	0.24*	-0.18	0.18	0.29*
I feel that nothing can be planned	-0.26*	0.27*	-0.26*	-0.07	-0.32*	0.41*	-0.28*	-0.17
I worry about the future financial situation of my family	-0.12	0.42*	-0.17	0.21	-0.10	0.55**	-0.07	0.09
I worry about my and my family's security	-0.45*	0.34*	-0.46*	-0.37*	-0.42*	0.44*	-0.29	-0.16
I am worried that my employment conditions will deteriorate/I will earn less	0.09	0.00	0.09	0.25	0.06	0.09	0.09	0.20*
I have become more active and begun looking for a new job/new sources of income	0.34*	-0.20*	0.32*	0.26*	0.06	-0.05	0.08	0.23*

Descriptions of abbreviations: GDP, RUR, AMGE, AMAI are provided in Table 1.
* weak positive or negative correlation.
** moderate positive or negative correlation, significant at $p < 0.05$; N = 16.

Source: own study and elaboration.

Consistent with the interpretation of the significance of Pearson's linear correlation coefficient r_{xy}, presented in the literature (Wysocki, Lira, 2005), generally, a weak or moderate negative or positive relationship was observed between the variables under study. Accordingly, it can be concluded that:

- the percentage of respondents declaring concerns over losing their employment and livelihood, with feelings that nothing can be planned, including worries about their own and their families' security, increases in voivodeships characterized by a decline in economic development and average monthly earnings;
- residents of voivodeships with high unemployment significantly more frequently than prior to the crisis worry about losing employment and livelihood, feel that nothing can be planned and, more importantly, significantly more often worry about their families' future financial situation ($r_{xy} = 0.55$) and security;
- in voivodeships characterized by higher economic development, higher average monthly earnings and available income, as well as lower unemployment rates, relatively more respondents declare to be more active in seeking new employment and sources of income (Table 8).

The study of the correlations between the variables under examination yielded interesting results regarding the impact on consumer concerns and behavior, especially with regard to the varying amount of average monthly pensions and annuities. Indeed, a significant negative relationship exists between the amount of pensions and annuities and the respondent's concerns about their own and their families' security (r_{xy} = -0.52). The results of the survey have evidenced that the higher the pensions and annuities in the region, the lower the percentage of respondents declaring concerns about their own and their families' security. Interestingly, the analyses also proved a significant positive correlation between the amount of pensions and the scale of opinions indicating a reduction in the level of household needs satisfaction (r_{xy} = 0.52). It turns out that, as pensions and annuities increase, the percentage of respondents declaring a reduction in the level of household needs satisfaction increases. In the voivodeships where pensions are the lowest (Podkarpackie, Lubelskie, Świętokrzyskie, Lubuskie), the percentage of consumers declaring a reduction in the level of household needs satisfaction was equally low. In the Śląskie Voivodeship, where pensions and annuities are the highest, the percentage of respondents declaring a reduction in the level of household needs satisfaction was the highest (Figure 5).

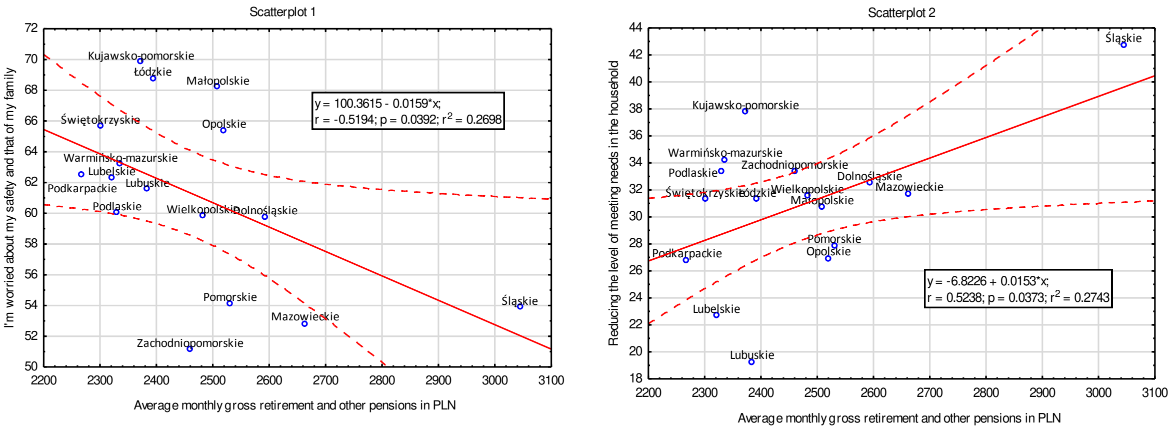


Figure 5. Correlations between average monthly gross pensions and annuities (in PLN) and consumers' concerns about their own and their families' security (Scatterplot 1) as well as their declaration of a reduction in the level of household needs satisfaction, relative to before the crisis (Scatterplot 2).

Source: own study and elaboration.

Changes in consumer sentiment and behavior induced by the crisis have also been confirmed by the results of other authors' studies. The crisis triggered by the Covid-19 pandemic caused changes in consumers' purchasing behavior, particularly in the purchase volume of certain product categories, as well as in terms of places where purchases are made and the attitudes towards consumption (Chlipała, Żbikowska, 2021). The COVID-19 pandemic has significantly affected the financial situation of many households, altering consumers' previous occupational, social and family life. The widespread uncertainty as to further economic shifts not only has had a devastating effect on household consumption decisions, including changes in household patterns (Solarz, Waliszewski, 2021), but has also threatened the population's work life. As reported by the Center for Economic Analysis, the number of Poland's residents at risk of losing employment or suffering a drop in income was 780 000 (Czech et al., 2020). The average earnings dropped by PLN 371 as early as the first months of 2020 (Szukalski, 2020). What is more, as a result of losing employment or being forced to close businesses, some households fell into the group threatened by poverty (Kalinowski, Wyduba, 2020). It should also be noted that the crisis evoked a sense of high uncertainty among the public, and consequently, a more prudent approach to spending emerged as a natural reaction. It should also be noted that the crisis induced a sense of high uncertainty among consumers, which in consequence has naturally resulted in a more prudent approach to their management of financial resources. The fundamental reasons underlying the rationalization of behavior were the deteriorating economic situation and the increased risk of unemployment, as well as, in part, the aftermath of the implemented restrictions on mobility (Nazarczuk, Cicha-Nazarczuk, Szczepańska, 2022).

5. Conclusions

Summing up the results of the survey, it should be concluded that the economic crisis triggered by the Covid-19 pandemic in 2020, followed by the outbreak of the war in Ukraine and the consequent cycle of escalating adverse economic phenomena, have prompted changes in consumer attitudes and behavior. Concerns over loss of employment and livelihood have intensified among consumers, who have become relatively more concerned about maintaining their current income and level of needs satisfaction during the crisis. The sense of security, as well as sustenance of the future financial standing at an appropriate level, have proven to be of great importance to households. The crisis has forced consumers to reduce the level of personal and household consumption far more commonly, and shifted their purchasing habits and consumption to a more rational level.

Consumers make their decisions amid various conditions, and economic factors play the biggest role in this regard. Poland is still significantly differentiated regionally in terms of the economic level of voivodeships, including the incomes of the resident households and consumers, and the current crisis is not conductive to the reduction of these disparities. Particularly significant disparities exist between the relatively poorest voivodeships of eastern and southeastern Poland and the richer regions of northern and northwestern Poland. The pessimistic attitudes toward the crisis, as well as the associated elevated fears and concerns, are not uniform among all consumers. Regional variation is clearly evident in Poland in this regard. It turns out that the decline in economic development, the drop in consumers' monthly earnings and incomes, as well as the rise in unemployment in these voivodeships, have led to an increase in the percentage of respondents expressing fears of losing employment and livelihood as well as declaring feelings that nothing can be planned and concerns about their own and their families' security. Crisis-related concerns, anxieties and limitations are relatively more often exhibited by residents of poorer voivodeships (Warmińsko-Mazurskie, Kujawsko-Pomorskie), compared to richer regions (Mazowieckie, Pomorskie). The survey revealed that residents of voivodeships with relatively lower pensions and annuities are significantly more prone to anxiety over their sense of security, yet, interestingly, are less likely to declare reduced satisfaction of household needs.

In a period of economic crisis, given its significant contribution to pessimistic consumer sentiment, including consumer behavior leading to a decline in demand and a reduction in the level of needs satisfaction, the role of the state and its strength becomes of great significance. This role first and foremost entails remediation of market inefficiencies and leveling of market imperfections. The primary state efforts to prevent the negative effects of a crisis are focused on the provision of assistance to entities affected by the crisis. The state can also stabilize economic activity by adopting appropriate corrective measures or leveling the negative impact of the crisis on consumer attitudes and behavior. It can employ a wide list of administrative, economic, social and financial instruments. These instruments yield indirect effects; nevertheless, they allow the authorities to create certain conditions preventing deterioration of consumer sentiment and averting reductions in consumption. The scope and availability of state-provided social services (e.g., health care, education, housing) are of particular significance under crisis conditions. A period of crisis often forces changes involving an increased share of social outlays in the divided national income. Regional policies, in turn, should primarily seek to reduce the inequality of regions in consumption opportunities and the level of needs satisfaction, in order to contain the process of marginalization and impoverishment among the inhabitants of the least developed regions.

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RELIGIOUS PRODUCTS – THE PERCEPTION OF THEIR VALUE

Iwona OLEJNIK[1], Marcin LEWICKI[2*], Jan MIKOŁAJCZYK[3], Paweł DOBSKI[4]

[1] Poznań University of Economics and Business; iwona.olejnik@ue.poznan.pl, ORCID: 0000-0002-2019-0580
[2] Poznań University of Economics and Business; marcin.lewicki@ue.poznan.pl, ORCID: 0000-0002-3526-487X
[3] Poznań University of Economics and Business; jan.mikolajczyk@ue.poznan.pl, ORCID: 0000-0002-6767-4822
[4] Poznań University of Economics and Business; pawel.dobski@ue.poznan.pl, ORCID: 0000-0003-2267-9547
* Correspondence author

Purpose: The main objective of the paper is to identify the attributes of the value of religious products. Specific objectives include: conceptualization of the notion and perception of religious products from the perspective of an individual, determining the impact of secularization on consumer behaviour in the field of religious products, exploring and defining research areas that will constitute the basis for planned quantitative research, enabling the quantification of the analyzed variables and verification of research hypotheses generated during qualitative research.
Design/methodology/approach: Qualitative research (N = 21) on the perception of the value of religious products was conducted among Polish Catholics. Additionally, the understanding of the essence of religious products was examined.
Findings: The research shows that a religious product is defined and perceived by the respondents in various ways - there is no uniform approach in this respect. Considering the approach proposed by Sheth et al. (1991), the respondents perceive the existence of all five values in religious products, among which the relatively greatest importance is assigned to functional and emotional values.
Research limitations/implications: The research carried out is of a qualitative nature and is burdened with the disadvantages of this type of research. It is not a representative study and can only provide a partial picture of the research problem.
Practical implications: The paper has interdisciplinary and exploratory character, covering not only the issues in the area of religion and culture, but also economic, ethnographic and psychological aspects of human behaviour. The conclusions from the conducted research may provide guidance for enterprises offering religious products on the market.
Originality/value: The original value of the article is the conducted own research, addressed to both consumers and enterprises operating in the researched industry.
An additional value is also the approach to the research problem; so far, this type of research has not been undertaken in relation to religious products.
Keywords: consumer behavior and attitudes, marketing, religious products, qualitative research.
Category of the paper: Research paper.

1. Introduction

The subject of religion, faith and religiousness constitute an extremely broad and multifaceted area of research and analysis for social researchers. Defining the relationship between, for example, the professed faith and the perceived quality of life is a prominent issue, especially in the individual dimension. Until recently, religion and its relationship with economics, marketing and consumer behaviour were topics neglected in the scientific literature (Ustaahmetoğlu, 2020). Currently, the relationships between these issues increasingly often become the subject of research by many scientists (Agarwala et al., 2019; Brenner 2019; Farias et al., 2019; de Wildt, Aupers, 2021). For example, the research by Nguyen et al. (2020) concerns religious consumption based on product, services, media and practices as well as its impact on the attitudes, values and behaviour of consumers. As the authors of the studies indicate, this consumption can also be approached in the context of "life satisfaction, religious brand preference, dollars spending on religious products and monetary donation".

Religious products that combine the sacred with the profane are one of the areas of interdisciplinary interest. Such products are especially important in the most visible layer of religiousness, i.e., the rites, both within church institutions and at the individual level. Of course, depending on the religion, tradition or theological doctrine, they have a very diverse character. Their significance in the modern world is therefore quite heterogeneous. On the one hand, they play a very important role in the lives of many people. This is because the main, but not the only, purpose of buying and possessing them is to meet the needs of a higher order, i.e., spiritual needs. On the other hand, on the supply side, the production of these products is one of key areas of activity, and thus a source of income for church institutions or commercial enterprises. Therefore, it is worth proposing a thesis that the **identification of the essence and significance of religious products in human life. The perception of their value and motives for purchase is an interesting area of scientific research.**

It is worth noting, however, that issues related to religion, faith and religiousness, are an extremely difficult subject of research not only in Poland. This is caused by the sensitivity of this topic, which from the point of view of an individual can be perceived as very intimate and private. Hence, "Many aspects of religiousness are not subject to statistical research, and some of them are not empirically studied at all" (Religious denominations in Poland 2015-2018, 2019).

The Polish society, which is the main area of interest in this paper is dominated by people declaring belonging to the Catholic Church. However, the changes taking place in recent years and the forecasts indicate a continuous decline in the number of Catholics. The ongoing process of secularization of Polish society especially concerns youth and young people. It is a relatively new phenomenon in Poland and can be called a disruption of the intergenerational transmission of faith. In the years 2000-2021, a 20% decrease in the declaration of faith and as much as a 50% decrease in religious practice could be observed among young people. However, an increase in the number of young people who define themselves as very religious should be noted - an increase from 6% to 8% (Catholic Church in Poland…, 2021).

The main objective of the paper is to identify the attributes of the value of religious products. In order to achieve the goal, the Sheth's value model (1991) was adopted and adapted as the theoretical basis in the conducted own research. The paper has interdisciplinary and exploratory character, covering not only the issues in the area of religion and culture, but also economic, ethnographic and psychological aspects of human behaviour.

Specific objectives of both a cognitive and methodological nature also defined in the research process include:

- conceptualization of the notion and perception of religious products from the perspective of an individual,
- determining the impact of secularization on consumer behaviour in the field of religious products,
- exploring and defining research areas that will constitute the basis for planned quantitative research, enabling the quantification of the analyzed variables and verification of research hypotheses generated during qualitative research.

2. Literature review

2.1. Religious products - economic aspects

The classic debate at the intersection between religion and economics, including marketing, may concern such theoretical issues as e.g., individual rationality and rational choice, market theory, the theory of supply and demand, the usefulness of religious consumption, branding and commodification of religion, consumer habits, churches, competitive strategies and a number of other issues. As indicated by L. Obadia and D.C. Wood (2011) "economics of religion" allows "a new and groundbreaking approach to the study of religious beliefs, preferences, attitudes, belongings, organizations, and dynamics".

As mentioned before, this paper will focus primarily on religious products, hence it is relevant to review selected studies conducted in this area first. As indicated by B.B. Hull and F. Bold (1989) "Churches produce a set of products including entertainment, a variety of socially valuable public goods, eternal life and alteration of otherwise fated events". The purchase of these products, like no others, can be strengthened "by the promise of heaven and threat of hell". Therefore, a service which is for example a promise of eternal life can also be a religious product, as well as experiences of visitors to sanctuaries or places of religious worship. Research related to this area focuses mainly on emotions, motivations, but also on physical and organizational aspects (e.g., related to the organization of a trip) that occur when visiting such places (Bideci, Bideci, 2021).

N. Muhamad and D. Mizerski (2010) emphasize that people dealing with economics and marketing practice have limited conceptual knowledge in the field of measuring the influence of religion on consumer behaviour in the market. They suggested the need for a holistic approach to religion and in their research they identified "five factors of religious influence. These are commitment, motivation, affiliation, knowledge about a religion and awareness of the social consequences of following a religion".

The research conducted so far concerned selected, specific product categories. For example, research focused on the sphere of impact of religion on the perception of luxury products (Geiger-Oneto, Minton, 2019), the impact of religiousness on the acceptance of new products (Rehman, Shahbaz Shabbir, 2010), and purchasing intentions among people of different religion in respect of purchasing products bearing halal logo (Jumani, Sukhabot, 2020). On the other hand, S. Ojo and S. Nwankwo (2020) studied the correlations between religion, faith and culture and their impact on entrepreneurship and marketing. As the authors write: "Pentecostal practices unveil the marketing notion of "Pentepreneurship", which combines both spiritual and enterprise activities to formulate a fused space of engagement straddling the sacred and the secular". Research on the impact of various advertising messages containing (or not) religious elements as well as the level of religiousness on the attitudes and buying intentions of consumers is another research area related to the relationship between religion and the marketing aspects of products (Ustaahmetoğlu, 2020). On the basis of the conducted experiments the research author notes that religiosity may be an increasingly important criterion for market segmentation today.

In view of the above, the analysis of the perceived values that consumers obtain from purchasing or receiving broadly understood religious products constitutes the novelty of this paper.

2.2. The concept of perceived value and the consumption value theory

Consumers attribute value to a product by assessing its utility based on the perception of what is received and what is given and focus on the benefits or the worthiness of using a specific product (Zeithaml, 1988). The abovementioned definition of perceived value is one of the most widespread since the very beginning of literature discussion on the subject in late 80's and early 90's and posits value perception as an unidimensional construct.

Although perceived value is one of the most studied variables in the marketing literature, there is still no consensus about its definition. Other researchers (e.g., Babin et al., 1994) argue that value perception is rather a multi-dimensional construct. Various perspectives are generated by academics for indicating this multidimensional structure such as customer value hierarchy, utilitarian and hedonic value, as well as consumption value theory.

Moreover, the perceived value has often been poorly differentiated from other related constructs (Lapierre et al., 1999) therefore especially terms such as "value" and "values" should be clearly distinguished. According to Holbrook (1994, 1999) value is the outcome of an evaluative judgment, whereas the term values refers to the standards, rules, criteria, norms, goals, or ideals that serve as the basis for such an evaluative judgment. Because each consumer has a different value system, their behaviour will differ depending on said values (Rokeach, 1973). Values can influence the individual's attitude (Poortinga et al., 2004) and can provide a basis for consumers' evaluations and preferences for products. It is also a critical antecedent of the consumers' purchasing behaviour (Chiu et al., 2014).

Sánchez-Fernández and Iniesta-Bonillo (2007) in their literature review on perceived value revealed two main research approaches to the operationalization of value (Fig. 1) which are still valid.

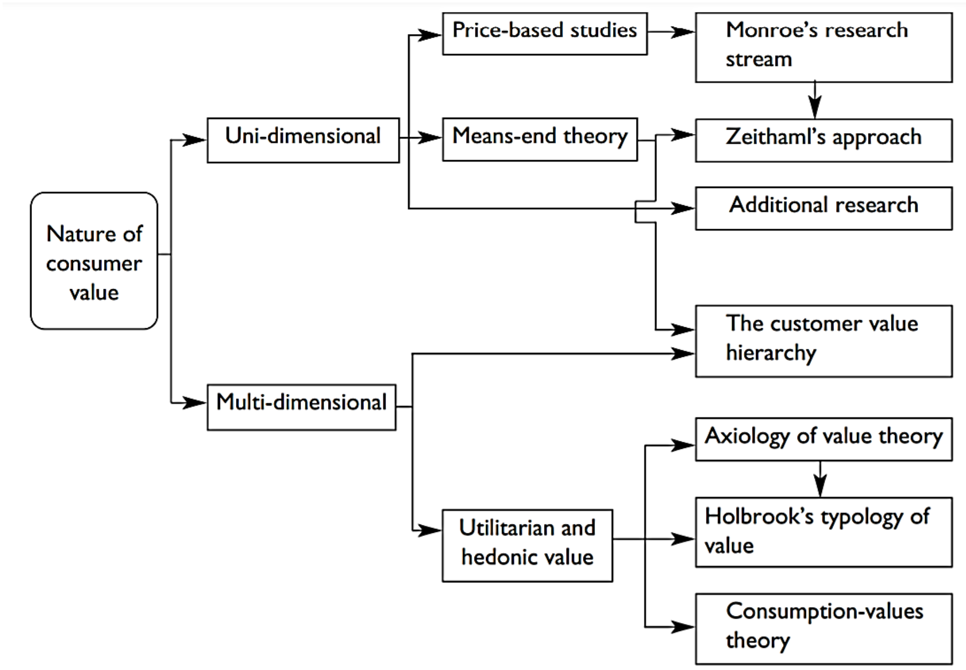


Figure 1. Research streams on perceived value.

Source: Sánchez-Fernández, Iniesta-Bonillo, 2007.

There are many multidimensional approaches to the perceived value. Babin et al. (1994) proposed that consumer value consists of utilitarian and hedonic components. While utilitarian value is related to non-emotional outcomes of an experience; hedonic value is characterized as emotive aspects of a consumption experience. In other words, benefit that is derived by accomplishing a specific task is defined as utilitarian value. Experimental benefit that is elicited by feelings of fun, fantasy fulfilment, escapism, and excitement is called hedonic value (Jones et al., 2006; Stoel et al., 2004). Grönroos (1997) on the other hand divided perceived value into cognitive value and emotional value, whereas Sweeney and Soutar (2001) divided consumer perceived value into three categories: functional, emotional, and social values.

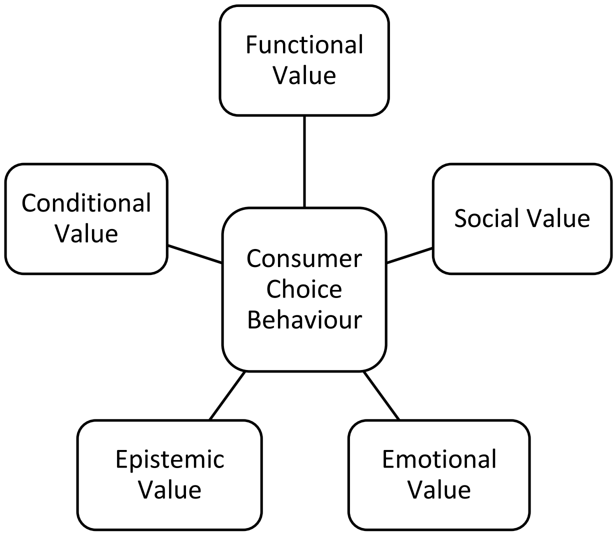


Figure 2. The five values influencing consumer choice.

Source: Sheth et al., 1991.

In this paper, the main emphasis is on the approach proposed by Sheth et al. (1991), namely The Consumption Value Theory which depicts that functional, social, emotional, epistemic, and conditional values guide the consumers' choice behaviours (Fig. 2). Functional value is related to perceived benefits of a product's functional, utilitarian, and physical performance. The social value is defined as: the perceived utility acquired from an alternative's association with one or more specific social groups (Sheth et al., 1991). Emotional value is related to a product's ability to create positive or negative affective states. Epistemic value is related to curiosity, novelty, and cognition obtained from the products. Conditional value reflects the effect of a product's utility in the particular situations and circumstances. Since conditional value is not a value itself, researchers mostly consider the first four value dimensions. Moreover, conditional value is considered to have influence on other values' significance only (Denys, Mendes, 2014).

3. Data and method

Primary research was conducted to identify the perception of values in relation to religious products. In the process of the research performance, the grounded theory methodology was used. Qualitative studies were performed using the method of individual-in-depth-interviews (with elements of observation and photography). They were followed by semi-structured interviews and field note-taking. Additionally, the respondents were asked to take photographs (or they were taken by the researcher) of devotional items that the respondents had in their homes. The interview scenario was the measurement tool. The following research problems were distinguished:

- general attitude of the respondents towards religion, including attending masses and participating in pilgrimages,
- conceptualization of religious products (sacred and devotional items), including associations with the essence of such products, and their perceived value,
- consumer behaviour related to such products and purchase motivations,
- perception and quality assessment of such products,

This study was conducted for 2 months in 2021. The sample selection was purposive. The sample was selected in this way because it was found that the research issues may be perceived by the respondents as sensitive (Khraim, 2010; Van Meter, 2000; Lee, Lee, 2012). The main criteria for selecting the respondents to the sample were the purchase of products related to the church, faith or produced (affiliated) by friars or entities associated with the church institution. People related to the production or sale of this type of products, as well as clergy, nuns and other people involved in the organizational aspects of the functioning of the church were eliminated.

21 individual interviews were conducted. 13 women and 8 men participated in the study, the youngest person was 22 years old, and the oldest person was 87 years old. The characteristics of the people participating in the study are presented in table 1 (see: annex). It is worth noting that, considering the priorities in the lives of respondents participating in the survey, they declare that family and health are the most important for them, while faith or a relationship with God appeared in some statements, but was rarely placed higher in the hierarchy.

The analysis of the content of the collected material was performed according to the principles developed by Miles and Huberman (1984), with the use of the descriptive, attribute and process coding of statements in accordance with Saldana's recommendations (2021). Atlas.ti software was used in the data analysis.

It should be added that during the preparation and implementation of the research, the principles of respecting ethical standards were followed. First of all, it was ensured that there were no psychological damages related to the participation of respondents in the research. They were informed, among others, about voluntary participation, the methods of observation and registration used in research (both statements and photographic documentation), data protection and privacy (ensuring anonymity) or the method of publishing the results, as well as not using them for commercial purposes (Malhotra, Miller, 1998). It should be added that the approval of the Ethics Committee for Scientific Research of the Poznań University of Economics and Business was obtained (no. 24/2021).

4. Results

4.1. Conceptualization of religious products - associations and perception from the perspective of individuals

When conceptualizing a religious product, the respondents' spontaneous associations with this concept were first examined. Religious products, i.e., products related to religious worship, are understood by the respondents in different ways. When studying spontaneous associations with these products, some respondents perceived them very broadly, including basically all products related in any way to faith, church, priests or places of purchase. Religious products included: rosaries, pictures (including icons), figurines, crosses, candles, liturgical vessels and vestments, Catholic press, religious posters, religious games and films, souvenirs and gifts (including jewelry), herbs and cosmetic products, and even wine, health tinctures, alcoholic beverages (provided that they are produced by entities associated with the church) and papal cream cakes (i.e. cookies that Pope John Paul II liked). Religious products also include sprinklers, incense, candlesticks, and wristbands (with religious themes). A product became "religious" also by the very place of its purchase (e.g., an oil lamp bought in Jerusalem) or by the unique raw material from which it was made (e.g., an olive wood bell).

However, for some respondents, religious products are a narrow category that includes only "something that is blessed", although the mere fact of sprinkling with holy water is not important for everyone ("I do not bless anything, because it makes no sense, we did not bless anything in the family home either", res. 5). Therefore, this narrowly understood group of products includes, for example, "holy" pictures, rosaries, crosses and medals (but not, for example, books, because they are not blessed).

Some of the respondents, while spontaneously identifying the concept of a "religious product", did not, however, indicate an example of a specific product. They defined such products through the prism of their value, pointing to the needs that they satisfy thanks to them. The respondents emphasized that religious products are products for believers that help them in their lives. As one of the respondents said: "They strengthen faith and character, and they bring closer to God" (res. 4). Some people indicated that such products are not bought as investments or souvenirs from a trip, but to strengthen their own faith ("I buy them for myself, they strengthen my faith, and I become attached to them", res. 3).

Summing up, the spontaneous perception of this concept by the respondents is highly diversified and depends on the level of their participation in religious practices and professed life values.

When defining the essence of a religious product, its features were defined in the second place through the prism of the perceived quality of such products. The connotations of products with a religious sphere raise buyers' trust and strengthen the belief in the high quality of these products, especially if they are produced by friars. As the respondents stated: "I have read that the Brothers of St John of God have been making their products for centuries, they are as good as those from the herb shop or pharmacy, but certainly better than from the supermarket" (res. 5), and "Without monks, we would not have half of the cheese, beer, wine - they invented it, let them continue to work and develop these products" (res. 10). At the same time, they strongly emphasized the need to choose the right place of purchase, i.e. "In a convent, from friars, in a church shop or in a church bookstore, not at a market, bazaar or supermarket" (res. 4).

According to the respondents high quality mainly results from the fact that religious products:

- have proven recipes that have been "tested for ages",
- are not mass-produced (limited supply – friers' "craft"),
- ingredients and raw materials are carefully selected (own plantations and gardens at convents),
- work better than those bought in a supermarket (e.g., creams),
- have healing properties (tinctures with plant extracts - e.g., "honey tincture for colds"),
- have a guarantee of the "place of purchase", which is sometimes a brand in itself (e.g., a convent),
- are made of valuable material (gold, platinum, silver) or rare raw materials (olive tree and rosewood),
- have an emotional value (they facilitate prayer, are a memento, sometimes a gift for the close relatives).

It should be emphasized that the perception of high quality does not apply to products sold at a market or bazaar (according to the respondents, there are frauds and rubbish here). It is also worth noting that the low quality was also noticed in many souvenirs from the so-called "holy places" that are produced cheaply and massively (by followers of religions other than Christianity) for profit. In conclusion, religious products are largely perceived through the prism of the place of purchase, which clearly affects their perceived quality. In addition, according to the respondents, religious products, to a greater extent than any other, may have an emotional value (more on this value later in the paper), related to faith and the place of purchase of the product "religious products carry an emotional load; they are most often bought for religious events such as baptism, communion or wedding, and as a souvenir from visits to a given place" (res. 8).

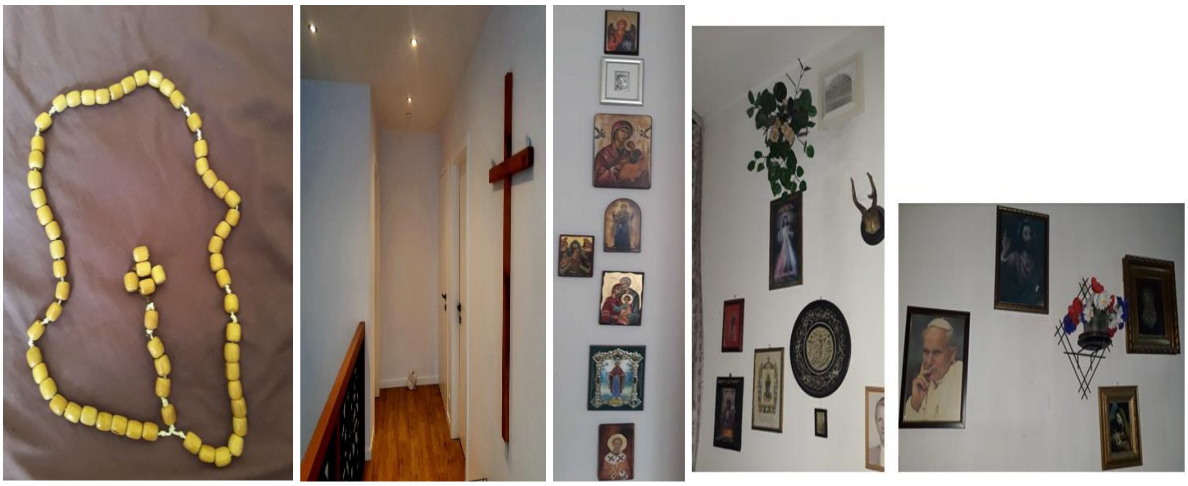
4.2. Identification of the value attributes of religious products

When analyzing the attitudes and behaviours of the research participants, it is possible to notice a diversified approach and assessment of the importance of individual dimensions of the value of religious items. The application of the Sheth value model in relation to religious products requires its adaptation, considering the specificity and complexity of these products, the value of which can be perceived in many dimensions.

The functional value of religious products

The functional value of religious products mainly refers to "facilitating prayer, strengthening faith and bringing people closer to God" (res. 4). The religious product is thus perceived as a kind of tool. Certain physical features of the products, especially the material from which they were made, the size and the price determined the purchase of a given item.

In the case of the material, for example, as indicated by one of the respondents, a crucial factor in buying a rosary was the fact that it was made of silicone ("A silicone rosary is convenient to use, e.g., when traveling", res. 10). On the other hand, in the case of product size, it proves that despite the large availability of various religious products in stationary and online stores, some respondents cannot find those that are convenient to use or exactly what they need. An interesting example is a rosary made of large beads by hand, from an old seat mat (Fig. 3a). For an older person (res. 5), the available rosaries are too small and inconvenient "I have many of them and I do not use them, and the large beads from the mat are perfect in practice". Another example of a self-made product is a very big self-carved cross "I wanted to buy a cross for myself, but it was not the size and price that I wanted - in the end I decided to make it myself, it gained an additional dimension" (res. 10, Fig. 3b).



From the left: (a) a handmade rosary of mat beads, (b) a handmade cross, (c) a collection of icons, (d, e) wall decorations.

Figure 3. Religious products - examples showing functional values.

Source: own photos taken during field research.

Taking into account the functional value of religious products, the respondents also indicated aesthetic side of interior decoration and material aspects related to capital allocation. In this respect, buying religious items for collection or investment can be distinguished as another aspect of their functional dimension. Many respondents, often over the years, collect items of a selected product category (e.g., angels, bells, cribs, magnets for a refrigerator with religious motifs, Fig. 6a). The collections can be very large (even several hundred items), they represent an extremely wide artistic and geographical spectrum. Collector's purchases also concern more religiously advanced works. These are mainly icons (Fig. 3c). Respondents buy icons mainly because of their artistic value (work of art) or the potential increase in the value of their invested capital in the future.

The functional value of religious products is also related to their use as decorations in apartments and houses (Fig. 3d and 3e). The most frequently purchased paintings present saints. These pictures are often family heirlooms kept for many years in a given family. An interesting example is the painting of Our Lady of the Gate of Dawn from Vilnius, which was brought by a family of repatriates after World War II, as the only memento from an abandoned house (Fig. 3d).

In addition, considering the functional value of a religious product, the purchase of these products as gifts is worth indicating. In this case, purchases for specific religious ceremonies, in particular the First Holy Communion (but also baptisms and confirmation), are predominant. Religious products are the main category of gifts for children receiving their First Holy Communion. The respondents indicated the security of finding the right gift in church bookstores (St. Wojciech, St. Jacek, Veritas stores). At that time, the respondents emphasized that purchasing religious products in places of religious worship was associated with a higher quality (e.g., gold medals) than if the same products were purchased, for example, in a bazaar, in an ordinary shop or at a jeweler's. The most frequently purchased products related to the First Holy Communion include the Holy Bible, gold products (chains and medals), books and games on religious topics ("If I have to buy something for a gift - I go to the church bookstore, I will always find something suitable there", res. 4).

Moreover, the purchases made when visiting holy places should also be mentioned. They are associated with the epistemic value of such products (discussed later). A person who is in such a place often wants to share a part of the unique personal experience with close relatives. Therefore, purchasing religious items as gifts is a very common motive for purchasing products during pilgrimages.

Social value of religious products

The social value of religious products is mainly related to demonstrating faith to others. This value, as shown by the research, may apply to very different behaviours, e.g., marking your car with a symbol of the Christian faith (Fig. 4a), placing religious symbols in a prominent place in your home or sharing your experiences of buying religious products with other people.

From the left: (a) a fish - a sign of belonging to the Christian religion on a car, (b) a religious cross worn as an ornament, (c) a cross as a sign of keeping up with the fashion based on film, (d) a motorcycle enthusiast's cross.

Figure 4. Religious products - examples illustrating social values.

Source: own photos taken during field research.

The cross is the product that best exemplifies various aspects of the social value of religious products. Among the people participating in the study, it was possible to notice those for whom the cross they wear on a chain is an important attribute of the declaration of faith. In the opinion of these people, the cross with the image of the crucified Christ is not so much a material value, even if it is made of precious metal, but above all it is an expression of faith. One of the participants in the study declared that he had been wearing it since confirmation. It was a gift he received from his parents, and he could not imagine replacing it with another. This product also had an emotional value for him (discussed in the next part of the article), related not only to who he had received it from, but also, and perhaps above all, to memories related to one of the three sacraments of Christian initiation in the Catholic church. This person stated that he had to repair the cross pendant several times and despite the fact that the cross was already heavily worn, he did not want to replace it with another.

A slightly different approach was declared by a woman wearing a cross, which was permanently soldered to the chain (Fig. 4b). In her opinion, it was one of the many ornaments she had. Although she described herself as a believer, she was not really emotionally connected with the cross she had on her chain. For her, it presented primarily an aesthetic value, and she treated it as an ornament that let her emphasize the beauty. Therefore, she treated the purchase of the cross as a typical purchase of a jewelry product. She stated that she was wearing different ornaments interchangeably. It was significant, however, that when she happened to spend holidays in countries where “other religions” dominated, she did not display the image of the cross she had on her chain. This situation clearly shows the simultaneous perception of the social value of this product.

An extreme example was a man for whom the cross he wore on a chain represented only an aesthetic value (Fig. 4c). From the answer given, it can be concluded that he only bought it because it was worn by Dominik Toretto (Vin Diesel) in the movie "The Fast and the Furious". In this context, this cross can be called a necklace because it does not represent a religious value for buyers, but only evidence of following a certain pressure of fashion related to the popularity of many parts of the movie "The Fast and the Furious". In the case of this research participant, the motive behind the purchase was by no means faith, but the desire to have a product that would be a possibly exact copy of the product worn by the character in the film.

It should be noted that in the offer of many jewelry stores such "crosses" that are popular among buyers can be found. These crosses are made of both stainless steel and silver or gold. They are decorated with cubic zirconia as well as semi-precious and precious stones. The man who participated in the study explained having this "cross" by the fact that he is a motorcycle enthusiast, and such an ornament corresponds to his interests (Fig. 4d).

Products used to decorate homes are another category of religious items that illustrate their social value in an interesting way (Fig. 5). Sometimes the owners of houses and flats, wishing to manifest their faith, periodically or permanently decorate their houses with religious elements. Permanent decoration consists in building home chapels, niches in the walls where a figure of the Virgin Mary and even sculptures and monuments are placed. Examples of such installations in the vicinity of Poznan (the place of residence of the authors of the paper) are presented in figure 5. Periodic decorations are associated with religious holidays or important anniversaries. A special example concerns the peregrination of a copy of the painting of Our Lady of Czestochowa when most of the houses and even fences are carefully decorated for this occasion.

Figure 5. Religious items used to decorate houses - examples illustrating social values.

Source: own photos taken during field research.

The awareness of the support provided in a worthy cause is also an important aspect of social value, through the prism of which religious products can be purchased. It may be a charitable cause, not necessarily for a church institution. An attempt to purchase an icon during an auction is an interesting example. One of the respondents stated: "I did not manage to bid on the icon put up for the auction of the Great Orchestra of Christmas Charity [ed. nationwide charity action] by a singer of a well-known music group" (res. 17). Certainly, the people who direct the support to various organizations also choose the church ones – for example, they make donations to the sanctuary, various foundations (e.g., Caritas) and support small family businesses (that produce religious items).

Emotional value of religious products

The emotional value of religious products represents, in turn, the possibility of recalling the moments related to their purchase, possession or receiving from someone as a gift. It is an exemplification of feelings and ties connecting a person with a given product. It is the perception of the value of such products in terms of souvenirs, i.e., products that will allow the buyer to return to a number of memories and emotions related to the place and time of purchase (Fig. 6a), or the person who the product was given by. The desire to have something as a souvenir is often the main factor that encourages the purchase of religious items, e.g., during a stay in a special place, an important celebration, or from relatives (often deceased).

Purchases made during pilgrimages and religious trips are an important group of emotional factors. This especially applies to "holy places" (as the respondents said), i.e., distant pilgrimage destinations (e.g., Jerusalem, Rome, Fatima), where the stay is usually associated with great experiences, emotions and where the pilgrim will most often be only once in a lifetime. A stay in such a unique place known from the Holy Scriptures ("Holy Land") or holy miracles (Fatima, Lourdes, Medjugorje) encourages pilgrims to take actions that are to remember these special places and moments spent there.

An example may be a souvenir bought in Jerusalem, which contains a significant emotional element, but is also a "proof" of stay as well as facilitates memories, and in the future perhaps a return trip to this place ("I buy as a souvenir of visits to this unique place and as a gift for my close relatives" res. 6, Fig. 6b).

From the left: (a) Fridge magnets - souvenirs that evoke emotions related to the visited places of religious worship, (b) A bell with a Jewish theme – it comes from a place with a high emotional load, (c) A rosary box with the inscription "Jerusalem"; (d) Olive wood bell

Figure 6. Religious products - examples illustrating emotional values.

Source: own photos taken during field research.

In the opinion of buyers, products which show the place of stay (e.g., "Jerusalem", Fig. 6c), those made from unique, exotic raw material (e.g., olive wood, Fig. 6d) or in a unique shape (e.g., Jerusalem Cross) are particularly valuable. Sometimes it is possible to combine these three elements in one product ("I collect bells, so when I am in a holy place I buy another bell, I brought an olive wood bell with the inscription Jerusalem from Jerusalem - it is a plentitude of happiness!", res. 6, Fig. 6d).

Souvenirs received from, or left by ancestors, especially those deceased are another source of emotional value of religious products. A wooden cross, which, according to the declaration of one of the respondents participating in the research, is the only material memento of the deceased mother is an example here (Fig. 3a). It is striking that its owner has not found a worthy place for the cross to be honored. It has been on a shelf stuck in between books for a long time (Fig. 7a). The bronze cross hanging on the wall of another respondent’s flat is also of exceptional value. After the death of his parents who lived in Lithuania in Vilnius, it is the only heirloom left for him, his children and grandchildren from his ancestors. Thanks to this, it was possible to preserve not only the cross that hung on the wall, but a certain symbol that brings memories of the deceased that are important to the respondent (Fig. 7b).

Figure 7. Crosses - family mementoes of the deceased family members - examples showing emotional values.

Source: own photos taken during field research.

The epistemic value of religious products

The epistemic value of religious products is related to the provision of new, and deepening the existing religious knowledge, or to arousing interest in the subject of faith. The conducted interviews show that this value constitutes a crucial factor for some people, and the modern market has a lot to offer in this respect. Apart from the Holy Scriptures, the respondents were willing to buy books and audiobooks on religious topics, selected and specially prepared fragments of the Holy Scriptures (for specific occasions), and religious games (e.g., board games). They also supported YouTube channels dedicated to deepening knowledge about faith (Fig. 8). As one of the respondents said, "I buy a lot of such things, for example in Studio Błogo, which are good, for example, for a housewarming party or as kitchen stuff. These things contain passages from the Holy Scriptures. These are, for example, a poster with a cucumber or a vegetable cutting board with a prayer before a meal", res. 15).

Figure 8. Religious items: poster with the "Hail Mary" prayer, board game and puzzles - examples illustrating epistemic values.

Source: https://studioblogo.pl/; https://sklep.pasterz.pl, February 10, 2022.

The participation by one of the respondents in the course "Diversity in Otherness - 10 Meetings on Religions" organized as part of the Warsaw Open University classes is an interesting example of an intangible product, i.e., religious services with high epistemic value. As she stated, "It is important for me to explore contemporary problems of various religions, I am one of the 90 students, we can hear about various religions and their peculiarities: about women in Protestantism, about Sunnism and Shiism, about singing in Orthodoxy, about Hinduism, Judaism or about exorcisms in Catholicism. It raises my religious awareness a lot", res. 18).

It is not surprising that nowadays a lot of information is sought mainly on the Internet and social media. It proves that the Internet is used to search for information on retreats, Christmas carols or pilgrimages, among others. Numerous religious YouTube channels are also gaining popularity. As one of the respondents pointed out, "Sometimes I provide some links to retreats on the Internet, share posts about valuable books, or about going on pilgrimage", res. 17).

Conditional value of religion products

The conditional value, which is relatively rarely distinguished by researchers, in the case of religious items is mainly limited to purchases made during visits to holy places, taking part in pilgrimages, and in connection with the purchase associated with a given church celebration. Therefore, this value in relation to religious products is closely related to their functional value, i.e., purchasing a gift. The place of purchase and the occasion in question thus constitute conditions that create additional value of religious products for their buyers.

5. Discussion

Perceived value is a subject of research relatively frequently appearing in numerous publications. Research in this area usually covers a very wide spectrum of issues, including the perceived value of organic food (de Morais Watanabe et al., 2020), the perceived value of online group shopping (Sharma, Klein, 2020) or the perceived value of energy-saving appliances (Zhang et al., 2020). Nevertheless, there is a clear research gap in terms of perceived value in relation to religious products. While publications on the relationship between religion and broadly understood buyers' behaviour are very common (especially in the field of religion as a motive for making a purchase (e.g., Fourali, Gbadamosi, 2021), there are basically no publications directly dealing with the perceived value of religious products. Therefore, the issues discussed in this paper are an attempt to fill the above-mentioned gap.

Based on the concept of perceived value by Sheth (1991) and considering the results of the presented research, it should be emphasized that buyers of religious products perceive value in them at each of the five distinguished levels. The specificity of religious products and the fact that the perception of this concept by respondents is highly diversified and depends on the level of their participation in religious practices and professed life values undoubtedly translates into the perceived value in them. Therefore, on the basis of the conducted interviews, it could be observed that people who participated in religious practices relatively more often found in these products additional values that were not recognized by non-practicing people. These differences could be noticed especially in the area of emotional, functional and social values. It should also be emphasized that the buyers of religious products saw relatively the greatest value in the area of functional and emotional values. Moreover, it should be noted that in the case of religious products the conditional value, often neglected in studies based on the concept of Sheth's value, was relatively clearly marked in the statements of the respondents.

From the conducted research it can be concluded that the secularization of society does not have to mean departing from the church leading even to apostasy, but it can also be expressed by changing the motives when purchasing religious items. For some of the survey participants, the purchase of, for example, a cross does not constitute a declaration of an act of faith, but only results from the desire to have an attractive ornament. Also, other values attributed to religious products (e.g., family heirlooms, souvenirs from travels or related to the allocation of money) are not a manifestation of faith, but a manifestation of secularization. This type of behaviour is a perfect example of transition from the sacred to the profane.

The assumption by the authors that the deliberations were of a diversified nature, covering issues in the area of religion, culture, ethnography, psychology, economics and management, allows for the formulation of interdisciplinary conclusions. The fact that religious products combine the sacred with the profane means that, in the buyers' opinion, the act of purchase allows to satisfy not only the needs of a higher order, i.e. spiritual needs (in A.H. Maslow's classification they are included in the highest-order category: the needs of self-realization), but also the ordinary needs of owning aesthetic and permanent products of religious worship. In the opinion of the authors of the paper, this may provide an impulse, especially for producers and intermediaries involved in trade in goods, to build their own brands. Having a strong brand can be an essential element in building a competitive advantage. From the perspective of individual customers, product certification could be a determinant facilitating the buyers' choice. If the products, especially food were evaluated externally, they could be of greater value to consumers. It is also worth noting that there's a lot of potential in branding services that are directly connected with religion, e.g. funeral industry (Sanders, 2012).

Considering the theoretical implications of the study, it is worth emphasizing that the conducted research provides a view on the relationship between religious consumption and its values for consumers. In the case of practical and social implications, the considerations contained in the paper provide knowledge useful in creating advertising, activities in social media, marketing of services, church marketing. At the same time, considering the triad: religion-consumer-religious products, knowledge about the experiences of consumers in the sphere of the influence of religious products on the development of the individual sacred, and the analysis of the economic aspects of organizations offering such products, may constitute an extremely major area of further analyzes on social values as well as shape market changes. The availability of the discussed products not only at stationary points of sale, but also in online stores (Pabian, 2018).

Noting the limitations of the research presented in the paper, it should be emphasized that, first of all, they only apply to the behaviour of Christians. It can be assumed that the values perceived in a religious product by other religious consumers (e.g., Muslims, Buddhists, etc.) would be different. Secondly, the research referred to in the paper was performed in Poland, which, as indicated above, despite being a Catholic country, has recently been facing a major crisis of the church as an institution. The question remains whether Christians, including Catholics from other countries, perceive the value of religious products to a similar degree. Thirdly, the conducted research was exploratory, which does not allow for generalization of the results per entire population. Hence, it would be relevant to conduct quantitative research, which will constitute the next stage of research by the authors of this paper.

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CONSUMER ENGAGEMENT IN THE CLOTHING INDUSTRY

Katarzyna PAWLAK

Military University of Technology, Warsaw; katarzyna.pawlak@wat.edu.pl, ORCID: 0000-0002-1781-1059

Purpose: The development of ICT has led to an increased interest in the domain of consumer engagement. The article entails an attempt at identifying the symptoms of and the factors influencing consumer engagement, as well as seeks to formulate a model for building Generation Z consumer engagement in the clothing industry.
Design/methodology/approach: The study was conducted using in-depth group interviews, in accordance with the principles of grounded theory. The data collected in interviews was processed by transcription. The data coding and analysis was carried out using Atlas.ti computer software.
Findings: The article elaborates a consumer engagement model incorporating the impact of the following factors on consumer engagement: satisfaction, loyalty, trust, product quality, customer involvement and interest in the product category. The consumer engagement behaviors expressed by the interviewees were classified.
Research limitations/implications: The consumer engagement model was formulated based on qualitative data. A future quantitative study should provide quantitative verification of the relationships identified. Further research can be expanded to include other groups of respondents, varying in financial status, age.
Practical implications: The results of the study indicate the urgency of following both pathways of building consumer engagement in the practice of clothing companies. They provide clues of sources that should be utilized in consumer engagement building as well as routes to motivate consumers and modify their behavior.
Social implications: The results of the study reveal a link between consumer engagement behavior and customer needs satisfaction, as well as high product quality and brand trust. They touch upon the issues of sustainability and the need for a strategy shift in the clothing industry toward sustainable production.
Originality/value: The article elaborates a consumer engagement model serving as a basis for the building of strategies aimed at increasing consumer engagement.
Keywords: consumer engagement, consumer brand engagement, customer engagement marketing, fashion.
Category of the paper: Research paper.

1. Introduction

The beginning of the 21st century, in tandem with the development of new digital technologies, has brought a dynamic advancement of the concept of consumer engagement (CE), both in science as well as in business practice (Bowden, 2009; Kumar et al., 2010; van Doorn et al., 2010; Verhoef et al., 2010; Brodie et al., 2011; Hollebeek, 2011; Sashi, 2012; Vivek et al., 2012). Marketers gained new online tools and means of interacting with consumers, which changed the roles of buyers and sellers (Acharya, 2021).

The new means enabled consumers to participate in value creation by interacting not only with sellers, but with other customers and stakeholders (Malhan et al., 2021). Consumers have become active co-creators, contributing to the fulfillment of companies' marketing functions, e.g., recommending a given company and its products to other customers, co-creating new products and content along with the company, and supporting other customers in using the company's products (Jaakkola, Alexander, 2014; Rosado-Pinto, Loureiro, 2020).

Consumer engagement, and transfer of control over part of the marketing function to consumers, brings positive results for organizations, by improving company performance: either directly (e.g., by increased sales, lowered costs of new customer acquisition) (Alvarez-Milán et al., 2018; de Oliveira Santini et al., 2020) or indirectly (e.g., by improving the company's reputation, customer satisfaction and loyalty) (Hao, 2020; Chandni, Rahman, 2020).

One potential area of application of the consumer engagement concept is the clothing industry, particularly the apparel brands targeting younger consumer groups, i.e., customers who interact with new technologies on a daily basis.

The article aims to examine Generation Z consumer engagement with apparel brands, more specifically:

1. To classify consumer engagement behaviors.
2. To identify the factors affecting customer engagement behavior (CEB).
3. To identify the direct motives driving consumer engagement.
4. To formulate a model of clothing industry consumer engagement.

2. Consumer engagement - literature overview

2.1. The concept of consumer engagement

The literature lacks a single universally accepted concept of consumer engagement (Hao, 2020). The topic of engagement has been addressed by various academic disciplines, such as psychology, sociology, political science and organizational behavior, leading to a diversity of conceptual approaches emphasizing different aspects of engagement (Kumar, Pansari, 2016).

The literature on marketing also fails to provide a unified take on the issue of engagement, while the emerging theory of consumer engagement keeps evolving based on various theories and paradigms, including:

1. Relationship marketing and the service-dominant logic approach (e.g., Acharya, 2021; Hollebeek et al., 2023).
2. The Social Exchange Theory (e.g., Beckers et al., 2017; Islam et al., 2019).
3. The concept of customer value co-creation and the Value Cocreation Theory (e.g., Hollebeek, 2011; Jaakkola, Alexander, 2014).
4. The Social Identity Theory (e.g., Harrigan et al., 2018; So et al., 2016) and the Regulatory Engagement Theory (RET) (e.g., Higgins, Scholer, 2009).
5. Theories interpreting the use of and engagement with new media, e.g., the Uses and Gratification theory (UGT), and Technology Acceptance Models (e.g., Florenthal, 2019; Pawlak, 2022).

Engagement refers to processes consisting of interactions between and/or experiences shared by the primary subject (e.g., the customer) and the object (e.g., the brand, product or organization) of engagement (Hollebeek et al., 2021; Dessart et al., 2015; Harmeling et al., 2017).

Many authors address engagement within the context of customer engagement (e.g., Pansari, Kumar, 2017; Verhoef et al., 2010), consumer engagement (Brodie et al., 2013; Dessart et al., 2015), brand engagement (Hollebeek, 2011; Gambetti et al., 2012) customer engagement behaviors (Van Doorn et al., 2010).

The advancement of digital technologies has prompted a great deal of research to address the online environment: customer engagement via social media, brand community engagement or customer engagement via mobile apps (Storbacka et al., 2016; Barari et al., 2021). The object of research has broadened as well - instead of customer-company/brand interactions, extended relationships (actor engagement) are studied, along with the entire network of related actors (company stakeholders): current and future customers, employees, contractors, the general public (Storbacka et al., 2016; Jaakkola, Alexander, 2014; Chen et al., 2021).

Table 1.
Selected definitions of consumer engagement

Author	Definition
Higgins, Scholer, 2009	Engagement is a state of being involved, occupied, fully absorbed, or engrossed in something - sustained attention.
Van Doorn et al., 2010	Customer engagement behavior (CEB) - customers' behavioral manifestation toward a brand or firm, beyond purchase, resulting from motivational drivers. CEBs include a vast array of behaviors including word-of-mouth (WOM) activity, recommendations, helping other customers, blogging, writing reviews, and even engaging in legal action. The behavioral manifestations, other than purchases, can be both positive (i.e., posting a positive brand message on a blog) and negative (i.e., organizing public actions against a firm).
Kumar et al., 2010	Customer engagement value (CEV) - customers provide value to the firm through their (a) own transactions (CLV), (b) behavior of referring prospects (CRV), (c) encouragement on other customers and individuals to make (or not make) initial or additional purchases (CIV), and (d) feedback to the firm on ideas for innovation/improvements (CKV). These four dimensions (purchasing, referral, influencer, knowledge) together constitute a costumer's engagement value.
Brodie et al., 2011	Customer engagement - a psychological state that occurs by virtue of interactive, co-creative customer experiences with a focal agent/object (e.g., a brand) in focal service relationships.
Hollebeek, 2011	Customer brand engagement - the level of an individual customer's motivational, brand-related, and context-dependent state of mind characterized by specific levels of cognitive, emotional, and behavioral activity in direct brand interactions.
Sashi, 2012	Customer engagement is defined as turning on customers by building emotional bonds in relational exchanges with them.
Vivek et al., 2012	Customer engagement is the intensity of an individual's participation in and connection with an organization's offerings or organizational activities, which either the customer or the organization initiates. (The individuals may be current or potential customers. CE may be manifested cognitively, affectively, behaviorally, or socially).
Jaakkola, Alexander, 2014	Customer engagement behavior – behavior, through which customers make voluntary resource contributions that have a brand or firm focus but go beyond what is fundamental to transactions, occur in interactions between the focal object and/or other actors, and result from motivational drivers.
Dessart et al., 2015	Customer engagement - psychological state that occurs by virtue of interactive, co-creative experiences with a focal agent/object (i.e. a brand) in a focal service relationship.
So et al., 2016	Customer engagement - a customer's personal connection to a brand, as manifested in cognitive, affective, and behavioral responses outside of the purchase situation.
Storbacka et al., 2016	Actor Engagement is conceptualized as both the disposition of actors to engage, and the activity of engaging in an interactive process of resource integration within the institutional context provided by a service ecosystem.
Lemon, Verhoef, 2016	Customer engagement - an element of the customer experience via specific touchpoints, including interactions with staff or social media channels.
Pansari, Kumar, 2017	Customer engagement - the mechanics of a customer's value addition to the firm, either through direct or/and indirect contribution (direct contributions consist of customer purchases, and indirect contributions consist of incentivized referrals that the customer provides, the social media conversations customers have about the brand, and the customer feedback/suggestions to the firm).
Harmeling et al., 2017	Customer engagement - customer's voluntary resource contribution to a firm's marketing function, going beyond financial patronage.
Hollebeek et al., 2019	Customer engagement - customer's motivationally driven, volitional investment of focal operant resources (including cognitive, emotional, behavioral, and social knowledge and skills), and operand resources (e.g., equipment) into brand interactions in service systems.
Rather, 2019	Customer engagement - the emotional bond established between consumer and brand, as a consequence of the accumulation of consumer experiences that assumes a favorable and proactive psychological state.
Thakur, 2019	Customer engagement - psychological state that leads to frequent interactions with the focal object that goes beyond the transactional motive of immediate purchase intention. The motives for interactions with the focal object may be utilitarian, to obtain information for potential purchase, or hedonic, with the objective of keeping abreast of the environment.

Cont. table 1.

Hao, 2020	Customer engagement is a multidimensional concept, depicts customers' deep psychological commitment and active behavioral involvement. It is cultivated and maintained through a long-lasting service relationship beyond the transactional motive of immediate purchase. In the service eco-system, engaged customers interact with various focal objects (e.g. online activities, specific behaviors). Customer engagement occurs within a dynamic, iterative process that customers co-create value through interactions with multiple focal agents, and thus creates a variety of engagement relationships (e.g. customer-to-brand/firm, customer-to-customer engagement, customer-to-staff engagement, customer-to-community engagement, etc.).
Bilro, Loureiro, 2020	Customer engagement - a motivational and relational state (comprising cognitive, emotional, and behavioral aspects) that may occur between two agents, one being the consumer(s) and the other a brand, firm, or organization, which can operate online, offline or both.

Source: Higgins, Scholer, 2009; Van Doorn et al., 2010; Kumar et al., 2010; Brodie et al., 2011; Hollebeek, 2011; Sashi, 2012; Vivek et al., 2012; Jaakkola, Alexander, 2014; Dessart et al., 2015; So et al., 2016; Storbacka et al., 2016; Lemon, Verhoef, 2016; Pansari, Kumar, 2017; Harmeling et al., 2017; Hollebeek et al., 2019; Rather et al., 2019; Thakur, 2019; Hao, 2020; Bilro, Loureiro, 2020.

Marketing literature defines the concept of consumer engagement somewhat ambiguously. Most authors identify consumer engagement as a mental process (state) arising from interactive, co-creative experiences of customers with an object (e.g., brand, company), taking place within a service relationship (Brodie et al., 2011; Bowden, 2009; Brodie, et al., 2013; Hollebeek, 2011; Rather et al., 2019; Thakur, 2019). According to some authors, consumer engagement emerges not only as a result of direct interactions of the customer with the object (brand, company), but also within the entire network of relationships: consumers, company employees and other stakeholders (Kumar, Pansari, 2016; Brodie et al., 2011). The relationship participants exert influence on each other (Hollebeek et al., 2019) and can initiate engagement relationships (Alvarez-Milán et al., 2018; Beckers et al., 2017).

During interaction, customers develop individual motivational states - disposition to act, signifying willingness or tendency to engage with a brand, company or community (Hollebeek, 2011). This disposition leads to behavioral manifestations. In this perspective, engagement encompasses several dimensions: cognitive, affective and behavioral (Storbacka et al., 2016).

Several authors emphasize that engagement is based on customers' voluntary contribution (investment) in their interactions with the company. Customers "invest" their resources - cognitive, emotional, behavioral and social - in interactions with the brand, the company, other customers, and the company's stakeholders (Harmeling et al., 2017; Hollebeek et al., 2019; Hollebeek et al., 2023; Bilro, Loureiro, 2020). Such resources include, e.g., the customer's network capital, persuasive capital, knowledge and creative resources (Malhan et al., 2021; Harmeling et al., 2017).

More broadly, engagement constitutes a dynamic, iterative process (Brodie et al., 2011), encompassing an entire series of customer interactions and experiences (offline and online) with the brand, the company, its customers and employees (Lemon, Verhoef, 2016; Bowden, 2009; So et al., 2016). Engagement can therefore refer to a number of phenomena, different stages of customer decision-making, attitude formation, knowledge acquisition, and engagement behavior. Given this perspective, different stages of the engagement process can be considered: passive and active engagement (Ng et al., 2020).

The literature also provides a purely behavioral definition of engagement, identifying it as the customers' behavioral manifestation towards a brand or company, extending beyond purchase, driven by motivational factors (Verhoef et al., 2010; Jaakkola, Alexander, 2014; Van Doorn et al., 2010). Consumer engagement, in this perspective, encompasses a wide range of behaviors, such as: positive word-of-mouth (WOM) about a company and its product/s, assisting other customers, blogging, sharing recommendations or posting reviews, and even pursuing legal action. These activities entail value creation for the company (Kumar et al., 2010; Pansari, Kumar, 2017; Rosado-Pinto, Loureiro, 2020).

In defining customer engagement, authors capture the dimensions, direction (value) and intensity of engagement variously (Hao, 2020).

The literature features one-dimensional and multidimensional approaches to the concept of consumer engagement (Hao, 2020). Some authors define engagement in behavioral terms exclusively (e.g., van Doorn et al., 2010; Verhoef et al., 2010; Jaakkola, Alexander, 2014; Kumar et al., 2010; Harmeling et al., 2017). The advantage of this approach lies in the ease of measurement - only such consumer behaviors as customer reviews, information exchanges with other customers, customer complaints and suggestions are measured (Ng et al., 2020). Few researchers focus on the emotional dimension (Ng et al., 2020).

Most research on consumer engagement involves the multidimensional perspective (Chandni, Rahman, 2020; Bilro, Loureiro, 2020; Gambetti et al., 2012; Brodie et al., 2013; Dessart et al., 2015; Harrigan et al., 2018; Alvarez-Milán et al., 2018; So et al., 2016; Chen et al., 2021; Lim, Rasul, 2022), covering two or more dimensions from among: the cognitive, behavioral, emotional and social dimensions.

The behavioral dimension encompasses beyond-purchase customer behavior, which is driven by motivational factors (Dessart et al., 2015), focused on the brand or company, and relies on customer input (his/her time, effort, knowledge) when interacting with the company, brand, other customers (Jaakkola, Alexander, 2014; Hao, 2020; Kumar, Pansari, 2016). Consumer engagement behavior entails a wide range of behaviors:

1. Sharing resources with the company - the customer shares his/her resources (knowledge, energy, time) with the company, through, e.g., suggestions, feedback, complaints, in order to improve the company's marketing functions. Customers can provide information regarding improvements to existing products and participate in the development of a new product.
2. Sharing resources with other parties - customers share their knowledge, experience, energy, time, emotions and privileges with other parties (e.g., other customers). Customers provide information, advice, technical assistance, participate in discussions, develop content of interest to the community.

3. Direct influence - customers influence other actors' attitudes or behaviors toward the company by sharing tips, recommending or discouraging product purchases, influencing others' perceptions of the company (Pansari, Kumar, 2017; Shin 2022; Barari et al., 2021; Kumar et al., 2010; van Doorn et al., 2010; Jaakkola, Alexander, 2014).

A different stance is presented by authors (Kumar et al., 2010) who focus on measuring the value of consumer engagement for the company, taking both the customer purchasing behavior and the impact of the said non-transactional behavior into account. These authors also factor in the dependencies linking various elements (e.g., product recommendations to other customers may also increase the recommending person's purchases).

When defining consumer engagement in multidimensional perspective, the following dimensions are additionally factored in:

1. Cognitive dimension - it is a state of individual concentration on and/or absorption with the brand (Higgins, Scholer, 2009; Dessart et al., 2015), referring to the consumer's level of processing and elaborating brand-related thoughts (Hao, 2020). According to Hollebeek et al. (2023), it entails consumers' cognitive investment in interacting with a brand.
2. Affective/emotional dimension - the sum and level of the emotions experienced by the consumer when interacting with the brand (Rosado-Pinto, Loureiro, 2020). The emotional dimension can be represented by the level of inspiration and customer pride associated with brand consumption, or brand loyalty (Hollebeek, 2011; Hollebeek et al., 2023; Bilro, Loureiro, 2020). It entails consumers' emotional investment in interacting with the brand (Hollebeek et al., 2023).
3. Social dimension - less often studied, usually when engagement is discussed more broadly in relation not only to customers, but to all actors within the brand interaction network (actor engagement) (Rosado-Pinto, Loureiro, 2020). The social dimension can be viewed as a special component of the emotional dimension of consumer engagement (Hollebeek et al., 2019). It involves the creation of the customers' and other stakeholders' social interactions surrounding the brand or company, uniting all actors around the brand/company, through participation in the brand community, dialogue with other participants, co-creation, and value sharing (Gambetti et al., 2012; Vivek et al., 2012). The social dimension has been greenlighted by the new means of online communication facilitating real-time customer (actor) interactions (Gambetti et al., 2012).

The majority of researchers studying engagement focus on positive consumer engagement, whereas negative aspects are less frequently addressed in the literature (Ng et al., 2020; Rosado-Pinto, Loureiro, 2020; Barari et al., 2021; Chandni, Rahman, 2020).

Positive consumer engagement involves those activities which produce positive short-term and long-term effects (financial and non-financial) for the company. In positive engagement, customers disseminate positive information about the company, provide assistance to other customers, and provide the company with product improvement suggestions (Hollebeek et al., 2023). In some instances, however, such customer activity can produce negative effects, e.g., as a result of miscommunication among customers, misleading or useless information about the brand may be disseminated (Jaakkola, Alexander, 2014; van Doorn et al., 2010), customers may also feel overwhelmed by the communication directed to them (Florenthal, 2019).

Negative engagement can manifest itself in unfavorable customer thoughts, feelings and behaviors, as a result of dissatisfaction with the company's offer, level of service, other company activities relevant to the customer (e.g., unethical, environmentally or locally harmful activities (Ng et al., 2020). Engaged customers can negatively influence other customers, warn them away from the brand/company, and even organize boycotts against the brand or company. (So et al., 2016; Chandni, Rahman, 2020; Florenthal, 2019).

Consumer engagement can vary in intensity (different levels). At the beginning of a customer's interaction with a company/brand, levels of engagement are generally relatively low. They build up over time, under certain favorable conditions, over the course of subsequent interactions (Brodie et al., 2011; Vivek et al., 2012). In terms of the level of engagement, two types of engagement can be distinguished: passive and active (Chen et al., 2021). Passive engagement is a less active form of engagement, in which customers passively consume content or utilize simple forms of feedback, such as "likes" or information sharing on social media (Ng et al., 2020; Florenthal, 2019). Active engagement is associated with customers' efforts to advocate for a brand or company, e.g., product review posting, product recommendations to others, comment response or collaboration with the company (Florenthal, 2019).

Consumer engagement is typically studied within the online or offline (less often both simultaneously) context (Ng et al., 2020). Research conducted within the online engagement context addresses customer interactions with the brand/company via mobile apps, social media, websites, virtual reality, augmented reality, gamification, content marketing and artificial intelligence (e.g., Hollebeek et al., 2021; Malhan et al., 2021; Acharya, 2021; Lim, Rasul, 2022). Studies conducted within the offline context address customer interactions with retail sales personnel, outlets, and products (Jaakkola, Alexander, 2014). Some studies, often conceptual in nature, investigate both online and offline engagement (e.g., Hollebeek et al., 2019; Harmeling et al., 2017; Brodie et al., 2011; Kumar et al., 2010; Hollebeek et al., 2021).

2.2. Consumer engagement models

Table 2.
Selected models of consumer engagement

Autor	Causes	Engagement dimensions	Effects
van Doorn et al., 2010	Customer-based: -Satisfaction, -Trust/commitment -Identity -Consumption goals -Resources -Perceived costs/benefits Company-based: -Brand characteristics -Company reputation -Company size/diversification -Company information usage and processes -Industry Context-based: -Competitive factors -PEST (political, economic/environmental, social, social, technological factors)	Consumer Engagement Behavior: -valence (positive, negative CE) -form or modality (np. WOM), -scope, -nature of its impact (direct, indirect), - customer goals	Customer consequences: -Cognitive -Attitudinal -Emotional -Physical/Time -Identity Company consequences: -Financial -Reputational -Regulatory -Competitive -Employee -Product Others: -Consumer welfare -Economic surplus -Social surplus -Regulation -Cross-brand -Cross-customer
Verhoef et al., 2010	Company strategies: -CRM/ Customer intelligence -Channels - Media Moderating factors: -Customer characteristics -Company initiatives -Environment (i.e. competition, economic, climate)	Customer engagement: -Customer Interaction (i.e. Word-of-Mouth) -Co-creation -Blogging etc.	Company Value: - Customer retention -Customer lifetime Value/ customer equity - New product performance
Hollebeek, 2011	Involvement Relationship Quality (only current customers): -Trust, -Commitment, -Customer Satisfaction	Consumer Brand Engagement: Cognitive Emotional Behavioral	Relationship Quality: -Trust, -Commitment -Customer Satisfaction Customer Loyalty (as Relation Quality effect)
Vivek et al., 2012	Involvement Customer Participation	Customer Engagement	Value Trust Affective Commitment Word-of-Mouth Loyalty Brand Community Involvement
Sashi, 2012	Connection (with customers via online and offline channels), Interaction (with the company, its staff and other customers, and the community), Satisfaction, Retention, Commitment (affective and calculative commitment) Advocacy	Customer engagement	---------------

Cont. table 2.

Pansari, Kumar, 2017	Experience Satisfaction Emotion moderating variables: -Convenience (the time and effort that consumers invest in purchasing a product) -Type of Company (B2B, B2C) -Nature of Industry (Service vs. Manufacturing -Level of Involvement (Higher vs. Lower) -Brand Value (Higher vs. Lower)	Customer Engagement: Direct – Buying Indirect: Referring, Influencing, Feedback	Benefits of Customer Engagement: Tangible: -Company Performance Intangible: -Opt-in -Privacy Sharing -Relevant marketing (Customer Experience)
Islam et al., 2019	Service Quality Moderation effect - Gender	Customer Engagement	Brand Experience Repatronage Intent
Florenthal, 2019 (U&G & TAM2)	- Entertainment - Informativeness - Irritation - Credibility - Interpersonal Utility - Subjective Norm	Brand engagement on social media sites: Social Media Engagement Value, Attitude toward Brand Content, Attitude toward Engagement with a Social Media Site	Brand-driven SMEB (social media engagement behavior) - Co-creation/ Co-destruction -Positive Contribution/ Negative Contribution - Consumption - Search - Dormancy - Detachment
Ng et al., 2020	Customer-related: 1. Customer capabilities 2. Situational factors 3. Attitudinal factors (Repeat customers) -Trust -Commitment -Satisfaction Company-related (Customer support) 1. CEM initiatives -Task-based CEM -Experiential CEM 2. Social CEM	Customer engagement: 1. Multi-dimensional 2. Behavioral 3. Process 4. Disposition Manifestation: 1. Focal actor 2. Focal objects 3. Valence 4. Intensity 5. Level of interaction 6. Context (online vs offline)	Customer's perspective: 1. Satisfaction 2. Trust 3. Loyalty 4. Purchase intention 5. Word-of-Mouth (WOM) Company's perspective: 1. Customer lifetime value 2, Customer referral value 3. Customer influencer value 4. Customer knowledge value 5. Company performance
de Oliveira Santini et al., 2020	Trust Commitment Satisfaction Positive emotions Moderators (Convenience, Product Involvement, Type of Company, Product Value, Type of Industry, Type of social media)	Customer engagement	Behavioral intention Word-of-Mouth Performance

Cont. table 2.

Barari et al., 2021	Promoted pathway (Functional initiative, Experiential initiative) Organic pathway (perceived quality, perceived value) Relationship quality (Satisfaction, Trust, Commitment) Moderators (Engagement context: Online vs. Offline, Industry type: Service vs. Manufacturing Product type: Hedonistic vs. Utilitarian, Cultural context).	Customer engagement: -attitudinal engagement -behavioral engagement	Outcome: -Loyalty -Company Performance
Chen et al., 2021	1. Company-related: -Marketing communication skills and features (i.e. type of content and post, frequency of posting etc.) -Corporate strategies and policies (i.e. CRM) -Management response -Application of technology -Brand image 2. Customer-related -Customer satisfaction -Customer trust -Customer experience -Customer perceived value 3. Context-related -Information communication technology -Social media platform -New Technologies (AI and VR)	1. Manifestation a) Process -Value co-creation -Customer experience b) Behavior -Interaction -Collaboration -WOM -Online review c) Multi-dimensional -Identification, attention, enthusiasm, absorption, and interaction -Physical, cognitive, and emotional presence 2. Context -Online, -Offline	1. Company perspective -Customer relationship -Customer loyalty -Customer satisfaction -Customer trust -Corporate reputation -Sustainable development -Value co-creation 2. Customer-perspective -Customer experience -Customer innovation -Value co-creation
Acharya, 2021	Brand Familiarity	Customer Brand Engagement: -Cognitive -Affective -Activation (time and effort)	Self-identification Word-of-Mouth

Source: van Doorn et al., 2010; Verhoef et al., 2010; Hollebeek, 2011; Vivek et al., 2012; Sashi, 2012; Pansari, Kumar, 2017; Islam et al., 2019; Florenthal, 2019; Ng et al., 2020; de Oliveira Santini et al., 2020; Barari et al., 2021; Chen et al., 2021; Acharya, 2021.

Depending on the research perspective adopted, different factors shall be explored in the models explaining the process of building consumer engagement. The models commonly include categories associated with the customer, the brand or company, as well as moderating variables: economic, political, environmental, social or technological factors (Rosado-Pinto, Loureiro, 2020). Selected models explaining the formation of consumer engagement are presented in Table 2.

Customer-related factors influencing customer engagement include:

1. Customer characteristics - knowledge of the brand and product category, as well as the customer's skills, personality, socio-demographic and economic characteristics affecting his/her ability to interact, and co-create value, with the company or other customers (Ng et al., 2020). They also affect the amount of time and resources

a customer can devote to interacting with the company and other customers, and the perceived costs of engagement, e.g., fear of losing reputation or key relationships, due to negative comments, for instance (van Doorn et al., 2010).

2. Factors related to customers' attitudes toward the company/brand - i.e., customers' trust in the company/brand, their satisfaction with their interaction with the company, resulting from their assessment of the overall purchase and consumption experience, as well as customers' emotional engagement (commitment), i.e., their desire to maintain a relationship with the company (Jaakkola, Alexander, 2014; Rosado-Pinto, Loureiro, 2020).

   The factors in this group are cyclical in nature and can both influence as well as result from engagement (Hollebeek, 2011; Ng et al., 2020). This stems from the very nature of engagement as a process occurring sequentially (Brodie et al., 2013). Current customers, who have experienced e.g., trust, commitment and satisfaction during their relationship with a given object, re-interact with that object, building a relationship based on a personal connection with it (Bowden, 2009).

3. Contextual factors - these factors include the technological, economic, environmental, political-legal or competitive factors affecting consumer engagement, e.g., the development of new ICT technologies facilitating knowledge sharing among customers, or competitors' efforts to raise awareness of the poor quality of a given company's products (van Doorn et al., 2010; Ng et al., 2020).

One important group of factors influencing consumer engagement involves customer engagement marketing (CEM) efforts, which entail motivation, reinforcement and measurement of voluntary customer input into the company's marketing functions, extending beyond business transactions (purchases) (Harmeling et al., 2017). This translates into an active solicitation of customers by the company to act as marketers (Harmeling et al., 2017).

Corporate CEM (customer engagement marketing) activities can be divided into two categories:

1. Relational approach - also referred to as the organic pathway - complies with relationship marketing, and entails the creation of lasting and long-term, time-distributed interactions between the customer and the company, its personnel, products, other customers (Pansari, Kumar, 2017; Bowden, 2009). Under this approach, the company focuses on the social-emotional aspects of the customer-company relationship. It is assumed that customers will reciprocate positive thoughts, feelings and behaviors toward the company as a result of a satisfying experience (Barari et al., 2021). The company's task is to offer, throughout the interaction, a complex experience, with multisensory, hedonistic and social benefits (van Doorn et al., 2010) in order to build emotional attachment to the company, develop a sense of psychological ownership of the brand or product in the customer, change his/her beliefs and attitudes, as well as motivate him/her to take action for the benefit of the company, the brand and other customers (Barari et al., 2021).

Organic initiatives should result in increased customer perceived value and perceived quality, leading to higher satisfaction, greater trust in and emotional connection (commitment) to the company. They culminate in affective (attitudinal) engagement, followed by behavioral engagement (Harmeling et al., 2017; Barari et al., 2021).

2. Promotional approach (promoted pathway) - involves the use of direct economic incentives to drive customer engagement activities, e.g., posting a product review (van Doorn et al., 2010). Engagement behavior entails customer effort, mental or physical, which is why customers are requited for their input in favor of the company, usually in the form of rewards, discounts, points (Kumar et al., 2010; Kumar, Pansari, 2016). Task-based engagement initiatives mainly motivate customers externally (Vivek et al., 2012; Harmeling et al., 2017), do not result in lasting customer behavior changes, and may cause customers to undermine their relationship with the company. The main advantage of the functional approach lies in its direct and immediate impact on consumer engagement (Harmeling et al., 2017). This engagement, however, is contingent on the presence of economic incentives. The promoted pathway yields short-term impact, lasting only as long as the exchange of benefits between the customer and the company continues (Barari et al., 2021).

The relational and promotional approaches are intended to encourage customers to actively participate in and contribute to the company's marketing functions. According Barari et al., (2021) the two pathways can impact one another by increasing the perceived value of the relationship with the company, strengthen customer loyalty and increase company performance.

In elucidating the pathways to customer engagement, the impact of the technological solutions employed by the company should also be mentioned. New Information and Communication Technology (ICT) (e.g., mobile applications, social media, virtual customer communities, online stores, virtual and augmented reality) facilitate companies with channels to build consumer engagement along the promoted and organic pathways: they enable customers to express their thoughts, complaints, ideas, and interact with other community participants (the company and other customers), as well as provide avenues for rewarding active consumers (with points, discounts, by assigning a specific status level within a ranking system) (van Doorn et al., 2010). Digital means of communication provide a way to increase customer knowledge, through online training, social media, app or community information. Augmented reality, virtual reality and artificial intelligence, in turn, enable companies to include personalized interaction features (Barari et al., 2021).

CEM activities can produce different results, depending on the customers' perceived brand value, the company's reputation, the nature of the market (consumer and non-consumer goods) and the nature of the product (buyer engaging/non-engaging) (Pansari, Kumar, 2017; van Doorn et al., 2010).

The effect of increased engagement can involve a number of factors, which can be divided into two groups: The effect of increased engagement can involve a number of factors, which can be divided into two groups: customer-perspective engagement effects and company-perspective engagement effects. Customer-perspective engagement effects entail increased customer satisfaction, trust, loyalty or purchase intent (Ng et al., 2020). Some of these categories occur in customer engagement models as antecedents to customer engagement. This is particularly true when customers have previous experience with a particular brand, company.

Company-perspective effects of engagement, in turn, are associated with increased customer value for the company (Kumar et al., 2010) and include:

1. Customer lifetime value (CLV) for the company - the present value of future profits generated by the customer over the course of his/her relationship with the company, which reflects the future customer profitability. It accounts for the total financial result of transactions with a given customer - i.e., revenues less costs - throughout his/her relationship with the company. Engagement increases customer lifetime value to the company by raising the value and recurrence of purchases and boosting incremental sales (Kumar et al., 2010).
2. Customer referral value (CRV) - engaged consumers recommend products, brands, companies to new customers. CRV is centered entirely around new customer acquisition through existing customers' activity (both online and offline), for which they are rewarded (e.g., with discounts, points). When calculating CRV, the probability of acquiring a new customer through a recommendation, the cost of that acquisition, the probability of a given person becoming the company's customer regardless of the recommendation, as well as the partial impact of multiple recommendations to the same potential customer should be taken into account (Kumar et al., 2010). CRV involves conversion of potential customers into actual clients, through a formally structured program of referrals by existing customers. The program assumes compensation for customers who recommend products; hence, CRV stems from extrinsic motivation (compensation).
3. Customer influencer value (CIV) - customers voluntarily influence other customers (potential and current), share information about the company and its products, persuade customers, help them, encourage them to buy more, minimize objections to products or the company. CIV arises from the intrinsic motivation of current customers. Companies can create environments encouraging product discussion and customer support via the Internet (e.g., in the form of a virtual community centered around the brand) (Kumar et at., 2010).

4. Customer knowledge value (CKV) - customers accumulate knowledge about the product, brand, company and other customers. Engaged customers share information on products, their needs, participate in product discussions with other clients, as well as provide companies with product/service improvement complaints and suggestions (Pansari, Kumar, 2017). The information gained from customers can help companies understand customer expectations as well as inspire new product and service improvement ideas. Customers can also participate in the conceptualization, development of new products (Harmeling et al., 2017).

Individual factors can strengthen or weaken the impact of the other elements comprising customer value (Kumar et al., 2010).

3. Study of consumer engagement in the clothing industry

3.1. Research methodology

The study was carried out in the form of in-depth group interviews, conducted from October to November 2022, at a Faculty of Management at one of Warsaw's universities. The sampling was purposive. First- and second-year students participated in the study. Fourteen interviews were conducted, with five to eight participants in each, for a total of 92 persons. The respondents were 40.2% female, 59.8% male.

Each interview lasted between 40 and 60 minutes. During the interviews, the respondents commented freely on, inter alia, their clothing purchases, clothing brands shopped for, clothing choice criteria, means and places of purchase, sources of information on fashion and favorite brands, as well as clothing brand loyalty. The entire process of clothing purchase was examined, from the information-seeking stage to the actual purchase, use of clothing and disposal of used clothing.

The study was conducted in accordance with the recommendations of the grounded theory. The research hypotheses, as well as the categories and the relationships involved, were developed and modified in the course of data collection (Charmaz, 2006). Existing theories of consumer engagement were applied at later stages of the study - not at the outset (Glinka, Czakon, 2021). The respondents' utterances were transcribed, coded and classified. Open, focused and selective coding were used (Gibbs, 2007).

The coding and data analysis process involved the use of qualitative data analysis software - Atlas.ti, which facilitated the process of coding, note-writing, test fragment and code comparison, broader category generation, as well as code-category linkage. The transcription of the data was verified by the respondents, and the coding - by a second researcher.

3.2. Research findings and discussion

The interviews provided information on the various elements involved in the process of building consumer engagement. Relationships linking the categories were identified and mapped into two types of consumer engagement: company-directed and customer-directed behavior.

The factors contributing to the respondents' engagement efforts were identified: fashion interests, perceived satisfaction resulting from the experience with the company, brand/company loyalty and trust, as well as the respondents' perceived product quality.

The relationships between the various factors and the constituent categories highlighted by the respondents are illustrated in Figure 1.

Based on the respondents' input on the various forms of engagement, a classification into passive and active engagement was established.

Passive engagement involves consumer efforts to seek information on the offer of the clothing brands they shop for. Many of the respondents' utterances concerned the sources of information used to obtain information on fashion and clothing (193 utterances). Some of the statements referred exclusively to brands which the respondents were loyal to - they declared regular purchases, or that these were their "favorite" brands (43 statements). Selected interviewee responses are presented in Table 2; Figure 2 shows the counts of the respondents' utterances regarding each source of information.

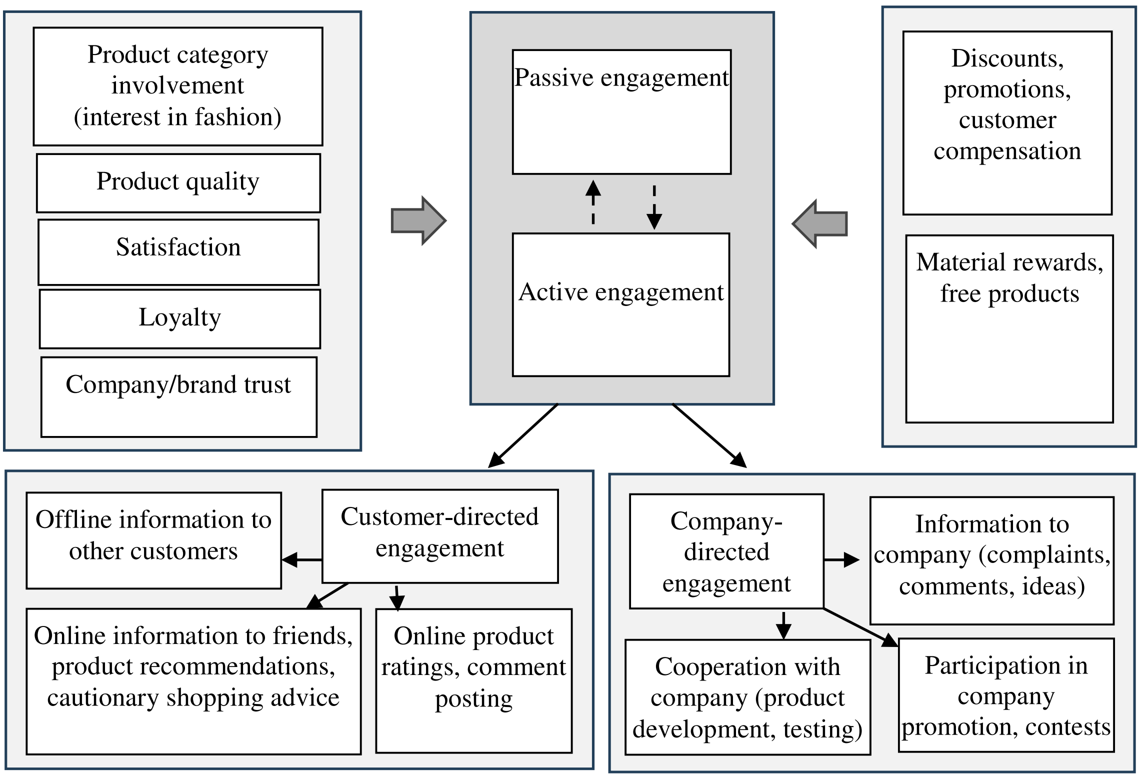

Figure 1. Model of consumer engagement in clothing industry.

Source: own elaboration.

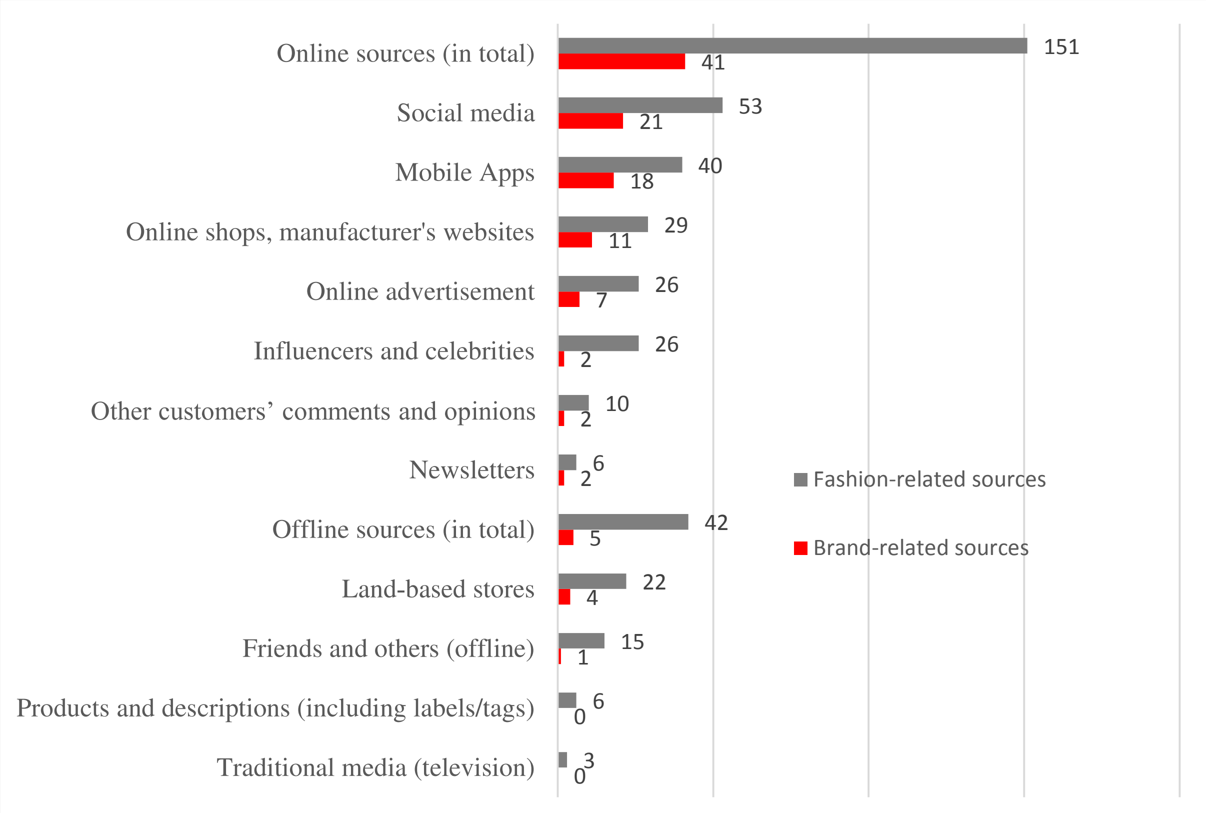

Figure 2. Respondents' sources of information on purchased brands and fashion.

Source: own elaboration.

The respondents' statements show that they use a variety of fashion information sources, mainly online. When they search for information about brands they are interested in, they mainly rely on several types of sources. Consumers follow brands on social media, use fashion apps, browse the online stores' offers, and are more responsive to their favorite brands' online advertising.

Table 3.
Selected respondent statements regarding sources of information

Source type	Respondent statement
Social media	Julia f1k5: "I usually [follow my brand] on Instagram. I think most young people follow different brands on Instagram, and that's where some news or information about promotions usually gets posted, e.g., Victoria Secret announced on Instagram that swimsuits are going to be sold also in Poland"
Social media	Martyna f5k1 "I keep track of Nike very often, to see whether any new collections are out. On Instagram, for instance, I like to browse through the photos of advertising campaigns"
Social media	Kinga f7k6: It's through social media that I learn about a lot of Polish brands which I had no knowledge of, but people commend them highly. As for TV commercials, I don't pay attention to them, as I don't watch TV. The only such source of information I use is social media"
Social media	Aleksandra f10k5: "As for myself, I take people's opinion and my own experience about the brand into account, and I browse Instagram. If I really like a certain item, I take inspiration from the brand right through Instagram"
Social media, internet advertising	Szymon f9m3: "In my case, this involves following various accounts of, e.g., the HM company, and checking for new additions to the assortment, but I don't pay that much attention to it. I pay more attention to it, and to Internet ads, when I need something"

Cont. table 3.

Social media, internet advertising, app, website	Wojciech f9m5: “When it comes to small-scale made clothes, I always receive information somehow, when something new comes out, it is displayed on some social networks. When it comes other brands, like I said, since I buy Nike, it is rather not news that reaches me, but once in a while I go to their website or app to see if anything new has come out"
Celebrities, friends	Adrian f2m6: "Personally, in my experience, I follow various athletes, footballers or basketball players on Instagram. It is well-known that they are closely associated with such brands as Nike, Adidas, New Balance. And this blends together, allowing me to find some great stuff. But I think we can get inspired by what our friends buy, when they buy things we like"
apps	Michał f12m1: "I have several apps just for clothing, but don’t treat them as newsletters, but rather browse, or order, clothes […]. It's just that I'm often more comfortable on my phone than on my laptop or desktop computer"
apps	Dawid f11m5: "As for me, I have a habit, when it comes to my favorite brands, and when a new collection comes out, I try to check what's in it, remember some newer designs, and I try to find the items I like later, at bargain prices […]. To keep track of all these novelties, a Zalando app is enough for me, where you can simply follow a particular brand, and if any new collection comes out, you get a notification"
apps	William f4m7: "I have various apps on my phone, which send me notifications, and I get real-time information about the assortment in a given store and about special offers, so that's what I use most often. I have an app for HM, Zara, Reserved, Adidas, Pull&Bear, to name a few"
Websites, apps	Kacper f2m3: "I mostly visit websites to see the latest arrivals, and I also have apps, because apps often offer discounts, rebates, coupons"
Land-based stores, apps	Patrycja f8k5: "I draw inspiration by checking out the latest collections in land-based stores. I also follow the latest collections via apps"
Land-based stores	Tomasz f9m2: "I'm more interested in what's new, when I'm at a land-based store, or in a mall or shopping center, then I go in, look at what's new, what I could possibly buy, try on"
Internet advertising, social media, influencers	Wojciech f11m1: "I think you can learn, that is I learn, about new collections by accident. It could be an ad that pops up or a sponsored post on social media: Instagram, Facebook, or a YouTube ad; something like that, or another info posted on public figure profiles liked on Facebook or followed on Instagram, which share fashion information […]"
Internet advertising, application, company website	Jakub f9m1: “I only start paying attention to […] Internet advertising, e.g., on Facebook, when I need clothes. Sometimes I use a loyalty app, mainly because of the discounts. One such example would be the HM [app] I use. When I need something, I look for it on the website, [browse] the assortment"

Source: own elaboration.

The respondents use various sources of information, mainly to seek inspiration, information regarding new collections and financial/material benefits: promotions, discounts, sales, special offers, etc. (Figure 2).

Another major reason for this lies in the facilitation of the purchase process, which increases user convenience, saves the user time and effort involved in product information, availability and variant searching. The respondents value personalized communication, i.e., the *ease and transparency in searching for products of interest* (Przemysław f3m6), notifications, e.g., *when the product you are looking for becomes available* (Kamil f4m4), personalized online advertising, which suggests a purchase of a product when, according to Aleksandra (f1k7) "[…] *you are looking for a product, and it pops up ‘on a plate*".

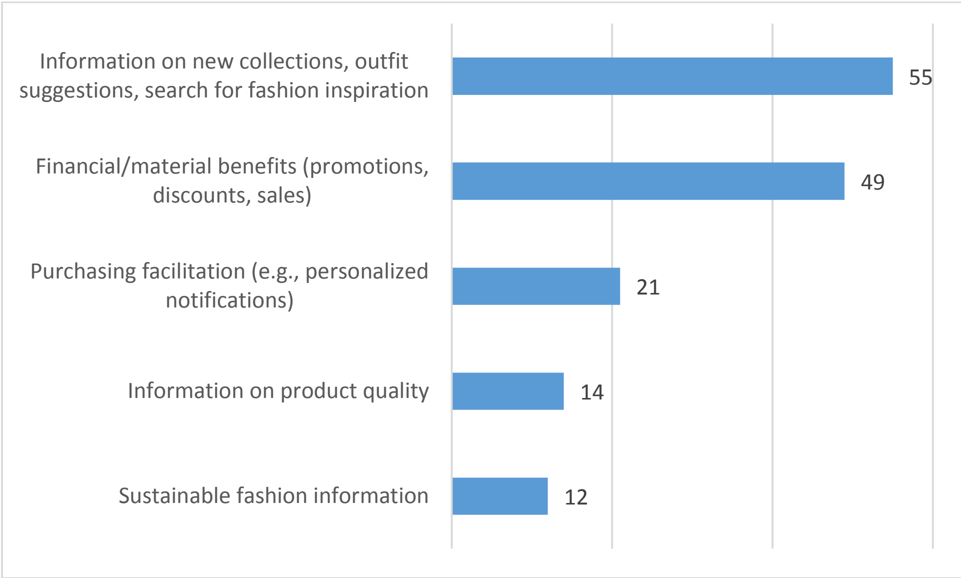

Figure 3. Reasons for respondents' passive involvement.

Source: own elaboration.

The respondents also mentioned they use the various sources (mainly online sources) to verify information on product quality and companies' sustainable production efforts. They verify quality via company websites, social media focus groups, and friends. The issues of corporate sustainable efforts they are interested in concern the actual products (mainly the fabrics, including recycled materials), the process and place of production, non-ethical practices or charitable activities. Information in this regard the respondents draw from both offline (land-based stores, product labeling) and online (mainly social media, company websites) sources.

More than half of the respondents reported that they actively engage with the company or other customers (62% and 57% respectively). Respondent statements on engagement, including the types thereof, are presented in Tables 4 and 5.

Table 4.
Selected respondent statements regarding their active engagement

Category/number of utterances	**Total**	**Female**	**Male**	**Interested in fashion**	**Not interested in fashion**	**Loyal**	**Non-Loyal**
Active CE with other customers (informs others, offline or online)	**60**	26	34	44	16	54	6
- offline informing	**34**	**16**	**18**	**25**	**9**	**31**	**3**
- online informing, including:	**23**	**11**	**12**	**14**	**9**	**21**	**2**
- private CE - sends information to friends, recommends brands to them, cautions them against purchasing)	10	7	3	10	0	9	1
- public CE - evaluates products, comments publicly	16	6	10	7	9	15	1

Cont. table 4.

Active CE, with respect to the company, including:	**15**	**7**	**8**	**12**	**3**	**9**	**6**
- complaints, comments, ideas submitted to the company	6	2	4	5	1	6	1
- cooperation with the company (product development, testing)	5	4	1	4	1	0	5
- participation in contests, promotions	4	1	3	3	1	3	1
- responding to negative comments from other customers and participation in boycotts	0	-	-	-	-	-	-
Total CE activity	**75**	**33**	**42**	**56**	**19**	**69**	**12**

Source: own elaboration.

Most of the respondents interact for the benefit of other customers: inform them about products, recommend or caution against purchases, provide information on promotions or new collections. The most interaction with other customers occurs offline - respondents share information on brands in conversations with friends, family. Julita (f7k1) indicates: *When I talk to my friends, I often say what works for me, or what new thing I bought that's great, and recommend they buy it for themselves also. I make such recommendations when talking to my girlfriends, but I don't tend to describe or provide an opinion on a product via a website*. Stanisław (f14m1) also declares: *I comment, rate and recommend [products].* […] *But I'm far from contributing in any way online. More privately, in conversations, but online I don't comment on posts or share anything via Instagram*. Of similar concern is another respondent: […] *I try to stay anonymous online, so I don't comment on social media on practically anything*, […], *maybe, among friends, I may complain about a particular company or brand* (Mateusz f11m6).

Some respondents, however, do undertake to provide online information about brands to others: they post comments and opinions or send information regarding the brand via the Internet. The information sent by customers privately is particularly valuable, because the customer holds knowledge of what his/her friends are looking for, thus the information can reach customers who are interested in purchasing. Adam (f5m4), for instance, explains: [W]hen *we see something, and it's something we don't even really like, but we know that someone close to us might be interested in it, we feel obliged to share it with them* [...].

Conversely, information posted publicly online, in the form of comments and ratings under product listings or in forums, reaches a large audience. Some respondents rate and comment on products online because they themselves rely on such sources of information, as e.g., Olga (f1k6) notes: *I express my satisfaction or dissatisfaction* [*with a product*] *on Opineo and other such websites, because I know that I too look at what others have written about the brand before I shop.* Customers should therefore be encouraged to comment on brands online, the more so given that some of the respondents are prone to share their opinions in extreme situations - when they were particularly dissatisfied or satisfied. Weronika (f7k3), for example, declares: […] *I hardly ever give feedback, unless something is very, very good or outright nightmarish*. Whereas Mikołaj (f11m2) adds: *I avoid this type of online activity altogether, but if I was very disappointed with, for example, quality or something else, I might be tempted to leave a review. I'm more inclined to leave negative than positive feedback*. Negative comments are often a reaction to dissatisfaction with a purchase, as exemplified by Jakub's (f13m2) statement: […] *I bought leather shoes and literally after two or three days they cracked from walking, so I returned them. And then I posted a negative opinion about the brand on the Internet* […].

From the retailer's perspective, therefore, it is essential to develop mechanisms that would encourage a larger group of customers to comment and rate products, not only through rewards, but also through development of convenient and user-friendly online means, such as apps. Kinga (f7k6) has mentioned such facilitations: […] *whenever I buy something on Zalando, I post a review after a week. I even receive an automatic email asking for feedback. So, to help other consumers in their purchase, I try to say something about the product. When I buy something online, even if it's through Zalando, I look at the reviews first*. Jakub (f9m1), in turn, speaks of in-app rewards: […] *you collect points, for which you get discounts, for awarding a star, or rating a size, i.e., whether it's too big or too small. I have happened to do that*.

The respondents much less frequently report becoming engaged with companies, e.g., by informing the company, sending complaints, or undertaking cooperation, such as clothing testing and promotion.

According to the respondents, company-directed customer engagement transpires more commonly as a result of negative shopping experiences. All those who undertook such activity did so in response to their dissatisfaction with the company. Mateusz (f5m2), for instance, affirms: *If I happen to post opinions, they are rather negative, because when my expectations are met, I just get over it. When there is something I don't like* […] *about the purchase, however, I won't miss an opportunity to write about it*.

The respondents seldom taken part in product testing and contests. Those who report such activity, received the tested products in exchange, as e.g., Magda (f14k3), who notes: *I currently participate in such cooperation.* [*You test products?*] Yes, it's something like that, among other things, and I get to keep these products. […] *The brand sends me products, I use them and sort of work for the brand externally*.

Several respondents took part in contests organized by apparel companies. They usually involved social media post sharing or coining an advertising slogan, in exchange for cash or in-kind prizes. According to Julita (f7k1): *if you shared a post, you could get a set of clothes or vouchers for PLN 500 or PLN 1000 to use in a store*. Karol (f13m3) adds: […] *you had to write some kind of a slogan and share it* [on your timeline] *with a given post on Facebook* […].

None of the interviewees reported any activity involving boycotting a selected clothing company or advocating the company online in response to negative comments. The respondents, although aware of the numerous negative comments about their favorite brands, do not act on the comments, explaining, for instance, that it is *the competition that wants to put a given store in a negative light* (Karolina f1k4), that the customers were dissatisfied because *they actually had reasons for it* (Olga f1k6), or that such popular brands not always do the right thing (Aleksandra f2k1).

Table 5.
Selected respondent statements regarding engagement with other customers

CE type	Selected respondent statements
Informs other customers offline	Julita f7k1: "[…] Reviews often come in handy when choosing products, but very often I forget and don't do it. When I talk to my friends, I often say what works for me, or what new thing I bought that's great, and recommend they buy it for themselves also. I make such recommendations when talking to my girlfriends, but I don't tend to describe or provide an opinion on a product via a website"
Informs other customers offline	Stanisław f14m1: "I comment, rate and recommend [products]. Mainly, when I see a discount on expensive shoes, obviously, I tell my closest friends, acquaintances. But I'm far from contributing in any way online. More privately, in conversations, but online I don't comment on posts or share anything via Instagram"
Informs other customers offline	Mateusz f11m6: "[...] when it comes to commenting, I try to stay anonymous online, so I don't comment on social media on practically anything. And as far as any negative emotions are concerned, I rather […] don't pass them on, I don't post any comments, maybe, among friends, I may complain about a particular company or brand"
Informs other customers offline	Weronika f7k3: "[…] I hardly ever give feedback, unless something is very, very good or outright nightmarish. Usually, however, it's a face-to-face comment, when, for example, a colleague asks me if a given product is worth buying, if I recommend it, what its quality is"
Informs other customers offline	Magda f14k3: "I have never commented on anything on social media. I'm far from it. I just don't contribute. As for recommending a brand, I don't recommend either, somehow, I don't feel such a need to advertise a brand. And in terms of speaking, the only thing I mention is promo information […] But only to those closest to me, like my mom, sister, boyfriend"
Forwards online information to friends	Adam f5m4: "It's that when we see something, and it's something we don't even really like, but we know that someone close to us might be interested in it, we feel obliged to share it with them […]"
Forwards online information to friends	Wiktoria f1k1: "I forward information to friends very often, on social media, when something new comes out, if I know they are interested in a given brand"
Comments on, evaluates products online	Olga f1k6: "I express my satisfaction or dissatisfaction [with a product] on Opineo and other such websites, because I know that I too look at what others have written about the brand before I shop"
Comments on, evaluates products online	Mikołaj f11m2: [re: commenting] "I avoid this type of online activity altogether, but if I was very disappointed with, for example, quality or something else, I might be tempted to leave a review. I'm more inclined to leave negative than positive feedback"
Comments on, evaluates products online	Jakub f13m2: "When I bought leather shoes and literally after two or three days they cracked from walking, so I returned them. And then I posted a negative opinion about the brand on the Internet, and I don't buy it anymore. Even though the brand is considered exclusive, in my opinion their prices do not reflect the quality"
Comments on, evaluates products online	Kinga f7k6: "[…] whenever I buy something on Zalando, I post a review after a week. I even receive an automatic email asking for feedback. So, to help other consumers in their purchase, I try to say something about the product. When I buy something online, even if it's through Zalando, I look at the reviews first"
Comments on and evaluates products online, informs other customers offline	Jakub f9m1: "I have an account set up on H&M and there you collect points, for which you get discounts, for awarding a star, or rating a size, i.e., whether it's too big or too small. I have happened to do that. Besides that, I mostly rate products among friends, for example, when a given store has good-quality T-shirts […]"
Complaints, informing the company	Mateusz f5m2: "If I happen to post opinions, they are rather negative, because when my expectations are met, I just get over it. When there is something I don't like about the purchase, however, I won't miss an opportunity to write about it"
Product testing	Magda f14k3: "I currently participate in such cooperation. [You test products?] Yes, it's something like that, among other things, and I get to keep these products. […] The brand sends me products, I use them and sort of work for the brand externally […] As I said, I get these clothes for free, or […] for pennies"

Cont. table 5.

Product testing	Piotr f5m5: "I happen to have received post-purchase questions [from the company] in the form of a survey. And [if] it involves a few short, closed questions, I will fill it out. But if I had to show some initiative of my own and write something more, I rather not do it"
Participation in contests	Julita f7k1: "I often participated in various contests on Instagram. […] there was [some contest] where, if you shared a post, you could get a set of clothes or vouchers for PLN 500 or PLN 1000 to use in a store"
Participation in contests	Karol f13m3: "A long time ago, I happened [to participate in a contest where] to win a sweatshirt, you had to write some kind of a slogan and share it [on your timeline] with a given post on Facebook"

Source: own elaboration.

The respondents' engagement was influenced by factors associated with customer attitudes toward the product category (interest in fashion), customer perceived product quality and brand/company attitudes (satisfaction, loyalty and trust in the brand/company).

The interwiev participants varied in the degree of interest in fashion. More than half of the respondents (63%) declared they have an interest in fashion, buy clothes regularly, and follow fashion trends. Michał (f12m1), for example, stated: *I am interested in fashion. I often check websites to see if there are new collections out and promotions. I also look at outfits, what colors dominate in a given season*.

Several respondents allocate a large part of their income to clothing and regularly make purchases, e.g., Wiktoria (f1k1): […] *I spend about a quarter [of my income on clothing], but it depends on whether I need something at a given moment or just want to buy something because I like it*, or Julia (f1k5), who admits that: *There are times when I spend a hundred percent [of my income] on clothing*.

The respondents claimed that fashion provides a way for them to adapt to or stand out from their surroundings. According to Wojciech (f9m5), […] *fashion is important because it allows one to stand out. Most of the society is at least minimally interested in fashion. Through clothing, we can improve our first impression, and by doing so, we can not only suit our own taste, but also that of others*.

Some respondents admitted to becoming more interested in fashion and fashion information only in a shopping situation. Kacper (f12m2), for example, explains: *I'm rather not interested in fashion on a daily basis. I only start getting interested when, I run out of something or need to buy new clothes. Then I do some research on how much certain things cost, what the opinions are*.

Interest in a given product category influences consumer brand engagement. The respondents interested in fashion more frequently reported engagement activities: informing other customers (online and offline), informing and interacting with the company/brand (Table 4).

Engagement is influenced by customers' perceived satisfaction resulting from the purchase and use of the purchased product. Satisfaction means that the product *meets customers' expectations* (Karolina f1k4), *worth buying* (Weronika f1k8), *consumer needs are met*, [and customers are] *satisfied with the purchase, because the price matches the quality*, *and* [*the product*] *will last for a long time* (Martyna f5k1).

Satisfaction leads to repeat purchases, as e.g., Karolina (f1k4) notes: […] *the first purchase is most important, and if* [*the product*] *works* [*for us*], *we will keep coming back to that store*. Lack of satisfaction, in turn, can stop customers from buying a particular product. According to Adrian (f1m3): [...] *if we get disappointed* [*by a product*] *once, at least I wouldn't buy* [*it*] *again*.

Satisfaction may also prompt the respondents to recommend a given product to other customers. According to Aleksandra (f10k5): *if a product of a particular brand really works for me then I recommend it, among friends*. Szymon (f11m3), in turn, states: [...] if I was very satisfied with a garment, then there would be a good chance that I would comment on it and rate it highly.

There were respondents who must be particularly satisfied with their purchase to post comments online, e.g., Natalia (f10k4): When it comes to sharing my opinions on my purchases with others, I happen to sometimes actually do that. When I'm really satisfied with something. When a product does not meet the respondents' expectations, they complain to the company or share information about their experience with other consumers, e.g., Mateusz (f5m2): […] *when there is something I don't like about the purchase, however, I won't miss an opportunity to write about it*.

Another factor influencing engagement is loyalty, often understood by the respondents in a behavioral sense - as repeated purchases of the same brand or purchasing a particular brand primarily or exclusively. For instance, Mateusz (f5m2) declares: *If I showed* [*you*] *my wardrobe,* [*you'd only find*] *Nike or Tommy Hilfiger* […]. *I think those two brands locked me in, so to speak*. Another respondent asserts: *when it comes to sportswear, most of my stuff is this* [*particular brand*] (Szymon f11m3).

In Karolina's (f1k4) opinion, brand loyalty means that *we don't buy from the others, the competitors*. Of similar opinion is Michał (f12m4): *When it comes to buying clothes, I usually have a few trusted stores that I just go to and don't really pay attention to others*.

Loyalty for the respondents also means that, in a buying situation, they go for a given brand's offer first. Aleksandra (f1k7) notes: […] it's the brand we check first. When we're looking for something, we go to their site, and only later we check others, if we can't find anything on the brand's website. Favorite brand can serve as a benchmark when rating other brands. According to Przemysław (f3m6): *We always refer to this particular brand when shopping, I mean, if we plan to buy something, we will always compare it with our favorite brand's products*. Kamil (f4m4) adds that loyalty means buying products of a particular brand, even when *a new brand has entered [the market], which offers better prices and similar products*.

The respondents rarely describe their *favorite brand* and loyalty to it in affective terms. With reference to brand loyalty, Weronika (f1k8) explains: *I buy out of brand loyalty, when I train, I really only buy Nike, I just like it best, it works best for me. Running shoes too, all Nike; it's just that kind of attachment*. Kamil (f4m1) also mentions a bond with a brand: […] *I go to that store with my friend, and he can also feel the bond, the same bond we feel with the brand*.

The respondents who are loyal to their brand/s more commonly declared engagement with other customers, both offline and online. They are more inclined to recommend or discourage a brand to friends in conversations, send information about new collections and promotions to online friends, as well as rate and comment on brands online (Table 4).

Another factor - product quality – is assessed by the respondents primarily based on garment fabric and workmanship. When asked about quality, they provided such answers as: *I check the fabric composition, if it's 100% polyester, or if it contains better textiles in the composition* (Magda f14k3); *I look closely at the fabric, namely whether the blouses are made of cotton, not polyester and other synthetic textiles* […] *whether there arere any threads sticking out, whether it's sewn well* (Marcin f13m6).

Some of the respondents, like Karolina (f1k4), admitted that they: *[...] don't check the fabric composition, but only* […] *by touch I can tell if it's the quality is good or poor*. The respondents also regard garments which are […] *more comfortable to wear* (Jakub f13m2) as good quality clothing. They check whether *the material feels pleasant in touch, so that [they] feel better in these clothes and that the clothes wear well* (Michał f12m4).

The respondents also linked quality with the place of production. According to Bartosz (f12m3): "*It would be good to have something sewn in Poland, or in some European country, because that means better quality*." Of a similar opinion is Mateusz (f5m2): "*Most garment products are made in Asia or China. These products are unlikely to be of the highest quality, because production there focuses on minimizing the costs*."

Quality, for many of the respondents, is linked with product durability. Jakub (f13m2), for example, notes that: *It's very important how a product performs after being washed several times, whether it stretches or the color fades*. Michał (f3m3), in turn, understands quality as an aspect *of considerable significance* [*because he often buys*] *clothes to last for years, as* [*his*] *size doesn't change.*

Quality represents an important factor in product recommendations. Adrian (f1m3) notes: *If I knew that a product was qualitatively good, I would recommend it as often as possible, free of charge*. Likewise, the respondents are reluctant to recommend products and post comments when the quality is poor, even when the manufacturer rewards for recommendations. For example, Olga (f1k6) declares: *If I knew it was lousy and [...] even for a discount, I wouldn't agree for anything*.

Consumer engagement is also affected by trust in the company. Some customers only recommend companies they trust. Michał (f5m7), for instance, explains: *I, for example, rate the products of the companies that I like and value, the rest I don't, only those that are trusted to me*. Of similar view is Wiktoria (f1k1): *When trust* [*a brand*], *we recommend it to our friends, if we happen to know they are looking for something specific, we will recommend the brand we ourselves use*.

Company trust is built based on the customer's experience with the company/brand and its product range. According to the respondents: *we trust* [*the brand*] *and just know that the product will meet our expectations* (Karolina f1k4). Whereas another respondent adds: […] *I want to be sure that the product won't break after a week; if I already have experience with a particular brand, I know more or less what to expect* (Mateusz f3m4). Kinga f7k6, in turn, emphasizes: […] *I know that nothing happens with Zara clothes, that the quality is good. And I can return these clothes at any time. I kind of feel safe when it comes to shopping there*.

Trust is also influenced by customers' perceptions of prices, i.e., how high they are, in relation to quality and production costs. The level of product prices has caused much controversy. According to Wojciech (f11m1): *The one thing I often don't like is the overpricing, because when I see what kind of product I get and see how it's made, it seems to me that it could easily be sold for half the price*. In Magda's (f14k3) opinion: [*companies*] *manufacture* [*their products*] *for a pittance and sell at such a margin that it's mind-boggling; we're just wasting money*. Of similar opinion is Aleksandra (f2k1): *We are all aware of which clothing brands benefit financially. We realize* [*that*] *we are on the losing end, and they are making a huge amount of money off of us*.

Perceived price levels are correlated with the manner and place of production. The respondents tended to be aware of the social and environmental issues associated with garment production in Asian countries: worker exploitation, child labor, environmental problems. This is illustrated by Wiktoria's (f1k1) statement: *I have mixed feelings* […] *I've heard that children are used in [clothing] production, but most brands operate that way. Thus, I do think about it, on the one hand, but still buy it, on the other. So yes, I do have mixed feelings.* Stanisław (f14m1) adds: *I could talk about exploitation, but to be fair, we don't do anything about it.* [...] *It's known that it's disgusting, but we go to these stores and buy anyway*. The respondents also declared they were eager to buy clothes made in Poland, only there is no such offer. According to (f9m5): *It's good when a product is made in Poland, but I know that for the most part this is not possible*. Paweł (f12m5) is of a similar opinion: […] *it's hard to get a product sewn in Poland*.

Table 6.
Declared reasons for consumer engagement

Reasons for engagement	Total	Female	Male	Interested in fashion	Not interested in fashion	Loyal	Non-loyal	CEB undertaken	CEB not undertaken to date
Financial	**55**	**27**	**28**	**39**	**16**	**45**	**10**	**39**	**16**
In-kind rewards, free products	40	22	18	30	10	34	6	31	9
Discount, promotion, remuneration (compensation)	23	8	15	15	8	18	5	16	7
Non-financial	**33**	**22**	**11**	**28**	**5**	**27**	**6**	**23**	**10**
Quality of company relations	12	11	1	11	1	10	2	11	1
Product quality	11	7	4	8	3	8	3	7	4
Sympathy, brand loyalty	7	3	4	6	1	6	1	6	1
Other	6	4	2	5	1	5	1	3	3
Total	**92**	**46**	**46**	**68**	**24**	**73**	**19**	**66**	**26**

Source: own elaboration.

Company trust is undermined by misleading marketing communication, according to the respondents. For example, Adam (f5m4) notes that: […] *often the advertisement says there is a sale, but the product is no longer available or there are no sizes available*. Karolina f1k4 adds: *Recently, there was a promotion in Zara for dresses* […], *and when was making the purchase, a message was displayed saying that the product could not be purchased, it was out of stock*.

The respondents' utterances indicate that their trust in clothing companies is limited, which can impede companies' ability to build engagement organically.

The study also allowed two groups of reasons underlying the respondents' willingness to undertake CEB activities in the future to be identified. The distinction was made based on the statements provided regarding the CEB activities undertaken and the likelihood of such activities in the future. Two groups of factors were distinguished: financial and non-financial.

The respondents specified that compensations for their efforts in commenting on, rating and testing products, in the form of discounts and promotions for company product purchases or remuneration for their activities, are a big incentive for them. They indicated that the products alone would also be sufficient compensation for their engagement efforts. Na przykład Wojciech (f9m5), for example, asserts: *I think it could work, in the form of this kind of barter - they give me clothes, I test them, and in return, I get to keep them, and as far as money or compensation is concerned, I think no, that's how influencers work, they take money for presenting some clothing. And as influencers we are not, I think we should not demand any money for that* […].

Some of the respondents mentioned non-financial reasons behind consumer engagement. They would take up commenting or cooperation with a brand if they valued it, trusted it, liked it or thought it was of the right quality, as e.g., Martyna (f5k1) notes: *I think that if it was a brand I use on a daily basis anyway, I wear these things, then I wouldn't need any additional compensation.* Olga (f1k6) is of a similar view: *I would share information [about the brand] with my friends even free of charge, if I was sure as to the quality of these products and knew that* [*my friends*] would be satisfied with it; while Aleksandra (f1k7) would engage free of charge, *out of a sense of affection or brand loyalty*.

The reasons for engagement directly indicated by the respondents correspond with the two routes of building consumer engagement, present in engagement theory: the promoted pathway and the organic pathway.

4. Research conclusions and discussion

The presented model of consumer engagement in the clothing industry is consistent with the two pathways developed in the literature on engagement theory: the relational and promotional pathways (Bowden, 2009; van Doorn et al., 2010; Kumar et al., 2010; Vivek et al., 2012; Kumar, Pansari, 2016; Harmeling et al., 2017; Pansari, Kumar, 2017; Barari et al., 2021). The factors identified - product quality, satisfaction, customer loyalty and brand/company trust, customer interest in the product category - explain the formation of consumer engagement along the relational pathway.

The basis for the formation of engagement along the relational pathway is the customer's positive experience with the given apparel brand. During the experience with the brand, the customer formulates his/her assessment of the brand, evaluates the quality of a given product, experiences satisfaction or lack thereof, and subsequently develops loyalty to and trust in the brand/company. Each of these categories fosters consumer engagement with the brand. Likewise - a customer's interest in a product category translates into his/her increased interest in fashion information and apparel brands. Consumers follow brands on social media, use fashion apps and company websites, as well as participate in social media group discussions. They are more knowledgeable and able to influence other customers.

Consumer engagement built along the relational pathway entails a long-term process, based on repeated customer-satisfying experiences with the brand, loyalty and trust in the brand.

Lack of loyalty and trust can be barriers to building clothing industry consumer engagement. The respondents listed fast fashion brands, sports brands and, less frequently, exclusive brands, as the brands most commonly shopped for. The statements expressed by the respondents show that they regularly shop for certain brands, but are not attached to, do not identify with and often do not trust those brands.

This phenomenon is consistent with the cyclical view of engagement present in engagement theory (Bowden, 2009; Lemon, Verhoef, 2016; So et al., 2016). In the initial stages of a relationship with a company, a ‘rational bond’ (calculative commitment) forms in customers, often referred to as a commitment to continue the relationship, based on a calculation of the utility the bond between the customer and the company/brand can provide. The factors taken into account are, e.g., favorable value for money, product features. "Emotional bond" (affective commitment), in turn, is associated with customers' emotional closeness to the brand, and involves an overall or aggregate assessment of the brand, regardless of its functional attributes (Bowden, 2009).

The respondents interviewed lacked this bond and trust in clothing companies, and even questioned the value-for-money of the brands they shop for. There are factors which, as in the case of the brands purchased by Generation Z, impede the building of commitment along the relational pathway.

Under such circumstances, engagement needs to be built along the promotional pathway, through a model of financial and material engagement reinforcement. The study found that most consumers would be willing to engage with other customers or a company if they received financial or material incentives from the company, such as cheaper/free products, discounts or remuneration (compensation).

Only a fraction of the consumers interviewed experienced company incentives promoting engagement: point and discount rewards. Facilitation of customer activeness along the promotional pathway is of equal importance to rewards. Companies can remind customers to rate a given product, as well as simplify comment posting and product testing. The promoted path, however, leads to short-term effects. Accordingly, rather than individual rewards, consumers need to be offered opportunities to participate in a system reinforcing customer activity, consisting of various types of rewards, distributed over a longer period of time and including, e.g., points, experience levels, material rewards and discounts.

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THE ASSESSMENT OF STUDENTS' FINANCIAL EXPECTATIONS ON THE EXAMPLE OF THE STUDENTS OF THE FACULTY OF MANAGEMENT OF THE JAN AND JĘDRZEJ ŚNIADECKI BYDGOSZCZ UNIVERSITY OF TECHNOLOGY

Elżbieta PIERZGALSKA[1*], Julia BORKOWSKA[2], Iwona KOBUSIŃSKA[3]

[1] Jan and Jędrzej Śniadecki Bydgoszcz University of Technology, Faculty of Management; elasiemaa768@gmail.com, ORCID: 0000-0003-3667-9863
[2] Jan and Jędrzej Śniadecki Bydgoszcz University of Technology, Faculty of Management; juliabor1@interia.pl, ORCID: 0009-0006-8664-887X
[3] Jan and Jędrzej Śniadecki Bydgoszcz University of Technology, Faculty of Management; iwona.kobusinska@wp.pl, ORCID: 0000-0002-6123-0905
* Correspondence author

Study objective: The aim of the study is to assess financial expectations of the students of the Faculty of Management of the Jan and Jędrzej Śniadecki Bydgoszcz University of Technology after graduation and to determine whether the field of study has an impact on salary expectations. The hypothesis was formulated that students of finance and accounting have higher salary expectations than students of other fields. Additionally, it was assumed that 2/3 of the students of this faculty work while studying. The field and level of studies were taken into account.
Methods: The study was conducted at the Jan and Jędrzej Śniadecki Bydgoszcz University of Technology. It involved 252 students of the Faculty of Management studying in the following fields: management (hereinafter ZA), management and production engineering (hereinafter ZIP) and finance and accounting (hereinafter FIR). The study was based on the primary data, obtained using a measurement instrument prepared for the needs of the study in the form of an online questionnaire (CAWI), as well as data on the number and structure of students of the Faculty of Management obtained from the University IT Department.
Conclusions: The study results show that over 70% of the students take up work while studying. This indicates changes in the labour market, where the market demand for young people with both education and experience is clearly visible. The largest group of respondents, both employed and not working, are students of finance and accounting (first and second-cycle studies). The students of management and production engineering have the highest salary expectations after graduation, while students of finance and accounting have the lowest expectations. Students of management, however, fall between these groups. The salary expectations of finance and accounting students differ from the average salary expectations by PLN 1,334.69, by PLN 1,251.55 (for management students) and by PLN 1,194.76 (for management and production engineering students). Therefore, the largest deviation occurs for finance and accounting students who on average expect lower earnings than students of other fields. For all fields of study, the variation between salary expectations is low, which indicates homogeneity of the population. Interestingly, students of management in the highest

percentage do not work in their profession (over 60%). The smallest disproportion between students who work and do not work in their profession exists in the case of finance and accounting students. The largest group working in their profession are students of management and production engineering, followed by students of finance and accounting. Most students, regardless of their cycle, combine work with studying. Among second-cycle students, the largest number of people - over half of the students of management and production engineering, and slightly less than half in the field of finance and accounting work in their profession. Among first-cycle students, the vast majority of respondents, regardless of the field of study, do not take up professional work. There is a relationship between salary expectations and the field of study, and it is statistically significant. This hypothesis was positively verified.
Originality: The paper shows on the example of the students of the Faculty of Management of the Jan and Jędrzej Śniadecki Bydgoszcz University of Technology that the vast majority of management and finance students work while studying. The study highlights an extremely important aspect of current studying - combining studies with work, which has been noticed by researchers in Australia (Devlin, James, Grigg, 2008; Creed, French, Hood, 2015), New Zealand (Manthei, Gilmore, 2005) and the USA (Butler, 2007). The article is addressed to universities, in particular those offering courses, such as finance and accounting, management, management and production engineering.
Keywords: students, higher education, financial expectations, work during studies.
Article category: Research paper.

1. Introduction

David Card, winner of the Nobel Prize in economics in 2021, has proven that the number of years of education is a key factor for success on the labour market, especially in terms of future income. These results are considered one of the milestones in the way economic research is conducted (Jurczak, 2021). The findings, which are also confirmed by the National Salary Survey, statistical data contained in the paper by Jurczak K., show the principle of higher salaries among people with higher education.

Education is an investment connected with costs, i.e. all financial outlays related to deepening knowledge, as well as effects. Jacob A. Mincer was a pioneer of research on the correlation between education and salary. Basing on the assumption of the human capital theory, he proposed an equation for estimating the impact of years of education and professional experience on the amount of salary. Later, the Mincer earnings function was modified by Lauer and Steiner, who expanded the research by using a qualitative approach instead of a purely quantitative approach to education (years of education). Levels of education were differentiated and university, vocational college, general secondary schools and basic vocational school were distinguished. This effort was aimed at translating competences into salary, valuing intellectual goods in a reliable and unified way so that it could be used to determine remuneration (Adamczyk, Jarecki, 2008).

As mentioned on the website of the Metropolitan State University of Denver, earning a higher education opens the door to greater earning potential. People with a college degree earn, on average, more than those with a secondary school diploma. A 2021 Forbes study found that people with a bachelor's degree earned over their lifetimes more than twice as much as those without such a degree (Metropolitan State University of Denver official website, 2023).

The research conducted by Jarecki W showed benefits from having higher education, such as higher remuneration and a decreasing unemployment rate. The analysis revealed that students of economics achieve the fastest return on education expenditure, at the same time, their salaries are at an average level (Jarecki, 2006).

With the development of information and telecommunications technologies and the emergence of new professions, the demand for new skills increases. The classic models of the labour market are no longer used in the same way as before, as their ability to adapt to changes, related both to the labour market itself and its participants, is limited by rigid regulations (Wiśniewski, 2004). Adapting the labour market to constant economic changes is possible only when both employers and employees change their approach. Employers must be flexible and respond quickly to changes, adjusting the number of employees and their remuneration. On the other hand, in order to stay on the labour market, employees must be ready for various forms of employment, use modern technologies and be ready for professional mobility, both within one workplace and between different places of employment (Kryńska, 2003).

The need to adapt to economic changes puts students and graduates in a special situation on the labour market. EU regulations also impose on educational institutions, especially universities, the obligation to improve cooperation with economic entities in order to better adapt their program offers to the needs of the labour market. The education system, and especially universities are expected to respond quickly and flexibly to changes in modern technologies and trends in the labour market (Radło, 2007).

The modern labour market is characterized by high variability. According to experts, already in 2018 the Polish labour market was in a situation it had not been in for a quarter of a century. Unemployment began to fall, which resulted in an increase in wages and GDP, and companies reported a higher demand for new employees (Baron-Polańczyk, Klementowska, 2018). An increasing number of students start working while studying (Rajeev, 2014). In Australia and other countries, there is a growing tendency for students to combine studies with work. In 1971 in Australia, 20% of higher education students worked full or part-time (Creed, French, Hood, 2015). This number increased to 54% in 2001 and to 72% in 2007 (Devlin, James, Grigg, 2008). Similar patterns are observed in other countries, such as New Zealand (Manthei, Gilmore, 2005) and the USA (Butler, 2007). Currently, it is the employer who tries to meet employees' expectations: financial, motivational or those related to physical and mental health (Pracuj.pl, 2023).

The Bydgoszcz University of Technology met market expectations by expanding its educational offer to include a study-and-work master's program. The Faculty of Management educates students in the following fields: management, production management and engineering, finance and accounting, recently also sports management. The students can choose from bachelor's, engineer's and master's degree programs, full-time and extramural studies as well as study-and-work mode. The new form of education offers classes for second-cycle students run after 4 p.m. on weekdays, including online lectures, thanks to which the academic knowledge is combined with practice (Official website of the Bydgoszcz University of Technology).

2. Methods

The study was conducted at the Jan and Jędrzej Śniadecki Bydgoszcz University of Technology. It involved 252 students of the Faculty of Management studying in the following fields: management (hereinafter ZA), management and production engineering (hereinafter ZIP), finance and accounting (hereinafter FIR). The study group consisted of students of bachelor's, engineer's and master's degree programs, full-time and extramural studies as well as study-and-work mode. Full-time and extramural students were classified into one category as the study-and-work mode, as full-time studies, allowed students to work and study at the same time. The authors of the study used primary data obtained using a measurement instrument prepared for the needs of this study in the form of an online questionnaire (CAWI) as well as data on the number and structure of students of the Faculty of Management of the Jan and Jędrzej Śniadecki Bydgoszcz University of Technology obtained from the University IT Department. The study was conducted in the period of 25.05.2023-16.06.2023. An e-mail with a link to the questionnaire was sent to the students' e-mail addresses. The questionnaire consisted of 13 or 18 questions, depending on whether the respondent works while studying. One question was open-ended. The study was random and was conducted among the students of the Faculty of Management. Thanks to the use of a statistical framework, such as a mailing list, the survey was addressed to all students of the Faculty of Management (population). Due to the need to adhere to the principles of GDPR, it was not possible to direct questions to specifically selected group of people, which explains the voluntary nature of the answers. All students of the Faculty of Management had the same opportunity to participate in the study. The study was conducted in a representative study group of 252 respondents (both working and not working in their profession). The share of all working students was estimated using the sample size of 243 people, with an error of 5% and a confidence coefficient of 0.9, assuming that 2/3 of the students work. The data were analysed using statistical methods.

3. Results

At the time of the study, there were 856 students at the Faculty of Management of the Jan and Jędrzej Śniadecki Bydgoszcz University of Technology. The study group consisted of students of bachelor's, engineer's and master's degree programs, full-time and extramural studies as well as study-and-work mode. Table 1 shows the percentage of students of the Faculty of Management, divided by field and cycle of studies. Most of the respondents, over half - 601 people (70.21%) were first-cycle students. Both in the first (34.23%) and second cycle (11.80%) studies, most students studied finance and accounting.

252 students of the Faculty of Management of the Jan and Jędrzej Śniadecki Bydgoszcz University of Technology participated in the study. Table 1 shows the percentage of surveyed students of the Faculty of Management, with division by cycle. The structure of the respondents can be considered similar to the structure of the students of the Faculty of Management. The largest deviations were observed for the field of ZIP (first-cycle studies), ZA (second-cycle studies) and FIR (second-cycle studies), however taking into account only the field of study, not the cycle, these deviations are smaller. Therefore, it can be assumed that the study sample quite well reflects the reality.

Table 1.
The structure of the students of the Faculty of Management of the Jan and Jędrzej Śniadecki Bydgoszcz University of Technology and the study sample, with division into the field and level of studies [%]

Field of study/cycle	Structure of the students of the Faculty of Management	Structure of the surveyed students of the Faculty of Management
Finance and accounting (first-cycle studies)	34.23%	32.54%
Management (first-cycle studies)	22.55%	19.44%
Management and production engineering (first-cycle studies)	13.43%	19.05%
Finance and accounting (second-cycle studies)	11.80%	9.13%
Management (second-cycle studies)	7.83%	10.32%
Management and production engineering (second-cycle studies)	10.16%	9.52%
Total	100.00%	100.00%

Source: own study.

The authors of the study verified the share of working students. 178 students take up work while studying, which is over seventy percent of the respondents (70.63%), while 74 students do not work, which is less than thirty percent of the respondents (29.37%). The largest number of the respondents in absolute terms, both employed and not working, are students of finance and accounting (first and second-cycle studies). Additionally, estimating that 2/3 of the students of the Faculty of Management combine work with studying, and assuming an error of 5% and a confidence coefficient of 0.9, the result in the study sample was 243 people. This indicates representativeness of the study population, which amounted to 252 students. Figure 1 shows the percentage of surveyed students of the Faculty of Management of the Jan and Jędrzej Śniadecki Bydgoszcz University of Technology, with division by cycle. The figure indicates that regardless of the field and level of studies, the vast majority of the respondents work while studying.

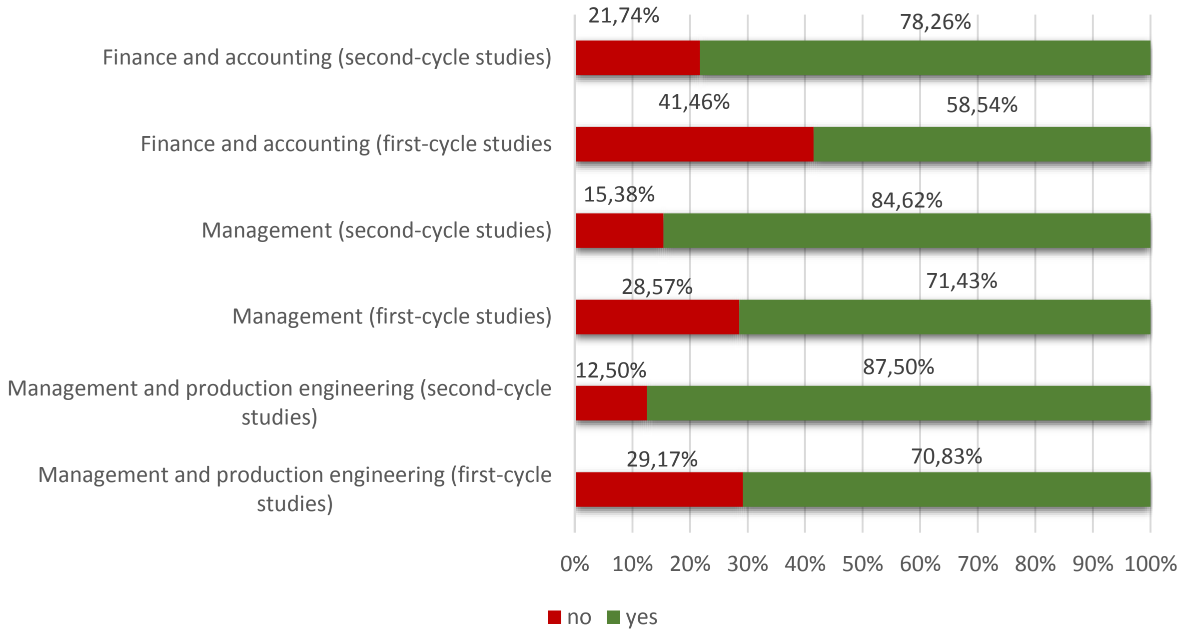

Figure 1. Share of the surveyed students of the Faculty of Management of the Jan and Jędrzej Śniadecki Bydgoszcz University of Technology, divided into students taking and not taking up work while studying [%].

Source: own study.

Students of management and production engineering have the highest salary expectations after graduation, while students of finance and accounting have the lowest expectations. Students of management fall between these groups (Figure 2). The salary expectations of finance and accounting students differ from the average salary expectations by PLN 1,334.69, by PLN 1,251.55 (for management students) and by PLN 1,194.76 (for management and production engineering students). Therefore, the largest deviation occurs for finance and accounting students who on average expect lower earnings than students of other fields. Additionally, the coefficient of variation was calculated, which was for students of FIR - 23.26%, ZA - 21.07% and ZIP - 17.56%. The differences between salary expectations for all fields of study are therefore low and indicate homogeneity of the population.

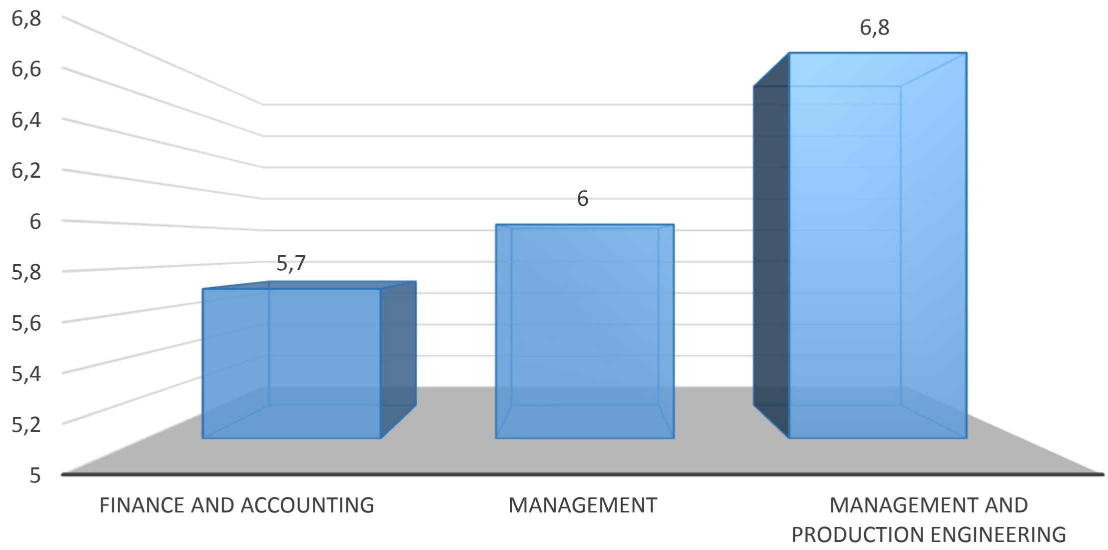

Figure 2. The average salary expectations of the students of the Faculty of Management of the Jan and Jędrzej Śniadecki Bydgoszcz University of Technology [in thousands].

Source: own study.

Figure 3 shows the percentage of working students divided by the field of study, including the information on how many of the students work in their profession. The results indicate that students of management in the highest percentage do not work in their profession (over 60%). The smallest disproportion between students who work and do not work in their profession is observed in finance and accounting. The largest group of people working in their profession are students of management and production engineering - 63.64%, followed by students of finance and accounting - 57.58%.

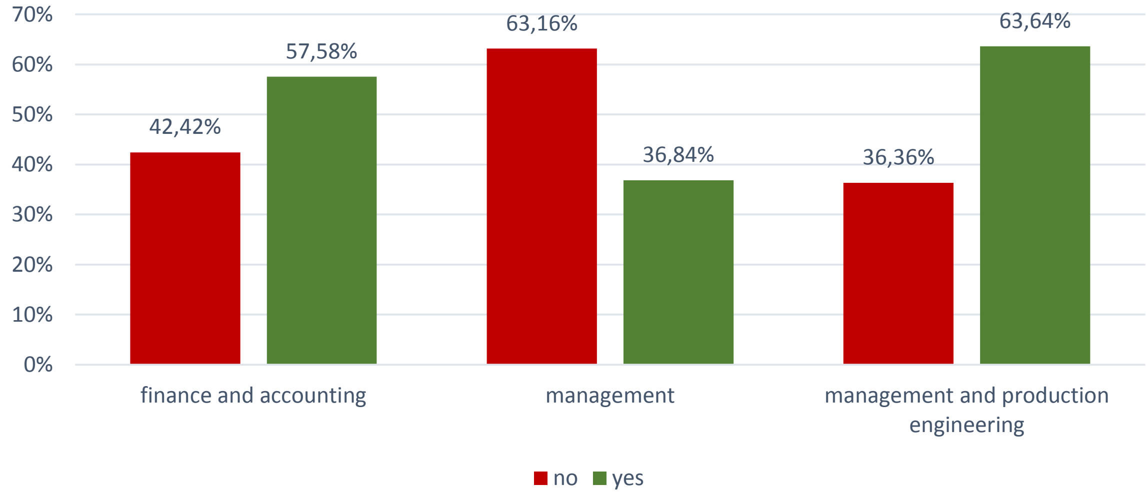

Figure 3. Share of the surveyed students of the Faculty of Management of the Jan and Jędrzej Śniadecki Bydgoszcz University of Technology working and not working in their profession while studying [%].

Source: own study.

The study results show that most people work already during their first-cycle studies (Figure 1). However, first-cycle students are a larger group than second-cycle students. Among second-cycle students, most management and production engineering students (as many as -

90.48%) work in their profession; this number is slightly smaller for finance and accounting students - 72.22%. Among first-cycle students, about half of the respondents, regardless of the field of study, do not work in their profession. Students of management present the highest values in this respect - 68.57% (Figure 4-6).

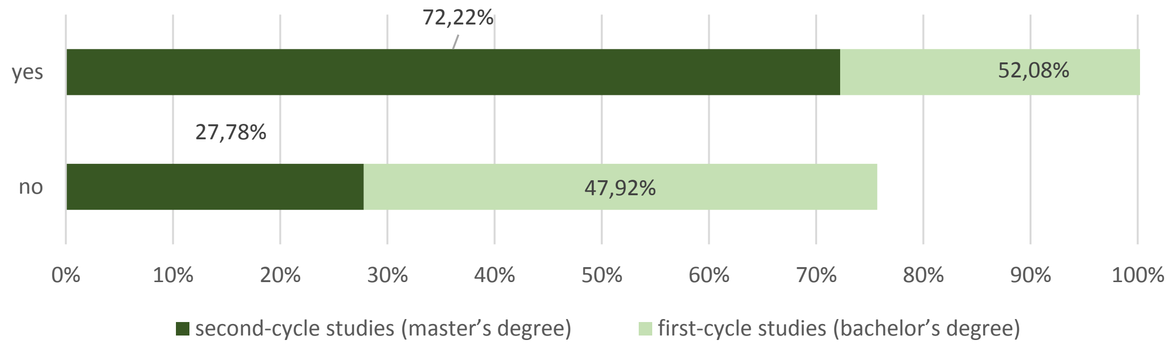

Figure 4. Share of the surveyed students of finance and accounting of the Faculty of Management of the Jan and Jędrzej Śniadecki Bydgoszcz University of Technology working while studying, taking into account whether they work in the profession and cycle of studies [%].

Source: own study.

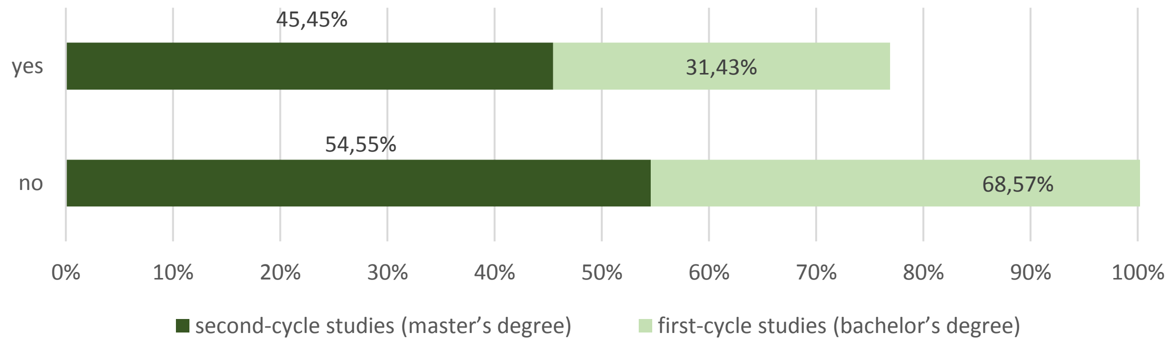

Figure 5. Share of the surveyed students of management of the Faculty of Management of the Jan and Jędrzej Śniadecki Bydgoszcz University of Technology working while studying, taking into account whether they work in the profession and cycle of studies [%].

Source: own study.

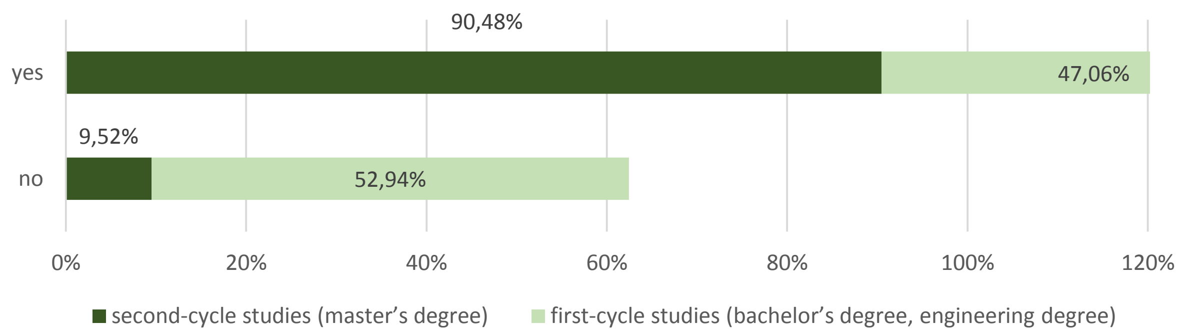

Figure 6. Share of the surveyed students of management and production engineering of the Faculty of Management of the Jan and Jędrzej Śniadecki Bydgoszcz University of Technology working while studying, taking into account whether they work in the profession and cycle of studies [%].

Source: own study.

The chi-square test of independence was used to examine the relationship between salary expectations and the completed field of study. Three level of salary expectations were adopted: low (PLN 3000-5000 gross), medium (PLN 5000-7000 gross) and high (PLN 7000-8000 gross and above). Figure 7 shows salary expectations of the students. There is a relationship between salary expectations and the field of study, and it is statistically significant. The result of chi-square test was 124.11, which exceeds the critical value - 9.48 (read from the chi-square distribution tables) with the significance level of 0.05 and 4 degrees of freedom (Table 2). These data are the basis for rejecting the null hypothesis in favour of the alternative one. Statistically, this is a significant relationship, salary expectations depend on the field of study.

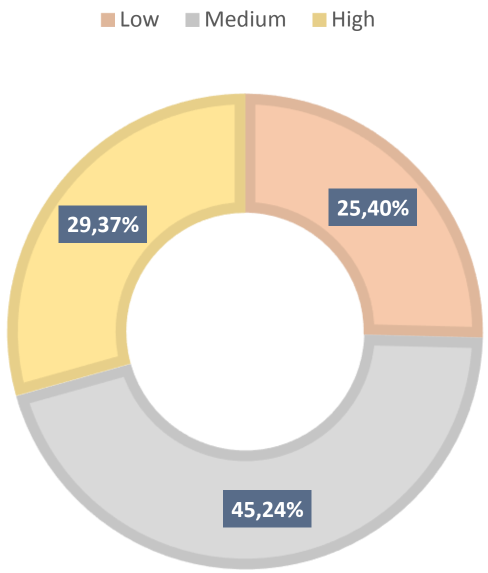

Figure 7. The level of salary expectations among the students of the Faculty of Management of the Jan and Jędrzej Śniadecki Bydgoszcz University of Technology - after graduation [%].

Table 2.
Financial expectations of the students of the Faculty of Management

Expectation level	**low**	**medium**	**high**
field of study	PLN 3000-5000 gross	PLN 5000-7000 gross	PLN 7000-8000 gross and above
finance and accounting	38	45	22
management	19	40	16
management and production engineering	7	29	36
total	64	114	74

Source: own study.

4. Conclusions

Literature sources present benefits from having higher education, such as higher wages and a decreasing unemployment rate. There are grounds to conclude that graduates of economics achieve the fastest return on education expenditure, at the same time, their salary is at an average level. Moreover, the number of years of education is a key factor of success on the labour market, especially in terms of future income.

The research results show that 178 students take up jobs while studying, which constitutes over seventy percent of the respondents (70.63%). This indicates changes in the labour market, where the market demand for young people with both education and experience is clearly visible. The largest number of respondents in absolute terms, both employed and not working, are students of finance and accounting (first and second-cycle studies).

The survey results indicate that students of management and production engineering have the highest salary expectations after graduation, while students of finance and accounting have the lowest expectations. Students of management, however, fall between these groups.

The salary expectations of finance and accounting students differ from the average salary expectations by PLN 1334.69, by PLN 1251.55 (for management students) and by PLN 1194.76 (for management and production engineering students). Therefore, the largest deviation occurs for finance and accounting students who on average expect lower earnings than students of other fields. This means that the disproportion between salary expectations may be blurred, depending on the situation.

Interestingly, students of management in the highest percentage do not work in their profession (over 60%). The smallest disproportion between students who work and do not work in their profession involves finance and accounting students - 57.58%. The largest group working in their profession are students of management and production engineering - 63.64%, while the least numerous group are students of management - 36.84%.

Second-cycle students have the largest share in the group of working students. However, second-cycle students constitute a smaller group than first-cycle students. Among first-cycle students, management students are the most numerous working group - as many as 71.43%, and slightly less - management and production engineering students - 70.83%. The hypothesis that students of finance and accounting have higher salary expectations than students of other fields has been refuted. The study showed that students of management and production engineering have higher salary expectations than students of management and students of finance and accounting.

There is a relationship between salary expectations and the field of study, and it is statistically significant. The result of chi-square test was 124.11, which exceeds the critical value of 9.48 (chi-square distribution tables), with the significance level of 0.05 and 4 degrees of freedom. This is a basis for rejecting the null hypothesis in favour of an alternative one. The assumption that 66% of students work has been confirmed. Over 70.63% of students work (less than every second student).

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DESIGNING THE DESIGN. APPLICATION OF DESIGN THINKING TO SOCIAL INNOVATION PLANNING

Patryk PIŁAT

Bydgoszcz University of Science and Technology, Faculty of Management; patryk.pilat@pbs.edu.pl,
ORCID: 0009-0003-5808-5000

Purpose: This narrative review shows the scope of the application of design thinking in planning social innovations based on the goals of implementing design thinking identified in the literature.
Design/methodology/approach: This paper is a classic literature review, with particular emphasis on articles from recent years presenting specific practices in the application of design thinking.
Research limitations/implications: This study is a qualitative review and cannot constitute the basis for a quantitative assessment of the effectiveness or convenience of using the discussed approach in social innovation. Moreover, this is not a systematic review. Therefore, it is not free from possible areas that have not been fully exposed.
Practical implications: This study can help build a strategy for using design thinking to plan social innovations by entities that are interested in them. In particular, it allows you to identify the goals of using design thinking that are consistent with the goals of a given organization. However, this approach has not yet been used.
Social implications: This paper identifies the goals of using design thinking based on the analysis of current practices; therefore, it contributes to a better understanding of the organization's operating strategy, which is particularly useful in promoting and planning social innovations. It can accelerate social innovation where it can be the subject of this approach.
Originality/value: The presented paper is an original review of scientific work. It is particularly addressed to management theorists and practitioners, who may find it helpful in identifying new areas in which they can apply the design thinking approach.
The term 'desing thinking' is generally understood as an approach to problem-solving or a specific problem-solving process based on this approach.
Keywords: design thinking, social innovation, social development, co-design.
Category: narrative review.

1. Introduction

In an increasingly intricate and interconnected global context, society grapples with multifaceted predicaments that necessitate inventive solutions. These predicaments, which span from socioeconomic disparities to environmental apprehensions, call for a fundamental change in the approach to problem-solving. Here enters design thinking, a methodological process that prioritizes empathy, collaboration, and experimentation, with a focus on human needs. Initially grounded in the realm of product and service design, its scope has expanded beyond conventional boundaries, revealing its profound potential for stimulating social innovations. As communities worldwide strive for sustainable and inclusive resolutions to urgent matters, the integration of design thinking into social innovation initiatives has become increasingly relevant. This article delves into the diverse objectives of design thinking applications in social innovations, illustrating its transformative ability to reshape communities, foster inclusivity, and drive impactful change. Through an exploration of various case studies and interdisciplinary perspectives, author emphasize the importance of design thinking as a pivotal tool for contemporary social innovation endeavors.

2. Concept of design thinking

The broad definition of design thinking and its generally accepted use of the term refers to a problem-solving approach that emphasizes empathy, collaboration, and iteration to generate innovative solutions based on human needs.

Design thinking may, however, be defined using a more process-oriented definition as a systematic, human-centered approach to solving complex problems, encompassing stages such as empathizing with users, defining problem statements, ideating solutions, prototyping, and testing, and being an innovation methodology that prioritizes the user’s perspective in all phases of the problem-solving process (Lee, 2017).

It is yet a flexible process during which creators designing a technology usually follow an exact set of five continuous stages (empathize, define, ideate, prototype, and test), returning to earlier stages iteratively (even indefinitely in any given technology development project) (Landers, Marin, 2021).

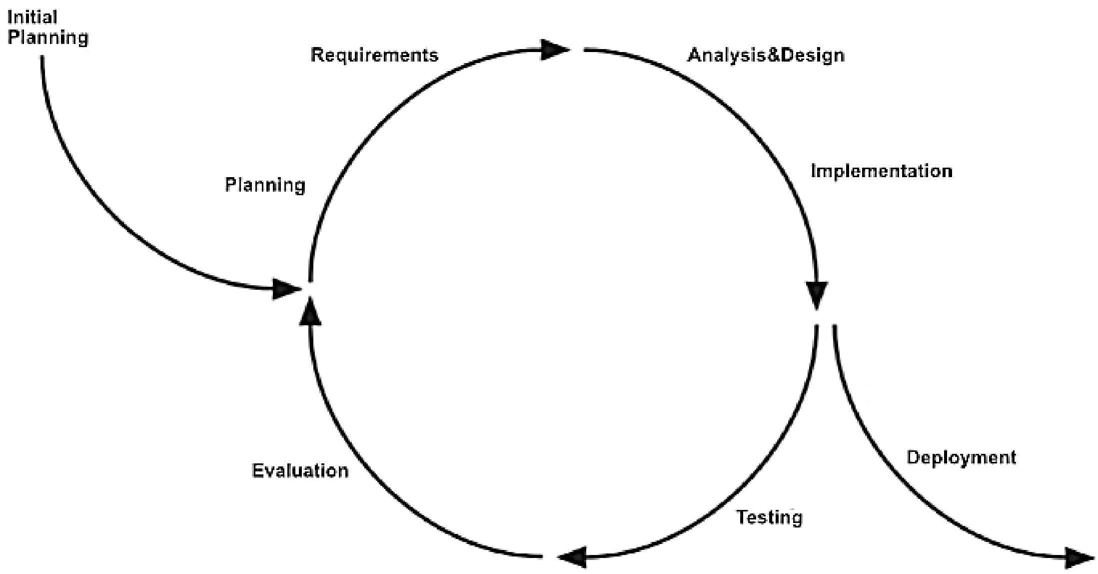

Figure 1. A depiction of the iterative design process.

Source: own study.

In another approach, the definition emphasizes the importance of problem solving, which combines the intuition and methods of designers with the goal of aligning the needs of individuals with what is technologically feasible and can generate value in the market (Micheli et al., 2018). It represents a formal creative problem-solving technique that fosters innovation (Dell'Era et al., 2020). Design thinking has been described as a sequential process involving steps such as empathy, definition, ideation, prototyping, and testing, providing a structural framework for identifying and approaching problems (Greenwood et al., 2019).

One crucial element of design thinking lies in its prioritization of empathy and comprehension concerning the requirements and encounters of users. By adopting the user perspective, designers can acquire valuable understandings and develop resolutions that genuinely cater to their needs (Dunne, Martin, 2006; Glen et al., 2014).

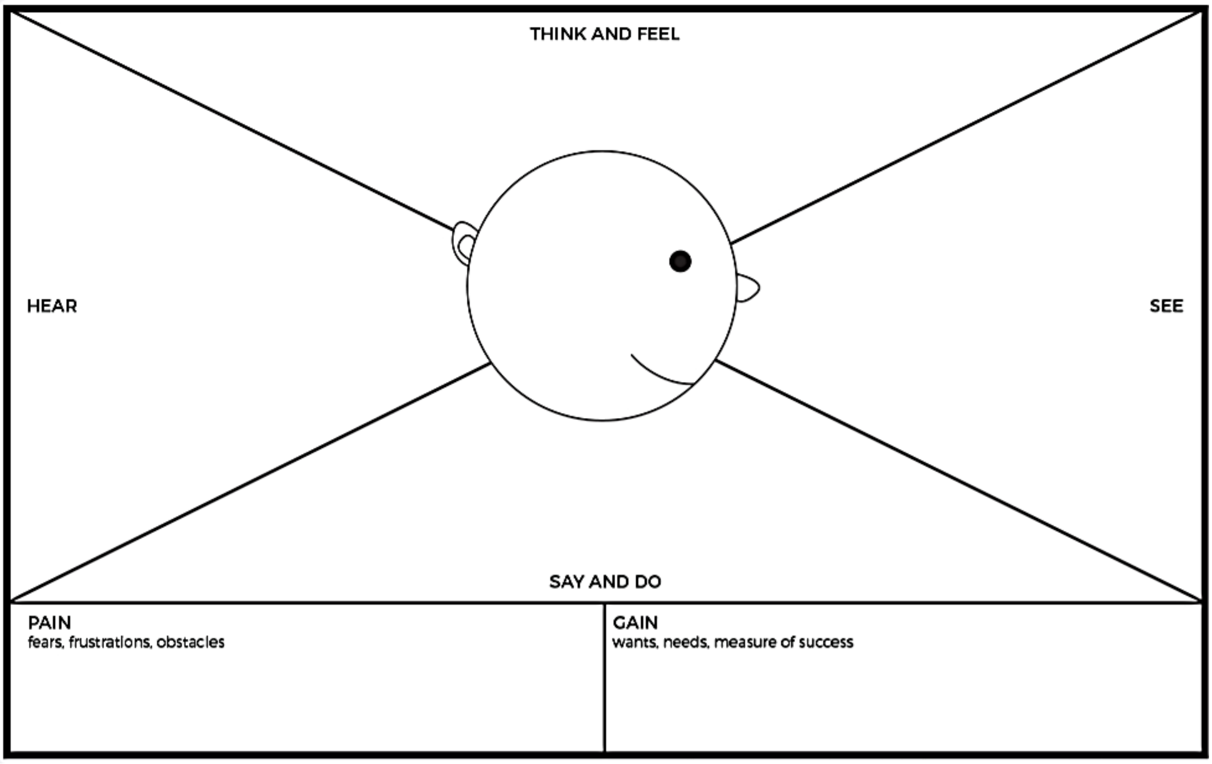

Figure 2. Example of empathy map used in design thinking process.

Source: own study.

Design thinking is based on a user-oriented methodology that prioritizes understanding, collaboration, and trial and error. Its essence lies in grasping the wants and needs of those it seeks to serve. Instead of starting with detailed technical criteria or business needs, the process dives deep into understanding the user's journey and experience.

Therefore, this approach must be cyclic by nature, as the proposed solutions undergo creation, assessment, and fine-tuning based on actual user feedback. The repetitive process promotes ongoing enhancement, ensuring that the final result meets user demands and is both efficient and intuitive. This iterative process allows designers to continuously learn and adapt their designs, leading to more effective and innovative solutions (Micheli et al., 2018). The design thinking iteration process is driven by the goal of understanding user needs and creating solutions that meet those needs (Sandars, Goh, 2020).

Teamwork is a defining characteristic of design thinking, with diverse groups comprising creative designers, technical experts, business strategists, and users themselves coming together to exchange knowledge and perspectives. This combination of expertise and experience can stimulate originality, resulting in many ideas and comprehensive insights into challenges and their potential resolutions.

The significance of teamwork in design thinking stems from several factors. First, it facilitates the sharing of insights and perspectives among team members, thereby fostering a comprehensive comprehension of the problem and users' needs (Stempfle, Badke-Schaub, 2002). By collaborating, team members can harness their collective knowledge and experiences to generate a broader spectrum of ideas and potential solutions (Hölzle, Rhinow, 2019). Furthermore, teamwork nurtures creativity and cultivates a supportive atmosphere where individuals feel at ease expressing their ideas and taking risks (Hölzle, Rhinow, 2019).

In addition, the applicability of design thinking is vast and not constrained to a particular sector or profession. Originating in the realms of product and service creation, its tenets are versatile and suitable for tasks ranging from conceptualizing fresh business strategies to envisioning educational frameworks or shaping societal policies. The versatile nature of the method has led to its widespread adoption across diverse arenas, as entities see the merit in solutions that are both innovative and tailored to user needs in a dynamic, evolving landscape.

Empathizing is the foundational stage of the process. The design teams immerse themselves in the specific world of the end-users to deeply understand their perspectives, motivations, and challenges. This involves a rigorous process of data collection through methods such as interviews, observations, and surveys. By connecting with users on a personal level, innovators can gain invaluable insights into the real-world nuances of the problems they solve with the new technology. This immersion goes beyond just quantitative data; it is about interpreting emotional responses, understanding cultural contexts, and unveiling unmet needs. This stage allows designers to gather customer insights such as behavior feelings and experiences (Rosario, 2023).

Upon assimilating the insights from the empathize stage, the next step is to articulate and crystallize them into a clear and actionable problem statement. This involves formally stating the end-user's needs, challenges, and specific problems that the technology seeks to address. The clarity gained in this phase ensures that the design team has a laser-focused direction. It is not just about identifying the problem but also understanding its depth, breadth, and impact on the user. This stage especially refers to understanding the scope of information that has yet to be gathered, including a problem statement (Somerville et al., 2008).

With a well-defined problem statement in hand, the ideation phase takes center stage. This is where creativity and innovation flourish. Teams collaboratively generate a plethora of potential solutions, often using techniques such as brainstorming, mind-mapping, and even role-playing (Li, Zhan, 2022). The goal is to think wide ('out-of-the-box'). However, this stage may be described as more about quantity over quality as it is about generating as many ideas as possible (Gonçalves, 2021).

As the design thinking process progresses, the abstract ideas from the ideation phase begin to take a material form in the prototype stage. The focus is on creating possibly low-cost, simplified versions of the solutions to represent the potential products or features. Prototyping, similar to design thinking, is iterative. The scope of possible prototypes is generally indefinite because it is the set of possible solutions that may be designed. Typically, this process is associated with the creation of virtual or physical models that can range from sketches, 3D models, and digital mock-ups. The prototypes act as tools for visualization and further refinement. They are quick and inexpensive, allowing teams to represent multiple solutions and test their viability (Micheli et al., 2019).

Prototypes are created when the end user's needs are already defined and the ideas to meet them are known. For this reason, this phase mainly serves to present forms of solving the problem that can later be tested to select, improve, and implement the best solution.

Testing may be seen as a pivotal phase, where rubber meets the road, as the developed prototypes are introduced to end-users to gage their reactions and feedback and understand the efficacy of the possible solutions in addressing the defined problems. It should be emphasized that testing is not just about validation but also about learning and iterating. Observing how users interact with prototypes can unveil unforeseen challenges or opportunities. In the simplest terms, however, this is the phase in which users test the prototypes (Cchallmo, Williams, Lang, 2018).

The specificity, scope, and even the order and complexity of the entire process and its stages can be freely changed as long as the whole thing deeply implements the three general factors of effectiveness of the discussed approach: consumer empathy, visualization with rapid prototyping, and collaborative nature (Olsen, 2015).

A phase that may belong to the structure of the overall approach is implementation, because this may be handled by teams other than those that have been involved in the project so far.

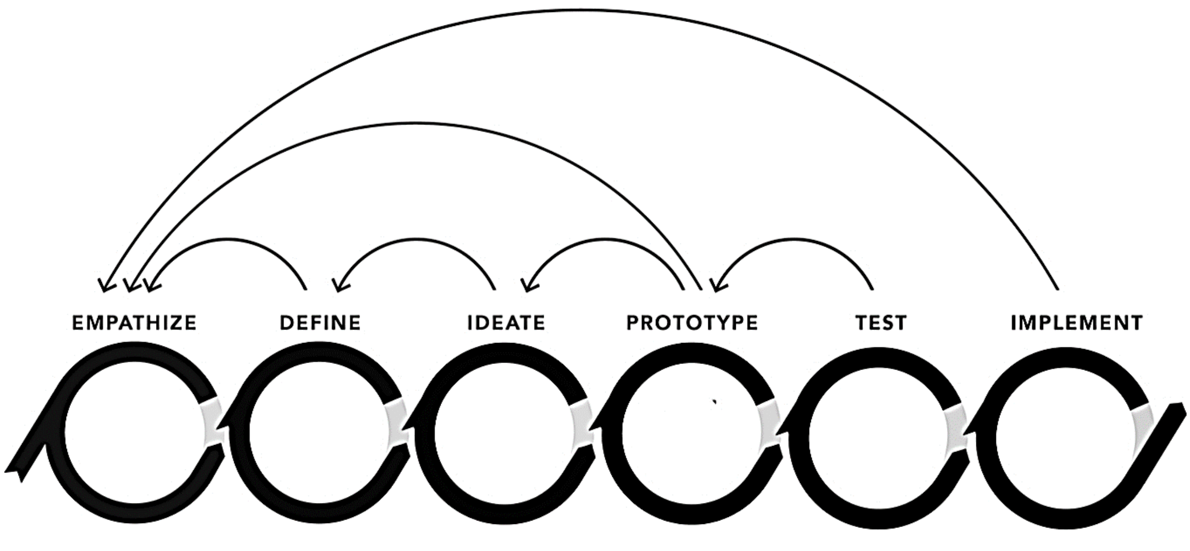

Figure 3. Stages of design thinking.

Source: own study.

At the same time, it should be emphasized that individual phases have certain common features and may specifically interpenetrate. Conveniently, this can be described using an example of prototyping. Prototyping is not only a stand-alone phase, but when necessary, it also becomes an element of other phases. The transition from early prototyping to testing can be relatively complex, depending on the depth of the idealization of the collected ideas. The first prototype to be created appears to be one that will allow for a preliminary assessment of the prospects related to individual ideas through the prism of their materialization.

Such material should be understandable, legible, and perceptible to designers. In turn, the final prototypes should be functional enough for the end users to test them. For instance, cardboard prototypes may be considered an ideation phase activity, whereas functional prototypes may be considered an implementation phase activity (Oliveira Zancul, Fleury, 2021).

The aforementioned depiction demonstrates the evident benefits of design thinking, which encompass its human-centric nature, promotion of creativity and innovation, use as an iterative problem-solving tool with greater depth, facilitation of collaboration and teamwork, adaptability in various industries and contexts, comprehensive resolution of complex issues, early identification and rectification of errors, emphasis on empathy and comprehension of user needs, facilitation of a superior understanding of problems, and ultimately leading to more sustainable and effective solutions.

The broadest description of the advantages of this approach can be made in the sphere of participatory design (co-design), i.e., design in which end users participate.

Co-design is an evolving approach to design practices rooted in participatory design traditions and user-centered methodologies. It has gained prominence in scholarly literature and has been widely adopted in diverse practices. This approach is lauded for its ability to enhance the effectiveness of general processes, ensuring a harmonious match between users' needs and the features of products or services. Scholars advocate the benefits of shifting from traditional top-down design methods to a co-design approach. Through a comprehensive review of significant contributions in the literature, this study seeks to highlight prospective advancements in the field, drawing from the evolution of the co-design approach over the years. This paper suggests a constructivist approach anchored in cultural psychology theory as a promising advancement for the discipline (Antonini, 2021).

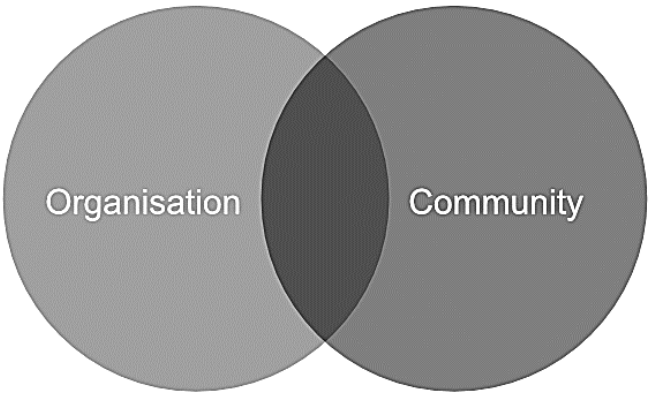

Figure 4. A democratization of the design process.

Source: own study.

In this context, design thinking seems to be, above all, a simple, productive version of co-design, in which the designer empathises with the end user, who is directly involved only in the testing phase, while the iterative nature of the whole allows for a very broad consideration of the opinion and experience of end users.

However, these are not all aspects of the approach described. Design thinking, like any other approach, has the following drawbacks and limitations:

- the time- and resource-consuming nature of the iterative process (Othman, Bamasood, 2021);
- possible "analysis paralysis" during ideation and conflicts at other stages, etc. (Haines, 2014);
- requires a shift in thinking and relies heavily on user feedback, which is not always available, and can introduce the risk of overemphasizing user needs or creative outputs (Pinkow, 2023);
- possible lack of a clear structure or framework, which may make it difficult for some individuals or organizations to implement and consistently follow (Liedtka, 2014; Randhawa et al., 2021);
- relying on empathy and understanding of users' needs through what this subjective nature can introduce biases and assumptions that can affect the design process and outcomes (Liedtka, 2014; Ramdani et al., 2021);
- it is often applied to small teams or projects, which can limit its scalability to larger organizations or complex systems (Randhawa et al., 2021).

It may also not be suitable for all problems or industries. The issue of what can and cannot be solved using this approach can be described as extremely important. In recent years, the increase in its popularity has led to the use of models based on this approach in new areas of management. For example, it is not clear how helpful and effective these methods are, for example, in strategic management (Sandro, 2021). It can also be seen as too open-ended or lacking structure for those who have no previous experience with this approach (Clatworthy, 2011).

A critical shortage of empirical evidence of the effectiveness of design thinking seems to be a significant weakness of this approach (Tantiyaswasdikul, 2019).

3. Social innovation process

In management, innovation has traditionally been defined as a unit of technological change, and most definitions include an enterprise perspective (Cumming, 1998). Thus, in its most primitive approach, innovation is a change related in some way to technology, or preferably the narrowest change, understood individually, as the smallest independent whole. From this perspective, not only the evolution of a given organization but also the development of all humanity appears as an uninterrupted chain of successive innovations (Poirier et al., 2017).

To fully understand the concept of innovation, it is necessary to emphasize that innovation is not only an individual activity but also a process. Understanding the process essence of innovation is crucial because it is a fundamental requirement for economic growth and maintaining competitiveness in today's globalized environment. The innovation process refers to the sequence or progression of activities that encompass innovation. It is not just an isolated act but involves multiple stages or processes. For an innovation to be genuinely effective, each of these stages or partial processes must be successfully executed. This procedure sets the foundation for subsequent research, measurement, and management of innovation outcomes (Žižlavský, 2013).

The main resource necessary to create innovations is innovative thinking. Innovative thinking is the cognitive process that propels innovation. It involves a set of cognitive competencies that, when combined, lead to novel and improved outcomes. These competencies, as deduced from the synthesis of various definitions, encompass identifying a need or problem, coming up with new or modified ideas, developing an outcome aligned with these fresh ideas, putting into action a novel or enhanced outcome, and embracing this new or refined result that brings added value (Morad, Ragonis, Barak, 2021).

In an environment where innovations take place, regardless of whether it is an organization or society, certain attitudes and skills in the cognitive aspect are necessary. Thus, it can be argued that innovation always has a psychosocial nature and requires favorable conditions for development.

These conditions are met in an environment that is ready for innovation. These conditions are met in the innovation ecosystem, which is one of the most important concepts regarding innovation, both from the perspective of management and other social sciences.

Traditionally, attempts to define this concept have focused on the complementarity and cooperation of the participants of such an ecosystem, i.e., individual actors of interrelated processes. Over time, the focus also began to be on competitiveness and competitive impacts, which also drive innovation. In this context, an innovation ecosystem refers to a dynamic network of participants, actions, tools, and organizational structures and relationships, encompassing both complementary and alternative interactions that play a crucial role in the innovative success of an individual or group of individuals (Granstrand, Holgersson, 2020).

In the realm of technological advancement, innovation ecosystems play a pivotal role in promoting proficiency in intricate products and systems. Deliberate efforts to establish dynamic innovation ecosystems empower participants to harness the dual forces of competition and cooperation, thus expediting the process of catching up. Consequently, the profound significance of innovation ecosystems in propelling technological advancement and fostering economic growth becomes evident. (Yang et al., 2022).

Innovation is characterized by the fact that by its nature, it brings a specific (although not always predictable) result, and that is the way it is usually examined. Studies using this perspective in research on innovations are the most numerous and tend to focus on the impact of new technology, which is seen as the main driver for innovations (Wittel et al., 2016). Thus, innovations, in today's most common understanding, can be seen as fuels of growth and development, generators of new technologies that they themselves also use. This leads to a view in which innovations are not only desirable but also necessary.

From the standpoint of an enterprise, innovations can be perceived as primarily a requirement from the standpoint of society. This is attributable to the reality that, similar to an organization, society also necessitates resolutions to subsequent challenges, encompassing those that have persisted in the past as well as those that arise during its progression.

Society necessitates innovative solutions to many problems because innovation has the capacity to engender enhanced healthcare, tackle societal obstacles, and instigate social transformation. For instance, the digital revolution can revolutionize healthcare and improve patient outcomes (Toole, 2013). By harnessing external sources of innovation, such as open innovation practices, organizations can access a broader reservoir of knowledge and expertise to find solutions to complex problems (West, Bogers, 2013).

Social innovation, in particular, plays a vital role in accentuating the shortcomings of conventional solutions and established paradigms across all sectors of society (Lee et al., 2019). It functionally operates as a catalyst for change, fulfilling social needs, and resolving social predicaments (Lee et al., 2019). Responsible research and innovation (RRI) also underscores the significance of contemplating the ramifications of innovation on society and identifying solutions to emergent societal problems (Jiya, 2019).

Innovations are necessary to optimally design and use warehouse space (Zemke, Stöwer, Borgmeier, 2005) or information resources of an organization (Gakidou, Hogan, Lopez, 2004). They are also necessary to improve medical care (Azuara-Blanco et al., 2022), combat poverty or hunger in the world (von Braun, 2010), and ensure an appropriate level of environmental protection or food safety (Barrientos-Fuentes, Berg, 2013.

Social innovation can be viewed essentially from two perspectives. While sociology looks at social change from a macro, societal level, management approaches it from a more micro, organizational perspective.

From a sociological perspective, these are changes occurring in society, subject to the influence of new technologies, capable of specific forms of spontaneous organization. In such a society, conditions for innovation are created, thanks to which it changes itself, is ready to accept new solutions to problems, and evolves in accordance with the direction of its development. Social innovation is also a process in which specific actors are involved - institutions, networks, social movements, and organizations themselves (Krlev, Mildenberger, Anheier, 2020).

From a management perspective, social innovation refers to novel strategies, concepts, ideas, and organizations that meet social needs and create new social relationships or collaborations. It emerges as a response to address societal issues, particularly in a context where traditional for-profit business models may not suffice. Social innovation is closely associated with social entrepreneurship and focuses on the role of entrepreneurs, their networks, systems, and institutions. It often involves cross-sectoral partnerships and is seen as part of a broader "systems of innovation" approach. Essentially, social innovation aims to bring about positive change in society, emphasizing collaboration, adaptability, and a deep understanding of social issues (Phillips et al., 2015).

Moreover, as powerful entities within society, organizations can shape values behaviors and norms, playing a pivotal role in driving social changes by influencing the ways people live, work and interact with one another (Kullak et al., 2022). Their policies and practices often reflect larger societal values, but they can also challenge and transform these norms (Campbell, Baxter, 2019).

For instance, organizations can introduce progressive workplace policies that promote diversity and inclusion, which can then set standards for other organizations and influence broader societal attitudes (Soeters et al., 2021). Furthermore, by creating employment opportunities and contributing to economic growth, organizations can affect social mobility and the structure of communities (Aparicio et al., 2022). Corporate social responsibility initiatives can directly address societal issues, from education and healthcare to environmental sustainability (Purtell, Kang, 2022). As they innovate, they can lead the way in technological advancements that alter how society functions, although it is generally considered that current grand societal challenges require innovative solutions that go beyond technological innovations (Bayuo, Chaminade, Göransson, 2020).

In fact, social innovation usually occurs in constrained contexts and develops as a frugal answer to a social problem (Rizzo, Deserti, Komatsu, 2020).

The process of social innovation unfolds through five distinct stages (idea generation/mobilization, advocacy and screening, experimentation, commercialization diffusion and implementation) and spans micro-, meso-, and macro-institutional tiers. Furthermore, this process thrives on the collaborative involvement of various partners. It is not strictly linear, meaning that there is flexibility to revert to previous stages. In addition, its progress has been consistently assessed over time (Morais-da-Silva et al., 2022).

Commercialization, understood as introducing innovations to the market for profit generation, is a distinct stage from diffusion, which focuses on spreading innovations in society, often independently of commercial objectives. This distinction emphasizes that social innovations, in addition to market aspects, are crucial in spreading social impact and implementation.

The notion of social innovation is influenced by the concept of the Anthropocene, which emphasizes the necessity for transformative responses to challenges related to sustainability (Olsson et al., 2017). Social innovation plays a particularly significant role in adaptive processes because it enables systems to create and disseminate new and innovative ideas, thereby enhancing their resilience and capacity to adapt to external disturbances (Baker, Mehmood, 2013). In the realm of nonprofit profit, social innovation encompasses the generation and implementation of novel ideas for social services (Weerawardena, Mort, 2012). In summary, social innovation is a pivotal concept in the pursuit of addressing sustainability challenges and catalyzing transformative change within society.

In recent years, there has been a strong tendency to study social innovations in the context of systems analysis, with the Social Innovation Systems concept being a crucial term. The concept refers to a network of actors, organizations, institutions, and processes that collaborate to identify and address societal challenges and create positive social change through innovative solutions. This concept recognizes that complex social problems often require multi-stakeholder collaboration and novel approaches to finding solutions. Such systems may be seen as an outcome of ongoing debates on material, technology, knowledge, and economic rationale in innovation studies (Shah, 2022).

4. Practices of applying design thinking to social innovation and its goals

Design thinking serves as one of the mechanisms that enable and promote social innovations because it can foster new approaches to innovation as well as complex and persistent social problems through a framework of co-creation, systemic thinking, abductive reasoning, and iteration (Tantiyaswasdikul, 2019).

Furthermore, the application of design thinking can be observed within the framework of citizen science for social innovation (Goi, Tan, 2021). Through the incorporation of citizens into the process of innovation, design thinking possesses the capability to use collective intelligence and bestow empowerment upon communities to effectively address social issues (Goi, Tan, 2021). This participatory approach actively promotes inclusiveness and guarantees that solutions are customized to specifically cater to the requirements and aspirations of the community.

Identifying the goals for which design thinking is used is complex because there are many actors in the social innovation system who can use or promote its use.

Social innovation can be designed, supported, and coordinated from above by public authorities, but it cannot be fully controlled (Galego et al., 2022). Examples of social innovations may be various social institutions that respond to specific needs of society, both those that have a top-down element related to the activities of the state or local authorities (like participatory budgeting processes) (Godwin, 2018), and those created completely bottom-up (local food-sharing initiatives) (Sánchez-Vergara, Ginieis, Papaoikonomou, 2021).

However, the most stable generators of lasting social innovations and their frequent manifestations or effects are organizations. These include microfinance institutions (Milana, Ashta, 2020), community land trusts (Moore, McKee, 2014), time banks (Del Moral, Pais, 2015), housing communities (Dang, Seemann, 2021), and many others.

Therefore, it seems reasonable to assume that in the entire system, the actors-planning the process are overwhelmingly organizations.

The first goal of using design thinking in planning social innovations is to solve specific problems. In the literature, two goals can be identified for the use of design thinking to directly solve a problem, which could take the form of social innovation. The first is solving problems by a single action or a set of ad hoc actions related to project management. An example is the choice of food delivery method (Hye-Young, 2022). The second method is to implement a long-term plan using design thinking. This practice is more related to strategic management and covers the cycles of many projects, sometimes within a time horizon that is difficult to specify. An example is the use of design thinking to encourage people to get involved in sports (Joachim, Schulenkorf, Schlenker, 2022).

It should be emphasized that design thinking faces the limitation that it is primarily suitable for a specific target group. If problems affecting society as a whole can be identified, the strength of design thinking is undoubtedly empathizing at the first stage and testing at the second stage. Hence, design thinking is most often used in relation to specific social groups or communities and their problems.

The range of problems that can be solved through design thinking is very broad and does not face any fundamental limitations. The literature shows that examples of the application of this methodology include: eliminating food deserts (Fernhaber et al., 2019), supporting mental health (Champ, 2018), promoting cultural understanding (Hantsiuk et al., 2021), improving the delivery of social services, including health care, education, and community development (Brown, Wyatt, 2010), generating solutions to environmental challenges by promoting sustainable practices and developing environmentally friendly solutions (Clark et al., 2020), alleviating poverty, and creating opportunities for economic empowerment (Kummitha, 2018). Design thinking can help develop inclusive business models, improve urban environments, and foster community engagement (Mintrom, Luetjens, 2016). Design thinking can also promote social justice and equity by addressing systemic inequities and biases (Shrier et al., 2020). Design thinking can be used in humanitarian and disaster response to develop innovative solutions to emergencies (Newman et al., 2015). Design thinking can support civic engagement, participatory decision-making, and democratic processes (Mintrom, Luetjens, 2016). Design thinking is used, among other things, to address the problems of people at risk of social exclusion, particularly the elderly (Jussli, Gewald, 2021).

In summary, design thinking can solve several social problems in different fields. Its human-centered and iterative approach allows the development of innovative solutions that are tailored to users' needs and aspirations while promoting social impact and positive change.

A distinctive area of application of design thinking in social innovation is shaping the market position of specific players. Social innovations related to this direction of application are, in particular, globalization technologization, social convergence, and shaping mass customer loyalty. This area of application is characteristic of global corporations, especially technological ones.

Design thinking has been widely adopted by several companies as a problem-solving approach that emphasizes empathy, collaboration, and iterative prototyping. Companies such as Apple and Google have embraced design thinking to create innovative and user-centered products (Liedtka, 2014). These companies prioritize user experience and apply design principles throughout their product development processes. IBM is another company that has recognized the value of design thinking and has integrated it into its organizational culture for innovation and problem-solving (Elsbach, Stigliani, 2018). IBM's design thinking approach involves understanding user needs, generating ideas, and rapidly prototyping solutions. IDEO, a renowned design consultancy, and Airbnb, a platform for booking accommodations, have built their entire business models around design thinking principles. IDEO uses design thinking to drive innovation and create human-centered solutions for clients (Dunne, Martin, 2006). Airbnb has applied design thinking to create a seamless and enjoyable user experience, which has contributed to its success in the hospitality industry.

The adoption of design thinking as a core philosophy is effective in fostering innovation, enhancing user experience, and driving business success. By prioritizing empathy, collaboration, and iterative problem-solving, companies can create products and services that meet the needs and desires of their target audience.

The next purpose of using design thinking in designing social innovations is to provide services that are key to society in the best possible way (Campbell, Stockman, Burns, 2020). There are certain services whose provision can be considered crucial to maintaining the quality of life of society. Their modification leads to social changes occurring directly because improving their quality and availability results in a direct benefit for the community. In this area, the literature describes particular applications in health care and education. Examples include the use of this approach in shaping the way services are provided by academic teachers (Eloranta et al., 2021) and medical doctors (Campbell, Stockman, Burns, 2020).

Another purpose for which design thinking can be used in social innovations is to consider activities aimed at overcoming resistance to a specific factor.

A study of the literature indicates that the fundamental application of design thinking in social innovations may be to overcome resistance to innovation in situations when it is really needed. An example of this is the resistance of traditional organizations to the use of cloud technologies. The identified case study proves that developing and delivering a product using this method allows one to overcome resistance to innovation (Levchenko, Taratukhin, 2021).

Design thinking can also overcome resistance to innovation in relation to individual people, for example, managers who use them, with a measurable effect for the entire sector and even the economy (Wang et al., 2023). It should be emphasized that design thinking can be used not only to address resistance to innovation but also to tame the fear of challenges in general (Mikelsone, Uvarova, Segers, 2022). It should be noted that many commercial products and solutions are subordinated to services that are essential for society's level and quality of life. In this regard, particular attention should be paid to the applications of design thinking in medicine and biomedical engineering, which directly translate into the quality of these types of services (Oliveira, Zancul, Fleury, 2021).

A closely related area in which design thinking works is the adaptation of society to innovation. In this respect, we are talking about solutions that will make specific technological solutions, currently needed or even necessary, easier to adopt and accept.

Design thinking, which is rooted in everyday esthetics, drives social change planning by involving citizen designers and nurturing creativity. It emphasizes the importance of esthetics that naturally emerge from local contexts, ensuring an authentic connection between design and users. Understanding lived experiences is essential for crafting appealing and functional renewable energy solutions. Moreover, design thinking complements governance efforts, aligning projects with local culture and preferences, ultimately fostering sustainability. In summary, design thinking empowers citizen designers, enhances esthetics, and promotes sustainable social change (Törnroth, Nilsson, Luciani, 2022). Another area may be interior esthetics (Rashdan, Ashour, 2022).

Design thinking is also commonly used to overcome cultural resistance to innovation in healthcare (Andersson et al., 2023).

The next group of applications of design thinking in planning social innovations are activities aimed at changing lifestyles. It should be emphasized that environmental and social conditions occurring within the limits of specific technological solutions have an undoubted impact on the lifestyle of people and communities. However, there are numerous areas in which planned social innovation involves lifestyle modification. This applies particularly to healthcare. This concept works well in presenting patients with solutions regarding both the implementation of a healthy lifestyle and greater involvement in treatment (Fleury et al., 2022).

Another group of applications of design thinking is the shaping of specific social resources, especially human resources. In this field, the key area of application of design thinking is education. The development of entrepreneurship resources, which may then influence the entire national economy and provide generations of people with specific, active attitudes, may serve as an example (Nguyên et al., 2019).

Another task that design thinking fulfills in shaping social innovations is social participation. Design thinking is, by definition, a process that requires social participation. The more widespread it is, the deeper the participation (Yoon, Kang, 2021). However, it should be emphasized that the literature shows that there are more ways in which design thinking engages society (Qaed, 2020). Design thinking shapes people's perceptions that they live in harmony with technologies that are better tailored to their needs. Thus, they have a chance for deeper participation. This example applies particularly to shaping smart technology landscapes, especially smart cities (Qaed, 2020). Design thinking is suitable for engaging the community in various participatory processes in which it decides on its shape, environment, and future (Qaed, 2020).

5. Discussion and Conclusions

Design thinking, while lauded for its innovation potential in various spheres, notably in management and design, encounters significant criticism, particularly in its practical application and integration in diverse fields. This methodology, often seen as a panacea for creativity and innovation in management, paradoxically faces neglect and underutilization in the very domain it originates from – design. Such a dichotomy suggests a misalignment or misunderstanding of its core principles and potential in different contexts.

Further complicating its application, design thinking is rooted in a cognitivist tradition that emphasizes a separation between thought and action. This theoretical underpinning raises concerns about its real-world applicability and effectiveness, especially in complex, dynamic environments where theoretical ideas must quickly translate into practical solutions. The cognitivist approach potentially underestimates the importance of tacit knowledge and the fluidity of thought-to-action processes that are crucial in design and innovation.

Evaluating the efficacy of design thinking also poses challenges, especially when considering the intangible or qualitative outcomes it aims to foster, such as creativity and critical thinking. Traditional metrics and assessment methods may not adequately capture the nuances and transformative aspects of these skills, leading to an undervaluation of the process's true impact. This gap in evaluation further obscures understanding of design thinking's effectiveness, particularly in educational and professional settings where these skills are increasingly crucial.

The debate extends to the need for discipline-specific instruments to measure critical thinking and creativity. The one-size-fits-all approach of design thinking might not cater effectively to the unique demands and problem-solving methodologies inherent in different fields. This necessitates a rethinking of how design thinking is taught, applied, and evaluated, taking into account the specificities of each discipline and the complex interplay between thinking and action in creative processes.

On the other hand, the complex and expansive panorama of global challenges requires an approach that prioritizes empathy, inclusiveness and adaptability. Within this context, design thinking emerges as a guiding light, providing a structured framework that is pliable and centers human requirements at the core of constructing solutions. As evidenced throughout this manuscript, the use of design thinking in the realm of social innovations is both extensive and profound, as it tackles various predicaments ranging from community development to global sustainability. The numerous instances and assessments presented serve to underscore the transformative potential of design thinking when wielded purposefully and perceptively. In addition to its utilitarian advantages, design thinking champions a cultural transformation toward collaborative problem-solving, emphasizing the collective over the individual. As we navigate the intricacies of the 21st century, design thinking will remain an indispensable comrade in our pursuit of a more equitable, sustainable, and harmonious world. Its adaptability and human-centered approach not only resonate with the fundamental principles of social innovation but also expedite the very change we aspire to observe in our global society.

In the realm of design thinking, numerous crucial domains exist in which this innovative approach exerts a substantial influence and attracts attention. One particular domain that stands out as a primary application of design thinking is problem solving. It transcends the mere addressing of broad social challenges by offering a nuanced approach that tailors solutions to unique and specific scenarios. This can encompass the resolution of individual social problems and the tackling of issues that necessitate swift and ad hoc measures. It also serves as an essential instrument for catering to the needs of specific demographics, especially those communities or groups that are most vulnerable or at risk of social exclusion.

Venturing into the realm of strategic planning and execution, design thinking demonstrates its value in comprehensive planning. It assists in the development of long-term strategies and provides a framework for their efficient execution. Moreover, design thinking is a transformative force for both businesses and social organizations, as it aids in establishing and strengthening market positions. Nevertheless, its significance surpasses mere corporate maneuvering; it plays a crucial role in driving societal transformation. This is accomplished not only by involving citizen designers in the planning process but also by actively engaging the wider community through various participatory initiatives.

The realm of lifestyle and societal transformation is profoundly impacted by the principles of design thinking. In the contemporary and swiftly progressing technological environment, design thinking plays a crucial role in advocating for lifestyles that agree with these advancements. This impact is particularly observable in sectors such as healthcare, where design thinking is revolutionizing individuals' approaches to their well-being. Furthermore, design thinking acts as a catalyst in aiding societies to adapt to innovations and serves as a cornerstone in endeavors aimed at attaining sustainable social change.

In terms of service provision and enhancement, design thinking is all about optimizing delivery. It ensures that societal services are not only accessible but also provided in the most effective and efficient manner possible. In addition, design thinking appreciates the value of esthetics in enhancing user experience in various service sectors.

The multidimensional nature of design thinking is apparent in its capacity to address numerous challenges and its potential to bring about meaningful change. Its human-centered approach, adaptability, and emphasis on collaboration make it a formidable tool for tackling the intricate problems of our contemporary world. As we grapple with the complexities of the 21st century, design thinking will continue to be a crucial ally in our pursuit of a more equitable, sustainable, and harmonious global society.

Design thinking, recognized for its innovative and problem-solving capabilities, requires a nuanced and context-specific approach for effective application. Its theoretical foundations and evaluation methods need careful consideration to align with various real-world challenges.

Despite facing obstacles and resistance, design thinking demonstrates its strength in overcoming barriers, fostering cultural and educational transformation, and enhancing community engagement. It plays a significant role in resource development and actively promotes social participation, establishing itself as a valuable tool for societal progress and innovation.

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EDUCATION AS AN AREA OF ESF SUPPORT IN POLAND IN 2004-2020

Jarosław POTERALSKI

University of Szczecin, Institute of Management; jaroslaw.poteralski@usz.edu.pl,
ORCID: 0000-0002-6205-3795

Purpose: Problematic areas in the field of education in Poland have been mentioned in strategic documents, necessary for the implementation of the cohesion policy, in all three previous financial perspectives of the European Union. In the face of changes in the socio-economic reality of the EU countries, education has become more and more present in the areas of intervention of the European Social Fund. The aim of the article is to evaluate the current Polish experience in the system of supporting education and lifelong learning under the ESF in the years 2004-2020. It is also a summary of nearly 20 years of involvement of this company in Poland.
Design/methodology/approach: The article analyses the literature relating to both the Structural Funds in Poland, with particular emphasis on the ESF, as well as problem areas in the field of education, constituting the potential scope of the Fund's intervention. The article also includes an analysis of programming documents, as well as operational programmes at the national level, containing instruments to support education and lifelong learning in Poland from the ESF funds in the years 2004-2020.
Findings: For nearly twenty years, Poland, as a beneficiary of the social policy, has benefited from support instruments within the competence of the ESF, also in the area of education and lifelong learning. For nearly two decades, in successive EU financial perspectives, a system of support for education and the idea of lifelong learning has been created, responding to the greatest needs of this area of human activity. It included further priorities and areas of support, which corresponded to increasing financial resources. Studies have shown the effectiveness of ESF financial intervention in many areas, but there are still deficits that will be supported in the coming perspectives.
Originality/value: The article contains one of the first summaries of the functioning of the system of support for education and lifelong learning from the European Social Fund in Poland, mainly in the context of nationwide operational programmes.
Keywords: Structural Funds, European Social Fund, education, lifelong learning.
Category of the paper: research paper, viewpoint.

1. Introduction

The European Social Fund (ESF) is one of the oldest structural policy instruments of the European Union. Established in 1957, at the beginning of its operation, the fund was mainly responsible for supporting the sphere related to the employment of labour and its mobility. However, along with the changing socio-economic reality of the countries and regions of the Community, the scope of ESF intervention has changed and expanded. Nowadays, it is identified with broadly understood human capital, and here also with education policy and the idea of lifelong learning.

Polish problem areas in the field of education in Poland have been mentioned in all structural policy programming documents since the beginning of Poland's presence in the European Union. Along with the evolution of the ESF areas of intervention, the areas of support from this fund in Poland were expanded in the years 2004-2006, then 2007-2013 and 2014-2020.

The nearly 20-year period of Polish's presence in the EU is the time when the system of using structural funds, including the ESF, was created and improved. The availability of these funds has always been conditioned by the creation of a number of strategic documents, which subsequently gave rise to operational programmes, both national and regional. All of them were the subject of negotiations between the Polish and EU parties.

The article is an attempt to summarize the Polish experience in formulating areas of support for education and lifelong learning, as well as building support instruments in the form of operational programs co-financed by the ESF: the Sectoral Operational Programme Human Resources Development (SPO RZL), the Human Capital Operational Programme (PO KL) and the Operational Programme Knowledge Education Development (POWER).

2. Education in the EU's structural policy and as an area of ESF support

Polish's accession to the European Union in 2004 was a breakthrough moment for the socio-economic reality of both the whole country and its individual regions. One of the most important means of increasing the cohesion of Polish regions with the regions of the Community have become the Structural Funds, in particular the European Social Fund (ESF) and the European Regional Development Fund (ERDF) (Poteralski, 2023, p. 127).

One of the most important EU policies is cohesion policy. Its aim is to promote the harmonious development of the entire territory of the European Union through measures leading to the reduction of disparities in the levels of development of its regions, and thus to the strengthening of the economic, social and territorial cohesion of the Community. Thanks to the appropriate targeting of activities implemented under the cohesion policy with the financial support of the Structural Funds and the Cohesion Fund, regions characterized by a lower level of development have a chance to catch up with the development backlog and significantly accelerate the processes aimed at achieving convergence with other regions and countries of the Community (Poteralski, 2011, p. 346).

Education policy has become one of the important elements of state policy, which after Polish's accession to the EU has been subject to changes. The reforms implemented in this area resulted, on the one hand, from Polish's membership in the EU, but to a large extent they were also the result of the need to adapt education to the contemporary realities of social and economic life. Nowadays, education is of fundamental importance for the development of society, the growth of prosperity and competitiveness. Economic and social changes force a redefinition of education policy, both in terms of its subjects, objectives, as well as the content of teaching and addressees. More and more often there is talk of "education policy" in the context of not only the activities of the state, but also various activities of local governments and the EU. In this sense, the EU can be treated as a subject of education policy (Maj-Waśniowska, 2016, pp. 151-152).

Education policy is not mentioned among the main issues of interest to the EU, but usually includes areas such as the common agricultural policy, regional policy or monetary policy. This is due to the conditions of the EU's common economic and monetary policy (Maj-Waśniowska, 2016, p. 152).

Education policy is one of the spheres of social life of the Member States, guaranteed by the Association Treaties, which is independently shaped by the authorities at national level. The educational priorities of individual EU Member States result from strategic, planning and implementation documents at the national level (Rudowska, 2021, pp. 359-360).

In the light of the definitions quoted in the studies, education policy focuses on the principles of organizing education systems, providing them with appropriate financial foundations, and finally defining the principles of education management. The scope of education policy also includes the need to determine the shape and content of teaching. Rather, the EU's actions in the field of education seem to be a set of objectives and tools in the field of education undertaken by the Union in order to carry out certain tasks with a broader socio-economic context (Maj-Waśniowska, 2016, p. 152).

The European Social Fund (ESF), along with the European Regional Development Fund (ERDF), is one of the two most important structural funds of the European Union. The main areas to be supported by the fund are the labour market, the fight against poverty and the quality of human capital. In the era of intensive struggle with the problem of unemployment, such issues as raising managerial qualifications and ensuring high quality of management in both public institutions and business entities were pushed into the background (Poteralski, 2021, pp. 89-90).

The European Social Fund was created to improve the employability of workers in the internal market and thus contribute to raising the standard of living, which in turn is one of the fundamental objectives of the European Union's cohesion policy. One of the objectives of ESF-funded support and programmes is to adapt workers to changes in industry and production systems, in particular through vocational training and retraining. (Jarmołowicz, Knapińska, 2005, pp. 226-232).

The main pillars of ESF activity are the improvement of employment opportunities, the development of entrepreneurship, the improvement of the adaptability of enterprises and their employees, and the promotion of equal opportunities. The ESF is intended to support the Member States of the European Union in introducing modern, active employment policies and systems aimed at providing financial support for the improvement of the professional skills of workers. The ESF is therefore the basic tool of the European Union's structural policy, which is to serve the implementation of employment policy and the development of human resources (Zarębski, 2010, p. 113).

The European Social Fund was created in 1957 and, at the time of its creation, had only two types of assistance: facilitating the employment of workers and promoting the occupational and spatial mobility of the workforce within the Communities.

Between 1994 and 1999, due to changing socio-economic conditions, attention was drawn to other important priorities for ESF support. These included helping to increase human potential in research, science and technology, improving education and training systems towards labour market compliance, economic and technological development, and promoting equal opportunities for women and men in the labour market. Between 2007 and 2013, the ESF areas of intervention mentioned included strengthening human capital through reforms of education and training systems so that they contribute to developing employability, better aligning education with labour market needs, and responding to the needs of the knowledge-based society (including the development of human potential in research and innovation). In the last budget period covered by this study, the ESF envisaged the implementation of 4 main thematic objectives. One of them is "Investing in education, training and vocational training for skills and lifelong learning". This was aimed at reducing and preventing early school leaving and ensuring equal access to quality early childhood education, primary and secondary education, improving the quality, effectiveness and accessibility of higher education, as well as equalising access to lifelong learning for all age groups (Harasimowicz, 2022, pp. 62-63).

When analysing the areas of support for the ESF over its long history, it should therefore be noted that the ESF has evolved and undergone numerous reforms in order to respond to the changing realities of the labour market and the social sphere of the Community's functioning. Areas related to education were also gaining in importance.

Until 2020, the fund operated under the name of the European Social Fund, while at the threshold of the next financial perspective (2021-2027) there is talk of its new version, namely the European Social Fund "Plus" (ESF+) programme.

3. Education – problem areas in Poland in the years 2004-2020

The use of funds from the EU Structural Funds in subsequent budget perspectives required the creation and agreement with the European Commission of a number of strategic and programme documents, both at the Community level as well as at the national and regional level. It can be assumed, however, that in the Polish context, the most important strategic documents at the national level were:

- 2004-2006: National Development Plan 2004-2006;
- 2007-2013: National Strategic Reference Framework (National Cohesion Strategy);
- 2014-2020: Partnership Agreement.

These documents constituted m.in. A synthetic approach to problem areas, defined priorities and areas of support, indicated operational programmes, tools and institutions that were responsible for planning, implementing and managing these programmes. In each of these documents, the main objective and specific objectives are formulated to support the achievement of the objectives of cohesion policy support for the forecast budget period. These assumptions were the result of other strategic documents, setting out the directions and priorities of development for the coming years, both at the Community, as well as at the national and regional level. They were also the subject of negotiations between the Polish authorities and the European Commission (Poteralski, 2023a, pp. 172-173).

The strategic documents then revealed the basic tools for the implementation of structural policy in the form of operational programmes. Education, as one of the important areas of ESF support, was also the subject of analyses and subsequently support under operational programmes in all three financial perspectives referred to in this study (Table 1).

Table 1.
Problem areas in the field of education indicated in the programming documents in the years 2004-2020

Financial perspective 2004-2006
Main problem areas • the percentage of the population aged 25-29 with tertiary education is twice lower than the EU average (11.7% in 2001); • highly insufficient participation of rural youth in the student structure; • the reform of secondary education is being implemented, favouring general education, limiting narrowly specialised fields of study, especially for non-developing sectors and sectors of the economy.

Cont. table 1.

Challenges to the ESF • shaping the education system, as well as continuous improvement of human resources, and to provide all Polish residents, in particular young people, with real opportunities to improve their qualifications in order to compete effectively on labor markets; • concentrating socio-economic policy on the labour market and the system of education and lifelong learning, which are the basis for the comprehensive development of human resources, and thus increasing the chances of finding employment on the European labour market; • a clear improvement in the quality of the functioning of the labour market and education system and an increase in financial resources allocated to the beneficiaries in the following areas: a) increasing the level of education and professional qualifications by young people and adults, b) increasing the efficiency and quality of the education and lifelong learning system;
Financial perspective 2007-2013
Main problem areas • insufficient link between the education system and the labour market; • relatively low investment and underinvestment in the education system, especially in rural areas; • low secondary education in rural areas; • low rate of lifelong learning; • unequal access to educational services based on material status and place of residence; • insufficient link between the promotion of entrepreneurship among citizens and the education system; • lack of the habit of lifelong learning;
Challenges to the ESF • increasing investment in human capital; • improving the level and quality of education, contributing to increasing the chances of finding and taking up employment and to increasing the mobility of individuals in the labour market; • providing pupils, learners and students with high-quality education through appropriate institutional and organisational solutions in the education system; • in view of the needs of the knowledge-based economy, it is particularly important to create conditions that will increase the number of students interested in science and, consequently, the number of students choosing this educational path; • reducing the number of people for whom the main obstacle to entering or staying in the labour market is a lack of adequate education; • increasing the availability of education at all levels of education, linking it to the requirements of the labour market, improving the quality of educational services offered and the effectiveness of education; • undertaking activities focused on improving the management of processes and institutions constituting the education system in Poland; • creating a framework for the effective functioning and improvement of competences of teaching staff (including academic staff) and administrative staff managing the education system; • building a system and culture of lifelong learning through the implementation of projects conducive to the learning process in all forms and manifestations of human activity;
Financial perspective 2014-2020
Main problem areas • low (compared to the EU average) level of employment of young people, women and the elderly, as a result of, m.in, the inadequacy of the education system and the acquisition of competences to the needs of the labour market; • failure to adapt the education system and staff competences to the needs of the labour market; • Despite the positive results of the reforms in the Polish education system so far, the educational activity of adults is still low; • lack of a system for controlling the quality and effectiveness of training addressed to teachers; • low percentage (12%) of teachers using organised forms of professional development, at the same time low popularity of those forms of professional development which are indicated in the literature as the most effective (e.g. participation in teacher cooperation networks, or the use of mentoring or coaching);

Cont. table 1.

Challenges to the ESF
• an active policy to promote increased participation in lifelong learning, addressed not only to workers and adults, but also to entrepreneurs in the MSME sector; • reducing the share of early school leavers to 4.5% and increasing the share of 30-34 year-olds with tertiary education to 45%; • Achieving sustainable results of education reforms requires enriching and fine-tuning the competences of graduates of the formal education system at all stages of teaching and learning; • ensuring the highest possible quality of teaching at primary and lower secondary levels; • implementation of development programmes to equalise the level of social competences and universal skills necessary to start the next stage of education or enter the labour market; • higher education in Poland, as in the rest of Europe, must face the need for internationalization, increasing the employability of graduates, strengthening ties with the socio-economic environment or the effects of demographic processes; • treating higher education policy as an integral part of a broader set of policies aimed at increasing the innovation capacity of the economy; • effective cooperation between the university and the environment and systematic monitoring of graduates' careers; • With a decentralised management system in education, systemic actions are necessary to strengthen the coherence of education at the national level, m.in through the development of a school evaluation system, monitoring of students' educational achievements, or tracking the fate of graduates; • continuation of competence development activities in the use of information and communication technologies (ICT) in teaching all subjects; • developing pupils' competences to prepare them for life in the information society; • raising awareness of the key importance of ICT for the development of non-formal forms of education and self-learning for students and teachers and for preparing them to participate in the lifelong learning process.

Source: own elaboration based on: Poland. National Development Plan 2004-2006, Document adopted by the Council of Ministers on 14 January 2003, Warsaw: January 2003; Half. National Strategic Reference Framework 2007-2013 supporting economic growth and employment, Ministry of Regional Development, Warsaw 2007; Programming of the Financial Perspective 2014-2020. Partnership Agreement, Ministry of Development, Warsaw 2015.

As can be seen from the table, in each of the analysed EU financial perspectives, education was a problem area with specific, defined needs. In the first period of using the Structural Funds in Poland, the most important challenges in the field of education include access to education in order to acquire and improve qualifications, and the focus of socio-economic policies on the education and lifelong learning system. Requirements for improving the quality of the education system were also pointed out.

In the 2007-2013 perspective, the emphasis on linking both the education system and lifelong learning with the needs of the labour market, unequal access to educational services and the related unequal level of education, especially in the urban-rural system, was dominant and even more emphasized, as well as the lack of a habit or culture of lifelong learning in the Polish society. The main challenges for education and lifelong learning include, among others: the need to increase investment in human capital in general, to improve the level and quality of education also through appropriate institutional and organizational solutions in the education system. The years 2007-2013 were also a period in which education was promoted in selected areas, including science. Much more evident in this period was the need to undertake systemic activities supporting the process of planning and management in the area of education and training.

On the one hand, the problem areas and challenges for the ESF in the last analysed period were a certain continuation of the two previous perspectives, but the need to develop quality control systems for the educational offer and the constant need to influence the improvement of the educational activity of the Polish society, especially in the adult period, with a strong emphasis also on informal and non-formal education, was emphasized. The period 2014-2020 is also a time of significant promotion of information and communication technologies accompanying and supporting the education process.

4. Support for education in operational programmes in Poland in the years 2004-2020

Since Polish's accession to the EU in 2004, structural policy in the area of ESF has been implemented both thanks to operational programmes covering the entire area of the country and those addressed to individual voivodships. On the basis of the experience from the first two budget periods of the Polish presence in the EU, it was only in the 2014-2020 perspective that a model was created, under which regional operational programmes were of a two-fund nature and provided for support under both the ERDF and the ESF (Poteralski, 2021, pp. 54-55). This constituted a significant change in both the methodology of programming and the management of programmes at the regional level, because in the perspective of 2004-2006 a similar role was played by the Integrated Operational Programme for Regional Development, but it had a nationwide character. Regional Operational Programmes were created only in the context of planning activities in the 2007-2013 perspective, but they were single-fund in nature, with the involvement of ERDF funds (Poteralski, 2022, p. 367) (Table 2).

Table 2.
Involvement of the ESF in operational programmes 2004-2020

Financial perspective 2004-2006	
Operational programme	**Nature of the program**
SPO RZL (Sectoral Operational Programme Development of Human Resources)	• a single-fund programme (ESF) of a nationwide nature
ZPORR (Integrated Regional Development Operational Programme)	• nationwide, but partially implemented at the level of regions (voivodships) • the two-fund programme (ERDF and ESF); • in certain areas of intervention, the ESF, complementary to the SPO RZL
Financial perspective 2007-2013	
Operational programme	**Nature of the program**
PO KL (Human Capital Operational Programme)	• single fund programme (ESF) • the only operational programme with ESF involvement in the period 2007-2013 • a programme containing both the so-called nationwide priorities (national component) and regional priorities (regional component)

Cont. table 2.

Financial perspective 2014-2020	
Operational programme	**Nature of the program**
PO WER (Operational Programme Knowledge EducationDevelopment)	• single fund programme (ESF) • A nationwide program
RPO (Regional Operational Programmes)	• 16 dual-fund programmes (ERDF and ESF), in the area of ESF complementary to POWER

Source: own elaboration.

Table 2 presentsthe structure and characteristics of the operational programmes that in the years 2004-2020 were the tools for ESF involvement in cohesion policy in Poland. The system of use of the funds has evolved over this period and has shown a high degree of complementarity between the development of national and regional tools, including in the areas of ESF intervention.

The needs related to the sphere of education and lifelong learning in Poland, defined in the strategic documents, were reflected in the structure of operational programmes, and more precisely in the formulated priorities (priority axes) and actions. The operational programmes also contained specific objectives, together with the expected indicators of their achievement, as well as potential tools for achieving these objectives. An important element of the programming of activities for the following years was also the planning of financial resources for them. (Table 3).

Table 3.
Education support instruments in operational programmes in 2004-2020

Financial perspective 2004-2006	**Total allocation [million euro]**
Sectoral Operational Programme "Human Resources Development" • Priority 2: Developing a knowledge-based society: 2.1. Increasing access to education – promoting lifelong learning; 2.2. Improving the quality of education in relation to the needs of the labour market; 2.3. Development of human resources in the modern economy; 2.4. Strengthening adaptability. • The main objectives of priority 2: preparing the society to function in the system of a global market economy by increasing access to education, with particular emphasis on equal opportunities, by raising the level of education of the society; increasing and broadening the participation of an increasing adult population in high-quality lifelong learning, which will ultimately contribute to improving employment in a changing labour market; development of the skills base and adaptability of the employed workforce of enterprises, in particular SMEs; facilitate knowledge transfer and cooperation between universities and businesses in order to disseminate innovation and contribute to adaptability and competitiveness.	988,57

Cont. table 3.

Financial perspective 2007-2013	
Operational Programme "Human Capital" • Priority II: Development of human resources and adaptive potential of enterprises and improvement of the health of working people (national component) • Priority III: High quality of the school education system (national component) • Priority IV: Higher education and science (national strand) • Priority VIII: Regional economic staff (regional component) • Priority IX: Development of education and competences in the regions (regional component) • The main objectives of the programme in relation to education and training: to contribute to the strengthening of enterprises and their employees in terms of their ability to adapt to socio-economic changes related to globalisation and restructuring processes; strengthening human capital by increasing the level of education of the society, increasing the availability of educational services at all levels of education and improving the quality of education and training, the dissemination of education must be accompanied by an increase in its effectiveness; It is therefore necessary to ensure the quality of education that meets the standards of a knowledge-based society, while at the same time aligning the fields of education with the requirements of the labour market.	778,01 1 006,24 960,37 1 588,48 1 703,42
Financial perspective 2014-2020	
Operational Programme "Knowledge Education Development" • Priority axis I: Young people in the labour market • Priority axis II: Effective public policies for the labour market, economy and education • Priority axis III: Higher education for the economy and development • The main objectives of the programme relate to education and training: to ensure equal access to quality education tailored to the individual needs of pupils; better prepare students for their future employment; increasing the use of innovative methods supporting the teaching process by schools and educational institutions; strengthening cooperation between schools and entrepreneurs, universities and social partners; equalising access to lifelong learning for adults, including those with low competences; support for cooperation between universities and business and strengthening the pro-employment role of higher education; increasing the quality of educational services offered and developing competences that are key to the economy (applies to universities); internationalisation of Polish universities; improving the quality of doctoral studies; management support and staff development at universities.	2 035,18 877,65 1 253,29

Source: own elaboration based on: Sectoral Operational Programme Human Resources Development 2004-2006, Annex to the Regulation of the Minister of Economy and Labour of 1 July 2004, Journal of Laws 166, item 1743; Human Capital Operational Programme. National Strategic Reference Framework 2007-2013, Ministry of Regional Development, Warsaw 2007; Operational Programme Knowledge Education Development 2014-2020, Ministry of Infrastructure and Development, Warsaw 2014.

As shown in the table, the most important problem areas in education were reflected in the operational programmes and the priorities defined in them. The level of their funding has also increased, both at the level of priorities and programmes. Taking into account the impact at the national level, the allocation of funds has increased from €988 million in the first budget period to €4.16 billion in the period 2014-2020. Per year, this gives an allocation of €329 million for the period 2004-2006 and €596 million for the period 2014-2020, respectively.

5. Effects of ESF instruments supporting education in Poland

The areas of ESF support for education in Poland, mentioned in the programming documents, conditioned the use of the Fund's financial resources by the institutions authorised to do so within the framework of specific projects. It was their implementation that was to contribute to the achievement of the objectives set at the beginning of the next financial perspectives. The process of monitoring and evaluation of the implemented projects and entire programmes was used to assess the degree of achievement of the objectives. Due to the complexity of this issue, this study will attempt to indicate only the most important achievements in the implementation of the ESF objectives in the field of education in Poland in the years 2004-2020.

EU funds, in particular the European Social Fund, have made it possible to undertake a number of activities to facilitate access to education at all levels of education, with particular emphasis on pre-school education, lifelong learning of adults, education in rural areas and improving the qualifications of people from disadvantaged social groups. Qualitative changes in the labour market – the dissemination of various forms of lifelong learning, e-learning or professional development – should be considered as an additional benefit of the support. (Mnisterstwo Rozwoju Regionalnego, 2010, s. 40)

Already after the first two budget perspectives, it could be stated that Poland has achieved indicators close to the EU average in many areas. Poland had one of the lowest rates of early school leavers and low achievers in basic skills. There has also been progress in higher education and increased participation in early childhood education. Between 2007 and 2013, the Polish education and training system underwent a number of significant changes in terms of structure, organisation, management and core curricula in the face of society's growing aspirations for higher education. The most important actions in the areas of education include, m.in a new core curriculum, improvement of the external examination system, significant dissemination of pre-school education, development of teachers' competences and updating teaching evaluation methods, improvement of the quality of vocational education and meeting special educational needs and their modernisation in line with the lifelong learning programme, development of strategic documents of a long-term nature concerning Polish education system. (Maj-Waśniowska, 2016, pp. 161-162).

Summarizing the 2014-2020 perspective, based on the analysis of the results of evaluation studies, it can be stated that in this period there was a growing level of education of Poles and an increase in the percentage of people with higher education. There has also been a reversal of the unfavourable trend in the proportion of young people who have at most lower secondary education and do not continue their education. Other positive effects of education support include a systematic increase in the educational achievements of Polish students, also in the field of mathematics and natural sciences, a systematic increase in the quality of education, and changes in the standards of teacher education (Ministerstwo Funduszy i Polityki Regionalnej, 2020, pp. 59-69).

Unfortunately, at the threshold of the current EU budget perspective, envisaged for the years 2021-2027, Polish education is still characterized by deficits and areas that require planning and implementation of support programs. These include, but are not limited to:

- inadequacies in the use of methods based on active learning by pupils and individualisation of education,
- a key social problem in the area of general education, which is not foreseen to be covered by the ESF intervention, is the current content of the core curriculum for general education,
- still relatively low level of skills of adults in Poland,
- still low levels of digital competence, especially in the oldest age groups,
- the problem of mismatching competences with the needs of the labour market, which is still present on the Polish labour market and has existed for a long time,
- shortage of staff in sectoral vocational education and secondary schools providing vocational education,
- a large distance between Poland and the EU in the case of non-formal adult education, despite the ever-growing participation of Poles in it,
- still insufficient involvement of employers in supporting adult learning,
- a systematic decline in the number of students in Poland (Ministerstwo Funduszy i Polityki Regionalnej, 2020, pp. 59- 81).

6. Conclusion

Education and lifelong learning have been systematically gaining in importance as areas of intervention of the European Social Fund in Poland in successive EU budget perspectives. It can be seen that some of the problem areas, as well as the subsequent areas of support under the operational programmes, have generally remained unchanged. Others, on the other hand, emerged along with the changing socio-economic reality and needs directly resulting from the specificity of the ESF, which include issues such as the quality of human capital and the degree of its involvement in the processes taking place in the economy and on the labour market.

Education, and especially lifelong learning, have become an inseparable and absolutely essential element shaping the quality and situation of the human factor in both the social and economic spheres.

Polish experience related to the presence of the ESF in Poland since 2004 shows that a system of monitoring and supporting areas related to human capital has been created and constantly improved, both at the national and regional level. In this respect, the main tool for the implementation of the policy of supporting human capital in Poland in the analysed period were successive operational programmes, thanks to which it was possible to implement specific projects not only in education, but also in support of the education and lifelong learning system of Poles regardless of their age, place of residence and social status.

A separate issue related to the ESF's support for education in the 2004-2020 period should be the issue of its effectiveness. The presentation of the most important problem areas and their evolution in the subsequent years of Polish's presence in the European Union showed how the needs and directions of interventions in the field of education have changed. In the documents concerning the successive financial perspectives, ex-post evaluations of the operational programmes already implemented were carried out. It was the result of numerous evaluation studies, carried out from the level of individual projects and beneficiaries, project implementation organisations, to the level of institutions implementing and managing the use of ESF funds in Poland. According to the research, despite the positive effects of ESF support on education in Poland, there are still problem areas that require intervention. These include, among others, the low level of adult participation in education, especially non-formal education, staff shortages, especially in sectoral and vocational education, and the mismatch between competences and the needs of the labour market.

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THE IMPACT OF INTER-ORGANIZATIONAL COOPERATION ON THE DEVELOPMENT OF THE REGION BASED ON SELECTED INITIATIVES IN THE ŚWIĘTOKRZYSKIE PROVINCE

Agnieszka PREDYGIER

Jan Kochanowski University of Kielce; agnieszka.predygier@ujk.edu.pl, ORCID: 0000-0003-3283-2592

Aim: The article aims to answer the following questions regarding the challenges of the modern world, support for inter-organizational relationships, and the use of initiatives in the field of science and business conducive to increasing competitiveness. It attempts to determine how to develop and manage contemporary initiatives regarding cooperation between the worlds of science, culture, art and business while maintaining the principles of ethics and culture, and how to help build support for business, science and culture. The aim of the article is also to demonstrate how the region's managers can prevent the escalation of war-related issues and what actions to take to prevent local societies from generating problems. Finally, the article tries to indicate how to build lasting inter-organizational relationships, how science, culture and art can contribute to solving local problems, and how informal clusters can support regional management through inter-organizational cooperation.
Design/methodology/approach: The article uses the methods of literature research and a case study in the Świętokrzyskie region.
Findings: The article presents an example of an inter-organizational cooperation initiative promoting the worlds of business, science, culture, art and local governments in the Świętokrzyskie region in the study of selected cases. The issue of building competitive advantages of the region through the development of inter-organizational relationships between the worlds of science, business, culture and art is also addressed.
Practical implications: Region managers can implement inter-organizational cooperation, which brings the most benefits, by including cooperation with scientific, cultural, art, sports and business institutions. The article characterizes initiatives of inter-organizational cooperation between business, science, culture and art. Inter-organizational cooperation initiatives can be used as sources of new competitive advantages for the region and building effective management strategies. Modern management of the region's competitiveness is the development of a mentality based on the principles of learning to use the regionally demonstrated freedom and ethics of business behaviour that implements inter-organizational cooperation, which is characterized in the case study. The inter-organizational cooperation initiatives analysed in this article in the Świętokrzyskie region have a synergistic effect and benefits in a number of other regions of Poland; therefore, they are an effective tool for managing the region in the aspect of building inter-organizational relationships.
Social implications: Effective management of the region involves creating a society that is willing to undertake conflict-free changes, implements innovations, is open to discussion and dialogue, and introduces conflict-free change implementation. Recent years have shown that

high intellectual capital and the implementation of new technologies and innovations can become a competitive advantage, provided that society is a conscious, sensitive and ethical recipient of the proposed competitive strategies of enterprises. The analysis of the problems of the war between Ukraine and Russia demonstrates that the managers of the region should make every effort in order to encourage the society to develop an attitude of sensitivity to harm, entrepreneurship based on the principles of ethical competition, the use of democratic freedom in a reasonable manner, as well as the use of property for purposes related to the development of emotional sensitivity to manifestations of intolerance and replacing conflicts with cooperation. In the long run, the effects of such management will benefit every participant of the market, because everyone is a resident of a region and has similar needs (security, development, improvement), and inter-organizational cooperation can achieve this through a region management strategy.
Originality/value: The article characterizes modern regional management, which, owing to inter-organizational cooperation between business, science, culture, art and local government, will support the peaceful resolution of regional problems and conflicts (war, famine, poverty) through the development of behaviour aimed at building inter-organizational relationships. Modern competition rules are intended to foster the creation of multi-level inter-organizational relationships, the benefits (synergistic effects) of which are described in the article on the basis of the analysis and evaluation of inter-organizational cooperation implemented in the Świętokrzyskie region.
Keywords: promotion of the region, inter-organizational cooperation, local initiatives, inter-organizational relations.
Category of the paper: Study, viewpoint.

1. Introduction

Modern organizations operate in a changeable and uncertain market economy environment, which forces the creation of competitive advantages. Strategies for building competitive advantages apply to all organizations, including regions. The competitiveness of regions is, by nature, understood differently than that of enterprises, which must generate profit through innovation, technology, process changes, and the fight to acquire sales markets, allies, and customers (Klamut, 2014). In managing the competitiveness of regions, one of the key aspects is meeting the needs of residents, which are most often included in strategic goals. Entrepreneurs are also residents of regions; therefore, their activities influence the perception of the region as competitive and a place of good life and business development. Hence, an important task is to create conditions in the region that will help shape open attitudes, facilitating the development of inter-organizational cooperation initiatives, as such initiatives, together with local leaders, have a decisive impact on the development and management of the region. Therefore, the region's managers should create conditions for the development of inter-organizational cooperation, because this translates into the region's competitiveness and the well-being of its residents.

2. 21st century challenges for management in the region

The article addresses the issue of building competitive advantages of the region through the development of inter-organizational relationships between the worlds of science, business, culture and art. In February 2021, the Russian–Ukrainian war proved that the modern world, despite advance technological development and modern forms of Internet communication, is not free from old fears and concerns such as war, poverty or famine. These problems, as well as the unhealthy ambitions of state leaders, may become the source of new global conflicts in the 21st century. The armed conflicts are of a developing nature: while the problem of the Russian–Ukrainian war has not yet been resolved, new problems have now emerged in the Middle East, where the long-drawn problem of the Israeli–Palestinian conflict continues and has recently taken the form of violent and armed solutions.

We are all obliged to look for solutions, and above all, scientists in various fields should seek to develop methods to solve problems and take preventive actions in order to resolve conflicts before they become war, poverty, famine or pandemic, as well as take precautions to possibly prevent such conflicts from occurring in the first place.

Nowadays, support for cooperation initiatives between business, science and culture may become a tool for building modern competitive advantages. The contemporary competitiveness of local entities may gain a new value in the ethical behaviour of entrepreneurs who will appreciate the value of works of science, culture and art. Hence, science and culture will acquire permanent recipients and participants in joint initiatives by promoting new values in a way that is accessible and interesting to regular residents of the region. Owing to the described initiative to promote science, culture and art of the region, entrepreneurs will be able to learn about new concepts, apply them and support the development of companies, conduct research, implement good practices and take advantage of cultural initiatives that promote the region. The market economy, competitive strategies and business activities will be able to gain a new face of more ethical and moral behaviour, altruistic attitudes, replacing conflicts with inter-organizational cooperation. Entrepreneurs – who are also recipients of science, culture and art (as they are also residents) – will gain the opportunity to participate in building competitive advantages of the region and its organizations in an atmosphere of cooperation, peace and tolerance, which will replace antagonistic attitudes, fights and brute force. The presented initiatives (Plawgo, 2007) of inter-organizational cooperation will affect the competitiveness of enterprises and the region implemented in the climate of a conflict-free development strategy. In such circumstances, the management of the region will be competitive because it will fulfil the basic needs of the inhabitants (security, peace), while moral and ethical behaviour – owing to the sublime tastes of entrepreneurs – will build a competitive advantage based on sound principles of ownership and the use of freedom of competition.

The transformation of the political and economic system that took place in Poland in the 1990s showed that SME sector companies had to overcome numerous problems, i.e. adaptation to market economies, finding a competitive strategy, applying methods and techniques to improve operations, transfer of knowledge, or development of management skills. Thirty years of functioning in a market economy gave scientists the opportunity to reach certain conclusions and a short experience for entrepreneurs. The analysis of enterprise management in Poland demonstrated that thirty years is too short a period to develop one's own methods and strategies of competitive activities (Danielak, Mierzwa, Bartczak, 2017; Determinanty sukcesu..., 2022). Polish entrepreneurs observe, learn and transfer methods, techniques and strategies from around the world into their business because we have not had time to develop our own. The modern world forces entrepreneurs and scientists to pursue continuous education, obtain information and data patterns, and perform continuous analyses and assessments in order to search for the best methods of work and development.

Contemporary management of sustainable development of regions in the aspect of inter-organizational cooperation development should be based on principles. Inter-organizational relationships also involve meeting the basic needs of residents, such as security, peace, tolerance, and prosperity. One of the ways to meet the needs of the region's inhabitants is to develop inter-organizational cooperation between business and science, culture and art, which constitute the basis of a new society in which aggression and the pursuit of solving problems by force will cease to be valid and will be replaced by seeking peaceful solutions for tolerance and harmony.

The key to effective and stable region management is to create a society that promotes conflict-free changes, implements innovative solutions, is open to discussion and dialogue, and implements changes without the use of force or violence.

It is about shaping the mentality of a society that will implement constructive solutions, non-violent and aimed at respecting social differences. Culture, art and science are the common ground that unites nations as they are outside the category of conflicts, they are an objective, transnational good connecting all people, beyond politics, economy or religion; therefore, they can be a key element of the new management of regional entrepreneurship.

This article presents one of such suggestions for solving the problems of the modern world by building management of the region's competitiveness through promoting initiatives of inter-organizational cooperation between business, science, culture and art. Managing an inter-organizational cooperation initiative favours building local and non-local environments based on the principles of promoting local achievements of culture, science, art and business. The acquired knowledge teaches us the ethics of behaviour in implementing entrepreneurial attitudes in the competitive freedom of a market economy and inter-organizational cooperation, which will eliminate conflicts and introduce tolerance through the formation of a society with refined tastes and moral behaviour. Recent years have shown that high intellectual capital and the implementation of new technologies and innovations can become a competitive advantage, provided that society is a conscious, sensitive and ethical recipient of the proposed competitive strategies of enterprises. The analysis of the problems of the war between Ukraine and Russia demonstrates that the managers of the region should make every effort in order to encourage the society to develop an attitude of sensitivity to harm, entrepreneurship based on the principles of ethical competition, the use of democratic freedom in a reasonable manner, as well as the use of property for purposes related to the development of emotional sensitivity to manifestations of intolerance and replacing conflicts with cooperation. In the long run, the effects of such management will benefit every participant of the market, because everyone is a resident of a region and has similar needs (security, development, improvement), and inter-organizational cooperation can achieve this through a region management strategy.

The article characterizes local initiatives of inter-organizational cooperation of business, science, culture and art as part of the Kielce Science Festival, the Kielce Technology Park, the Świętokrzyskie Centre for Innovation and Technology Transfer, and the Collegium Medicum. Inter-organizational cooperation initiatives can be used as sources of new competitive advantages for the region and building effective management strategies. Modern management of the region's competitiveness is the development of a mentality based on the principles of learning, entrepreneurship development, promotion, the achievements of local society and the ethics of business behaviour that implements inter-organizational cooperation.

The topic of building competitive advantages of modern enterprises has been analysed by a number of foreign management authorities, as well as Polish authors, including: A. Noga (Noga, 2009), M. Romanowska (Romanowska, Wachowiak, 2006), E. Mączyńska (Mączyńska, 2019), W. Grudzewski (Grudzewski, 2003), J. Hejduk (Hejduk, Grudzewski, 2002), M.J. Stankiewicz (Stankiewicz, 2001), Z. Olesiński (Olesiński, 2005, Olesiński, 2010). The publications of these authors use foreign literature that sets the trends for the development of modern enterprises.

Modern organizations build competitive advantage strategies using Kevin Kelly's 10 principles (Kelly, 2001), which have dominated modern markets and renewed the laws of classical education known from the books of macro- and microeconomics by D. Begg (Begg, 1999a; Begg, 1999b). The first principle involved a reversal of the traditional view of management. In the modern approach, it is proposed to decentralize management structures to make them smaller, more flexible, and adapted to changes in the environment. In classical economics, large heavy industry enterprises with complex technology parks were supported. Nowadays, it is the SME sector that supports the creation of GDP and the development of innovation; these enterprises adapt more easily to changes and depend only on the knowledge of the manager. The second principle of modern management is the use of the liquidity effect, i.e. managers should remember that innovations spread quickly and it is those who disseminate the inventions the fastest that benefit most from the market, not the inventors. Classical economics assumes that what is unavailable to the customer is the most expensive and constitutes the greatest value that needs to be protected from competition and is where the most money is earned. However, this has changed; what can be disseminated gains higher utility and constitutes the greatest value (e.g. mobile phones or the Internet). Hence, companies such as Google, Microsoft and Apple are the most competitive because they popularize their inventions. In the past, the environment was relatively stable, but today, modern technologies (the Internet) have changed the world; thus, organizations creating competitive advantages must study these changes and adapt to them. Another principle is that space and its limitations no longer play an important role. In the past, cheap raw materials that could run out or cheap labour were a competitive advantage. At present, space no longer limits the activities of managers, because they do not create mines or steelworks, but have virtual organizations and can start operations anywhere – they are only limited in terms of knowledge, and this can be acquired, modernized and improved. The level of competitiveness of organizations is now determined by new technologies, innovations, know-how, high-tech, and the old competitive advantages (cheap raw materials and cheap labour) are becoming a thing of the past. Nowadays, competitive advantages depend on the level of openness, the number of network participants and the strength of network connections, and the competitiveness of organizations is created by multi-level inter-organizational relationships. Modern organizations build competitive advantages by seizing all opportunities. The ability to establish inter-organizational relationships and build inter-organizational cooperation may become the organization's most important competitive advantage. Developing inter-organizational relationships can provide various benefits, synergistic effects and management improvements, supporting the effective and efficient implementation of the region's strategic goals. Figure 1 describes the benefits of implementing inter-organizational cooperation in the region.

The basis for the presented model of inter-organizational cooperation in the region was reliable empirical research on micro-enterprises, local government units, and business development support organizations operating in the Świętokrzyskie Province (Olesiński, 2007).

The model indicates that the speed of creation, course and final result of the implementation of innovations depend on the quality of the elements of the resource potential of entities, the efficiency of discovering and meeting needs and the activity in creating cooperation between various organizations in the environment. Innovative activity is related to competitive skills, which may be manifested in communicating one's pro-innovation needs to various entities in the environment and the efficiency of these entities in providing enterprises with the necessary support that contributes to the satisfaction of these needs (Hoffer, 2004).

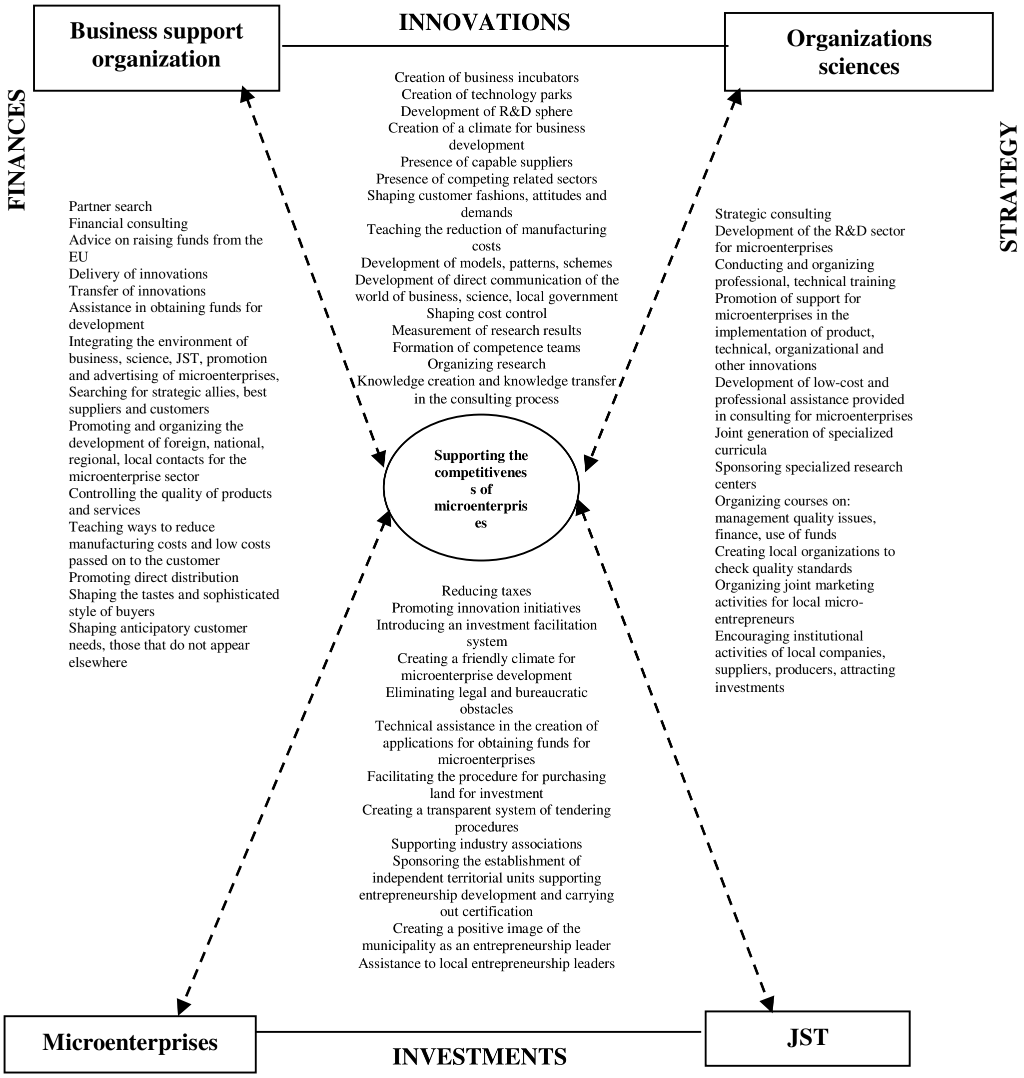

Figure 1. Model of inter-organizational cooperation in the region.

Source: Author's original work based on Porter, 2006.

Figure 1 shows that modern institutions have innovative potential in the ability to build an effective system of communication with partners, knowledge related to establishing beneficial contacts with local governments, science organizations and business support organizations, the ability to seek and use new opportunities (e.g. EU funds and programs, modern means of communication, the Internet, etc.), and the ability to cooperate with local governments as well as governmental, non-governmental, financial, insurance and marketing institutions.

The analysis of research on inter-organizational cooperation in the SME sector in the Świętokrzyskie region between 2006-2019 (Predygier, 2019; Olesiński, 2007) showed a low degree of cooperation and inter-organizational relationships. The key task of the region's managers should be to support real strategies for inter-organizational cooperation of entities: enterprises, scientific organizations, business environment organizations, local governments. Today's regional management should be focused on the development of these inter-organizational relationships. Management taking into account building inter-organizational relationships as a result of synergistic cooperation may be conducive to the creation of a formal or informal cluster. The greatest benefits from the implementation of an inter-organizational cooperation strategy can be obtained by including scientific, cultural, art and sports institutions, in addition to business and science. The article includes case study research and analysis of the Kielce Science Festival, the Kielce Technology Park, the Świętokrzyskie Centre for Innovation and Technology Transfer, and the Collegium Medicum.

3. An example of inter-organizational cooperation between business, science, culture, art and local governments: Kielce Science Festival

The Kielce Science Festival was an initiative to promote the development of science, culture and art in the Świętokrzyskie region. It was implemented between 2002–2012 and covered the region's communes and counties, as well as foreign contacts.

The Kielce Science Festival organized in 2012 in the Świętokrzyskie Province achieved the key goal that was to popularize the achievements of science, culture, art and sports on a national and international scale. The Festival featured many carefully selected, very interesting and substantively valuable lectures, workshops, multimedia presentations, trips, debates and events, which were visited by over 30,000 people across six towns. It was an opportunity to discover and display the talents and interests of junior high school, high school and university students. Owing to the Festival, the society of the region gained the opportunity to acquire knowledge in various fields of science presented in an accessible form of interactive shows, games and activities, promoting the latest scientific achievements. To summarize the activities of the Kielce Science Festival, one needs to take into account over ten years of implementation of this project. The idea of holding these scientific events was born in the minds of participants around 2000, when initiators and science enthusiasts under the leadership of Professor Krzysztof Grysa began to establish small clubs to connect people interested in various fields of science.

The agreement on organizing an event with this name in Kielce was signed by: Vice-Marshal Włodzimierz Wójcik, MA, on behalf of the Local Government of the Świętokrzyskie Province; Mayor of Kielce Włodzimierz Stępień, MSc Eng., on behalf of the City of Kielce; Chief Education Officer Andrzej Sygut, MA, on behalf of the Board of Education; Rector Professor Wiesław Trąmpczyński, PhD Eng., on behalf of the Kielce University of Technology; Rector Prof. Adam Massalski, PhD, on behalf of the Jan Kochanowski Pedagogical University and the Kielce Scientific Society; Rector Rev. Kazimierz Gurda, PhD, on behalf of the Higher Theological Seminary; Director Prof. Zbigniew Kowalczewski, PhD, on behalf of the Polish Geological Institute, Świętokrzyskie Branch in Kielce; Director Stanisław Góźdź, MD, on behalf of the Świętokrzyskie Oncology Centre.

The number of supporters, participants and originators working completely free of charge increased from year to year, and the idea of annual meetings became established. The idea of the Kielce Science Festival was successfully implemented on an annual basis, introducing new participants, sponsors and presenters every year. Over ten years, approximately 20,000 presenters from all over Poland as well as Germany, Ukraine, Israel and Belarus have performed in various roles during lectures, galas, workshops and shows. The number of recipients also increased during this period; in total, 300,000 people watched, listened to and participated in the festival events, most of them being high school and university students. After 2006, the Kielce Science Festival became a well-known and respected institution that gained the support of the Ministry of Science and Higher Education, and its events ceased to be regional, as they were joined by presenters from numerous research centres to create projects recorded in published articles; they included representatives of the University of Warsaw, the University of Rzeszów, the Jagiellonian University, the AGH University of Kraków, the Poznań University of Technology, and the Lublin University of Technology. Various institutions such as museums, cinemas, art galleries, philharmonic halls and cultural and sports centres also joined the festival projects, creating unforgettable works that carried out the mission of promoting the science, culture and art of the Świętokrzyskie region. The success of the Festival was not only the constantly increasing number of participants and presenters from domestic and foreign science centres, but above all, the popularization of regional science achievements through closer cooperation with the business community, media and local government. Since 2008, the Kielce Science Festival integrated all communities to eliminate social divisions and discrimination, while developing cooperation with the leaders of local communities. Cooperation with teachers from the local schools was a new stage in the Festival's history. Through their work and meetings with them, the Festival became a tool for recruiting students and an instrument for effective promotion. The implementation of the idea of the Festival has had a significant impact on the development of human capital in the society of the Świętokrzyskie region, especially when it comes to directing the interests of young people from small towns and rural areas. In this respect, the impact of the Kielce Science Festival is invaluable (Historia Kieleckiego..., 2023).

Cooperation as a basic strategy for the competitiveness of local science in the global world was the basis for the implementation of the Festival with universities. The strategy of joint promotion of science was implemented particularly effectively by the University of Economics and Law in Kielce, the University of Arts and Sciences in Kielce, the University of Commerce in Kielce, the Holy Cross University in Kielce, the University of Tourism, the Kielce University of Technology, the University of Humanities and Natural Sciences in Sandomierz, and the University of Business in Ostrowiec Świętokrzyski. Through cooperation with universities from the region, the bond of implementing joint scientific, research and promotional projects was strengthened. Owing to this cooperation, the popularization of science gained real impact, and the Kielce Science Festival became a tool through which the society of the region gained the opportunity to acquire knowledge in various fields of science presented in an accessible form of interactive shows, games and activities, promoting the latest achievements of science. The Kielce Science Festival is an event appreciated in Poland and abroad, which implemented the concept of popularizing the achievements of science, culture, art and sports on such a large scale.

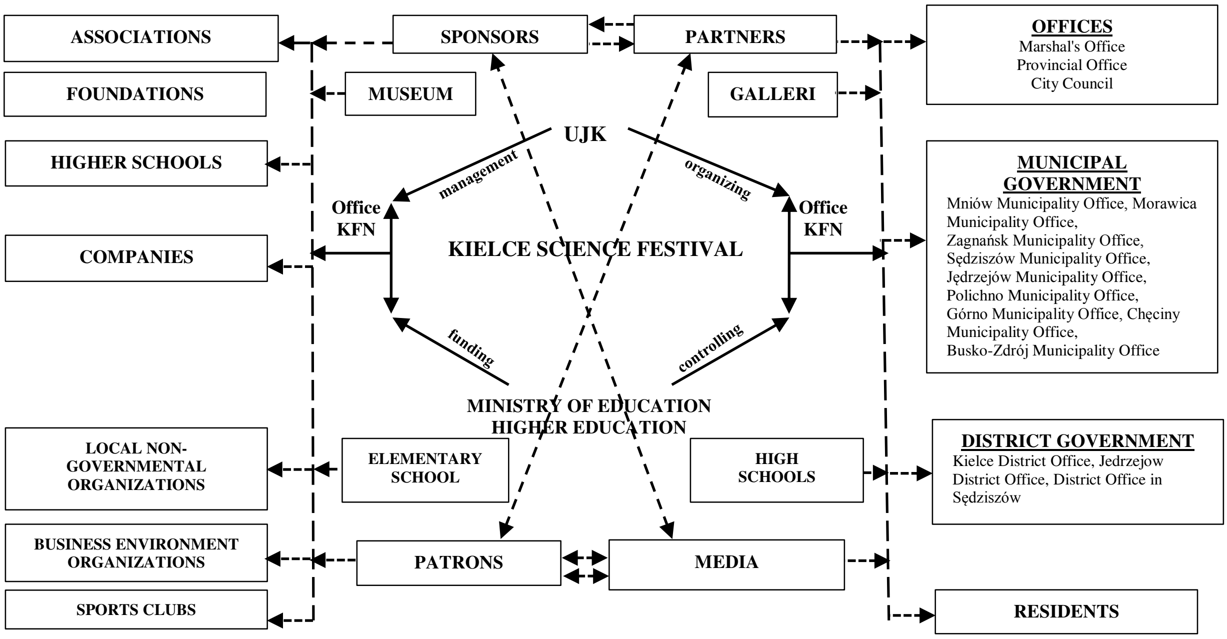

Figure 2. Cultural and scientific group of the Kielce Science Festival.

Source: Author's original work.

Figure 2 describes the cultural and scientific group of the Kielce Science Festival and its impact on the dissemination of achievements in science, culture, art and sports. During the ten years of its operation in the Świętokrzyskie region, the Kielce Science Festival developed inter-organizational cooperation of over 3000 organizations (associations, offices, foundations, companies, etc.) that actively participated in the Festival's events to promote science and culture. Considering that the Festival started as a small initiative of several universities, its development and network of initiatives and inter-organizational relationships should be deemed a success. The Kielce Science Festival also developed cooperation with foreign and supra-regional entities (Jewish Festival, German Foundation, Finnish Association in Reykjavik). The strength of inter-organizational relationships helped build the promotion of science and culture in the region through university, secondary school and primary school leaders. Over the course of ten years, the Festival implemented nearly 500 cultural and organizational initiatives annually, and also gained an increasing number of sponsors and participants. The Kielce Science Festival ended its activities in 2012, but initiatives for the promotion of science, culture and art are still implemented in other regions (Mazovia, Lower Silesia, Lesser Poland); therefore, the conclusions contained in the article may be helpful for the managers of similar regional promotion initiatives in terms of cooperation between representatives of science, culture, art and business.

4. An example of inter-organizational cooperation between business environment institutions, science centres and business: Kielce Technology Park

Among the many tasks included in the "Strategy for the city of Kielce for 2007-2020" created in 2006 was the establishment of a science and technology park. The strategy assumed that the existence of a technology park would have a huge positive impact on the image of Kielce and the region in the eyes of current and potential investors. The Kielce Technology Park began its operations in 2007 with the implementation of a project entitled "Kielce Technology Incubator" with the support of EU Funds. In 2008, the Kielce Technology Park was established. Its creation was the result of cooperation between local government structures and scientific and business communities, which determinedly sought to increase the competitiveness of the region (Historia, 2023).

The Kielce Technology Park cooperates with business environment institutions, local government, research centres and entrepreneurs. By implementing many projects that encourage entrepreneurial attitudes among the inhabitants of the province, it builds a knowledge-based economy and contributes to the increase in competitiveness and development of the Świętokrzyskie region. It cooperates not only with local units, but also with institutions from outside the region, and implements a number of national and international projects.

The Park offers modern infrastructure and developed investment areas. Companies operating in its area can use amenities and tax privileges. The institution always tries to meet the individual needs of potential collaborators.

The Kielce Technology Park has a quality management system certificate according to the PN-EN ISO 9001:2015-10 standard. Since 2011, it has had a quality management certificate. In January 2021, it successfully passed the certification audit of the quality management system according to PN-EN ISO 9001:2015-10. The certificate was granted for the provision of services to individual clients, institutions and companies as part of the tasks carried out by the Park.

The Quality Management System according to ISO 9001 is a recognized standard of enterprise management and confirms that the services provided by the Park comply with the relevant standards and meet high quality requirements (System…, 2023).

The Kielce Technology Park has investment areas divided into four zones. Its partners have 15 hectares of investment areas at their disposal (Tereny inwestycyjne, 2023). The Park's operations include the Technology Centre, which is intended for new and existing enterprises that base their development on innovative technological solutions used in production and services. Entrepreneurs have over 20,000 m^2 of space at their disposal, including: a service, laboratory and production building consisting of 8 modules with the possibility of independent division and operation, and 4 production halls consisting of independent modules with entresols (Centrum…, 2023; Kielecki Park…, 2023).

The Kielce Technology Park offers support in the form of consulting and training services dedicated to micro-, small- and medium-sized enterprises, as well as their employees. The support covers issues necessary for implementing and developing a business idea as well as market expansion. The list includes basic and specialized services, which are free, paid or subsidized by the Development Services Base. The Park offers services in the following fields: support in the area of market verification of a business idea, support in obtaining funds for development, consultations and services in the field of marketing, branding and other sales-supporting issues, consultations with an internationalization expert, and support in preparing applications for external funds (Usługi…, 2023, Kielecki Park…, 2023).

From 1 January 2023, the Kielce Technology Park became the Digital Innovation Centre and offers support for enterprises from the Świętokrzyskie region. The scope of support includes a wide range of digitalization services, from digital maturity assessment to the implementation of new solutions (Cyfryzacja…, 2023).

5. An example of inter-organizational cooperation between business, business environment institutions, local government and science: Świętokrzyskie Centre for Innovation and Technology Transfer

The Świętokrzyskie Centre for Innovation and Technology Transfer was founded on 18 December 2001 by the Świętokrzyskie Voivodeship, the City of Kielce, the Świętokrzyskie University of Technology and the Staropolska Chamber of Industry and Commerce, as non-profit institutions, to support and channel the development of creativity and potential of the Świętokrzyskie region (ŚCITT…, 2023).

The key shareholders of the Świętokrzyskie Center for Innovation and Technology Transfer are public entities of the region, i.e. the Świętokrzyskie Province (90.83% of shares) and the Świętokrzyskie University of Technology (9.17% of shares) (O nas…, 2023).

The Centre's mission is to strive to strengthen and stimulate the competitiveness of the Świętokrzyskie Province in the field of production, services, education and management through the transfer of scientific and research achievements, economic information for SMEs, ISO quality systems, online education, fairs and conferences. As one of the leading entrepreneurship support centres in the region, the company offers a range of information, advisory, training and expert services to enterprises, individuals and public entities (ŚCITT…, 2023).

The Świętokrzyskie Centre for Innovation and Technology Transfer implements key projects for the development of the Świętokrzyskie region in the field of supporting entrepreneurship, audits and technology transfers, public-private partnerships, and analyses in the area of energy efficiency and renewable energy sources. The aim of the Centre is to initiate economically important activities that will enable close cooperation between entrepreneurs, local governments and scientific communities in the Świętokrzyskie region. Entrepreneurship, new technologies and knowledge transfer are the factors that determine the development of a region. Innovations are possible in virtually every field; therefore, the Centre focuses its activities on finding strong points and using them effectively (ŚCITT…, 2023).

The task of the Świętokrzyskie Centre for Innovation and Technology Transfer is to obtain financial resources from European Union aid programs to support innovative solutions in the areas of production, services, education and management.

Currently, the Świętokrzyskie Centre for Innovation and Technology Transfer participates in the implementation of a number of projects, including:

- Implementation of the ISO quality system, Environmental Management and Occupational Health and Safety,
- Enterprise Europe Network – a business support network,
- Preparation of applications for Structural Funds,
- Consultation Point for SMEs,
- Quality management and IT training.

Partners of the Świętokrzyskie Centre for Innovation and Technology Transfer include: small- and medium-sized enterprises, newly established companies, scientific and research centres, local governments, individual entrepreneurs and inventors (O nas…, 2023).

As one of the leading centres in the region, the Świętokrzyskie Centre for Innovation and Technology Transfer offers a range of information, advisory, training and expert services for entrepreneurs. The quality of the services provided is guaranteed by certificates and accreditations granted to the Centre by the Polish Agency for Enterprise Development and the National Contact Point for EU Research Programs. Owing to the fact that the Centre participates in national and international cooperation networks – such as the National Service System, the National Innovation Network, the network of Regional and Industry Contact Points for EU Research Programs, or the Enterprise Europe Network – it is able to provide many services free of charge (Oferta dla…, 2023).

The Świętokrzyskie Centre for Innovation and Technology Transfer provides consulting and advisory services in the field of applying for co-financing of investment projects from structural funds, such as: consulting for SMEs, preparing business plans and loan applications, coordinating activities related to obtaining subsidies, a full range of services related to obtaining subsidies, from the moment of completing the application to the full implementation of the subsidized project (Oferta dla…, 2023).

The Centre also provides general services, i.e. preparing financial analyses and financial forecasts for enterprises, advice on the search for accreditation units that are potential contractors of services provided as part of subsidized projects, supporting SMEs in their competitiveness, advisory and expert services under the Centre's accreditation, advisory and expert services within Management Systems, including the implementation of Quality Management Systems (QMS), Safety Management Systems (SMS), Environmental Management Systems, HACCP, and advice on the possibilities of using renewable energy sources (Oferta dla…, 2023).

The Centre's offer for entrepreneurs also includes pro-innovation advisory services (technology audits, assessment of the company's technological potential/needs, preparing applications to obtain funds for financing innovative projects, searching for partners, assisting and helping in negotiations); information services (informing about the available offer of external financing, maintaining a database of companies cooperating with the Centre, informing about economic conferences and events held, informing about the available offer in the field of cooperation between science and business, providing information and suggestions to foreign investors regarding cooperation with Polish entrepreneurs) and training services (systemic management in the areas of quality, safety, environment, safe food production (QMS, HACCP, energy audit), open and closed courses for auditors and representatives of quality management systems, organizing postgraduate studies in the field of systemic quality management, and seminars on the possibilities of obtaining funds for co-financing economic and investment projects) (Oferta dla…, 2023).

In addition, the Świętokrzyskie Centre for Innovation and Technology Transfer has an interesting offer of services for local governments. These include: services in applying for funding from structural funds, expert services in the development of planning documents (e.g. Local Development Strategy for Renewable Energy Sources, Local Development Plan), general consulting services (e.g. preparation of financial analyses) and training services (e.g. systemic management in the areas of quality, safety, environment, open and closed courses) (Oferta dla jednostek…, 2023).

The most important achievements of the Świętokrzyskie Centre for Innovation and Technology Transfer include: the creation of the Advisory Centre for Efficient Use of Energy and Renewable Energy Sources and the Efficient Use of Energy Innovation Circle to provide substantive and technical support to entities, establishing a research laboratory for solid biomass, biogas and biofuels to research and find ways of their efficient energy use, the creation of the Erasmus Program for Young Entrepreneurs to enable the exchange of future and aspiring entrepreneurs and learning from experienced entrepreneurs, obtaining subsidies for entrepreneurs and local government units in the total amount of PLN 330,000,000.00, the construction of an autonomous house for the purposes of energy efficiency research for the development of the Świętokrzyskie region, and strengthening the connections of the R&D sphere with enterprises in the Świętokrzyskie Province by establishing cooperation between business environment institutions and universities (Nasze…, 2023).

6. An example of inter-organizational cooperation between health care institutions, science and local government: Collegium Medicum

The Collegium Medicum operates under the Jan Kochanowski University of Kielce, which was established in 2011 in the city of Kielce. Originally, from 1969, the university operated as the Teacher Training College. In the following years, it underwent numerous transformations; in 2008, it was recognized as an adjectival university, and then a classical university in 2011. Jan Kochanowski has been the patron of the university since 1979. The university offers education in 50 fields of study and nearly 150 specializations in almost all scientific fields, including humanities, social sciences, medical and health sciences, exact and natural sciences, and art. The university's educational offer is successively expanded with new proposals for fields of study that meet the needs of the modern labour market. In recent years, several fields of study that are very popular among young people have been introduced, such as law, psychology, applied criminology, cosmetology, dietetics, data engineering, social communication, and medicine – in Polish and English (English Divsion). One of the new fields of study in the 2019/2020 academic year is general speech therapy. The university offers doctoral studies in 10 fields, with nearly 300 doctoral students enrolled currently (50 lat uczelni, 2023). The university offers education in 58 fields of study across 6 faculties, in almost all scientific fields, including humanities, social sciences, medical and health sciences, exact and natural sciences, and art (Uczelnia w liczbach, 2023). In September 2019, the Jan Kochanowski University became a signatory of the University Social Responsibility Declaration. University Social Responsibility (USR) is defined as a strategic and systemic approach to university management and building cooperation and dialogue with stakeholders that will contribute to sustainable development, shaping the values and attitudes of civil society, supporting academic values and creating new ideas, and developing scientific and teaching competences to influence the effectiveness of operations and innovation. The USR is a voluntary activity that goes beyond the obligations arising from legal provisions. It means greater openness of internal stakeholders (students, employees) and external stakeholders (local community, local authorities, entrepreneurs, graduates, non-governmental organizations, etc.) to promoting the idea of sustainable development and social responsibility in educational programs, scientific research and management and organizational solutions of universities (Społeczna…, 2023).

The Collegium Medicum was originally established in 2005 as the Faculty of Medicine and Health Sciences. It consists of the Institute of Medical Sciences and the Institute of Health Sciences. The Institute of Medical Sciences was established in 2015 within the structure of the Jan Kochanowski University in Kielce, Faculty of Medicine and Health Sciences, and is currently part of the Collegium Medicum. The Institute of Medical Sciences has been providing medical education in Polish since the 2015/2016 academic year and in English since 2016/2017 (O Instytucie…, 2023).

The development of practical skills for the medical field is possible thanks to the Medical Simulation Centre financed under the project called “MEDICUS - medical simulation centre of the Jan Kochanowski University” no. POWR.05.03.00-00-0004/18 implemented by the Jan Kochanowski University of Kielce (O Instytucie…, 2023). Clinical education in medicine is carried out in cooperation with the Provincial Hospital in Kielce, the Świętokrzyskie Oncology Centre, the Provincial Specialist Hospital of St. Raphael in Czerwona Góra, the Saint John Paul II Hospital of the Ministry of Interior and Administration in Kielce, the Kielce Hospital of Saint Alexander in Kielce, the Świętokrzyskie Centre for Psychiatry in Morawica, the Specialist Hospital of the Holy Spirit in Sandomierz, the Świętokrzyskie Mother and Newborn Centre in Kielce, as well as facilities providing outpatient specialist care and primary health care. The above-mentioned units provide facilities for the education and scientific development of medical studies. Employees of the Institute of Medical Sciences and medical students have thus gained access to a modern teaching and research base (O Instytucie…, 2023).

The history of the Institute of Health Sciences dates back to 2001, when, in cooperation with the authorities of the then Świętokrzyska Academy, within the structures of the Faculty of Pedagogy and Health Sciences, the Institute of Medical Education was established. By decision of the Minister of National Education of 29 September 2005, the Faculty of Health Sciences was established at the Świętokrzyska Academy with three Institutes: the Institute of Nursing and Midwifery, the Institute of Physiotherapy, and the Institute of Public Health.

The Institute of Health Sciences currently operating within the Collegium Medicum structure was established in 2019 by merging these Institutes. The Institute of Health Sciences educates nurses, midwives, paramedics, physiotherapists, dietitians, cosmetologists and specialists in physical education and public health. Employees and students have access to modern premises, equipped with specialized equipment, laboratories and medical simulation rooms. Practical education of students takes place, among other facilities, in the Monoprofile Medical Simulation Centre with high-fidelity nursing and midwifery laboratories, the Posturology Laboratory and the Nutrition Planning and Dietetics Laboratory (O Instytucie…, 2023).

The Collegium Medicum implements projects financed by the European Union. Its currently ongoing projects include: MEDICUS, MEDPAT, Nowe Perspektywy, Okno Na Świat, and RID (Regional Excellence Initiative for Science and Health) (Projekty w realizacji, 2023). The most important projects completed include: Absolwent dla regionu, MEDIC, MEDREH, Operacja STAŻ, SONAR, and SIMED (Projekty w zrealizowane, 2023).

7. Conclusion

The analysis and evaluation of the presented case studies give answers to the questions posed in the article and provide knowledge about the possibilities of developing and managing inter-organizational cooperation initiatives in the world of science, culture, art, health care and business while maintaining ethical principles. Promoting the achievements of science, culture, art and business favours inter-organizational cooperation carried out by local authorities as leaders of change, builds local initiatives and popularizes their activities. Creating a climate of inter-organizational cooperation, promoting local achievements, institutions, and supporting change leaders helps develop peaceful solutions to local problems, promote innovation, and create an information society that develops inter-organizational relations using the latest knowledge and technology in a climate of tolerance and promoting ethical behaviour in business. Building lasting inter-organizational relationships in an atmosphere of cooperation promotes the development of regions. Competitive strategies based on peaceful forms of cooperation, promoting innovation, and supporting local change leaders contribute to the promotion of culture, art, business and sports, as well as satisfying the needs of local societies and increasing the competitiveness of the region. Such activities influence the assessment of the effectiveness and efficiency of the region's managers, who carry out their tasks in line with the challenges of the 21st century and the needs of local society.

Managing the region in the aspect of building inter-organizational cooperation brings many benefits, added values and synergistic effects that promote the region:

- popularization of science, culture, art, sports and business activities,
- promotion of local initiatives to support inter-organizational cooperation,
- promotion of local activities in the region,
- creating lasting bonds with the environment, influencing the environment, shaping trends in the development of cooperation by strengthening and maintaining relationships between entrepreneurs, science, associations and local governments,
- development of relationship marketing, seeking direct contacts between participants of the informal group of the Kielce Science Festival,
- creating an emotional bond and continuous cooperation for greater understanding and increasing the benefits related to the exchange of experiences in the fields of science, business and activities for enterprises,
- development of participants' intellectual capital, transfer of knowledge through conferences, seminars, lectures, workshops, trips,
- development of social capital – promoting basic values such as loyalty and integrity, the need for continuous education and improvement of participants in the life of an integrated society, taking advantage of cultural and educational offers,

- "learning through play" – promoting learning in interesting and engaging ways, experiences and experiments, developing the habit of learning,
- a wide scale of promotion of science, culture and art,
- fostering and building interpersonal and inter-organizational contacts,
- eliminating discriminatory behaviour, antagonisms, social conflicts,
- building inter-organizational cooperation and "business angels" society to support science, culture and art,
- promoting training and scientific initiatives,
- presenting contemporary achievements of science, culture, art and sports to the local society,
- creating a climate of inter-organizational cooperation,
- teaching how to take advantage of opportunities, shared experiences and knowledge,
- transfer of knowledge and shaping refined tastes of local society, which will choose higher culture and art instead of cheap entertainment,
- creating opportunities to exchange views and have debates and discussions on the management of the region and the role of science, culture and art,
- Kielce Science Festival as an instrument of communication between business, science, culture, art and local and government administration,
- shaping refined tastes and ethical social behaviour,
- presentation and popularization of the achievements of local scientists, artists, representatives of culture and art,
- creating "talent incubators", promoting talents in science, culture, art, and local entrepreneurship leaders,
- the opportunity for society to participate in interesting and developing cultural and scientific events,
- shaping the need for learning and self-improvement habits in order to increase the intellectual and social capital of the region's inhabitants,
- development of lasting forms of inter-organizational cooperation between science, business, culture and local government,
- bringing the achievements of science, culture and art closer to society in an accessible form,
- developing good habits and higher needs, sensitizing society to manifestations of intolerance and discrimination,
- developing attitudes of continuous intellectual development and habits of using and appreciating the achievements of science, culture and art.

Modern regional management in the aspect of building inter-organizational relations becomes an effective tool for peaceful resolution of conflicts and socio-economic problems and the implementation of strategies for the well-being of residents if the basis for the activities of local authorities, science, business and culture is the inter-organizational cooperation for the promotion of local initiatives. The region's managers will achieve competitive success if they develop entrepreneurial behaviour in the local society aimed at implementing interregional cooperation and developing inter-organizational relationships in the fields of business, science, culture and art. The inter-organizational cooperation initiatives analysed in the article influence the development of lasting inter-organizational relationships, which build a lasting competitive advantage of the region in terms of joint problem solving and building a strong bond to support the development of innovation, science, culture, art and business.

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THE METAVERSE PROJECTS FOR CITIES – THE THEORETICAL AND PRACTICAL PERSPECTIVE OF BUILDING THE COMPETITIVE ADVANTAGE

Anetta PUKAS

Wroclaw University of Economics and Business, Faculty of Management, Department of Marketing;
anetta.pukas@ue.wroc.pl, ORCID: 0000-0001-6318-2516

Purpose: In recent years, the rapid growth of virtual reality has opened up new possibilities for creating an immersive virtual world known as Metaverse. With advancements in technology, such as virtual reality headsets, and the emergence of applications with social interaction, Metaverses offer exciting opportunities for cities to build the future and a competitive advantage. The paper focuses on analyzing the theoretical and practical aspects of the Metaverse, particularly in the field of city development. This paper aims to discuss the potential benefits and challenges of the Metaverse projects for building cities' competitive advantage.
Design/methodology/approach: The article comprehensively describes the use of Metaverse as a project created to build the city's competitive advantage in a technology-based future. Therefore, in the article, we asked a research question: What is the potential of Metaverse projects for cities as a tool for building competitive advantage? The method used was an in-depth literature study based on an electronic basis, e.g., SCOPUS for theory background. In the empirical part, we have done the qualitative research using the multiple case study (Three selected cities: Seoul, Tampere, and Dubai) associated with bibliographic and documentary research.
Findings: Metaverse has become one of the hot topics in society and, consequently, is the theme of scientific research worldwide. The development of the Metaverse world will inject new vitality into modern cities, open up more application scenarios for smart cities, and push them forward. It can also be stated that the fundamental concept of Digital Twins emerged with a Digital twin of a person (DToP) and a Digital twin of a customer (DToC). The Metaverse is an entirely new concept, and there are still too many unknowns and uncertainties about its development direction**.**
Originality/value: This article comprehensively describes using the Metaverse as the project for building a city's competitive advantage. The cross-sectional case study and comparison of three cities provided valuable insights into cities' challenges in creating a metaverse project. The main contribution is identifying repeatable decision-making areas that scops become future potentials of Metaverse for cities in building competitive advantages.
Keywords: Metaverse, Metaverse city, competitive advantage.
Category of the paper: Case study**.**

1. Introduction

The city is not only a place but also a way of organizing human life that maximizes the number and quality of connections between individuals and collective social and economic entities. Until recently, this required proximity in physical space. The last few years have shown that technology has reached a level that allows these contacts to be moved beyond physical, real space. Cities worldwide are trying to find ways to turn the pandemic disruption into opportunities to capture value offered by the new medium of the broader Web 3.0 technologies and industrial and urban Metaverses (Metaverse Institute, 2023).

Territorial competitiveness has become a topic of great importance at the beginning of the third decade of the 21st century. The competition between the territories and the geographical areas is the main reason for applying new tools and technologies, which give different values to all stakeholders.

The Metaverse is a virtual space parallel to and independent of the real world, an online virtual world that maps the real world, and an increasingly realistic digital virtual world (Wang, 2022). Opportunity also exists for firms in various industries such as financial services (e.g., decentralized finance supported by blockchain and cryptocurrency that may not rely on traditional banks), healthcare (e.g., telemedicine and collaborative R&D), and manufacturing (mixed reality enabled factory floor) to employ the Metaverse (McKinsey & Company, 2022).

The Metaverse is part of the new internet generation known as Web 3.0, which also includes AI, blockchain, and other digital innovations.

The state of the art shows the impact of the formation and development of the Metaverse in various fields already. Still, there is a relative lack of research exploring the path of Metaverse realization from the perspective of city or territory – the research gap. This research context related to urban areas and their specificity as a research subject seems exciting and has excellent scientific potential. Another interesting research context is cities' adaptation of the Metaverse to build their competitive advantage.

The paper focuses on analyzing the theoretical and practical aspects of the Metaverse, particularly in the field of city development. This paper aims to discuss the potential benefits and challenges of the Metaverse projects for building cities' competitive advantage.

We conducted an exploratory study to achieve the article's purpose and answer the research question: (RQ) *What is the potential of Metaverse projects for cities as a tool for building competitive advantage?* The type of qualitative research was selected. A multiple case study was chosen as the research method. By presenting and comparing three different cases of cities (1) Seoul, (2) Tampere, and (3) Dubai, we can gain a deeper and broader understanding of the phenomenon and uncover its underlying mechanisms, causes, and effects. The choice of these cities resulted from the identified advancement of these cities in the Metaverse implementation process and the described slightly different experiences in this process.

The cross-sectional case study and comparison of three cities provided valuable insights into cities' challenges in creating a metaverse project. The main contribution is the identification of repeatable decision-making areas that scops become future potentials of Metaverse for cities in building competitive advantages: (1) Strategic importance and role in building competitive advantage, (2) Necessary resources, (3) Effects and benefits for Stakeholders, (4) Limitations and challenges, (5) Future Directions of Development.

This Metaverse technology can significantly reshape, offering an immersive and interactive platform for stakeholders to create the city's diversity effectively. On the other hand, the Metaverse is still in its early stages, and some city municipalities have shared concerns about governance, ethics, privacy protection, and data reliability and accuracy.

2. Metaverse – theoretical background

The term "Metaverse" first appeared in the 1992 science fiction novel "Snow Crash" by the famous American science fiction writer Neal Stephenson. Metaverse refers to a three-dimensional space that is detached from and parallel to the real world. Users can live and work in the virtual world through "avatar" digital images, realizing online virtual world interaction (Wang, 2022). Through the publicity of "Snow Crash", a virtual network world parallel to the real world, the "Metaverse", was gradually accepted by science fiction writers.

Metaverse has arguably been the word of 2023, and there are many reasons that the media, business, and science are interested in searching for and using this technology. According to Bloomberg, the metaverse market will reach $800 billion by 2024, while PwC estimates that the metaverse market will reach $1.5 trillion by 2030. The metaverse-related topics are rapidly breaking the circle, and the market and social attention are extremely high. This shows that the Metaverse has become one of the hot topics in society and, consequently, is the theme of scientific research around the world. The era of the "metaverse" is not in the future but in the present (Wang, 2022).

The topic of "Metaverse" conveys different meanings to different people and firms since the Metaverse is not fully developed and is constantly evolving. For some, the Metaverse conjures up a futuristic three-dimensional (3D) - environment where customers can interact with each other and brands from any virtual location. For others, the Metaverse is simpler and is just the next version of the internet that enables 3D experiences (Lu, Mintz, 2023). The lack of certainty on what precisely the Metaverse is, what it will look like, what users will do on it, and how firms will interact with users on it has greatly impeded consumers' and firms' Metaverse use (Atske, 2022; Dwivedi et al., 2023; Ravenscraft, 2022).

There is also no doubt that the subject of the Metaverse has been of great interest to researchers from various fields. For the purposes of this article, we performed a bibliometric analysis of the SCOPUS electronic database (keywords – "Metaverse"). The results show a drastic increase in the number of articles in the last two years - 3556 document results in 2000-2024 (Fig. 1).

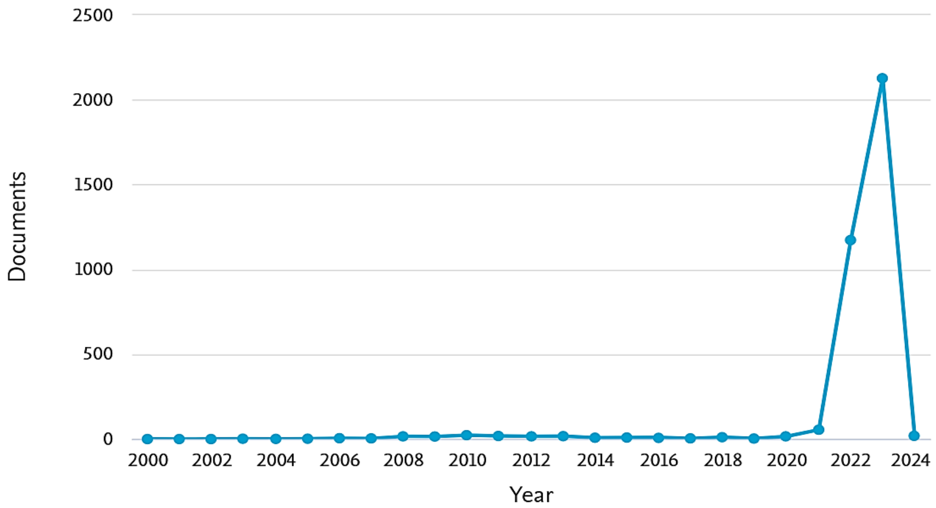

Figure 1. Word "Metaverse" – documents by the year (3556 document results in 2000-2024).

Source: https://www.scopus.com/term/analyzer.uri?sort=plf-f&src=s&sid=6f96226e10495d43d6f19158c1c0c907&sot=a&sdt=a&sl=24&s=TITLE-ABS-KEY%28Metaverse%29&origin=resultslist&count=10&analyzeResults=Analyze+results

Analyzing documents by subject area (Fig. 2) shows that articles in Computer Science and Engineering dominate (48.3% in total). However, it is interesting that the remaining share comprises over nine fields, including business and management, with a share of 5.7%.

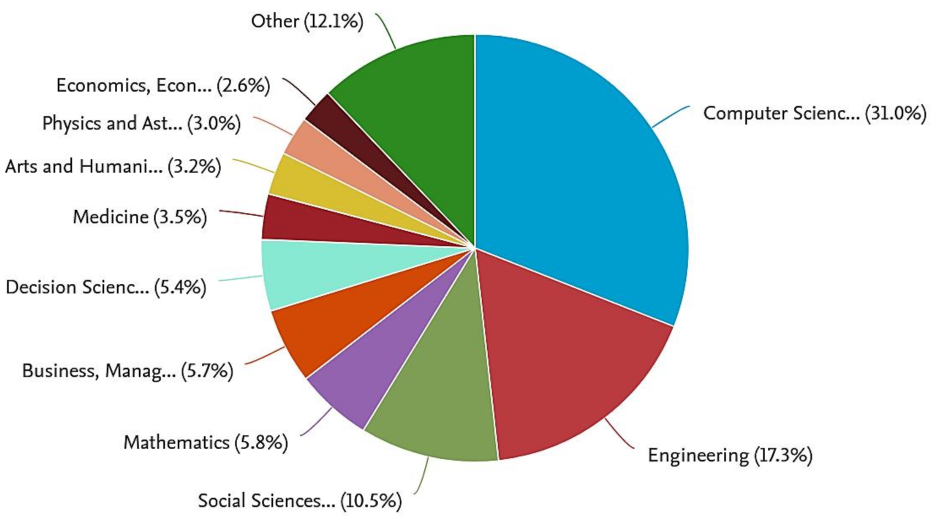

Figure 2. Word "Metaverse" – documents by subject area (3556 document results in 2000-2024).

Source: https://www.scopus.com/term/analyzer.uri?sort=plf-f&src=s&sid=6f96226e10495d43d6f19158c1c0c907&sot=a&sdt=a&sl=24&s=TITLE-ABS-KEY%28Metaverse%29&origin=resultslist&count=10&analyzeResults=Analyze+results

Literature analysis also indicated that there is no unified concept of what the Metaverse is. According to Lu and Mintz (2023), definitions from scientific articles and those considering practitioners' perspectives differ significantly, as shown in Table 1.

Undoubtedly, the Metaverse is a virtual space parallel to and independent of the real world, an online virtual world that maps the real world, and an increasingly realistic digital virtual world (Wang, 2022). Opportunity also exists for firms in various industries such as financial services (e.g., decentralized finance supported by blockchain and cryptocurrency that may not rely on traditional banks), healthcare (e.g., telemedicine and collaborative R&D), and manufacturing (mixed reality enabled factory floor) to employ the Metaverse (McKinsey & Company, 2022).

Table 1.
Representative definitions of the Metaverse

Author	Definition
Definitions from academic papers	
Davis et al. (2009)	Immersive 3D virtual worlds where people interact as avatars with each other and with software agents.
Dionisio et al. (2013)	An integrated network of 3D virtual worlds that allows users to interact in real-time with a computer-generated environment and with each other using avatars or agents.
Ryskeldiev et al. (2018)	A persistent and constantly updated collection of XR spaces mapped to different geospatial locations.
Kim (2021)	An interoperated persistent network of shared virtual environments where people can interact synchronously through their avatars with other agents and objects.
Hennig-Thurau et al. (2022)	A new computer-mediated environment consisting of virtual worlds where people use avatars to act and communicate with each other.
Ahn et al. (2022)	Where multiple interconnected virtual worlds exist for large numbers of users to interact simultaneously in embodied forms.
Hadi et al. (2023)	A network of digitally mediated spaces that immerse users in shared, real-time experience.
Barrera and Shah (2023)	A technology-mediated network of scalable and potentially interoperable XR environments merging the physical and virtual realities to provide experiences characterized by their level of immersiveness, environmental fidelity, and sociability.
Yoo et al. (2023)	An online collaborative shared space built of 3D environments that leverage high consumer immersion techniques to reduce the perception of technological mediation alongside transferrable and unique digital assets while allowing user-generated digital personas to interact with each other.
Definitions from practitioners	
Tucci (2022)	A single, shared, immersive, persistent, 3D virtual space where humans experience life in ways they could not in the physical world.
Stackpole (2022)	It's actually many Metaverses, or digital spaces, which typically are decentralized, incorporate AR and VR, store information on the blockchain, and allow users to own digital goods.
Ball (2022)	A massively scaled and interoperable network of real-time rendered 3D virtual worlds and environments that can be experienced synchronously and persistently by an effectively unlimited number of users with an individual sense of presence and with continuity of data, such as identity, history, entitlements, objects, communications, and payments.
McKinsey Company (2022)	At its most basic, the Metaverse will have three features: (1) a sense of immersion, (2) real-time interactivity, and (3) user agency. Ultimately, the full vision of the Metaverse will include the following: (1) platforms and devices that work seamlessly with each other, (2) the possibility for thousands of people to interact simultaneously, and (3) use cases well beyond gaming.
Gartner (2022)	Technically, a Metaverse is a collective virtual shared space created by the convergence of virtually enhanced physical and digital reality. For simplicity's sake, think of a

	Metaverse as the next iteration of the internet, which started as individual bulletin boards and independent online destinations. Eventually, these destinations became sites on a virtual shared space — similar to how a Metaverse will develop.

Source: Lu, Mintz, 2023, pp. 151-166, https://doi.org/10.1007/s13162-023-00255-5; What Is a Metaverse? And Should You Be Buying In? https://www.gartner.com/en/articles/what-is-a-Metaverse

According to Wang (2022), Metaverse refers to a new type of Internet application and social form that integrates virtual space technology, artificial intelligence technology, interaction technology, blockchain technology, and other new technologies. But the Metaverse is not a technology per se. Still, an idea and a concept that requires the integration of different new technologies, and the main core technologies of the Metaverse are the following:

- Games: the initial landing scene for the Metaverse.
- Blockchain: the underlying architecture to achieve a decentralized economic system.
- Network and computing technologies: 5G/6G and edge computing for low latency.
- Interaction technology: improve user immersion, Metaverse must go through.
- Artificial intelligence: a supporting technology for building virtual worlds.
- IoT technology: meeting the demand for diversified ways to access the Metaverse.

Considering the analysis of the literature and available research on Metaverse idea and development, it can be stated that the fundamental concept of Digital Twins emerged. A Digital twin of a person (DToP) not only mirrors a unique individual but is also a near-real-time synchronized multipresence, with the ability to be present in multiple places at the same time in both digital and physical spaces. A Digital twin of a customer (DToC), a subset of DToP, is a dynamic virtual representation of a customer that simulates and learns to emulate and anticipate behavior. Customers can be individuals, personas, groups of people or machines (Gartner, 2023). Xiaohui Yu, President of China Academy of Information and Communication Technology, said in the 2022 World Economic Forum Report that Fourth Industrial Revolution technology – represented by the digital twin approach, together with policy and mechanism reform, which helps us to understand systems better and intervene more effectively – is being used by cities to reshape and optimize their urban planning and operations, governance and service models, and planning method. Managing the city as a system focused on delivering better outcomes for people, society, and nature requires integration across the industries that serve the built and natural environments. It also requires connecting the physical, digital, and human worlds (WEF Report, 2022).

It can be concluded that although the extant literature has yet to reach a consensus on a vision for the Metaverse, studies have articulated a similar roadmap to the mainstream acceptance of the internet with its early adopters as well as laggards who are slow to see the potential benefits or are reticent to use the technology for safety or security reasons (Dwivedi et al., 2022). Digital technology and the digital twin concept have become essential choices cities make (Zhang et al., 2022), and trends in urban digital transformation will be explained in the next section.

3. Metaverse projects for cities - opportunities and challenges

3.1. Research context

As mentioned earlier, the Metaverse is frequently characterized as the internet's successor, in which users can interact with each other and digital objects in three dimensions rather than simply browsing websites or using social media platforms. Thanks to its direct effect on user satisfaction, it provides various new opportunities for entertainment, social interaction, education, and commerce (Suanpang et al., 2022). Since the first year of the Metaverse, scholars have conducted extensive research on the Metaverse, which mainly covers three aspects: (1) The study of the Metaverse ontology, (2) Theoretical study of the Metaverse, (3) Applied research of the Metaverse. This third aspect is very significant due to the adopted purpose of the article (Wang, 2022). The state of the art shows the impact of the formation and development of the Metaverse in various fields already. Still, there is a relative lack of research exploring the path of Metaverse realization from the perspective of city or territory – the research gap. This research context related to urban areas and their specificity as a research subject seems exciting and has excellent scientific potential. Another interesting research context is cities' adaptation of the Metaverse to build their competitive advantage.

The literature analysis regarding the context of using Metaverse in cities indicated that this is a relatively new problem. The search in the SCOPUS database by keywords: (a) Metaverse AND city - this resulted in a surprisingly small number of 120 publications, with the first article only appearing in 2010 (in 2023 - 60 do documents); (b) Metaverse AND project AND city - 16 documents ((in 2022, the first five publications; in 2023 - 10 publications; in 2024 - 1 publication). The in-depth study of the literature shows that Metaverse AND city documents described the scopes: Sustainability and urban planning and development (e.g. Dorostkar, Najarsadeghi, 2023; An, 2023), Cities and Territorial Brand in The Metaverse (e.g. de Almeida, 2023), Metaverse applications in smart cities and in smart hospitality or tourism (e.g. Yaqoob, Salah, Jayaraman, Omar, 2023; Buhalis, O'Connor, Leung, 2023).

In practice, more and more cities are increasingly piloting different technologies within the Metaverse ecosystem to provide more inclusive city development to ensure the needs of diverse community groups are fully represented and proactively engaged at all levels. The cities from Dubai to Seoul are rushing to announce their pilots that help serve citizens in the Metaverse, expand their local and global presence, and attract Web 3.0-focused businesses. How cities can use the Metaverse to develop a more people-centered strategy to maximize the positive impact of various technologies and minimize their risks is becoming increasingly important (Tampere Metaverse Vision 2040, 2023).

There is, therefore, an absence of a more formal concept for a Metaverse city in a competitive advantage context, and this study is an opportunity to create one.

3.2. Research method

We conducted an exploratory study to achieve the article's purpose and answer the research question: (RQ) *What is the potential of Metaverse projects for cities as a tool for building competitive advantage?*

The type of qualitative research was selected. A multiple case study was chosen as the research method. A case study is "an empirical study that examines a contemporary phenomenon in depth and a real context, especially when the boundaries between the phenomenon and the context are blurred" (Yin, 2009). Considering the specificity of the city context and its characteristic opportunities and limitations, the study was cross-sectional.

The main reason for using multiple cases in this study is that it allows us to explore the complexity and richness of the Metaverse phenomenon under investigation and to capture its various dimensions, perspectives, and facets. By presenting and comparing three different cases of cities (1) **Seoul,** (2) **Tampere**, and (3) **Dubai**, we can gain a deeper and broader understanding of the phenomenon and uncover its underlying mechanisms, causes, and effects. The choice of these cities resulted from the identified advancement of these cities in the Metaverse implementation process and the described slightly different experiences in this process.

The basis for a cross-sectional case study research is information collected from various sources, including strategic documents of cities regarding future development published as PDF files or as information posted on websites, World Economic Forum reports, reports and studies of organizations related to the development of the Metaverse, e.g., materials published by the Metaverse Institute. The Metaverse Institute is made up of a group of pioneers in the Metaverse, Digital Twins, AI, Smart Cities, and related technologies. The Metaverse Institute works collaboratively with UN agencies, Governments, NGOs, private sector companies, and research institutions to define Metaverse strategies, business models, target operating models, and governance and compliance audit controls (Assembly Outcomes Report, 2022). Additionally, reports from research institutions such as the China Academy of Information and Communication Technology the Tampere Institute, and consulting companies such as PwC were used.

3.3. Analysis of selected case studies

The cross-sectional case study and comparison of three cities provided valuable insights into cities' challenges in creating a metaverse project. The analysis of the collected documents indicates the importance of specific activities undertaken by city offices and their partners. This allows us to identify repeatable decision-making areas that become future potentials of Metaverse for cities (Tab. 2):

- Strategic importance and role in building competitive advantage - cities create strategic documents of long-term visions, which include models and directions of city development using Metaverse. Target competitive advantages in this area are also indicated.
- Necessary resources - Required technological resources are mentioned here, but human and knowledge resources are also necessary to implement the city development strategy's assumptions in the Metaverse.
- Effects and benefits for Stakeholders - Cities identify a complex network of benefits for all Metaverse participants and partners involved in the project implementation.
- Limitations and challenges - There are also limitations related to the level of digitization of project participants, e.g., residents, tourists, and enterprises. In addition, trust, security, and adequate legislation are essential issues.
- Future Directions of Development - Consequently, city authorities declare that they will take further steps, work, and financial outlays that will increase the effectiveness of Metaverse, also in terms of gaining a competitive advantage over other cities.

The efforts presented in Table 2 are undoubtedly making the place/city competitiveness, administrative efficiency, transactional transparency, and futuristic vision — factors that global investors, talents, and brands gravitate toward. Although metaverse cities have many advantages, they have weaknesses, including digital exclusion, disconnection from reality, technological dependence, security and privacy concerns, difficulty representing physical space, and digital and economic inequalities (Almeida, 2023). However, no consensus yet exists on how the Metaverse will evolve, leaving researchers to articulate a vision of how the Metaverse could work and operate and debate the implications for individual users, businesses, and society (Dwivedi et al., 2022).

Table 2.

Metaverse projects for cities - Case studies summary

Scope of analysis	Findings		
	Seoul	**Tampere**	**Dubai**
Strategic importance and role in building competitive advantage	- Seoul Vision 2030, the master plan of the basic directions of the city's administrative operation for the next decade until 2030 - The top vision presented in Seoul Vision 2030 is "Seoul, up and running again for fairness". The four future visions to be established by 2030 to realize the top vision are Seoul as a city of coexistence, a global leader, a safe city, and a future emotional city. - Seoul wants to be the first global Metaverse city, the first city to use real public services, and the first city to create a Metaverse city market.	- Tampere Metaverse Vision 2040 - We have developed one reasonable and likely **scenario** per the identified priority: Happiness, Equality, Governance, Sustainability, Well-being, and Health. - Putting the well-being and happiness of people at the very center of its Metaverse strategy, Tampere will work closely with citizens, businesses, universities, research institutes, NGOs, and governments worldwide to explore, identify, and optimize its Metaverse vision 2040 for the benefit of Tampere, Finland, the EU and the international community alike.	**- Dubai Metaverse Strategy with the aim for Dubai** - to "be one of the leading Metaverse economies, and a major hub for the global Metaverse community" by 03 Developing Metaverse use cases and applications in Dubai Government 02 Cultivating Metaverse talent through education and training 04 Adopting, scaling, and globally advocating for safe platforms - We aim to develop a new model for technological advancement and futuristic sciences, explicitly focusing on digital technologies and the Metaverse. It aligns with our broader strategy to promote digital growth, foster innovation, and achieve the objectives of the Dubai Metaverse Strategy.
Necessary resources	- Four policy directions have been decided to realize these visions through policies: the restoration of Seoul's hierarchical mobility ladder, the enhancement of Seoul's global city competitiveness, the realization of a safe urban environment, and the improvement of the city's dignity with elegance. Under the four policy directions, there are 16 strategic targets and 78 policy tasks to be pursued. - about $200 million to fund metaverse projects, giving out grants to universities and companies to help expand their technologies.	- We should look at the convergence technologies that may influence technological, economic, social, political, legal, and environmental development trajectories. - Cities need help to ensure that the urban Metaverse is more people-centered than our current political and governance systems. - Education, effective top-down and bottom-up communications, and fully facilitated dialogue at all levels will be required to ensure broad-based ownership and buy-in. - The social, economic, and ethical challenges associated with the urban Metaverse will require strong leadership on behalf of Tampere municipality.	- Dubai Metaverse Strategy aims to foster innovation in new technology. Dubai is already home to over 1,000 companies operating in the Metaverse and blockchain sectors, contributing $500 million to our national economy. - The strategy's key pillars revolve around extended reality (VR), augmented reality (AR), virtual reality (VR), mixed reality, and digital twins. Leveraging real-time data, machine learning, IoT, AI simulation, and blockchain, these pillars enhance human thinking processes and facilitate a more connected and interactive digital world. - Virtual Cities of the Future: A $54 Million Leap Into the Future of Dubai

Cont. table 2.

Effects and benefits for Stakeholders	- Metaverse Seoul aims to preemptively respond to citizens' desire for new virtual experiences and provide better public services. - It will be an essential communication tool for citizens in the new normal. It is an inclusive administrative service that everyone can take advantage of without any time and space obstacles. - The beta version of Metaverse Seoul presents Seoul City Hall in a 3D virtual space, where users can visit the lobby and the mayor's office as avatars, interact with other users, and even submit actual petitions to the local government - The pioneering use of public services in the Metaverse environment, aiming to eliminate bureaucracies existing in the face-to-face environment.	- With well-planned physical and Metaverse components, the city enjoys the trust of its inhabitants and shares its experience with global audiences. - Stakeholder education and engagement will be crucial to overcoming resistance to change and ensuring that public policies can keep abreast of rapid technological advancements.	- We saw key themes emerge around what stakeholders must do to be successful in embracing the Metaverse: Collaboration, Regulations, Openness, Business use cases - The first of several hyper-realistic virtual cities, Dubai will provide a wide range of attractions, offerings, and possibilities that will make you feel like you are there. - The Dubai Metaverse will include everything from universities and events to shopping malls and business districts.
Limitations and challenges	- Seoul Vision 2030 brings positioning: "Seoul, functioning again for justice." This positioning highlights that justice was part of the city, suggesting that justice stopped functioning due to some previous fact. The strategies of Seoul Vision 2030 and Metaverse Seoul also try to recover and restore justice in the city.	- Rethink and readjustment of societal norms, including what constitutes such significant cultural differences as notions of personal space, acceptable behaviors in public spaces, and other social norms. - Some may wish to escape reality altogether and exist solely via their digital twins. This could have profound implications for human society. - From retail to culture, from healthcare to education, our cities are ill-prepared for the disruption that the Metaverse will bring upon them.	- The region is undergoing digitalization and economic growth, with businesses and governments actively developing the Metaverse. Saudi Arabia, the UAE, Bahrain, and Qatar have regulations to promote the adoption of web3 technologies as part of their digital economic transformation programs. The UAE and Saudi Arabia are leading the way by making substantial investments in Metaverse ecosystems.

Cont. table 2.

Future Directions of Development	- In the future, Seoul plans to actively establish a global leadership position as a smart city based on its urban competitiveness, but in another environment, the Metaverse. - The intention is to position the city as a global city that values justice and co- prosperity, trying to build the image of a city of dreams and opportunities - Advancing Seoul's Future Forward with innovation - Seoul Metaverse. The goals of this visionary pillar include a futuristic urban ecosystem, smart transportation infrastructure, digital transformation, and urban sustainability. - The city's authorities have wanted to focus on the health sector, with leading technologies to alleviate the effects of bad air quality or develop a smart and digital health system, which includes monitoring tools based on advanced telecommunication and information systems. - We are yet to see how Metaverse Seoul will develop and, above all, what new uses will emerge in a future with various levels of urban reality.	- Tampere will continue to work closely with stakeholders at home and overseas to review the above strategies and proposals on an ongoing basis. These partnerships will help sustain efforts towards its Metaverse projects and inform interactions with vendors in a nuanced and people-focused manner. - Tampere should become a Metaverse learning laboratory and platform devoted to sharing knowledge, expertise, and experience for the benefit of humankind.	- Dubai's Metaverse Strategy marks a bold step towards the future of the digital economy. With its visionary approach and emphasis on innovation and growth, it aims to position Dubai as a global leader in the Metaverse community while fostering a vibrant and interconnected digital landscape for its citizens and businesses. - Aimed at creating 40,000 virtual jobs and adding $1.09 billion (AED 4 billion) to the economy over the next five years, the ambitious national-level strategy is arguably the first of its kind globally. - The Middle East and North Africa could experience a significant economic boost, with the Metaverse contributing over $50 billion to the region's GDP by 2035, as reported by Arabian Business.

Source: Authors based on the collected documents.

4. Conclusions

Metaverse is moving from conceptual construction and theoretical exploration to the rapid development stage of practical exploration and practical application in parallel. From the perspective of the current situation of Metaverse research, this paper allowed us to identify what Metaverse is for cities today and what challenges it poses in the future. When considering building a competitive advantage, modern cities must use the potential of new technologies. Since users in the Metaverse will interact in the digital space as virtual images, many problems in the real world can be avoided. The advantages of Metaverse cities include (1) better accessibility, so that users in different physical locations can enjoy the same information and experience; (2) better diversity, so that different user groups can enjoy a space to get along with each other free from physical resources; (3) better equality, so that users of different races, colors, and languages can enjoy equal development opportunities; (4) better humanity so that human culture to be passed on more healthily and perpetually (Wang, 2022).

The development of key technologies within the Metaverse is growing fast, and its rapid spread has stimulated numerous discussions about its potential to transform society, nations, and the world. Supporters of the Metaverse describe it as an innovation that will significantly impact people's lives and the city in the long run. This technology can significantly reshape, offering an immersive and interactive platform for stakeholders to effectively create the city's diversity. The Metaverse is still in its early stages, and some city municipalities have shared concerns about governance, ethics, privacy protection, and data reliability and accuracy. In conclusion, we hope that the technology and the creation of city Metaverses will have exhibited promising outcomes in revolutionizing the dynamics of city development, creating their competitive advantage.

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USING THE INSTAGRAM PLATFORM IN CREATING A PERSONAL BRAND

Katarzyna RADECKA

Politechnika Bydgoska im. Jana i Jędrzeja Śniadeckich; Katarzyna.woznicka@pbs.edu.pl,
ORCID: 0000-0001-8389-5652

Purpose: The purpose of the article is to present the possibilities of creating a personal brand image in social media.
Design/methodology/approach: The research analyzed literature materials on the development of social media and its use in personal branding. Compilations and reports covering users' online activity were analyzed.
Findings: Social media is becoming a tool for thoughtful personal branding, as well as proper two-way communication. Through the actions taken to create on Instagram, you can build an audience that will actively contribute to the development of your personal brand.
Research limitations/implications: Future research may be related to the creation of mentoring programs in the area under study.
Practical implications: The results of the survey can be used as input for designing training programs in the study area.
Social implications: Social media marketing means promotion conducted through a variety of means. This forces those who want to create a strong personal brand to be dynamically flexible and look for solutions that can optimize promotional and communication processes online.
Originality/value: This article is mainly addressed to those creating their personal brand on Instagram, who want to implement and improve their branding strategy.
Keywords: social media, personal brand, strategy.
Category of the paper: Research paper.

1. Introduction

New technologies have made it possible to adapt a selection of classic marketing tools to the growing array of digital marketing tools. The continuous development of social media has made it necessary for both large and small businesses to dynamically adapt to the changing environment. This results in the need to monitor these media, continuously educate themselves and stay abreast of all the changes taking place in this area. However, it is important to remember that the classical approach to marketing and management is still valid. The needs of the consumer are paramount, and it is these needs that should be kept in mind when marketing a product. Content published on social media is just such a product. It should be tailored to consumer expectations in order to "sell" it (Lupa, 2016).

Creating a personal brand and also managing it is becoming an increasingly popular phenomenon. Products or services offered by personal brands are carriers of specific personal representations. Creating the specific content associated with running a personal brand requires determination and great persistence on the part of the founders (Nowakowska, 2019).

The main purpose of the article is to present the possibilities of creating a personal brand image in social media. It discusses selected methods of marketing communication offered by the Instagram platform, used by specific individuals to create and strengthen the image of a personal brand. The goal was achieved based on literature studies of brand management and marketing theory and content analysis of accounts on Instagram. Information on personal branding was obtained during casual interviews with founders of leading brends from the list of top 100 Polish Instagrammers generated by ddob. The article presents tips on how to carry out the process of building a personal brand successfully.

2. The idea of a personal brand in the context of social media

A brand can refer to a great many meanings. It can be both an expression of certain characteristics of a product, benefits that are attractive and important to customers, values, culture, personality and the user (Razmus, 2010). A brand is made up of two groups of elements. The first is made up of functional elements, the presence of which can be determined objectively. These are the characteristics of a given product, such as size, volume, taste, durability. The second, on the other hand, is formed by virtual elements, which are assessed subjectively and individually by each customer. These include generated: emotions, associations, feelings, etc. (Altkorn, 1999). It is clear that from the perspective of building a lasting and strengthening competitive advantage for the brand, the company should place equal emphasis on both elements, keeping in mind, however, that it is the virtual elements that allow it to authentically stand out from the competition.

It is assumed that the first time the term personal brand appeared was in 1997, in the August issue of Fast Company Magazine, in the article We are CEOs of our own companies: Me Inc. To be in business today, our most important job is to be head marketer for the brand called You (Peters, 1997). This term was discussed in the book The Brand Called You (Montoya, Vandehey, 2003). Due to the practical nature of the term, its definition seems to be still evolving. Nevertheless, it can definitely be noted that the first attempts to define the scope and nature of a personal brand referred directly to brand management theory.

Referring to the understanding of branding proposed by L. de Chernatony (Chernatony, 2003), a personal brand can be considered an identifiable persona that represents enduring values that are recognized by the recipient as those that satisfy his or her needs to the highest degree. In this context, the identifiability of a specific personal brand and the values that are valuable from the perspective of the brand recipient are paramount. This definition, however, in no way addresses whether a personal brand is the result of a conscious action by an individual.

If we consider the issue of personal branding from a marketing perspective, each of us is a product and, unfortunately, is constantly subject to a simplistic or superficial evaluation by the recipient (Grochowina, 2018). The main component of personal brand building is image personalization. It is necessary to build a brand first, and consequently become a brand in itself. The strength of this brand is based on the reputation, popularity and credibility of the person. The term personal branding - in Poland referred to as "personal brand" - originated in the United States, from where it then reached Europe (Personal branding https://poradnikprzedsiebiorcy.pl/-na-czym-polega-personal-branding).

In Polish literature and practice, the English terms personal brand and personal branding are usually used interchangeably. While personal branding does not raise much doubt, it is difficult to compare personal branding to personal branding. This is partly due to the different scopes that the term "branding" contains in different fields. For example, in the graphic creative industry, branding will involve the visual distinction of a brand1, while for strategists it will be primarily the establishment of strategically perceived distinctive values, subsequently translated into the company's visual, verbal communication, product, service or organizational culture. It is clear that in the second case the understanding of the concept is much broader. Returning to the terms "personal branding" and "personal branding," it can be noted that in the literature and activities of specialists in the field, the use of the term "personal branding" results in a focus on image creation, while "personal branding" starts from an examination of an individual's personal potential and values, which are then communicated to the audience in an individualized manner and tailored to the goals and needs of both the personal brand and its audience (Walczak-Skałecka, 2018).

In the age of booming social networks, branding has long gone beyond the zone of pure commercialism. In the past, well-known products belonging to large corporations were called brands, and nowadays there has evidently been a stage in which the term "brand" is used to describe charitable organizations, public institutions, and with them their cities, sports clubs, services of various kinds, as well as individuals operating under their own name (Olins, 2009).

Personal brand creation, analogous to product branding, should not be a composite of random activities. It must be a process implemented from a strategic perspective. The process should be based on the idea of one's own development path, which is consistently implemented, although with the possibility of acting flexibly. Brand building consists of three consecutive stages (Trzeciak, 2015):

1. Building recognition - is primarily about communicating information about yourself to your target group. It is therefore paramount to identify the target group that a person wants to reach (including principals, target employers) and to plan the selection of media and tools that will make it possible for a person to be noticed by the individuals or other entities that make up the target group. If such treatments are effective, the likelihood of establishing cooperation will increase. With regard to the general brand, this stage can be called brand awareness building.
2. Reputation building - reputation is the result of gaining experience in a particular industry with the occurrence of successes in a particular field or the demonstration of certain qualities and their composition. To confirm reputation in relation to a personal brand, especially for people or companies that have not yet worked with the person, recommendations are used either verbally or in writing, also publicly available (e.g., added in social networks like LinkedIn or on the person's website). If the reputation is built on the Internet, then one should keep in mind the speed at which information is transmitted through this channel of communication. Regardless of the number of positive reviews, even a single bad opinion about a person, but accompanied by his or her name, can quickly undermine previous efforts (Olczak, Sobczyk, 2010).
3. Gaining "customers" - is based on building a belief in the need to work with a person, culminating in the establishment of cooperation. Getting to this stage of the branding process does not absolve reputation building, as it is necessary to maintain trust once gained.

More than one person can work for the success of a personal brand. A prerequisite for success is that the brand image is uniquely identified with a particular person. This is related to the fact that it is necessary to create a strong image that gives a sense of naturalness in perception, resulting from the image holder's own competence and skills (Kysztymova, 2013). Intensification of competition among personal brand varies and depends on the industry. It should be noted that a personal brand not only competes within personal brands, but also fights for position with large brands belonging to the so-called chains. Establishing yourself in the market is dictated, first of all, by the fact that you should demonstrate a professional approach and passion for your profession. A personal brand with its whole self should promote the approach associated with this activity.

Increasingly, both representatives of the younger generation and older Internet users are using new information and communication technologies to build their own brands. The development of social media is causing their users to take an increased interest in the possibilities of their use in various fields of activity. Conscious users are effectively using social media to build their own brands. Relatively few scientific articles have been written on the use of social media in the area of personal brand building. This topic is still under-researched and definitely deserves more scientific attention from modern researchers.

Social media branding is a relatively new issue. However, its foundations appeared much earlier, with the emergence of tribal marketing theory, built on the creation, or even subcultures, around selected brands. In social media, a community can be described as "a collective of Internet users who actively use this communication platform to exchange information and messages related to their common interests, beliefs or attitudes" (Smektala, 2006). A virtual brand community, on the other hand, is a collection of existing or potential brand customers who share interests, beliefs or life choices that are reflected in their purchasing decisions. These communities can be described as an online variety of brand-centered communities, whose members interact with the brand and exchange information with each other (Woisetschläger, Hartleb, Blut, 2011).

Delving into the social networks currently in operation in terms of how they can be used for personal branding, Instagram belongs to the group of add-on sites. Like YouTube and Pinterest, it allows you to post graphic or video materials and showcase your interests. The selection of well-thought-out graphic and video materials can strengthen or weaken the personal brand built in other media. At the same time, they are good tools for presenting niche interests or photography and filmmaking skills (Niedźwiedziński, Klepacz, Szymańska, 2016).

In considering a properly developed personal branding campaign on social media - especially on the Instagram platform, it is important to discuss the phenomenon of "storytelling". This term was formulated by Henry Jenkins in 2003. It encompasses a new way of telling stories, using different types of media, methods and points of view. It is a form that focuses on the message contained in multiple channels of communication. Different but complementary factors are present, ultimately outlining an elaborate message composed of several interacting elements. The content can change, mainly through the inspiration of the audience's story. Storytelling constitutes for it is a living communication organism that relies primarily on the transmission of content that evokes interaction. Influencing the development of a story brings users together, who identify with the characters in the story. This is crucial, as it allows the viewer to turn into a brand promoter (Radecka, 2023).

3. Instagram - analysis and research findings

The Digital Poland 2023 report shows that the number of Internet users increased by almost 3 million people, translating into an 8.5% increase in the Internet population. The number of active web users exceeded 36.68 million people, or 88.4% of our country's population. Poland has 27.50 million social media users, equivalent to 66.3% of the total population. As for the most popular social media, one of the growing platforms is Instagram. This tool is currently used by 10.4 million users in our country. 57.8% of this population are women, and 42.2% are men (Figure 1). Interestingly, every second user of the platform is a woman in the 25-34 age range (DIGITAL 2023 report https://datareportal.com/reports/digital-2023-global-overview).

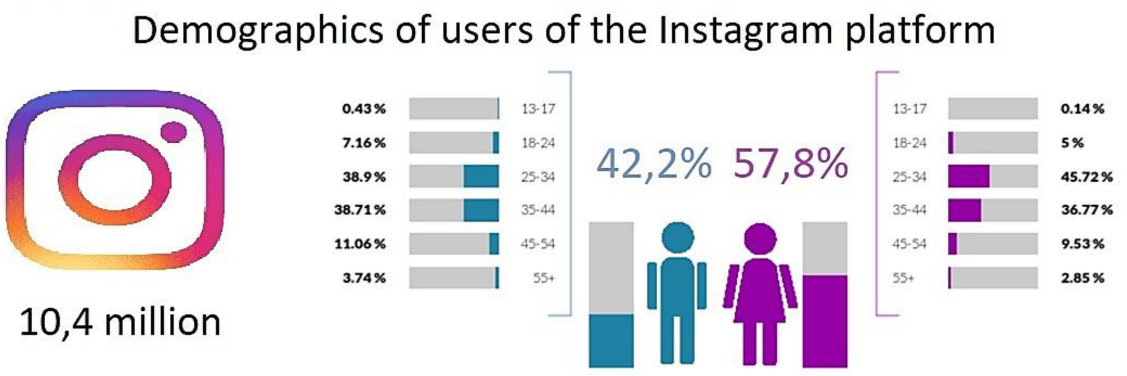

Figure 1. Percentage breakdown of Instagram users.

Source: Own study based on DIGITAL Report (https://datareportal.com/reports/digital-2023-global-overview).

Stories and reels continue to be popular. Reels are not only a separate format anymore, but all videos posted on the app. In addition, InstaStories through the Instagram algorithm are prioritized. In terms of marketing potential, the reach of Instagram ads in Poland at the beginning of the year was 25.1 percent of the total population. Unfortunately, the potential reach of Instagram ads in the country decreased by 300,000 (2.8 percent) between 2022 and 2023. (DIGITAL 2023 report https://datareportal.com/reports/digital-2023-global-overview).

Among those who professionally use the Instagram platform to build a personal brand are fitness trainer Ewa Chodakowska and married couple Anna and Robert Lewandowski and Veronica Sowa. These individuals tend to use several social media, as well as other online solutions, to achieve a synergistic effect and maintain ongoing contact with their audiences (ddob ranking https://ddob.com/ranking/instagram).

Presented below are partial results of our own research, conducted in the form of electronic free-form interviews sent to a group of people creating their accounts on the Instagram platform. The research targeted the most popular digital content creators. The interview questionnaire was conducted in September 2023 on a group of 30 of the most popular w Instagramers. An analysis of these accounts was also carried out based on observations made from May to September 2023. The aim of the measures taken was, firstly, to see how these individuals build their accounts and thus create their personal brand, and secondly, whether these individuals succeed in gaining new fallers who stay with them for longer.

In addition, the research material used for the analysis was participant observation by creating a personal account on Instagram. Data was collected for 3 years of observation starting in 2019. During this time, the profile featured publications about the presentation of prepared meals, since according to a 2019 Sotrender report, food was the most popular topic on this platform (Report http://s3trends.s3.amazonaws.com/poland/facebook/202210/202210).

The results of the free interviews are as follows. The response to the question regarding the strategy design process among the survey respondents was unanimous. This process should be preceded by answering several important questions. All participants began by thinking about what information about themselves they want, and especially for the comfort of their families, to present on their Istagram. Most began by presenting their own interests or earlier steps in their professional development. Sometimes posts from daily life were added showing, for example, photos with friends or other more spontaneous behavior. As the interviewees confessed, this was a deliberate act to build an emotional bond with the audience by showing that they were ordinary people "just like us". Secondly, most of them analyzed whether to restrict users' access to the account, thus creating a specific audience. Instagram, like other social networks, allows you to decide each time whether to make a given content public, visible only to a circle of friends. Conscious personal branding will therefore involve determining the reach of the content presented.

Another question asked about the combination of professional and private life and in what proportion the published content deals with these spheres. Here respondents' answers were already divided. As many as 60 percent of the users analyzed do not combine private content with the mainstream account. The justification for this was the comfort and safety of loved ones. Thirty percent of the respondents consider the best practice to be the ratio of 35% private content - mainly transmitted in the form of Storis (videos, or photos that disappear 24 hours after being added) to 65% content related to professional life. Ten percent of the surveyed group uses a different strategy by showing alternating professional and private content. Of particular note in this case is the account of fashion stylist Ms. Karolina D., whose form of fashion content has become highly controversial, according to news portals. Ms. Karolina breaks fashion standards so far considered appropriate in our country. Here, fashion content intertwines with private content to create a coherent image of a person followed by 111,000 users. This shows that users need content that they can identify with and is close to them.

The fourth question was partly related to the previous one and concerned who can share information from our profile and whether it will be possible to tag a given user in friends' posts. Here the respondents unanimously stressed that each sharing is a form of building reach and very often results in the growth of the account by gaining new observers. Noteworthy here is Ms. Sylwia Blach digital creator, whose very extensive content addresses, among other things, the problem of accessibility for people with disabilities. Shares of her posts have a significant impact on public awareness.

Target groups, or audiences, were also asked. Most people said that the beginnings were very difficult in this matter, mainly due to heckling. Fortunately, clearly defined rules regarding acceptable and unacceptable behavior allowed the account's audience to self-select.

A great deal of data was obtained through participatory observation, which involved creating one's own account and adding content related to the presentation of prepared meals. The analysis of the obtained results made it possible to create guidelines for the creation and dynamic development of an account on the Instagram platform.

It turned out that creating content within the account is very engaging especially if you want to build a large enough audience. It is necessary to properly prepare for these activities, namely to analyze similar accounts. Not to duplicate the method of message and content, but to avoid mistakes. It is necessary to fill in all fields correctly and if we are active in BIO include a link to our site. Posts should be aesthetically pleasing and preferably have their own aesthetics. Currently, the trend on Instagram is reels, or short videos. Therefore, we had to switch from initially adding photographs to short videos depicting, for example, the preparation of photographed meals. A lot of activity is very important. On average, you should add at least two posts per week, because the lack of such activity makes our account no longer attractive. In the case of a running account, when this activity decreased, a decrease in the number of likes under the added photo/roll was observed after a long break. The declines were significant and accounted for about 20% fewer users when a post was added after more than two weeks since the last publication. It is also important to engage observers, which can be achieved through properly prepared Storytelling. Announcing posts related to a particular raw material in a starring role caused users to wait for more variations of its use. This gave a higher volume for each post in the series.

The account that managed to build accumulated 3,200 followers in its first year of operation. Compared to the leading Instagram users, this is quite a small audience. Even so, it still managed to attract two food companies to collaborate on content creation.

Over the years in which the study was conducted, the trends and algorithm of the Instagram platform changed. In order to efficiently build your account and create your personal brand, you need to keep this variability in mind.

4. Summary

Personal branding is one of the important elements in the practice and systematically developing theory of marketing. The main purpose of the article was to present the possibilities of creating a personal brand image in social media. User accounts with a large audience were analyzed. The owners of these accounts provided answers during casual interviews.

The research shows that it is important to know who the potential consumer is. The entire process of building a personal brand and its communication begins and ends with the user in mind. It is important to be aware of the fact that not everyone may like a personal brand.

Narrow specialties of business usually have a few hundred people each, which is quite enough to operate efficiently online.

In times of intense development of the Internet and social media, where information about a person is sought by potential employers, colleagues, but especially business partners, it is necessary to create a credible and engaged personal brand. Social media allows a brand to establish a real connection with its target consumers. Nowadays, noticing and, above all, valuing the relationship with fans is becoming a very important factor in building a strong brand image.

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DATA-DRIVEN APPROACH IN SUSTAINABLE CITY MANAGEMENT

Aleksandra RADZISZEWSKA

Czestochowa University of Technology, Faculty of Management; aleksandra.radziszewska@pcz.pl,
ORCID: 0000-0002-6390-9487

Purpose: This study aims to examine the relationships between the use of data-driven solutions in key areas of sustainable city management (urban planning, mobility and transportation management, and environment protection) and city's position in the global smart cities ranking (the IESE Cities in Motion Index).
Design/methodology/approach: A case study methodology is adopted to examine and compare the possibilities of implementing data-driven approaches in sustainable city management, in order to gain a better understanding of this new urban phenomenon. Data and information about data-driven smart city initiatives have been collected from secondary sources. The presented case studies were explored through desk research using online resources, such as the web pages of smart city initiatives. Smart Cities were selected based on their rankings in the IESE Cities in Motion Index 2022. In addition, multiple regressions were used to identify the relationship between the independent variables (environment protection, mobility and transportation management, urban planning) and dependent variable-value of city's ranking in the IESE Cities in Motion Index.
Findings: The results illustrate that the majority of cities use data-driven solutions in all categories to improve city management, efficiency and achieve sustainability goals. All research hypotheses have been accepted, therefore data-driven solutions implemented in all key areas of sustainable city management (urban planning, mobility and transportation management, and environment protection) positively influence performance of achieving sustainability goals.
Research limitations/implications: The selection of a limited number of case studies is a limitation of this research. It is therefore important to explore the potential of data-driven smart city solutions in urban development and city management in more detail by considering more cases. Future research should explore the impacts of other variables related to sustainability, which can determinate performance of sustainable city management. A future study should try to validate the result by using a wider sample.
Originality/value: The conducted research combines quantitative and quantitative analysis in order to identify the determinants of effective achievement of sustainable development goals in city management. This study provides a form of grounding for further discussion to debate over big data computing on forms of the operational functioning, planning, design, development, and governance of smart sustainable cities in the future.
Keywords: sustainability, data-driven cities, data driven technologies, sustainable city management, sustainable smart cities.
Category of the paper: research paper.

1. Introduction

As predicated by the United Nations, more than half of the world's population live currently in urban areas, and around 70% will be concentrated in the cities by the year 2050. This anticipated urbanization of the world pose significant challenges related to environmental, economic, and social sustainability (Bibri, Krogstie, Kärrholm, 2020). Nevertheless, modern cities have a defining role in sustainable development and a central position in applying advanced technologies to support progress towards sustainability in the face of urbanization. Sustainable smart cities, the leading paradigm of urbanism today, are seen as the most important arena for sustainability transitions in an increasingly urbanized world (Su, Fan, 2023).

Contemporary cities have a key role in strategic sustainable development. This is clearly reflected in the Sustainable Development Goal 11 (SGD 11) of the United Nations' 2030 Agenda, which entails making cities more sustainable, resilient, inclusive, and safe (United Nations, 2015). In this regard, the UN's 2030 Agenda regards information and communication technology (ICT) as a means to promote socio-economic development and protect the environment, increase resource efficiency, achieve human progress and knowledge in societies, upgrade legacy infrastructure, and retrofit industries based on sustainable design principles (United Nations, 2015). In particular, there is an urgent need for developing and applying data-driven innovative solutions and sophisticated approaches to overcome the challenges of sustainability and urbanization (Khan, 2022).

In recent years, there has been a marked intensification of datafication. This is manifested in a radical expansion in the volume, range, variety, and granularity of the data being generated about urban environments and citizens.

As a consequence of datafication, a new era is presently unfolding wherein smart sustainable urbanism is increasingly becoming data-driven. At the heart of such urbanism is a computational understanding of city systems and processes that reduces urban life to logical and algorithmic rules and procedures, while also harnessing urban big data to provide a more holistic and integrated view of the city. This is increasingly being directed towards improving, advancing, and maintaining the contribution of both sustainable cities and smart cities to the goals of sustainable development (Zhang et al., 2022).

Modern cities have a defining role in sustainable development and a central position in applying advanced technologies to support progress towards sustainability in the face of urbanization.

Among the numerous concepts addressing urban development, the smart city concept offers the most comprehensive and multidimensional approach to sustainable city management. A smart city is one of the latest concepts in the development of modern cities. The dynamic development of innovative technologies provides new opportunities in managing urban development. Nowadays, the transformations of metropolises into smart cities is a crucial factor in improving the living conditions of the inhabitants. The goal of the smart city concept is modern urban management using technical tools (Wang, Zhou , 2022).

A lot of publications try to conceptualize and define the elements and application domains that constitute smart cities, mostly through case studies or comparative case study analysis. However, it is argued that there is a need for research on effective strategies for cities to become smarter.

The literature does not pay much attention to the organizational and managerial solutions during the transition from a classic city to a sustainable smart city, therefore the paper try to explore the potential of the data-driven applications in sustainable city management and urban development.

The motivation for this study is to identify the core dimensions of the sustainable data-driven city management and their influence on a city's position in the global smart cities ranking.

This study aims to examine the relationships between the use of data-driven solutions in key areas of sustainable city management (urban planning, mobility and transportation management, and environment protection) and city's position in the global smart cities ranking (the IESE Cities in Motion Index).

The paper is structured as follows: After this introduction the next section presents the literature review with discussions of the research model and hypotheses development. Then research methodology is presented in detail. Finally, research findings are outlined and discussed, implications are explored, limitation and futures research are described.

2. Literature review and hypotheses development

The sustainable smart city concept has become extremely popular in scientific literature and contemporary management of urban development. Cities and urban areas comprise about half of the total world's population (Bakıcı, Almirall, Wareham, 2013). The transformations of contemporary metropolises into smart cities is a crucial factor in improving the quality of life and sustainable development. The urban population growth has been adversely affecting quantity and quality of services provided to the citizens. Smart cities aim at providing effective solutions. Various smart city initiatives by both government and private sector organizations have resulted in deployment of Information and Communication Technologies (ICT) to find sustainable efficient and effective solutions to the growing list of challenges facing cities (Caragliu, Del Bo, Nijkamp, 2011). Knowing the identified challenges and the expected increase in the number of urban residents around the world, there is an increasing need for new and innovative ways to manage the complexity of urban life.

The importance of smart cities derives from the future projections of a growing urban population (Pašalić, Ćukušić, Jadrić, 2021). According to the general accepted definition, smart cities should contribute to increased quality of life and better governance (Dameri, 2013).

A smart city approach was recognized as contributing to boosting the sustainability of cities environmentally and economically, and improving the delivery of services to their inhabitants In addition, smart city development is perceived as a process of building the capacity of the city's economic, social, and institutional infrastructures to enhance and conserve quality of life, socio- economic development, and natural resources (Shahat, Hyun, Yeom, 2021).

Smart cities initiatives try to improve urban performance by using data, information and information technologies to provide more efficient services to citizens, to monitor and optimize existing infrastructure, to increase collaboration among different economic actors, and to encourage innovative business models in both the private and public sectors (Marsal-Llacuna, Colomer-Llinàs, Meléndez-Frigola, 2015).

The sustainable smart city concept assumes that a city should be a creative, sustainable area that improves the quality of life, creates a friendlier environment and the prospects of economic development are stronger (Lee et al., 2014). Although there is no formal and widely accepted definition of a smart city, the ultimate goal is a better use of public resources, the improvement of the quality of services offered to citizens, while reducing operational costs of public administration (Zanella et al., 2014).

Peng, Nunes and Zheng (2017) defined a smart city as a city using a set of advanced technologies, such as wireless sensors, smart meters, intelligent vehicles, smartphones, mobile networks or data storage technologies. Other researchers (Guo et al., 2017; Herath, Mittal, 2022) claimed that a smart city is urban development based on the integration of many information and communication technology solutions to manage the city's resources. These definitions of a smart city emphasize the role of technology. However, a city can hardly become smart because of technology alone (Nam, Pardo, 2014). Other authors (Ortiz-Fournier et al., 2010) included citizens of smart cities in the definition of a smart city. The authors described a smart city in the context of its intelligent inhabitants, the quality of social interactions, and integration with public life. In the current perception of the smart city concept, there is a return to the needs and preferences of the inhabitants, which are the focus. Huang, Zhang and Wang (2017) also emphasised aspects of city management. They defined a city as smart if it was managed in intelligently, efficiently and sustainably. According to the assumptions of Allam and Dhunny (2019), a smart city is a city where public issues are solved using ICT, with the involvement of various types of stakeholders working in partnership with the city authorities. Tura and Ojanen, (2022) stress the importance of the integration of a city's various systems in creating a smart city.

The concept of Smart City seeks to make maximum use of modern technologies, mainly information technologies with the aim of achieving sustainable development goals. Social and environmental sustainability is a major strategic component of smart cities (Lee et al., 2023).

The importance of the environment protection in modern cities can be justified by the fact that the latter occupy 2% of the world's surface, have more than 50% of the world population, consume 70% of global energy supply, and generate 75% of GHG emissions (Guo, Wang, Dong, 2022). It is clear that we can have a major positive impact on the environment by making cities more sustainable and greener thanks to the evolving digitally and computationally augmented urban environments that could change our relationship with nature by, for example, consuming less natural resources and protecting the environment (Razmjoo et al., 2022).

Improving environmental sustainability through anti-pollution plans, support for green buildings and alternative energies, efficient water and waste management, and policies that help counteract the effects of climate change are essential to ensure the sustainability of cities over time (Su, Hu, Yu, 2023). Therefore, the first hypothesis of this study is thus as follows:

H1: Data-driven solutions in area of environmental protection positively influence performance of city management.

Transport and traffic management is generally the most popular area of using data-driven solutions within smart cities and sustainable smart cities (Savastano et al., 2023).

Cities of the future face two major challenges in the area of mobility and transportation: facilitating travel (often over large territories) and access to public services. Mobility and transportation (in terms of road and route infrastructure, the vehicle fleet, public transit and air transport) affect the quality of life of a city's inhabitants and can be key to its sustainability over time (da Silva, Santos, Setti, 2022).

AI is now playing a key role in improving the development of cities. Among other benefits, it is helping local authorities collect information about city inhabitants, thereby facilitating efficient management of resources. For example, a city that uses AI to reduce traffic problems is in a good position to solve its mobility problems. AI tools make it possible to collect traffic information in real time, predict traffic jams, improve mobility, and decongest key areas (Singh et al., 2022; Cruz, Paulino, 2022). Therefore, the second hypothesis of this study is thus as follows:

H2: Data-driven solutions in area of mobility and transportation management positively influence performance of city management.

Urban planning in cities has always been considered a driver of sustainable development. Urban planning, in turn, is closely related to sustainability. To improve the liveability of any territory, it is important to take into account local master plans and the design of green areas and spaces for public use while also focusing on smart growth. New urban planning methods should focus on creating compact, well-connected cities with accessible public services (Son et al., 2023). Urban infrastructure management constitutes one of the key applications of the IoT and big data analytics in terms of monitoring, control, automation, and optimization. This involves the operations of roads, railway tracks, bridges, and tunnels (Sanchez et al., 2023). This relates to the events and changes associated with the structural conditions of urban infrastructure that can increase risk and cost and compromise safety and service quality.

In this regard, the IoT devices can be used to improve incident management, enhance emergency response coordination and service quality, and reduce operational costs in all infrastructure related areas (Wang and Yin, 2023). Therefore, the third hypothesis of this study is thus as follows:

H3: Data-driven solutions in area of urban planning positively influence performance of city management.

Cities have the potential to generate vast amounts of data. Data usage, data management, and operation are key processes associated with data. Finding the opportunities to innovatively use this data helps governments to forecast, respond to, and plan for the future. Additionally, access to real-time data and information can improve city management, resulting in environmental, social, and economic benefits (Xia et al., 2022).

The wave of the datafication of cities, as mainly enabled by the IoT technology, is giving rise to a new phenomenon–known as the data–driven city. Already, the number of objects connected to the Internet (e.g., computers, smartphones, WiFi-enabled sensors, mobile devices, household appliances, and many more) has exceeded the number of human beings in the world (Olaniyi, Okunleye, Olabanji, 2023). The continuously increasing number of networked devices deployed across urban environments will in turn result in the explosive growth in the amount of the data generated. Therefore, big data technologies have become essential to the functioning of smart cities, particularly in their endeavour to improve their sustainability performance.

3. Materials and methods

The presented study was conducted in September and October 2023. Its purpose was to determine the relationship between datafication and a city's position in the global smart cities ranking (IESE Cities in Motion Index 2022).

The IESE Cities in Motion Index is a study published annually by the business school of the University of Navarra (IESE) that aims to evaluate the development of the world's cities. It assesses several socioeconomic aspects of development, including human capital, social cohesion (which includes employment, female participation in the work force, etc.), governance, sustainable development, mobility and transportation, urban planning, international outreach, and technology. IESE Cities in Motion Index offers a platform for a comprehensive initial diagnosis of the cities and, through comparative analysis, aims to serve as the first point of reference. The index compares 183 cities globally, looking at 114 criteria grouped into nine dimensions: human capital, social cohesion, economy, governance, environment, mobility and transportation, urban planning, international profile, and technology (Lai, Cole, 2023).

A case study methodology is adopted to examine and compare the possibilities of implementing data-driven approaches in sustainable city management, in order to gain a better understanding of this new urban phenomenon. Data and information about data-driven smart city initiatives have been collected from secondary sources. The presented case studies were explored through desk research using online resources, such as the web pages of smart city initiatives. Smart Cities were selected based on their rankings in the IESE Cities in Motion Index 2022.

In addition, multiple regressions were used to identify the relationship between the independent variables (environment protection, mobility and transportation management, urban planning) and dependent variable - value of city's ranking in the IESE Cities in Motion Index.

The table below (Table 1) presents the values of dimensions related to sustainability according to IESE Cities in Motion Index 2022.

Table 1.
The results from the IESE Cities in Motion Index 2022- the value of dependent and independent variables

City	Value of IESE Cities in Motion Index (dependent variable)	Value of independent variables according to IESE Cities in Motion Index indicators		
		Environment protection	Mobility and transportation management	Urban planning
Amsterdam- Netherlands	73.03	14	20	13
Barcelona - Spain	65.13	67	10	15
Beijing - China	63.20	173	2	32
Berlin - Germany	76.42	21	7	5
Bilbao - Spain	47.31	57	73	88
Brussels - Belgium	58.67	60	15	61
Chicago - USA	70.22	118	56	25
Copenhagen - Denmark	71.47	3	31	23
London - United Kingdom	100.00	17	4	1
Moscow - Russia	49.75	146	60	91
New York - USA	98.25	105	1	2
Paris - France	84.99	49	3	34
Quebec City - Canada	55.90	36	110	45
San- Francisco - USA	69.03	132	14	121
Santiago - Chile	56.23	75	47	55
São Paulo - Brazil	36.43	126	177	133
Seattle - USA	67.69	102	81	17
Seoul - South Korea	71.22	76	41	22
Singapore - Singapore	73.33	78	58	26
Stockholm - Sweden	66.84	6	19	80
Sydney - Australia	63.41	52	128	119
Tokyo - Japan	80.30	25	62	112
Toronto - Canada	67.88	65	113	3
Turin - Italy	49.78	85	38	78
Vancouver - Canada	60.48	35	94	12
Vienna - Austria	69.20	11	8	11
Washington - USA	74.27	131	37	9

Source: The IESE Cities in Motion Index 2022.

The IESE Index were selected on the basis of temporal and thematic relevance, as it reflects the current results in several indicators, which are the priority indicators of city's technological development and sustainability.

4. Results and discussion

This section presents data obtained through secondary analysis of best practice strategies from selected sustainable smart cities. A case-study approach was used to explore the role of data-driven solutions in sustainable city management

A sample of 27 case studies that use data-driven applications deployed in real-world settings were identified from secondary sources and evaluated based on sustainable city indicators and related data-driven applications. All analyzed cities are included in the IESE Cities in Motion Index 2022 and they have been also included in the regression analysis. The results are presented in Table 2.

Table 2.
Data-driven smart city solutions related to sustainability – results of case study analysis

City	Examples of data-driven solutions related to sustainability
Amsterdam - Netherlands	smart lighting controls for energy efficiency and saving, traffic reduction
Barcelona - Spain	communication and green technologies, smart water efficiency, smart public transportation, smart noise control solutions
Beijing - China	intelligent urban infrastructure
Berlin - Germany	smart metering, smart transport systems,
Bilbao - Spain	smart parking systems
Brussels - Belgium	energy efficiency through smart sensors, smart mobility systems, real-time transportation information, waste management, environmental monitoring.
Chicago - USA	smart grid
Copenhagen - Denmark	smart energy incubators and energy labs, smart transport systems smart noise control solutions
London - United Kingdom	green and smart technology application in transport and parking, pollution and congestion control, smart noise control solutions
Moscow - Russia	intelligent transport systems
New York - USA	online transportation control system
Paris - France	smart applications for lighting, road circulation, waste management, and environment monitoring, online transportation control system
Quebec City - Canada	infrastructure management system, online transportation control system
San- Francisco - USA	interconnected smart streetlights system

Cont. table 2.

Santiago - Chile	smart meters, smart mobility and traffic management,
São Paulo - Brazil	innovation in mobility
Seattle - USA	smart grid
Seoul - South Korea	smart energy efficiency, intelligent transport systems
Singapore - Singapore	smart energy efficiency, intelligent transportation system, environment monitoring system,
Stockholm - Sweden	fiber optic communication network smart noise control solutions
Sydney - Australia	smart lighting system that utilizes sensors, smart waste management system that uses data analytics, intelligent transportation system
Tokyo - Japan	smart energy efficiency, digital connectedness, smart waste management, fully automated buildings, smart street lighting and meters, intelligent urban infrastructure, smart mobility management
Toronto - Canada	integrated mobility, minimized energy consumption, waste and emissions wit data-driven solutions, garbage robots that transport waste in underground tunnels
Turin - Italy	smart meters
Vancouver - Canada	integrated mobility, energy saving options with data-driven solutions
Vienna - Austria	energy efficiency via smart sensors, smart mobility systems
Washington - USA	smart grid

Source: own study.

The results illustrate that the majority of smart cities use data-driven applications in all categories to improve city management, efficiency and achieve sustainability goals. The most common data-driven solutions identified include: transport and traffic, mobility, energy, power grid, environment, buildings, infrastructures and urban planning.

Smart mobility and transport concepts have been implemented in cities for some time and cover a wide range of criteria. A variety of data-driven traffic control systems have been implemented for the efficient performance of city services and include interactive notifications of parking availability and distribution, bike and car sharing, digital public transit payment, predictive maintenance of transportation infrastructure, real-time public transit information, and road navigation. These applications support agent-based simulations of transport systems and many encounters they can face so that complex systems that incorporate and respond to a multitude of entities, including the shortest routes, minimal waiting times, and diversions aware from traffic congestions, can provide the optimum traffic solutions.

Cities apply the data-driven technology for transport and traffic management. The application of such technology pertains to the management of transport services on the basis of the received data, as well as the automatic control of traffic signals on the basis of the data collected on traffic congestion using sensors embedded in the traffic lights.

Advanced technologies allow, thanks to the city's Wi-Fi-network, real-time tracking of the quality of the air in terms of the presence of various substances as well as applying preventive measures in a timely manner, in addition to monitoring the condition and composition of green space in urban areas. The real-time data collected about the air quality in the city are analyzed to determine the impact of the solutions that have been adopted in terms of improving environmental conditions, as well as to identify the areas where further actions are needed.

Implemented in cities low-cost sensors detect noise levels and pollution, aiding in identifying and countering violations of the city policy in this regard. The smart noise control solutions used in cities enable to optimize and centralize the collection, integration, processing, analysis, and dissemination of information by the noise sensors of different suppliers and sound level meters distributed throughout the city.

The use of the data-driven approach to urban planning, the analysis of the data related to the population, allows to consider the emerging demand for shaping various venues. In other words, the application of the data-driven technology in planning is associated with the planning of districts, streets, as well as urban infrastructure based on the collection of information on the movement of residents and their activities.

In addition, multiple regressions were used to identify the relationship between the independent variables (environment protection, mobility and transportation management, urban planning) and dependent variable - value of the IESE Cities in Motion Index 2022. The results of regression analysis have been shown in the table 3.

Table 3.
The results of regression analysis

Independent variables	Standardized coefficients	t	Significance level
	Beta		
Environment protection	0,391	4,371	0,000
Mobility and transportation management	0,374	3,832	0,000
Urban planning	0,398	4,693	0,000
Dependent variable: value of the IESE Cities in Motion Index. R^2 = 0,813, F = 28,956, significance level = 0,01.			

Source: own study.

The result shows that R-square was 0,813, which demonstrates that independent variables explain 81,3% of the variance in value of the IESE Cities in Motion Index. The linear relationship between independent variables (environment protection, mobility and transport management and urban planning) with value of the IESE Cities in Motion Index is significant with an F-value of 28,956 at the 0,01 significance level. Therefore, the model fits this study.

The significance level of environment protection with value of IESE Cities in Motion Index was 0,000, which is less than 0,05. Therefore Hypothesis 1 is accepted. Environment protection was the second highest coefficient (beta = 0,391), hence, higher level of data-driven solutions related to sustainability positively influences the value of the IESE Cities in Motion Index and a city's position in the global smart cities ranking.

The significance level of mobility and transportation management with in value of IESE Cities in Motion Index was 0,000, hence, Hypothesis 2 is accepted. The beta value for this variable was 0,374. Therefore, higher level of level of data-driven solutions related to mobility and transportation management has a significant positive effect on the value of the IESE Cities in Motion Index and a city's position in the global smart cities ranking.

The significance level of urban planning with the value of the IESE Cities in Motion Index was 0,000, therefore, Hypothesis 3 is accepted. The test also showed that urban planning had the highest coefficient (beta = 0,398) compared to others independent variablen. In other words, sustainable urban planning has the highest positive impact on city's position in IESE Cities in Motion Index.

This study shows that the cities have a high level of the development of the applied data-driven technologies, but they slightly differ in the level of the implementation of such technologies in different city systems and domains with respect to sustainability areas. They also moderately differ in the degree of their readiness as to the availability and development level of the competences and infrastructure needed to generate, transmit, process, and analyze large masses of data to extract useful knowledge for enhanced decision making and deep insights pertaining to urban operational functioning, management, and planning in relation to sustainability.

5. Conclusion

The potential of big data technology lies in enabling smart sustainable cities and leverage their informational landscape in effectively understanding, monitoring, probing, and planning their systems and environments in ways that enable them to reach the optimal level of sustainability.

Big data technologies are certainly enriching experiences of how cities function. And they are offering many new opportunities for more informed decision-making with respect to knowledge of how to monitor, understand and plan cities development more effectively. Many smart cities across the globe have embarked on exploring and unlocking the potential of big data technologies for addressing and overcoming many of the pressing issues and complex challenges related to sustainability and urbanization.

Concerning the value of this work, the outcome will help strategic city stakeholders understand what they can do and invest in more to advance smart sustainable urbanism on the basis of data-driven solutions and approaches, and also give policymakers an opportunity to identify areas for further improvement while leveraging areas of strength with regard to the future form of such urbanism. In addition, it will enable researchers and scholars to direct their future work to the emerging paradigm of data-driven smart sustainable urbanism, and practitioners and experts to identify common problems and potential ways to solve them, all as part of future research and practical endeavours, respectively.

Lastly, this paper provides a form of grounding for further discussion to debate over big data computing on forms of the operational functioning, planning, design, development, and governance of smart sustainable cities in the future. Also, it presents a sort of basis for stimulating more in-depth research in the form of both qualitative analyses and quantitative investigations focused on the relevance of big data technology and its advancements as to accelerating sustainable development.

The conducted research combines quantitative and quantitative analysis in order to identify the determinants of effective achievement of sustainable development goals in city management.

However, it is clear that the selection of a limited number of case studies is a limitation of this research. It is therefore important to explore the potential of data-driven smart city solutions in urban development and city management in more detail by considering more cases. Nonetheless, the analysis of best practices in selected case studies the smart city model for the city can provide useful insights and practical guidelines.

Future research should explore the impacts of other variables related to sustainability, which can determinate performance of sustainable city management. A future study should try to validate the result by using a wider sample.

Moreover, as this study has demonstrated that applied technological solutions already exist across the selected cities, it would be extremely useful to conduct a wider and more varied comparison involving more other cities with a view to revealing more general trends in data-driven sustainable city management.

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THE ATTRACTIVENESS OF POLAND AS A CULINARY TOURISM DESTINATION

Don Vincent RANGEL Jr[1*], Jan MIKOŁAJCZYK[2], Robert ROMANOWSKI[3]

[1] Poznań University of Economics and Business, Instutute of Marketing, Department of Commerce and Marketing, Student Marketing Society (SKN Marketing); don.rangeljr@gmail.com
[2] Poznań University of Economics and Business, Instutute of Marketing Department of Commerce and Marketing; j.mkolajczyk@ue.poznan.pl, ORCID: 0000-0002-6767-4822
[3] Poznań University of Economics and Business, Instutute of Marketing Department of Commerce and Marketing; Robert.Romanowski@ue.poznan.pl, ORCID: 0000-0002-8585-6806
* Correspondence author

Purpose: The purpose of this paper is to identify and assess the main food products that can influence culinary tourism branding in Poland. Moreover, the purpose of the research is to explore familiarity with Poland's cuisine, first associations with Poland and its brand, attractiveness of Polish cuisine and identifying interest in culinary tourism overall. Most importantly, the survey indicates if visitors are interested in visiting Poland for the primary purpose of experiencing Poland's gastronomic tourism options.
Design/methodology/approach: To further understand and support secondary research regarding the topic of culinary tourism, a survey was launched on google forms and posted to several mediums to collect responses. These channels include AmazonMTurk, Facebook, and personal networking. In order to gain insight into Poland's attractiveness as a gastronomic tourism destination, survey results were collected from 123 individuals. These individuals were from various different foreign countries, the majority from the United States of America.
Findings: The survey begins with assessing and exploring associations with culture and cuisine, cuisine and the creation of memorable experiences, intentions to seek out culinary experiences and motivations for culinary tourism. Americans would be highly interested in visiting Poland because of variety of Polish cuisine. The most important flagship products were *pierogi* and *kiełbasa*. They are perceived as typical Polish food offer, that could also be an introduction to vast majority of other Polish authentic, tasty culinary achievements and rich gastronomic heritage. This kind of content should be included to tourism strategy on national level, to increase competitive advantage of Poland as tourist destination. According to research results, it would be even better to develop a culinary tourism strategy that would present content to people on the 25-55 age, with a promise of offering memorable culinary tourism experiences presented in attractive digital form. Special emphasize should be given to promotion of Wine, Beer and other alcoholic beverages. Intentional tourist know that tourist form from Spain, Italy, France or Czechia, but Polish growing wine market, very attractive craft beer market or mature spirits market could be an interesting surprise for demanding culinary tourists.

Research limitations/implications: The population sample was limited to 123 responses. Moreover, this study does not take into account the potential and very serious negative effects of tourism on a destination. The research was carried out before the war in Ukraine. This aspect should be taken under consideration in the future research on branding of Poland.
Practical and social implications: Recommendations are made for Poland's tourism strategy based on the literature review and results of the research and can be helpful in implementing a culinary tourism strategy in the future. The theoretical and practical application of the research can be used to help Poland in developing a culinary tourism strategy and further understanding of culinary tourists and their motivations to visit Poland as a destination.
Originality/value: This research adds value to Poland's tourism strategy and emphasizes the impact of culinary tourism on Poland's brand and image. The research results help to define Polish food flagship products to increase popularity of Poland among gastronomic tourists. Recommendations show activities, recommended by respondents, helping to increase the attractiveness of Polish gastronomic tourism based on both food and beverages heritage.
Keywords: gastronomic tourism, destination image, destination attractiveness, foodies, food experiences.
Category of the paper: research paper.

1. Introduction

Food has always been a significant part of traveling and "a biological necessity, but it was perceived in most western cultures as more of an amenity and hospitality service than something that would actually drive tourism. This is partly due to limited perceptions about tourism and what constituted food worthy of attention" (Long, 2018, p. 317).

Culinary tourism as a global trend is now a primary motivator for traveling to a destination. A deeper understanding of culinary tourists can assist countries like Poland who have not fully developed their gastronomic tourism offer. This form of tourism is deeply connected to the nation brand, a nation's image, cultural heritage and identity. The linkages between food and tourism also provide a platform for local economic development" (Nwokorie, 2015).

Gastronomic tourism is a newer concept. In an increasingly globalized world, newer generations are seeking out the most unique, diverse and culturally specific eating experiences. People wish to experience a culture directly through the food and the culture surrounding what locals eat. It has become a global travel phenomenon in recent years and can often be the sole reason that someone will travel to a place within metropolitan but also rural tourism (Romanowski, 2013a).

Gastronomy is a noteworthy method in experiencing cultural heritage and could be adopted into Poland's tourism strategy to utilize this new travel trend. A county's culinary heritage can create a lasting competitive advantage, further define a nation's brand in a positive light, and distinguish a country from competing destinations by expanding the tourism offering (Dinnie, 2016). Every country has a unique culinary heritage that has been defined throughout history. Culinary tourism is still a largely unexplored field with a large number of prospects for growth and potential for increasing visitation to a destination. It can encourage repeat visits, memorable stories and stronger emotional connections to a country and its brand. Food has a significant role in tourism, setting a vibe for a place and creating memorable experiences for people who visit new and exciting cities. Branding food in Poland can possibly create and achieve a sustainable competitive advantage if done properly. Nation branding is a technique for building a sustainable tourism industry in Poland that draws upon culture and heritage that Poland has to offer the world.

Poland's tourism industry in recent years has shown a great potential for growth as an emerging tourism market (OECD, 2018). Mature tourism markets like Italy, France, Germany etc. have all been heavily explored by the world. Poland has a strong domestic tourism market and policy and the potential for growth in the international tourism industry is exponential. Poland can further aid this growth and sustainably develop tourism through nation branding efforts in the area of gastronomic tourism. A gastronomic tourism strategy can be beneficial in strengthening Poland as a country brand and in attracting international visitors. Poland has a strong cultural heritage, robust history and a great national pride for everything that is Polish (Romanowski, 2013b). The international world can visit Poland that has utilized this heritage to increase its tourism value for visitors, both international and domestic.

The tourism industry operates within a rapidly changing global environment that is affected by the availability of information and new technologies. These factors significantly influence the development of tourism and innovation in destination management. New future trends involve adopting a tourism strategy that includes gastronomic tourism and ingesting culture in a different way than ever before.

The purpose of this paper is to identify and assess the main food products that can influence culinary tourism branding in Poland. The research include Poland's distinct culinary heritage, quality of food in Poland's major destinations and the variety of food offered across the country. To achieve the main goals, the research was carried out to determine interest in culinary tourism as a concept, effect of food experiences on a destination's image, and if food experiences are memorable and result in interest for return visits to a destination. Research concludes by exploring Poland's attractiveness as a culinary tourism destination, whether people would visit Poland with the primary purpose of exploring culinary tourism options, and what first associations exist with Poland's brand.

2. Literature review of gastronomic tourism concept

Food tourism has many different names that are interchangeable. Usually the name is derived from different areas of the world. Food tourism can also be known as ‘culinary’ tourism or ‘gastronomic’ tourism. These classifications all represent the same activity, but there are slight differences in the meaning that is understood by the different wordings.

Food travel and food tourism are simple and common phrases that are assumed to include beverages in the definition. There is a general assumption that when people go to eat, they also engage in drinking something as well. Using the word food in relation to tourism is considered a common and simple and reflects a distinct meaning that is not easily misunderstood (World Food Travel Association [WFTA], 2020).

According to the WFTA (2020), the phrase “Culinary tourism” is considered somewhat “elitist” and perceived as a term that adds additional meaning to “food” tourism. The word culinary can indicate or reference “time spent in professional culinary training to become a chef.” The WFTA states that this phrase already includes beverages into the overall assumption of the term.

Gastronomy tourism as a phrase is found by the WFTA (2020) as a phrase that is “used mostly in Europe, and mostly among speakers of romance languages. For them, “food travel” sounds very basic and banal – almost like cavemen hunting for food. “Gastronomy” is the term to explain an area’s culinary culture, and for them, it follows that “gastronomy tourism” makes the most sense. To native speakers, the phrase does sound a bit “elitist”, but in context, we understand why this term is used” (World Food Travel Association [WFTA], 2020).

“Within the tourism literature discussing food, numerous terms, namely ‘food and wine tourism’, ‘tasting tourism’, ‘gourmet tourism’, and most commonly ‘culinary tourism’, ‘food tourism’ or ‘gastronomic tourism’ are evident… ‘Culinary tourism’ is the most popularly adopted term to describe a form of tourism that significantly emphasizes a relationship between the insider and outsider created via food as culture...” (Ellis, Park, Kim, Yeoman, 2018, p. 250).

Gastronomic Tourism or Culinary tourism refers to the “Intentional pursuit of appealing, authentic, memorable culinary experiences of all kinds, while traveling internationally, regionally or even locally” (Williams, H., Williams Jr., R.L., Omar, 2014, p. 4) This definition of culinary tourism highlights that gastronomic tourism includes “authentic”, “memorable” experiences at all levels of a destination. Something that is authentic is generally considered as something that is “real”, “traditional” or “unique”, in that the culture cannot be replicated in any other place.

The World Tourism Organization (UNWTO, 2020) defines gastronomic tourism as “a type of tourism activity which is characterized by the visitor’s experience linked with food and related products and activities while travelling. Along with authentic, traditional, and/or innovative culinary experiences, Gastronomy Tourism may also involve other related activities such as visiting the local producers, participating in food festivals and attending cooking classes" (UNWTO, 2020).

Gastronomy as a concept has typically been a significant part of the tourism process. Recent years have displayed a bolstered interest in food travel and a newly defined tourism paradigm - gastronomic tourism. In the past, hungry travelers would simply visit a place to satisfy their hunger and in recent years, gastronomy has become "…a decisive influence on their choice of destination and who wish to satisfy their hedonistic and cultural appetite in addition to their physiological need to eat." (UNWTO, 2020).

This new segment of tourism is defined by a new need to be fulfilled, a need to experience culture through food. The value of a destination can now include a specific food related segment that caters toward the needs of visitors who visit a destination primarily to experience food.

The UN World Tourism Organization (UNWTO) Second Global Report on Gastronomy Tourism: Sustainability and Gastronomy (2017) states that "the gastronomic experience is as important today as visiting a museum, enjoying the music or admiring the architecture in a destination" (UNWTO, 2017).

The growing popularity of gastronomic tourism has served as a catalyst for the creation of many different forms of this tourism type. There are a vast array of food tourism experiences and new venues to experience the culture through food are constantly being discovered (table 1).

Table 1.
Gastronomic tourism forms

No	Gastronomic tourism forms	Description
1	**Food Tours and Food Trails**	Prevalent form of culinary tourism being established and supported by tourism businesses, government tourism organizations and economic development divisions. Tours take visitors to specific venues where they can view or taste food, while trails are venue listings and maps that can then be followed by tourists on their own. Since the venues chosen will presumably receive more business than those not chosen, the selection process reflects issues of power in a very practical sense… the selection process oftentimes reflects what is considered exotic and familiar to the potential tourists rather than what is perhaps representative of the group.
2	**Agritourism**	Staying on a farm is a unique way for tourists to experience Poland's landscape, people, agriculture, and food. Culinary experiences that occur during agritourism create authentic and local dining experiences that cannot be experienced in any other way. This segment of tourism allows visitors to experience the production process. Tourists will make their way to rural areas, experience the food production process, try traditional foods and experience a country directly through unique and very local dining experiences.
3	**Holiday Markets and Pop-up Markets**	Holiday markets are simply local, authentic, cultural heritage experiences that are mostly seasonal in nature. These markets offer products that are related to different holidays (Christmas, Easter, etc.) They provide unique insight into a culture and how they celebrate holidays, and generally seasonal products are sold that are not available any other time of the year. Pop-up Markets are randomly occurring markets that are set up on a whim, or they are scheduled and can become weekend markets.

Cont. table 1.

4	**Street Food and Food Trucks**	Food trucks and Street Foods are highly correlated. Food Trucks can essentially be considered as a vendor for street foods. “Urban dwellers – from creative class gourmands to late-night revelers, from savvy and cost-sensitive tourists to office lunch groups, from construction workers to school children – have flocked to these new businesses on wheels to get their fix of food that is inventive, authentic, and often inexpensive.” (Agyeman, 2017) These food experiences are strongly considered as gastrotourist experiences and serve an important place in the culture of many cities around the globe. It is a popular option because it allows for a great variety, a way to experience local culture, a way to socialize with locals and it helps to define a city’s cultural identity.
5	**Food and Beverage Museums**	This food tourism option is visiting to food museums and there exists are large variety of museums that have a sole purpose of displaying the history, cultural heritage, and offer valuable learning experiences to those who partake in the offer. This trend is newer in its existence in the field of “cultural tourism” and the interest in this offer is growing. Generally, visitors have the opportunity to gain knowledge about production in agriculture, and exhibits related to food. This category can include many interesting insights into products like beer, whiskey, wine, vodka, and chocolates (Bolesław, Karolina, n.d., p. 51).

Source: Own elaboration based on: Long, 2018, p. 320, Iwan, B., Iwan, K., 2014, p. 51; Agyeman, 2017.

The gastronomic tourist is a new identification of a tourist type, a person who purposely seeks out food experiences and wants to immerse themselves in the culture of a place. Food tourism is gaining importance and can be a defining experience when visiting a destination along with cultural experiences, visiting monuments and museums. “Over the years, in fact, culinary tourism is becoming an emergent alternative to mass tourism, in as much culinary tourists increasingly try to gain new experiences in an active, differentiated and unique matter than the choice of reaching standardized touristic destinations. What emerges is that many holiday destinations worldwide are very sought-after for their traditional food and beverages”. (Testa, Galati, Schifani, Trapani, Migliore, 2019, p. 3) Standardized services, goods and experiences are losing value as more people travel with the increased purpose and need to experience culture through food. Standardization in essence is subtracting from the value of a unique and differentiated cultural experience. Testa et al. (2019) essentially states that because holiday destinations are sought-after for their traditional food, destinations can increase their value of a destination by adopting culinary tourism into their tourism mix.

The food tourism industry is growing rapidly, proving that it is becoming a dominant force in tourism. The majority of people who travel consider food, and eating experiences a defining part of their vacation or visit to a destination. The massive contribution of food tourism to the overall tourism industry reflects that food is becoming a driver and primary motivation in choosing a destination. “The culinary tourism industry is now a significant force in the global economy. According to a 2016 summary, 88.2% of travelers consider food a significant component in their selection of a vacation destination, as well as in their vacation activities. The recent report by an Industry organization claims that travel and tourism contribute $2.3 Trillion to the global economy (WTTC, 2017) shows that culinary tourists can have a major monetary impact” (Long, 2018, p. 318).

Rapid growth of gastronomic tourism influences the way of using food content in national, regional and local brand strategies. To design a successful strategy it is necessary for authorities to define main factors effecting tourists' willingness to visit a place. In the paper, tourists needs have been identified and compared to current Polish cuisine offer. Poland has a significant culinary heritage, food offering, traditional experiences and a culinary tourism infrastructure that is likely to meet the needs of foreign culinary tourists that visit Poland. Poland has created and implemented a tourism strategy that does not include culinary tourism as a primary focus for increasing visitation. This research argues for the inclusion of culinary/gastronomic tourism into Poland's overall tourism strategy.

3. Methodology and results of own research

Carried-out survey aimed to determine the attractiveness of Poland as a culinary tourism destination and to investigate the potential impact on the nation's/destination's brand image.

A positive result can determine if Poland's unique and diverse food offering and culinary tourism offering can serve as a source of potential differentiation from other European destinations that compete for tourists. These unique culinary tourism offerings can produce a significant competitive advantage and increase the value of a nation's brand. Differentiation can refer to that causes a shift rea perception that confirms products and/or services are unique and different from the competition.

To further understand and support secondary research regarding the topic of culinary tourism, segmentations of food tourists a qualitative study and survey were launched on google forms and posted to several mediums to collect responses. These mediums include AmazonMTurk, Facebook, and personal networking. In order to gain insight into Poland's attractiveness as a gastronomic tourism destination, survey results were collected from 123 individuals and several of these responses were rejected due to survey response failure in the collection of the result, overall 20 survey responses were removed because of a failure to answer verification questions and inability to take the research seriously.

The majority of survey questions used a Likert Scale, which is a type of rating scale used to measure attitudes or opinions. Using this scale, respondents were asked to rate items on a level of agreement. 1 represented 'Strongly Disagree', 4 (in the middle of the scale) represented 'Indifferent' or 'Not sure' and 7 represented 'Strongly Agree'. The questions asked required respondents to either 'Strongly Agree' with the statement, 'Strongly Disagree' with the statement or anything in between reflected slight agreement or slight disagreement with the statement. The conducted survey consisted of 31 questions. One of these questions was an open-ended question.

A qualifying question included to help evaluate the integrity of the participants survey response, and to determine whether or not "they were taking the survey responsibly and seriously." The open-ended question was also used as a filter to determine which respondents provided a response that related to the topic of the survey. Twenty respondents were rejected based on the inability to provide the correct answer to the verification question and the inability to provide a response that related to the topic of the survey. Several open response questions from the rejected surveys were also answered with unrelated information to the topic. For example, over 5 respondents answered the question with information related to "Poland Syndrome", which is a condition that results in physical deformity and the term relates to a British Man with the surname of Poland.

The sample consisted of respondents from a variety of different countries. The most notable here is that 62.1% of respondents were from the United States, 13.6% of the sample were from India, 6% from the United Kingdom, 6% from Brazil, 4% from Canada and the rest were comprised of respondents from Japan, Ukraine, Italy, Germany and Bangladesh (Figure 1). The sample was nearly split in half with gender. 50.5% of the sample were female and 49.5% were male.

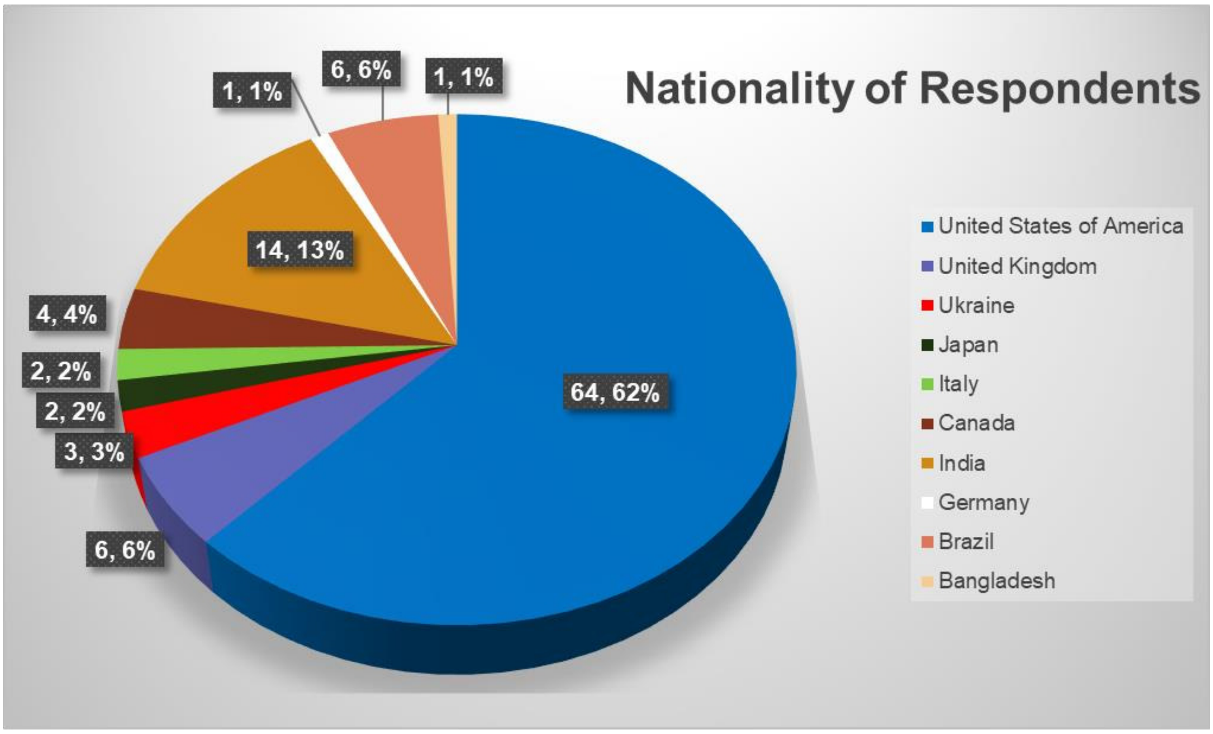

Figure 1. Nationality of respondents.

Source: own study based on personal research.

A large number of respondents are from the United States of America. These respondents have expressed a great interest in Poland. It is suggested that Poland modify their tourism strategy to target Americans. Americans are familiar with Poland and display interest in Poland's culinary offerings. There are also many Polish-Americans who were born in the United States and have never seen their homeland. Poland's current tourism strategy leaves out a large potential group of international visitors.

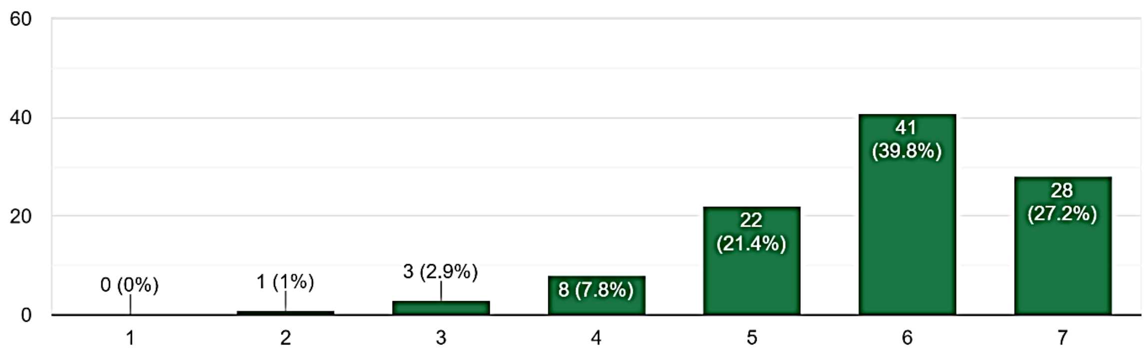

Figure 2. Identifcation with the Foodie Label.

Source: own study based on personal research.

A foodie was described (Figure 2) in the question description on the survey as someone who "is passionate about food and food culture". Results indicate that 88.3% of all respondents consider themselves as a foodie. The results exceeded expectations about how people view themselves. This follows with the global trend that people are more passionate about eating experiences and food culture. In general, from a sample that included people of many different nationalities, these food experiences are considered valuable.

Future tourism research must explore segmentations within the "foodie" classifications to determine if there are different levels of interest among people who consider themselves a "foodie". This knowledge could help destinations determine motivation and tailor food experiences to foodies that have varying levels of interest and dedication.

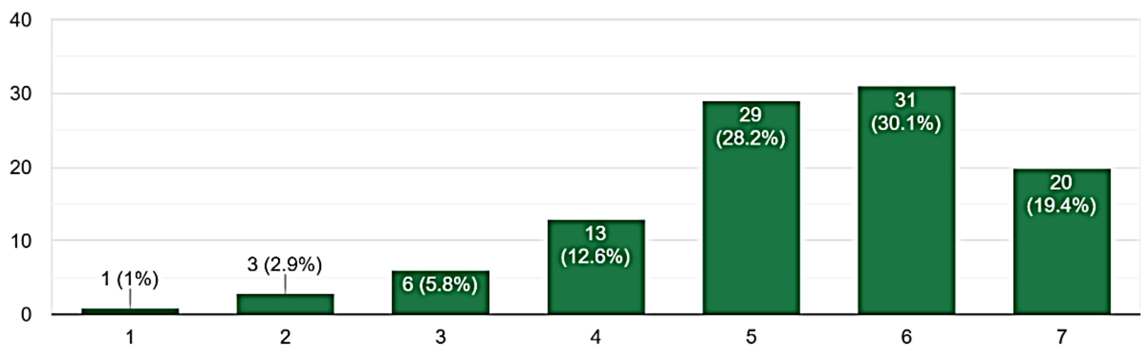

Figure 3. Food influence on Vacation Destination Selection.

Source: own study based on personal research.

The figure 3 displays a slightly different narrative than the Figure 2. It appears that even though some people consider themselves foodies, it doesn't always mean that they will always let food influence their decision making when choosing a destination to visit. This graph displays that there are at least 10% of people who are not influenced by the food offerings of a destination when they are making a choice to visit there. Therefore, identifying as a foodie does not always indicate that food has influence on choice.

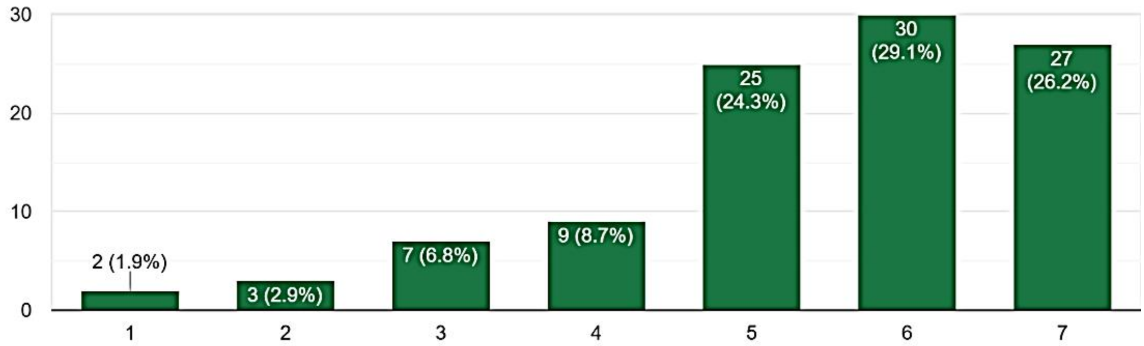

Figure 4. Researching Food Offerings Before Arriving to a Destination.

Source: own study based on personal research.

The vast majority of respondents indicated that they research the available food offerings before they go to visit a destination (Figure 4.), meaning that their culinary experiences are planned or researched before leaving on a trip. This suggests that there is a strong possibility that the "food experience" begins long after the trip begins and that destination's must engage in promoting the food offering online through a variety of mediums. Food research most likely will be done on social media platforms, google searches, word-of-mouth from someone within a network. Poland's tourism organizations will have to optimize their websites and update content related to food and culinary experiences to appeal to visitors who are searching where to eat when they visit.

Further research can help to determine if those people consider food as the primary purpose of their visit.

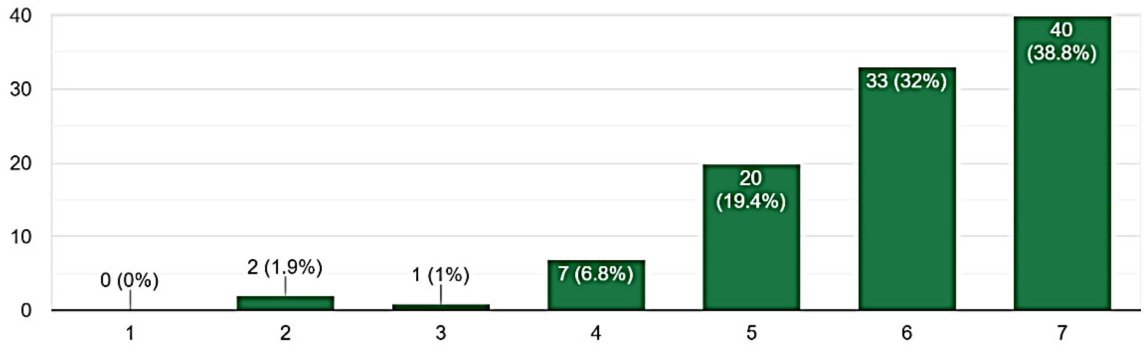

Figure 5. Experiencing Local Food and Connection with Local Culture.

Source: own study based on personal research.

Nearly 40% of all respondents strongly agree that local food experiences are a way to connect and involve themselves in a culture of the place they are visiting (Figure 5). This data supports secondary research findings that culinary experiences create a greater value for vistors and that gastronomy tourism serves as a way to create a better experience for foodies and people who visit a destination for food experiences as a primary and secondary purpose of visit.

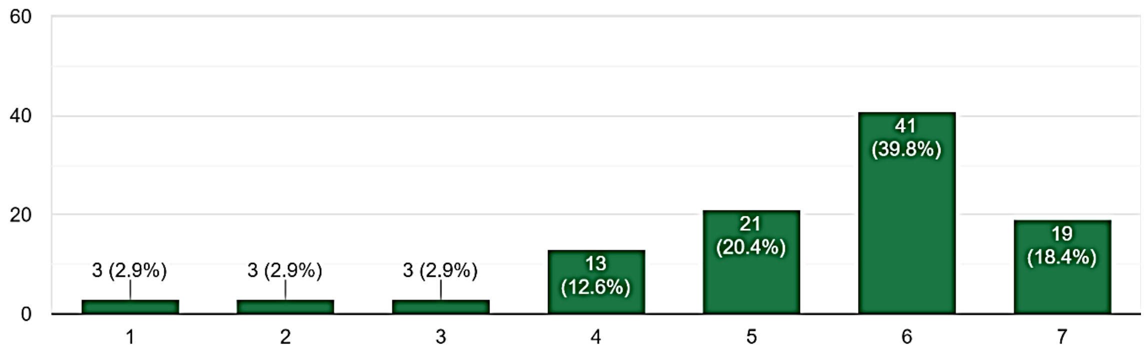

Figure 6. Influence of eating experiences on opinion (both postive and negative).

Source: own study based on personal research.

The likert scale (Figure 6) displays that an overwhelming amount of people more than agree (41 people or 39.8%) and Strongly agree (19 People or 18.4%) with the statement that food experiences play a role in improving or ruining the opinion of a destination that they visit. Over 20% of respondents agreed with the statement without a high degree of conviction. Over 12% of the ewspondents 'are not sure' or indifferent. The last almost 9% of the sample (Those who marked 1, 2, and 3) expressed that food experiences do not change their opinion of a place that they visit.

It is important to understand that the vast majority (78.6%) of people state that the food experiences availabe in a visited destination can effect (positively or negatively) their overall opinion of that place. Having postive eating experiences when visiting a new country can easily give shape or contribute to a postive nation brand image and encourage them to return (repeat a purchase).

Survey respondents were given the choice of many different food experiences that pique their interest (Figure 7.). The most popular option by a small margin was **street food** with 77 responses, 72% of total respondents answered this way. The second most popular option was Food Trucks followed closely by **food trucks** with 75 or 70.1% of respondents answering that this option was interesting to them. The third most notable category of culinary experiences as **traditional dining** with 67 respondents or 62.6% of respondents answering this way and showing interest. The least popular options were cooking classes and Agritourism offerings, that with 33 respondents (30.8%) and 16 respondents (15%) respectively. These answers are in a stark contrast with Poland's focus on agritourism as a form of rural development. It seems that these experiences are not as interesting to foreign visitors. Poland's current tourism strategy has a strong focus on domestic tourism and does not indicate or mention the popularity of Polish street food or food trucks.

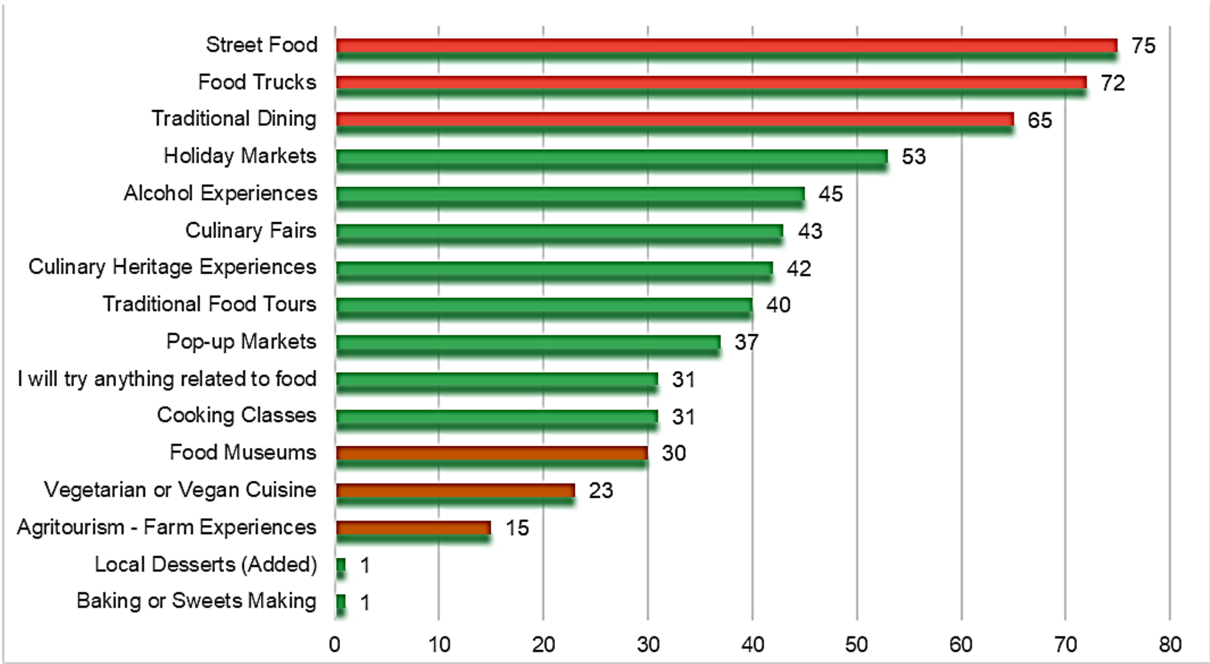

Figure 7. Culinary Experiences of Interest.

Source: own study based on personal research.

Food trucks are vehicles for serving street food, so it is safe to assume that street food and food trucks categories can ultimately be combined. There are minute differences between the two, but the relationship between the two is very strong. These two options are also valuable places to experience tradition food and foods with a strong cultural heritage. It is safe to say that all the categories bear a strong relationship to one another.

Alcohol experiences have 45 responses which make up 43.7% of the responses. The lower number could reflect that some respondents listed that they "do not drink". It is obvious that this category is popular and Poland will always be able to effectively connect its alcoholic beverages with culinary tourism experiences.

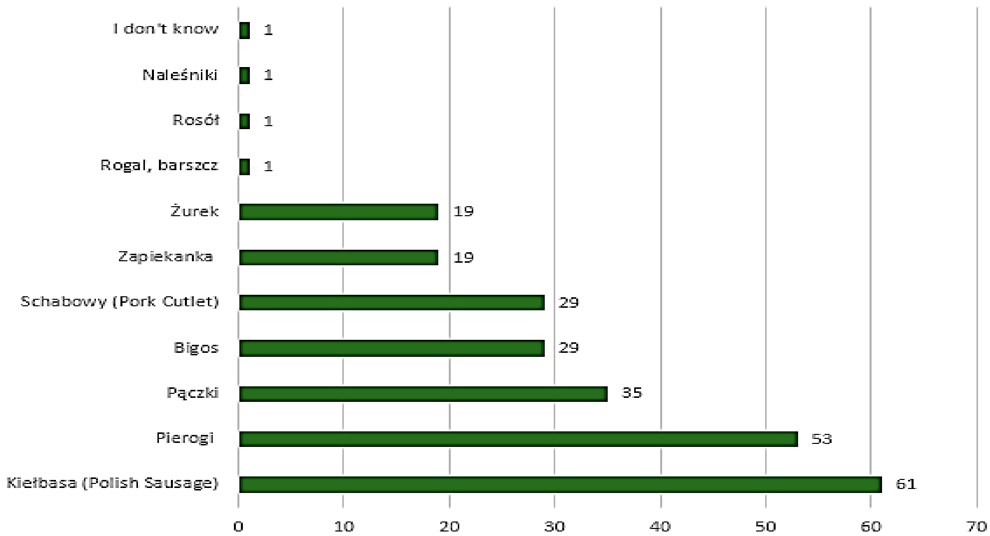

Figure 8. Culinary Experiences of Interest Related to Polish Cuisine.

Source: own study based on personal research.

Out of 107 responses, the foods that stand out amongst respondents are Pierogi and Kielbasa (Figure 8). Over 51% of all respondents noted that they are familiar with Pierogi. According to the results, Kielbasa is the most familiar food with 61 people or 59.2% of all respondents selecting this option. A distant third place option was Paczki with 35 votes, making up 35% of respondents. Polish mountain cheese represents the lowest level of familiarity with only 12 people indicating that they knew what this option was, that is only 11.7% of the total.

The "other" option revealed some interesting finds. A few respondents indicated familiarity with other Polish dishes that were not listed, these include: Rogale (3 mentions), barszcz (1 mention), Rosol (1 mention), Borscht (1 mention, results indicate that an American marked this response, but Borscht is not the Polish version of the dish), and finally Polskie nalesniki (thin pancakes).

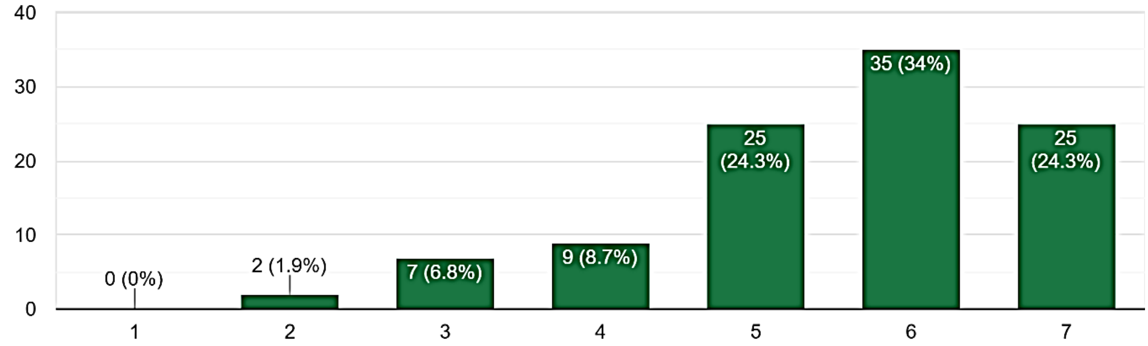

Figure 9. Declarations of Visiting Poland after Learning about Polish Food.

Source: own study based on personal research.

Most people strongly agree that their motivation to visit Poland would increase if they were given the opportunity to learn about the culinary offerings of Poland (Figure 9). The results indicate that Poland's tourism and brand improvement strategy can include educational and awareness options to boost awareness of the large and unique variety and value of the food offering in Poland.

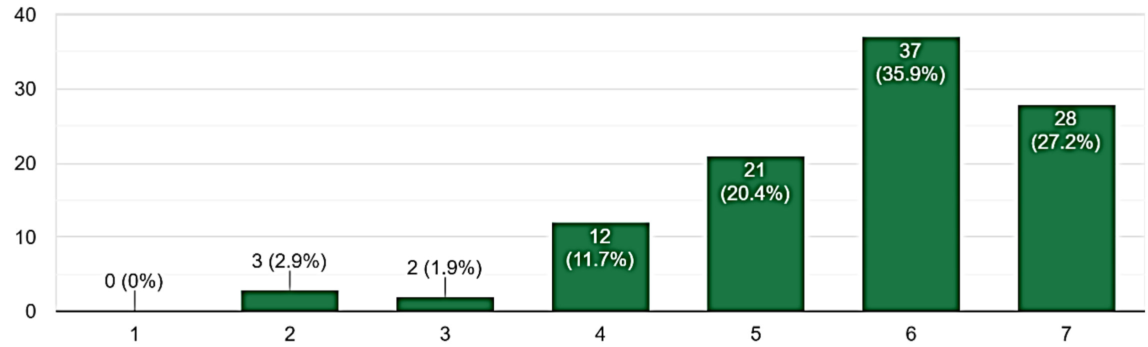

Figure 10. Chances of returning to Poland after Enjoying the Food Experience.

Source: own study based on personal research.

The majority of respondents (over 63%) strongly agree and agree with the statement presented in Figure 10. The majority of people would feel a greater desire to visit Poland again if they enjoyed the food experiences there the first time. Creating a valuable and memorable experience is incredibly important for prompting visitors to return to a country a second time, and gastronomy can essentially create this positive experience and encourage re-visits.

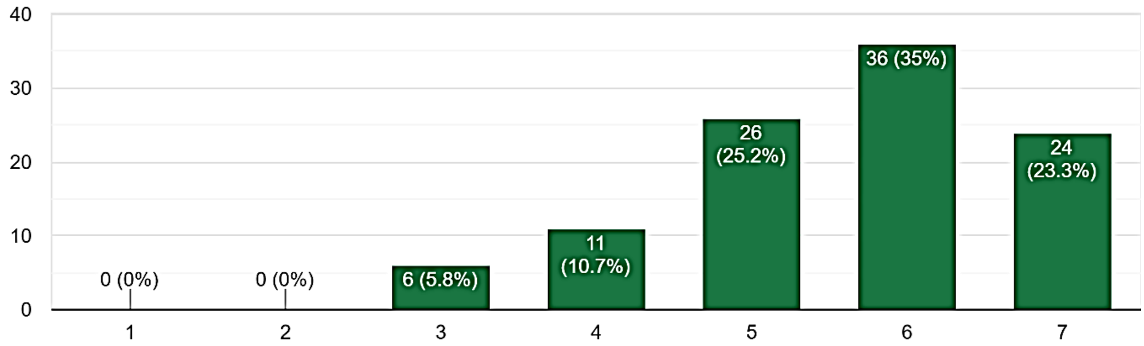

Figure 11. Gastronomy influence on Brand Uniqueness/Attractiveness.
Source: own study based on personal research.

The large majority of responses show very strongly that the food experiences available in Poland make Poland more unique and distinguishable from other countries. Food offerings clearly make Poland a more attractive place to visit and add a strong source of differentiation from other tourism destinations in Europe and around the world. Only 6 people or 5.8% disagree with the statement and believe that food does not make Poland a more attractive destination. Therefore, it is suggested that Poland create marketing and promotional campaigns that highlight the food experiences that can be had in Poland. It also creates great opportunity for the country to further build positive nation brand associations through Poland's culinary tourism offerings.

Qualitative knowledge on associations with Poland can serve as important information about Foreigner perceptions of Poland and its cuisine. Again, there is an overwhelming association between Poland and its food offerings, especially Pierogi and Kielbasa. Forty one out of 103 (39,8%) respondents mentioned food specifically in the open response questions. Which means that nearly 40% of all respondents' first associations with Poland are related to the food. Pierogi was mentioned specifically 8 times out of 41 (19.5%) of respondents who mentioned food. There was one respondent who alluded to Pierogi, but did not mention them by name, instead answering the question with "Dumplings". 9 respondents mentioned Sausage or Kielbasa as their first association or 21% of responses. Other responses included "sour cucumber soup", "Schnitzel", "Rosol", "pork", "Food Festivals", "Street food", "ice cream", "traditional food".

An interesting trend emerged that suggested that many people have associate “comfort food” with Poland’s culinary offering. Respondents indicate that this comfort food is “amazing, heavy and very meaty”, “Hearty, delicious and includes Potatoes”, or simply “Meat and Potatoes”. One respondent also noted that Polish food is “very fattening”, which could show concern that the food is too heavy or not good for health-conscious people. Those who are familiar with Poland understand that the culture has a large variety of foods and food offerings, including many vegetarian options. These options generally have no cognitive connection with the Polish Brand. Most people assume that the food is mostly “meat and potatoes”, which can also be assumed by the connections people have with Kielbasa sausages and Pierogi. Finally, one respondent mentioned this branding dilemma directly by saying that Poland has “Too much meat and vegetarians must have a difficult time living there.” A suggestion could be made to organizations promoting Polish Culinary Tourism offerings that there is a great opportunity to re-brand and show that Poland isn’t just about comfort food anymore and that many other interesting options are available and healthy. Lastly, one respondent mentioned that Poland has “Cheap food” which can be a common association for countries located in Eastern Europe.

Other mentions are the history, specifically Poland’s troubled history, war, World War 2, Communism, “It’s long history of suffering”, and a positive mention of Poland’s current journey and integration into western society. There are also many associations with Poland’s access to nature, natural landscapes, the mountains and its designation as “flat” and “agricultural”. Finally, there are strong religious associations with Catholicism and The Polish Pope that had strong international appeal and a strong influence on Poland’s national brand.

Poland was also mentioned to be a “cheap” and “inexpensive” destination. In relation to beverages, the only answer that occurred was people’s associations with Vodka, and one person specifically stated the “Bison Grass Vodka”. This beverage truly is Poland’s most important liquor, especially in terms of branding for foreign tourists.

There are several very powerful associations with Poland perceived by foreign tourists: the second World War, the Polish Pope, Poland’s nature and natural landscapes, Catholicism and people who know someone who is from Poland. Most importantly, the majority of associations are with food and vodka. Respondents did not mention beer or wine or any other associations with alcoholic beverages, which shows potential opportunity for education regarding wine tourism and beer tourism in Poland. Certain food products are shown to be heavily connected to Poland’s nation brand, and these products can be as important for Poland, as pizza is to Italy or sushi to Japan.

4. Discussion: Marketing and Promotional Recommendations for Poland Culinary Tourism Attractiveness

Recommendation 1: Include American tourists in Poland tourism promotional strategies

Americans are not included in Poland's Tourism Strategy as a target market for visiting Poland, however according to this research, a significant portion of Americans have expressed interest in visiting Poland for the culinary offerings and that it would either be a primary purpose for their visit, or a secondary purpose. American's make up a significant portion of the survey sample and have strong, positive associations or familiarity with Poland. This would serve as a potential target market for increasing foreign tourism numbers. Americans are also coming to Poland with increased military presence in the country. These military members would also benefit from Poland's culinary tourism offer and will be more likely to participate in tourism and culinary tourism activities.

Recommendation 2: Include gastronomic tourism into Poland's official tourism strategy in future strategic documents

Gastronomic tourism is proven to have a strong economic impact, improve a nation's brand image and help build positive country associations through the gastronomic product. There is a large international interest in culinary tourism activities and the market is mostly untapped in Poland. Poland's overall tourism strategy ignores food tourism as a driver or motivation for tourism in a location. Overwhelmingly the concept of visiting a place to try the food resonates in the global community and is not limited to a particular place. Research results showed that foreign visitors to Poland are very familiar with Poland, their history, their food and show a great interest in visiting Poland with the primary purpose of trying the food. Gastronomic tourism also creates memorable experiences, a strong competitive advantage, contributes to a strong brand image and benefits the county economically. There is a strong relationship between cultural tourism and culinary heritage, so a country like Poland is strategically capable of implementing gastronomic tourism into their marketing mix.

Recommendation 3: Maintain Polish culinary heritage and authenticity when developing future gastronomic tourism

Authenticity and traditional experiences were recurring themes in the data and an important indicator of satisfaction for foodies and culinary tourists of all ages and country of origin. This concept of authenticity can be additionally described as a "framework of the tourism sector, (that) refers to the offer of situations, places, natural attractions, objects and people who are not only genuine and original but have not been changed or staged for visitors – that is, they exist irrespective of the presence of tourists" (UNWTO, 2019, p. 33).

Development of tourism that occurs too quickly could result in a loss of authenticity or creating a gastronomic tourism product that caters toward the tourists and loses its value of cultural heritage. It is important to develop tourism carefully. These food offerings have a strong correlation with other aspects of cultural tourism, and both can benefit each other in a positive way in terms of image and attractiveness of the tourism offer.

Recommendation 4: Take advantage of Pierogi and Kielbasa as flagship culinary tourism products

There is an overwhelming interest and familiarity with Pierogi and Kielbasa in potential foreign tourists, along with positive associations of these foods being “comfort food” and “My favorite food” and “Delicious”. Research showed that both Pierogi and Kielbasa were both very interesting and that people wanted to try them, and survey respondents also displayed strong familiarity with both products, much more so than any other food offerings. Every great culture around the world has some sort of dumpling offer, including the Ravioli in Italy, Gyoza in Japan and Poland has arguably one of the strongest dumpling brands in the world.

Kielbasa and Pierogi have the ability to contribute positively to Poland’s nation brand and increase Poland’s image as a unique, valuable destination. These products are “unique”, “traditional”, “authentic” and can represent a group of culinary products that will differentiate Poland from other tourism destinations in the European Union.

Pierogi and Kielbasa are special and different and can be utilized as a tourism product to promote other traditional culinary heritage in Poland’s culinary mix. Both of these products share a high degree of familiarity amongst foreign tourists and a high degree of attractiveness. Many respondents noted familiarity with Pierogi and Kielbasa. These food offerings are considered as highly attractive, well-known and great association with the ‘Poland’ Nation Brand. It is suggested that future marketing and promotional activities by the Polish Tourism Organization utilize this knowledge to capitalize on these flagship products and use the positive association with these food products to add to Poland’s brand image.

Recommendation 5: Unique gastronomic Polish offer would easily give competitive advantage for Poland as a destination

Poland has a unique cultural and gastronomic heritage that has large amount of familiarity with the international community and research indicates a great interest in trying and eating these dishes. Poland’s branded foods and protected heritage serve as a great source of differentiation from other European tourism destinations. Poland has famous vodka offerings that are protected heritage, a quickly developing Food Truck and Street Food Scene, a rich history connected to the food and a wide variety of culinary tourism products that are available to offer to both the international and domestic tourist.

There are several ways that Poland can increase its competitiveness in the gastronomic tourism sector that include increasing the availability of experience-based tourism experiences, promote their wide array of protected products (PDOS, PGIS), and create new experiences that allow customers to engage in Poland's unique culinary heritage. Poland should create projects that boost the value of gastronomic heritage, develop a greater awareness in foreign tourists of the culinary offer that Poland has and promote the recognition and development of local gastronomy.

Recommendation 6: Create culinary tourism strategy on a national level

The research suggests that culinary tourism makes Poland's tourism offer more attractive and boosts the value of Poland's tourism brand. It is suggested that Poland create an umbrella organization that focuses on culinary/gastronomic tourism specifically and is meant to market and promote Polish culinary tourism products and experiences. As of now, Poland has many valuable organizations working at the regional, local and product levels, but no national strategy and the strategy lacks focus on international tourism. It is indicated in Poland's current tourism strategy that there is a strong focus on increasing domestic tourism and increasing visitation to rural areas where further development of agritourism can help solve this issue. A national strategy and management of Poland's brand using gastronomy would be beneficial to increase visitation of age groups that will spend more on the culinary tourism product.

Recommendation 7: Focus marketing efforts on the 25-55 age demographic

Results concluded that the specified age group between 25 years of age and 55 years of age had the highest rates of wanting to visit Poland for the primary purpose of food and for a secondary purpose. Together, this age range reflects a demographic that is overwhelmingly interested in experiencing Poland for their food offerings. Polish Tourism authorities state that this group contains the largest number of foreign tourist arrivals into Poland; thus, this group will likely spend at least 35% of their travel budget on food. This age group represents the largest number of arrivals and interest in visiting Poland for food. Increased visitation by this group will result in a greater economic benefit for Poland. It is highly suggested that Poland direct marketing efforts toward international visitor groups within this age range. Poland's gastronomic tourism offering is very attractive for foodies and people who seek to experience a destination through its culture. All age ranges will take advantage of culinary tourism as a secondary purpose of visiting, but 18-55 range shows the greatest potential for marketing efforts as these groups travel for a primary purpose as well.

Recommendation 8: Offer memorable culinary tourism experiences

A significant number of respondents in the data expressed that experiencing gastronomy in a destination creates a memorable an unforgettable trip that encourages repeat visitations. The majority of respondents agreed that they remember food experiences long after their trip has concluded. During the creation of Gastronomic tourism proposals in Poland, it is important that these proposed gastronomic tourism activities are creative, original, and create strong feelings and emotions to ensure a memorable experience. These activities must also maintain cultural authenticity to continue to be valued by the modern gastronomic tourist. Memorable experiences will also help Poland to maintain and further develop its brand domestically and internationally.

Recommendation 9: Develop digital marketing strategy campaigns, optimize website to ease the access for researching food offerings

According to research, respondents answered overwhelmingly that they research food offerings before they arrive in a new city, place or country. Over 26% of respondents "strongly agree", 28.8% "agree", and 24% "somewhat agree" that they engage in destination research related to the food offered, before they even go to a place. Nearly 80% of people believe that food experiences are important enough to spend time doing prior research, because they believe that food experiences are an important part of their trip. If people are actively researching, then it is important to expand awareness for Poland's food offerings and culinary tourism experiences online and through online promotional campaigns.

When researching "Poland food", "Polish food" or similar keywords on a Google search, Poland's tourism organization official websites do not appear organically at the top of the search results. If there are so many people researching options of 'what' to eat and where to eat, it would be a low cost and viable option to update the Polish Tourism Organization website content frequently in order to boost attractiveness to Google and increase organic rankings.

Further research can and should be done to determine if researching food before visiting a destination is correlated to being a foodie and how strong that relationship is.

Recommendation 10: Promote Wine, Beer and Tourism related to other alcoholic beverages

Respondents in the research indicate that there is great popularity surrounding Wine and Beer products. An honorable mention in the survey includes "Cider", where several respondents showed that they enjoy these alcoholic beverages. Poland can fully utilize their vodka, but also promote other forms of tourism that can give greater depth to their culinary tourism offering. Poland has a strong and growing wine industry that is currently under-utilized. This thesis does not mention Cider, but the Polish apple industry is very large and the apples produced are very high-quality and the Cider industry is also very robust. 65% of all respondents marked that they enjoy drinking wine. This is a great opportunity for Poland to promote their Wine products by incorporating it into their overall tourism strategy while simultaneously promoting agritourism in rural areas.

5. Conclusions

Poland is a unique destination that is rich with cultural heritage, culinary heritage and offers an attractive variety of gastronomic tourism offerings. Tourists can visit Poland and have an authentic, meaningful and memorable experience that will encourage them to participate in return visits to the country. Culinary tourism is heavily underutilized in the Polish Tourism Strategy. Polish tourism organizations at the local and regional levels are taking advantage of this growing and increasingly more attractive tourism niche, but strategy is lacking on a national level. Gastronomic tourism can become a catalyst that boosts and makes the Polish tourism experience more memorable and drastically increase positive associations with Poland as a brand. Adoption of gastronomy into the tourism mix can enhance the quality and variety of Poland's tourism offering and can add an additional venue for foreign tourists to experience Poland's rich cultural heritage and history. that Poland can use culinary tourism and its diversity of culinary heritage to increase visitation in future years. Poland has many food offerings and products that are familiar to many people. Several flagship products can represent Poland's brand that include Pierogi, Kielbasa and Vodka. They are perceived as typical Polish food offer, that could also be an introduction to vast majority of other Polish authentic, tasty culinary achievements and rich gastronomic heritage. This kind of content should be included to tourism strategy on national level, to increase competitive advantage of Poland as tourist destination. According to research results, it would be even better to develop a culinary tourism strategy that would present content to people on the 25-55 age, with a promise of offering memorable culinary tourism experiences presented in attractive digital form. Special emphasize should be given to promotion of Wine, Beer and other alcoholic beverages. Intentional tourist know that tourist form from Spain, Italy, France or Czechia, but Polish growing wine market, very attractive craft beer market or mature spirits market could be an interesting surprise for demanding culinary tourists.

As referred to research limitation, the population sample was limited to 123 responses. A larger amount of survey responses would increase the reliability and provide greater insight into the topic. Moreover, this study does not take into account the potential and very serious negative effects of tourism on a specific destination. The research was carried out before the war in Ukraine. Polish help for Ukrainians has changed a worldwide perception of Poland rapidly. It is highly recommended to do a research on the same topic after so many Ukrainians, but also volunteers visited Poland since the beginning of war.

Gastronomy can be a primary motivation to visit Poland and attract a new kind of tourist that respects culinary heritage and intentionally seeks out culinary tourism experiences that connect them to the local culture. Poland's culinary tourism products display a vast array of different and unique experiences that allow Poland to differentiate itself from other European tourism destinations based on food tourism. Future trends indicate that food will continue to be a vital factor in tourist motivations to decide on a destination to visit. According to the UNWTO (2019, p. 32) Memorable experiences must meet certain requirements that include, "socialization or interaction with the environment, promote a high potential for learning, theme-based, offer enjoyment, relaxation or evasion, provoke venting of emotions, integrate resources from the territory, and include tangible elements or souvenirs that the customer can take home".

Poland may adopt culinary tourism into their overall tourism strategy and framework. The strategy must include building memorable experiences, preserving cultural heritage while developing the segment, developing online marketing for food tourism (Education, awareness, promotion) and taking advantage of Poland's "flagship" products to build the brand.

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NGO MANAGEMENT IN TERMS OF COOPERATION WITH LOCAL GOVERNMENT ORGANIZATIONS

Anna RYBAK

University of Technology Czestochowa; anna.rybak@pcz.pl, ORCID: 0000-0003-3981-0273

Objective: Non-governmental organizations (NGO – 3rd sector) are a key element of today's society. Activities carried out by these organizations strengthen the sense of security and participation in social, political and economic life. The article aims to examine the extent to which cooperation with local authorities affects the management of non-profit organizations.
Design/methodology/approach: Based on literature research, the following research hypotheses were formulated related to the level of income of the local population, cooperation between NGOs and local authorities, building social capital by creating groups to undertake motivational activities and satisfaction with cooperation with the local government. Based on the Central Statistical Office data, the above hypotheses were verified using a correlation matrix with voivodeships as independent data.
Findings: Many non-profit organizations benefit from financial support from local governments and, thanks to them, build social capital, although this applies primarily to the organization's members. Thanks to the research, it can be confirmed that cooperation between organizations and local governments is successful, and the fragmentation of NGOs does not affect the quality of this cooperation.
Research limitations/implications: Several limitations were noted, including: the database is an average of organizations at the voivodeship level. The examined management evolution is only partial and highly generalized. There are no qualitative indicators to be included in future research.
Practical implications: The third sector in the Polish economy plays a complementary role to society's needs for public services. Thanks to our findings, we can conclude that the fragmentation of these organizations is a response to heterogeneous needs.
Social implications: NGOs are organizations that arise from grassroots social needs. We believe that it is important for these social life entities to take more into account the beneficiaries in their activities, financial independence and strengthening the quality of cooperation with local governments would allow them to improve the quality of services addressed to excluded social groups in a given region.
Originality/value: The article systematizes knowledge regarding the theory of creating non-governmental organizations. Analyzing the research results, it was discovered that the number of NGOs is not related to the income diversity of the local community.
Keywords: NGOs, management in the third sector, non-governmental organizations, local government units, local government.
Category of the paper: Research article.

1. Introduction

Management practice has entered the structures of non-governmental organizations. The development of the third sector plays a complementary and supporting role in other sectors of the national and international economy. However, until recently, research on NGOs paid very little attention to the phenomenon of managing these organizations through the prism of cooperation with local government units.

Currently, in management practice it is known that non-profit organizations are substitutes for the market mechanism in the allocation of resources (human, financial or material). Due to the varying availability of resources, limited access and scope, and the increased competition these organizations face, the number of people working in NGOs varies greatly due to financial opportunities (Schubert, 2019), staff reserves, and operational stability (Kim, Kim, 2016). As a result, the optimal amount of resources in an NGO may depend on local entrepreneurial environments and have a reciprocal effect on local governance. Surveys conducted by ALNAP (*Active Learning Network for Accountability and Performance*) conducted in 2012 and 2015 among 631 non-governmental organization leaders from 183 organizations showed that inappropriate social relations with entities, including local government, lack of proper balance between efforts to create contact networks and fundraising are the greatest obstacle to the development of the third sector. In fact, the vast majority of organizations operating in Poland do not have a long-term vision of development, and cooperation is usually based on the experience and knowledge of local leaders. This means that NGO managers need to understand how markets work to better adjust the functioning of these organizations. The article is divided into three parts. The first one discussed theories explaining the role of NGOs in modern society, their role and reasons for cooperation with the government. Based on these theories, four research hypotheses were formulated. Then, the database and methods for verifying the hypotheses were presented. The last section discusses the results, paying attention to the limitations of the research, and draws conclusions for future research.

In this article, we analyze non-profit organizations in terms of the management they adopt in order to better adapt their activities to the expectations of beneficiaries and at the same time maintain statutory independence from local government units.

2. Theoretical foundations of research on non-governmental organizations

In a growing "NGO market" and competition for financial resources, attracting and retaining sustainable sources of funding is an ongoing and key concern for NGOs (Michel, Rieunier, 2012). Nonprofits must differentiate themselves from other NGOs and strengthen their ties with donors, which are local governments, making it easier for them to identify with the social purpose of the organization and thus triggering their intention to provide subsidies (Sargeant, 2008; Paço, 2014; Wymer et al., 2021; Rios, 2023). The literature on the management of non-governmental organizations is quite sparse. This has led many researchers to examine the factors that contribute to the growth of the nonprofit sector. Moreover, given the ever-increasing size of this sector, it will be important to examine the role of non-profit organizations in meeting community needs and find opportunities for NGOs to cooperate with local governments. In a general sense, management is a set of activities, including planning and decision-making, organizing, leading (managing people) and controlling, directed at the organization's resources (human, material, financial and information) and performed with the intention of achieving the organization's goals in an efficient manner (Baruk, 2006). Management in relation to NGOs is primarily intended to focus on achieving the organization's goals and mission, generally results-oriented and stakeholder-oriented (Plaisance, 2022). Non-governmental organizations can be defined as pro-social organizations, known for promoting various moral goals, such as humanitarian aid and social issues or freedom, justice and equality, which are characterized by higher moral capital and social legitimacy (Romero et al., 2022) NGO's pro-social involvement is a network of connections between stakeholders where both local governments and beneficiaries are administrators and recipients of resources (Plaisance, 2023). Research that explains the involvement of governments in financing the activities of non-profit organizations is based on three theories, namely: government failure, interdependence and social capital. However, the fourth theory of stakeholders explains the management of an organizational network, where the responsibility for effective management also rests with the responsibility of NGO leaders towards local government units. We believe that the theories sufficiently explain the relations between local government authorities and NGO members, which strengthen social capital and legitimize local power.

3. Theory of government failure

Government failure theory assumes that the provision of public and quasi-public goods is influenced by the preferences of the majority (Grønbjerg, Salamon, 2016; Weisbroda, 1991; Joung, 2021). Voters vote to maximize the utility of public goods, and politicians determine the direction of their policies to gain as many votes as possible (Bassett et al., 1999). Therefore, governments are less likely to provide public goods that are driven by the diverse preferences of citizens (Bryce, 2012). Non-profit organizations are created to meet the needs of heterogeneous groups, the so-called social approach (Salamon et al., 2000), therefore the activities of non-profit organizations are often larger and more common in communities with more diverse populations (Matsunaga, Yamauchi, 2004). In this theory, it is assumed that the service provided by NGOs is a classic "pure public good" which, after its provision, is consumed in the same amount by everyone and from which no one can be excluded (Joung, 2021) According to the government failure theory (Bae, Sohn, 2018):

- governments meet the needs of the majority, leaving minorities dissatisfied where preferences are heterogeneous, which translates into the number of non-profit organizations;
- the more heterogeneous a community is, the more diverse its preferences are;
- the more heterogeneous communities are, the more preferences they have that are not met by governments, leaving room for action by non-profit organizations to "catch up" and meet the demands of people dissatisfied with political results.

This approach partly explains why NGOs are created at the national level. However, we deal with local government, so social heterogeneity should concern not so much dissatisfaction with the choices of local authorities as with the differentiation of incomes of inhabitants of individual regions (voivodeships), which is why we decided to put forward the following research hypothesis:

H1: The income level of the local population affects the number of NGOs in the region.

4. Interdependence theory

The government failure theory suggests that if governments fail to satisfy citizens' preferences, they will promote the activities of the nonprofit sector. On the other hand, interdependence theory posits a more collaborative relationship between governments and nonprofit organizations (Salamon et al., 2000). The theory suggests that governments rely on nonprofit organizations to provide public services, and at the same time, these organizations need support from governments to fulfill their missions (Gazley, 2010). Accordingly, governments provide subsidies and contract with nonprofit organizations to provide public services (Grønbjerg, Paarlberg, 2001). Therefore, the size of the nonprofit sector is more likely to increase as a result of local or government funding. This theory strengthens the position of NGOs in relation to local governments. Local government officials can not only strengthen non-profit organizations financially, but also use non-financial forms of cooperation. Non-financial cooperation includes, among others: mutual information on plans and directions of activity, consulting normative acts in the fields related to NGOs, providing honorary patronage to activities or projects carried out by NGOs, supporting information or training, organizing joint ventures and creating joint advisory teams of an advisory and initiative nature. (NIK, 2021) Most studies on the third sector confirm the relationship between government financial support and the size of non-profit organizations (Salamon, 2000; Luksetich, 2008; Lee et al., 2022; Park, 2023).

Based on the above findings, this study tests the following hypothesis regarding interdependence theory:

H2: Cooperation between NGOs and local authorities influences the form of subsidies.

5. Social capital theory

According to the definition in the Oxford dictionary, social capital is "The networks of relationships among people who live and work in a particular society, enabling that society to function effectively" (Definition, 2011). Social capital understood as networks of social connections is treated as a value in itself, a good that can bring benefits to both individuals and environmental groups, as well as entire communities. In research on social capital, unlike human capital, it does not belong to individual people, it is not an individual's resource, but is a value generated through connections between individuals (Mączyńska, 2023). Putnam (1995) believes that "...features of social organization, such as trust, norms and connections, which can increase the efficiency of society by facilitating coordinated actions, are attributed to social capital, which is productive because it enables the achievement of certain goals that could not be achieved, if it were missing". Wollcock (2001) defines social capital as norms and networks that facilitate collective action. Group formation and other forms of civic participation or collective action are at the heart of this definition. In the theory of social capital, non-profit organizations are a response to the need to associate and connect individuals in order to act together. Rupasingha et al. (2006) measure social capital using the number of associations such as civic groups, sports clubs, trade unions and political organizations at the county level to assess the ability to solve collective action problems by promoting cooperation, which is the basis of social capital. Important from the management point of view, social capital has (Miković et al., 2020):

- Structural dimension, i.e. it explains the relationships between participants;
- Relational dimension, i.e. it describes the nature of relationships developed over time;
- The cognitive dimension refers to the resources that provide shared representations, interpretations, and meaning systems among members;
- Nodal dimension, because it describes the features of individuals or communities, as well as recipients, sources of information and knowledge.

Using social capital as a source of social organization management in our study, we put forward the following hypothesis:

H3: Non-profit organizations in a given region build social capital by creating groups to undertake motivational activities.

6. Stakeholder theory

Stakeholder theory focuses on individuals and groups who can influence or are influenced by the organization (Freem et al., 2020). In this case, stakeholder theory brings about a change in the management of nonprofit organizations because members and beneficiaries are no longer the only priority stakeholders. Non-profit organizations must also respond to social needs and take into account the expectations of all interested parties (Andersson, Renz, 2021; Renz et al., 2023), so they also become accountable to the local government. Stakeholder theory emphasizes that management and managers must arbitrate between stakeholder demands in order to obtain the resources necessary for the survival of the organization. Taking into account the expectations of local governments and being responsible also towards them forces managers to compromise, as it is increasingly difficult to meet the expectations of all interested parties. Therefore, the following actions were proposed to be implemented (Plaisance, 2023):

- Developing relationships with partners (i.e. organizations with which the non-profit organization already has strong connections) and funders (including donors and local government organizations);
- Focus on members and beneficiaries because they are the target of the nonprofit organization;
- Ensuring organizational learning;
- Mobilization of volunteers.

Taking into account stakeholders in the management of the organization and implementing priorities in action will allow for better adaptation to social needs. Cooperation, mutual exchange of values, resources and ideas strengthens the identity of NGOs, which results in rationality and effectiveness of activities, resulting in the maximization of utility. Since our research focuses on local authorities, the next hypothesis is:

H4: Satisfaction with cooperation with local government of a non-profit organization is an expression of the number of members of the organization in a given region.

7. Data and methods

This study focuses on Poland. The legal basis for conducting business by a non-profit organization in the territory of the Republic of Poland is the Act on public benefit activities, the Law on associations and foundations. In 2021, there were 9.6 thousand in Poland. organization, which had 8.6 million members in its structures and employed 604.9 thousand people (GUS, 2022). Volunteering applies to only 67% of regional organizations. Among organizations operating only for the immediate neighborhood, 41% do so, and among organizations on the widest, international scale, as many as 59% (Charycka et al., 2022). Organizational revenues in 2021 amounted to PLN 37 866 753.1 thousand PLN, and 45.7% came from public funds, while 12.6% were membership fees (GUS, 2022).

One of the purposes of interest in research on the third sector is insufficient knowledge of management. Management from the point of view of non-governmental organizations is a set of mechanisms that enable the organization's activities to be adjusted to its mission contained in the statute and materially ensure the functioning of the organization. In our study, we focus on the determinants that allow an organization to survive.

8. Database

The research used statistical data conducted by the Central Statistical Office and is carried out as part of the tasks of public statistics, whose activities consist in collecting and storing data received from entities operating in Poland.

Techniques used to transmit statistical data:

- Internet (Reporting Portal, e-mail);
- Direct interview (using a paper form or the CAPI method through an interview recorded on a portable electronic device);
- Telephone interview (traditional or CATI method through a telephone interview supported by a computer program).

The database consisted of data from 2008, 2010, 2011, 2014, 2018, 2020, 2021 and 2022, and the administrative division of the territory of Poland was used for their analysis. This approach allowed for personalisation of data to meet the needs of testing the hypotheses.

9. Research methods

A correlation matrix calculated using the Statistica program was used to evaluate the data. Correlation is a mathematical tool used to determine the exact degree to which two variables are related to each other. Correlation studies determine the strength, shape and direction of such a relationship. A statistical relationship means that specific values of one variable correspond to precisely defined values of the other variable. Therefore, it is possible to calculate the values of the dependent variable Y depending on the value of the independent variable.

The strength of the relationship between variables is determined using many numerical parameters. The first is covariance. Suppose that as a result of some experiment, pairs of numbers (x,y) were obtained, where i = 1, 2, …, n. The variable presented in this way is called a two-dimensional random variable and denoted as (X,Y). We calculate the covariance for such a sample according to the formula:

$$\mathrm{cov(XY)} = \frac{1}{n-1}\sum_{i-1}^{n}(x_i - \bar{x})(y_i - \bar{y})$$

where $\bar{x}$ and $\bar{y}$ are the means of both variables. The covariance calculated in this way based on the sample is, of course, an estimator of the population covariance. If small values of variable X correspond to small values of variable Y, and large values of X correspond to large values of Y, then the covariance takes a positive value - both products are mostly positive. A positive covariance value means that when the value of variable X increases, the values of variable Y also increase, so we are dealing with a positive correlation. If as the value of variable X increases, the values of variable Y decrease - negative correlation. When the variables are uncorrelated, then cov(XY) = 0. The disadvantage of covariance is that its value depends on the units of measurement of the features - therefore, the strength of the relationship cannot be assessed.

It turns out, however, that it is enough to divide the covariance by the product of the standard deviations to obtain a measure of the strength of the connection, independent of the measurement unit, with values in the range <1;-1>. This is the Pearson linear correlation coefficient:

$$r_{xy} = \frac{\sum_{i-1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i-1}^{n}(x_i - \bar{x})^2 \sum_{i-1}^{n}(y_i - \bar{y})^2}} = \frac{cov\ (XY)}{s_x\, s_y}$$

where $\bar{x}$ and $\bar{y}$ are the means of both variables, s_x or s_y are standard deviations. The sign of the r_{xy}coefficient indicates the direction of the correlation ("+" indicates a positive correlation, while "-" indicates a negative correlation), while the absolute value indicates the strength of the relationship. The coefficient is used when the relationships between the variables are linear. The significance level of the Pearson test was set at $p < 0.05$.

To test the four research hypotheses, the dependent variables are data at the voivodeship level. The correlation matrix in testing the first hypothesis did not show any relationships at the significance level of p = 0.05 or at the level of p = 0.1. According to the study, population income at the voivodeship level and the number of non-profit organizations are not related (Table 1). The remaining matrix correlations indicated significant relationships.

10. Results

10.1. Correlation matrix: Answer to hypothesis 1

The first hypothesis concerned the level of income of the local population as a determinant influencing the number of NGOs (Table 1). Based on the data analysis, it cannot be concluded that population income has an impact on the number of non-profit organizations. Over the years 2010-2022, which also take into account the crisis related to the Covid-19 pandemic, no dependencies were found at the assumed level of significance. Hence the conclusion that the theory of inequality at the local level has not been confirmed by income data. However, it should be emphasized that the examined data are positively correlated, i.e. as income increases, the number of NGOs in the region increases.

10.2. Correlation matrix: Answer to hypothesis 2

This section is based on 2021 data. The results of the correlation of organizations in individual voivodeships with sources of revenue are presented in Table 2. The theory of interdependence talks about cooperation between non-profit organizations and local government. Based on the study, it should be noted that on average 10% of organizations have income, with 65% of it coming from public funds. Organizations can count primarily on non-financial support (73%), with 63% of organizations using non-financial support from public authorities. Grants awarded through open competition were received by 33% of organizations, including 28% from local government authorities. 11% of organizations received grants without open competition. The correlation matrix shows that organizations that received support in the form of subsidies were less likely to receive public contracts (negative correlation). Financial resources from the local government flowed to third sector entities in the form of subsidies in the form of open competitions, excluding the competition, granting 1% tax and others. At the voivodeship level, subsidies were negatively correlated with the number of beneficiaries (-0.5), which is why we believe that local governments focused on quality in providing support rather than on recipients. Also noteworthy is the fact that support was more often provided to the recipient, public utility entities (1% of personal income tax). Hence the conclusion that cooperation at the local level with local government authorities favors the development of

NGOs and they are more willing to support organizations that have the statute of a public benefit organization (OPP). However, it should be considered whether all available cooperation tools are used by both parties.

10.3. Correlation matrix: Answer to hypothesis 3

The third hypothesis concerned the influence of non-governmental organizations on increasing the quality of social capital by engaging in the motivation system. The study (Table 3) established that 43% of organizations undertake motivating activities, including 7% of employees, 35% of members, and only 18% of people from outside the organization. 28% of employees, members and volunteers declare participation in training. Organizations undertake motivational activities, especially for organization members (0.913). However, members of the organization do not use non-financial support (negative correlation of 0.51). If people are employed, they are primarily targeted by support for motivational activities – both financial (0.794) and non-financial (0.767).

Based on Table 3, it should be concluded that non-governmental organizations build social capital, especially among the members and employees of these organizations.

10.4. Correlation Matrix: Response to hypothesis 4

Stakeholder theory draws attention to various groups that influence the organization directly or indirectly. The main groups are non-profit organizations operating in a given region, members and employees of these organizations, beneficiaries, and local governments. The fourth hypothesis was intended to check whether there is a correlation between the number of members of the organization and their number in given voivodeships (Table 4).

Based on the study, there was a strong correlation between the number of organizations and the number of associated members, which may indicate strong cooperation and satisfaction with the activities of local government officials for the development of the third sector. It is also worth emphasizing that the community at the local level is composed of numerous organizations, which proves the diversity of social needs, and not a unified, significant one.

11. Discussion and conclusions

The empirical results described above provide an update on the state of knowledge and thus answer the question of how cooperation between local authorities and non-profit organizations should be built. There is a discussion among researchers of the topic related to the management of organizations III as to whether these organizations should focus more on the mission written in the statute or on the economic and financial survival of the organization. These organizations conduct activities complementary to public tasks. In Poland, these activities are of a special nature because they are often used for political purposes. In our article, we focused on four theories related to running the activities of non-governmental organizations. We did not prove the first hypothesis related to the theory of government failure. Based on it, we tried to verify income diversity as a factor that determines the size of an organization. Unfortunately, on the basis of this determinant, it was not possible to prove that the number of NGOs is the result of the mismatch of public services to heterogeneous social needs. This point requires more extensive and thorough research. The remaining hypotheses were positively verified. We managed to distinguish factors that directly affect the financial revenues of non-governmental entities. It is becoming obvious that local governments prefer non-financial forms of support, but they also direct financial support to entities, especially those that have made an effort to obtain the OPP statute. It should also be noted that local government authorities prefer subsidies as a form of support, and if they provide them, they are less likely to order public services. This relationship requires further examination whether this situation is related to the costs of financial reporting by NGOs, as these organizations often use simplified accounting facilities.

There is also discussion about the conduct of motivational activities. Most activities are carried out by members and employees of the organizations themselves. Only 28% of people declared participation in training, and these were training for members, employees and volunteers. It is worth considering whether NGOs in Poland operate only for people associated with the organization. What is also disturbing is the fact that members of the organizations themselves take part in paid motivational activities, leaving out non-financial activities. Obviously, this is a generalization, but it is also necessary to take a closer look at this phenomenon. The verifiability of the fourth hypothesis was at a high level (0.97), which proves that the number of organizations and members in voivodeships is strongly correlated. Personalization of organizations and the needs of local communities is carried out at the level of numerous NGOs. Local governments also cooperate appropriately with numerous organizations, as there is no single dominant organization, which proves the unification of social needs.

The article discusses theories related to the management of non-profit organizations in cooperation with local government. The influence of local government on the number and quality of cooperation, as well as the organization's preferences towards members and local governments, was examined. The study focused on Polish non-profit organizations using data collected and prepared by the Central Statistical Office, showing that many non-profit organizations benefit from financial support from local governments and, thanks to them, build social capital, although this applies primarily to the organization's members. Thanks to our research, it can be concluded that cooperation between organizations and local governments is successful, and the fragmentation of NGOs does not affect the quality of this cooperation.

Finally, there are a few limitations. Firstly, the database is an average of organizations at the voivodeship level. The examined management evolution is only partial and highly generalized, especially at the district level. There are no qualitative indicators to be included in future research. An important direction of research is to understand the factors determining management changes in times of crisis or war and expectations related to cooperation between organizations and local government.

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Appendix

Table 1.
Correlation matrix of income per capita and the number of registered NGOs in voivodeships in 2010-2022

variable	Correlations (income per capita and number of NGOs) The marked correlation coefficients are significant with p < .05000 N = 17 (Missing data were removed by accident)						
	2010	**2012**	**2014**	**2016**	**2018**	**2020**	**2022**
2010	0,1390	0,1241	0,1559	0,1259	0,1487	0,1339	0,1350
2012	0,1479	0,1337	0,1638	0,1346	0,1565	0,1398	0,1398
2014	0,1378	0,1249	0,1559	0,1282	0,1492	0,1340	0,1334
2016	0,1368	0,1226	0,1549	0,1264	0,1488	0,1334	0,1339
2018	0,1376	0,1229	0,1541	0,1264	0,1481	0,1348	0,1334
2020	0,1351	0,1205	0,1529	0,1218	0,1451	0,1285	0,1305
2022	0,1616	0,1469	0,1789	0,1460	0,1696	0,1517	0,1528

Source: Own study based on data from the Central Statistical Office (GUS).

Table 2.

Correlation matrix between forms of support for non-profit organizations in 2021

Variable	**Correlations** **The marked correlation coefficients are significant with p < .05000** **N = 17 (Missing data were removed by accident)**														
	Mean	**Std Dev**	**ORGANIZATIONS WITH REVENUES**	**of which public funds total**	**public procurement**	**Non-market revenues**	**public funds**	**subsidies within open offer competitions**	**of which local government**	**subsidies according to number of beneficiaries**	**of which local government**	**refunds/subsidies to salaries or social security**	**subsidies without open offer competitions**	**1% of personal income tax and vindicative damages**	**other**
ORGANIZATIONS WITH REVENUES	10,294	20,111	1,000	-0,152	-0,066	-0,049	-0,103	-0,088	-0,082	-0,026	-0,093	-0,102	-0,044	-0,073	-0,070
of which public funds total	64,900	4,268	-0,152	1,000	-0,588	0,728	0,880	0,807	0,413	0,113	0,262	0,394	0,750	0,405	0,214
public procurement	9,512	25,827	-0,066	-0,588	1,000	-0,434	-0,490	-0,481	-0,397	0,151	-0,085	-0,390	-0,765	-0,204	-0,092
Non-market revenues	73,112	15,593	-0,049	0,728	-0,434	1,000	0,962	0,884	0,357	0,261	0,393	0,417	0,484	0,564	0,260
public funds	63,171	8,777	-0,103	0,880	-0,490	0,962	1,000	0,912	0,383	0,250	0,404	0,450	0,602	0,527	0,242
subsidies within open offer competitions	34,553	6,702	-0,088	0,807	-0,481	0,884	0,912	1,000	0,653	-0,106	0,164	0,327	0,605	0,649	0,408
of which local government	28,765	3,800	-0,082	0,413	-0,397	0,357	0,383	0,653	1,000	-0,505	-0,146	0,114	0,492	0,585	0,545
subsidies according to number of beneficiaries	16,994	3,048	-0,026	0,113	0,151	0,261	0,250	-0,106	-0,505	1,000	0,730	0,398	-0,127	-0,349	-0,502
of which local government	12,076	2,208	-0,093	0,262	-0,085	0,393	0,404	0,164	-0,146	0,730	1,000	0,258	0,101	0,046	-0,092
refunds/subsidies to salaries or social security contributions of employees	8,676	1,445	-0,102	0,394	-0,390	0,417	0,450	0,327	0,114	0,398	0,258	1,000	0,272	-0,111	-0,295
subsidies without open offer competitions	11,371	2,395	-0,044	0,750	-0,765	0,484	0,602	0,605	0,492	-0,127	0,101	0,272	1,000	0,244	0,122
1% of personal income tax and vindicative damages	10,771	3,120	-0,073	0,405	-0,204	0,564	0,527	0,649	0,585	-0,349	0,046	-0,111	0,244	1,000	0,941
other	10,865	2,618	-0,070	0,214	-0,092	0,260	0,242	0,408	0,545	-0,502	-0,092	-0,295	0,122	0,941	1,000

Source: Own study based on data from the Central Statistical Office (GUS).

Table 3.
Correlation matrix of non-profit organizations in the form of improving qualifications

Variable	Mean (%)	Std Dev	Organizations, which actively motivated to activities:	paid employees of the organization	financial remuneration	non-financial remuneration	members of the organization	persons from outside the organization	Organizations, which declare participation of members, employees and volunteers in training courses
	Correlations The marked correlation coefficients are significant with p < .05000 N = 17 (Missing data were removed by accident)								
Organizations, which actively motivated to activities:	43,394	2,741	1,000	-0,289	-0,006	-0,430	0,913	0,307	0,228
paid employees of the organization	7,082	1,021	-0,289	1,000	0,794	0,767	-0,464	-0,110	0,221
financial remuneration	4,788	0,801	-0,006	0,794	1,000	0,243	-0,216	-0,082	0,326
non-financial remuneration	3,300	0,680	-0,430	0,767	0,243	1,000	-0,510	-0,053	0,110
members of the organization	34,735	3,864	0,913	-0,464	-0,216	-0,510	1,000	0,051	0,183
persons from outside the organization	18,241	2,496	0,307	-0,110	-0,082	-0,053	0,051	1,000	-0,188
Organizations, which declare participation of members, employees and volunteers in training courses	28,559	2,042	0,228	0,221	0,326	0,110	0,183	-0,188	1,000

Source: Own study based on data from the Central Statistical Office (GUS).

Table 4.
Correlation matrix: number of NGOs and number of organization members

Variable	Correlations The marked correlation coefficients are significant with p < .05000 N = 17 (Missing data were removed by accident)			
	Mean	**Std Dev**	**Grand total (tys.)**	**associated persons (mln)**
Grand total (in thous.)	11,38824	22,25028	1,000000	0,971956
associated persons (in mln)	0,96471	1,98555	0,971956	1,000000

Source: Own study based on data from the Central Statistical Office (GUS).

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LONG-TERM COMPARATIVE EFFECTS OF THE COVID-19 PANDEMIC ON SUPPLY CHAINS IN POLAND, GEORGIA AND TURKEY

Marek SIKORA[1*], Giga KIKORIA[2], Zezva SANIKIDZE[3], Başak ÇETINGÜÇ[4], Oliwia RYBACKA[5]

[1] Bydgoszcz University of Science and Technology, Faculty of Management; m.sikora@pbs.edu.pl, ORCID: 0000-0001-9773-8527
[2] Tbilisi State University, Faculty of Economics and Business; giga47kikoria@gmail.com, ORCID: 0000-0002-2202-7656
[3] Tbilisi State University, Faculty of Economics and Business; zezvasanikidze@gmail.com, ORCID: 0009-0003-7291-2746
[4] Yalova University, Faculty of Engineering; basakcetinguic@yalova.edu.tr, ORCID: 0000-0002-9420-4244
[5] Bydgoszcz University of Science and Technology, Faculty of Management; oliryb000@pbs.edu.pl
* Correspondence author

Purpose: This paper explores the enduring repercussions of the COVID-19 pandemic on global supply chains by investigating the experiences and adaptations of organizations in Poland, Georgia, and Turkey. It seeks to provide valuable insights into the long-term implications of the pandemic on supply chain management, with a focus on strategies and challenges faced by businesses in different regions.
Design/Methodology/Approach: We conducted an extensive study utilizing an online questionnaire to gather primary data from a diverse sample of organizations in Poland, Georgia, and Turkey. This research approach is quantitative and comprehensively assess the pandemic's impact on supply chains. We analysed responses from a range of industries, enabling a holistic understanding of the topic. In addition to descriptive analysis, we conducted a comparative examination of the three countries using ANOVA (Analysis of Variance) to assess any significant differences among them. Furthermore, we employed Cramér's V, a robust statistical measure, to investigate associations between categorical variables within the dataset
Findings: The research reveals that the outcomes in three distinct countries are surprisingly similar, contrary to initial expectations. The majority of the proposed COVID-19 factors exhibit no statistically significant distinctions among Poland, Georgia, and Turkey. Consequently, we can infer that the COVID-19 pandemic exerted a considerable and widespread impact on the entities under consideration.
Research Limitations: Despite our efforts to gather a representative sample, the study may not encompass all industries and organizations equally. Additionally, the research is subject to the limitations of self-reported data and potential bias in responses. The focus on specific regions may not capture the entirety of global supply chain dynamics.

Practical Implications: This research provides practical insights for organizations navigating supply chain challenges in a post-pandemic world. It offers guidance on building resilient and adaptable supply chains and managing risks effectively. Businesses can use these insights to make informed decisions and enhance their supply chain strategies.
Originality/Value: Drawing from our own research conducted in three countries after the official conclusion of the pandemic, this study adds a distinctive contribution to the current body of literature. It takes a long-term perspective on the repercussions of the COVID-19 pandemic on supply chains, specifically emphasizing diverse regions. The employed methodology and regional comparisons offer a nuanced insight into the dynamic evolution of the supply chain landscape, underscoring the importance of adaptability and resilience. In contrast to various studies conducted at the onset and during the pandemic, this paper uniquely seeks to discern the enduring effects.
Keywords: Supply chain, COVID-19 pandemic, long-term effects, risk management, regional variations.
Category of the paper: Research paper.

1. Introduction

A supply chain is a collaborative network of manufacturers and service providers working together to facilitate the processing and transportation of commodities, from the raw material stage to the end-user level, with interconnectedness maintained through the exchange of physical products, information, and monetary transactions (Bozarth, Handfield, 2007). Supply chains, in order to better adapt to the market, should align with the type of demand for the goods flowing through them. Supply chains can be classified into two basic groups: efficient (dealing with flows of standard products, and demand that is stable) and reactive (dealing with flows of innovative products and variable demand) (Webster, 2002).

In the context of different types of supply chains, it is important to understand that risk management plays a crucial role for both efficient, stable supply chains and reactive ones that respond to innovations and demand. Optimal risk management can help align supply chains with different types of demand and minimize potential threats and irregularities in the functioning of the entire logistics system. Effective identification, assessment, and control of risk are therefore key elements of effective supply chain management.

Risk is a very complex concept, making precise definition challenging. Risk is defined as "the possibility of realizing something undesirable, a negative consequence of a certain event" (Rowe, 1997), and also "the degree of probability of events occurring that are independent of the acting entity, which it cannot predict precisely and cannot fully prevent..." (Pszczołowski, 1978). However, according to Knight, in economic activity, unique events dominate, for which it is impossible to apply any measure of probability (Knight, 1971). The vulnerability of the supply chain to risk is its sensitivity to threats occurring both within the organizations forming it and outside of them. Zsidisin defines this risk as "the probability of an incident related to supplies occurring due to a market or individual supplier failure, resulting in the company losing its ability to meet customer demand or posing a threat to the life and safety of customers" (Zsidisin, 2003).

The emergence of the COVID-19 pandemic in November 2019 in Wuhan, China, serves as a prime example of a "black swan event". This global-scale occurrence, characterized by unexpected and unforeseen developments, carried severe consequences. An example of such an event is the COVID-19 pandemic, which began in November 2019 in the Chinese city of Wuhan. There is no doubt that the coronavirus pandemic was an unexpected and unforeseen event on a global scale, with extremely severe consequences. According to many analysts, it can be classified as a "black swan event". This metaphor was introduced in 2007 by Professor Nassim Nicholas Taleb. "Black swans" are events that have three attributes (Taleb, 2008):

- they are unexpected, unpredictable, unusual, and highly improbable, lying outside the realm of regular expectations, because nothing in the past indicated the possibility of such events occurring,
- when they do occur, they have a huge impact on society and the economy,
- after their occurrence, many people believe that such events could have been predicted.

The COVID-19 epidemic was undoubtedly an unexpected and unforeseen event on a global scale, with extremely severe consequences. No financial analyst in January 2020 predicted the crash in the global stock markets that occurred two months later in March due to the outbreak of the pandemic.

2. Literature review

2.1. Impact of the pandemic on logistics

The outbreak of the pandemic has had an unimaginable impact on people, the economy, entrepreneurs, government authorities, and others. The coronavirus has caused significant disruptions in the global supply chain. At the onset, the pandemic caused chaos and disruptions in the functioning of companies. This situation significantly disrupted supply chains and limited in-person consumption. Production halts, suspensions, or bankruptcies of suppliers can disrupt the supply of key components and materials (Dubey et al., 2016).

Most companies collaborate with international suppliers, making supply chain logistics face numerous challenges. After the outbreak of the pandemic, it was difficult to maintain the fluidity of goods flow across borders, partly due to modifications in regulations and shipping restrictions imposed by various governments (Nartey et al., 2022). In the initial phase of the pandemic, there were disruptions in road transport due to mandatory driver checks at border crossings, resulting in extended waiting times at borders and thus delays in delivery times, reducing transport throughput, and disrupting the flow of goods and materials (Ivanov, Dolgui, 2020). Air transport was also severely limited, primarily in the passenger sector, as air traffic was suspended. This sector, however, impacts cargo traffic because some cargo shipments are carried out using passenger aircraft. Medical equipment cargoes became a priority, which was also evident in the urban transport sector.

A comparative study for Turkey and the EU-27 (European Union – 27 countries) and EA19 (Euro area – 19 countries) concerning logistics turnover taking into account the impact of COVID-19 reveals a huge long-term impact of the COVID-19 virus on turnover in various logistics modes and a radical shift experienced by Turkey from land transport to air transport. The significant difference between Turkey's growth rate (535.84%) and the EU27 (18.58%) and EA19 (13.62%) countries is evidence of Turkey's rapid development in logistics, especially in warehousing and air transport (Balkan, Akyuz, 2023).

While COVID-19 caused a global shock in passenger flights due to travel restrictions and passengers' reluctance to travel, there was an increased demand for cargo flights for the rapid transport of medical equipment, vaccines, and PCR tests (Deveci et al., 2022). The authors believe that cargo transportation will continue to be a very important source of revenue for airlines after the COVID-19 pandemic.

Since international transport plays a leading role in trade and relies on travel and human interactions, the outbreak of the COVID-19 epidemic had a direct and indirect impact on the maritime industry. According to a report by the European Maritime Safety Agency (2021), analysing the impact of the COVID-19 pandemic on EU ships in the years 2019-2021, maritime traffic between Europe, China, and the USA decreased in 2020, but in 2021, traffic from the USA returned to pre-pandemic levels. As the COVID-19 pandemic intensified, ports faced an unprecedented number of ships at anchor, with vessels queuing up waiting for a place to unload cargo. The EMSA report demonstrated that the cruise and passenger transport sectors were the most affected by the COVID-19 pandemic. This also impacted other sectors, but despite the challenges, commercial ships, ports, and other maritime transport sectors continued to operate, ensuring the flow of goods, and highlighting the strategic importance of maritime transport for supply chain continuity.

An assessment of the sectoral impact of COVID-19 on global supply chains using the example of Turkey and China (Kazancoglu et al., 2023) showed an imbalance between import and export activities caused by maritime logistics due to a lack of available containers and equipment, drastically increasing transportation costs. This indicated a need for an alternative means of transport that could provide cost-effective transportation, such as the "One Belt, One Road" initiative, which constitutes a new transportation network between Asia and Europe.

The world had never experienced disruptions in supply chain management on the scale caused by the pandemic. Prior to the COVID-19 pandemic, supply chains were planned using a just-in-time production approach, where inventories worldwide were minimal or even zero. The aim of such an approach was to minimize inventory costs throughout the supply chain.

However, in the face of the pandemic, this approach significantly reduced the flexibility of companies. As a result, implementing management approaches in companies requiring working with minimal inventories, such as Lean Supply Chain and just-in-time production systems (Brakman, Garretsen, Witteloostuijn, 2020) seems almost impossible, and the importance of shorter and more flexible supply chains will increase in the future. The coronavirus exposed all the drawbacks of just-in-time/just-in-sequence production methods and gaps in the transportation industry. The sectors that heavily rely on JIT/JIS models suffered the most, for example, the automotive industry, because any disruptions in tightly managed production in these industries will immediately have serious consequences, and large distances between suppliers and customers increase the risk of many problems (Strom, 2021).

Disruptions in the supply chain caused by the COVID-19 pandemic drastically transformed the automotive industry, adversely affecting and seriously disrupting its global networks in terms of severity and complexity, scale, and duration of the impact. Supply chains designed for efficiency often did not ensure operational continuity in prolonged pandemic conditions (Chervenkova, Ivanov, 2023).

During the COVID-19 pandemic, logistics was one of the most frequently discussed topics. The sudden increase in demand for hygiene products and essential items such as food products, antibacterial gels, masks, and toilet paper posed a significant challenge to the entire logistics sector.

Panic buying, stockpiling, and disruptions in the supply chain can lead to challenges in inventory management, including stock depletion and excessive stock (Chopra, Sodhi, 2004).

Supply chains of companies offering essential items and other products necessary for daily life had to operate continuously despite travel restrictions in many countries. However, many businesses had to suspend their operations, resulting in disruptions in the supply of raw materials and production breaks in various industries. In the face of a disrupted supply chain, new suppliers, both local and foreign, had to be found to ensure the delivery of essential materials. These changes resulted in fluctuations in delivery prices and order delays, among other challenges.

Food supply is a key element in ensuring social stability and public health during a pandemic, and effective management of this aspect is crucial for societal well-being. The COVID-19 pandemic caused global disruptions in agri-food supply chains, increasing uncertainty regarding the availability and stability of food supplies.

Agri-food supply chains (AFSC) encompass a sequence of activities from "farm to table", including land cultivation, plant production, processing, testing, packaging, storage, transportation, marketing, and distribution of food products (Vafadarnikjoo et al., 2023). Food supply chains connect closely dependent producers and consumers worldwide, often providing just-in-time deliveries. Agricultural products have higher logistics service requirements, making them more vulnerable to disruptions. As Gray points out (2020), the intermodal container flow of grains and food products was disrupted due to a lack of empty containers in North America. The widespread use of physical distancing measures by consumers significantly increased the demand for food delivery and pickup services in retail to the extent that these services were rationed due to long waiting times.

An analysis of data from 367 SMEs in the agri-food industry across 17 countries collected in May 2020 allowed for capturing the early impact of the pandemic on their operations. Approximately 94.3% of respondents reported that the pandemic affected their business operations, primarily through a decrease in sales, as well as limited access to production resources and financing with limited financial reserves. Difficulties in staffing were also commonly reported. 82% of companies reported a reduction in production volume due to the pandemic, with 13% ceasing production entirely. About 54% of companies changed product prices due to the pandemic. Over 80% of companies took actions to mitigate the pandemic's impact on their business and/or employees, and approximately 44% considered exploring new business areas (Nordhagen et al., 2021).

One of the proposed solutions to such problems (Zeng, 2021) is to enhance the application and innovation of big data in agricultural product supply chains, such as precise demand forecasting for agricultural products, sustainable planning of agricultural product supplies, collaboration in agricultural product logistics, traceability of agricultural product quality, innovation in agricultural financing, early warning of risks in the agricultural product market, monitoring agricultural product-related disasters, and early warnings.

The analysis of IT system vulnerability and the use of CRM with big data support were also highlighted as significant risk reduction strategies in supply chains for the food processing sector in Bangladesh (Ali et al., 2019).

Another proposed solution for mitigating risks in supply chains is suggested by Janssen et al. (Janssen et al., 2018), who developed a stochastic model for perishable goods, considering a policy of micro-periodic inventory replenishment.

One of the links in the food supply chain most affected by the pandemic was home delivery. The pandemic situation compelled most stores and some restaurants, pharmacies, and bakeries to create home delivery options, allowing them to stay in the market. The adapted infrastructure of the last link in the supply chain resulted in the continuation of many of these changes after the COVID-19 pandemic (Gray, 2020).

According to Chenarides, Manfredo, and Richards (2021), the COVID-19 pandemic exposed critical weaknesses in the American food supply chain. Faced with the almost complete loss of the foodservice distribution channel, there were frequent stories of food waste, collapsing suppliers, and food shortages. The authors argue that the pandemic revealed a fundamental lack of resilience in the food supply chain, which, although it caused short-term welfare losses, did not necessarily have to occur, and resulted from a lack of vision rather than market unreliability in the traditional sense. For example, in the American fresh produce industry (onions), they show that the ability to change suppliers and maintain supply chain flexibility has significant value. The authors state, referring to Copeland and Antikarov (2003), that "if the costs of changing suppliers are low and uncertainty is high, then it is quite clear that highly flexible strategies dominate over inflexible strategies".

The lack of continuity in the supply of essential raw materials for food production can pose a serious risk to food safety, especially for perishable food and vegetables. Moreover, the pandemic raised other concerns regarding improper handwashing, packaging, and other practices related to handling food (Rejeb, A., Rejeb, K., Keogh, 2020). Quarantines, employee illnesses, and disruptions in the labour market can lead to labour shortages in production and logistics (Pettit, Croxton, Fiksel, 2013).

The crisis caused by the pandemic had both demand and supply-side characteristics. Due to the COVID-19 pandemic, many governments imposed radical restrictions on social and economic activities and travel barriers. Restrictions affected about half of the world's population and had a negative impact on the global economy. The result of Global Value Chains (GVC) is the dispersion of the production process in many places around the world, both within a single company and among many subcontractors. The absence of workers in factories disrupted these global value chains, making it difficult to maintain production even where restrictions were not yet in place.

2.2. Long-term effects and supply chain resilience strategies

The new rules and restrictions had a significant impact on the logistics industry. To comply with safety protocols and the fluctuating pace of activity, many companies were forced to implement changes in staffing and automate warehouse processes, including facility management using warehouse software. Drivers were relieved of the duty to participate in the loading and unloading process, and paper documentation was either limited or completely replaced by electronic documentation. Office workers, customer service representatives, freight forwarders, dispatchers, accountants, and salespeople were delegated to remote work, which proved to be a beneficial solution that many companies chose to maintain permanently.

As a result of many of the factors mentioned above, technological adaptation and broader implementation of digital technologies such as the Internet of Things (IoT) and artificial intelligence, allowing real-time monitoring and decision-making in supply chain management, occurred (Monczka et al., 2020). The shift of many companies to remote work also demonstrated the importance of digital transformation in the supply chain and logistics. It is expected that more data-driven decision-making processes and logistics operations based on data will emerge. Investments in automation and artificial intelligence in supply chains are expected to increase post-pandemic, with a greater utilization of more intensive information and communication technologies and technological capabilities in this context (Choi, 2020). New technologies enabling digital transformation provide increased efficiency and flexibility in the supply chain.

Due to the significant disruptions in global supply chains and the weakening of connections between buyers and suppliers caused by the COVID-19 pandemic, many authors emphasize the need for digital transformation in the supply chain, (Sharma et al., 2020; Villena, Gioia, 2020). This transformation will reduce the suppliers' response time by reducing the time needed to convey necessary information or access it (Ngo et al., 2023).

It is evident that the demand for certain products may exhibit high variability during a pandemic, leading to difficulties in forecasting and demand planning (Ivanov, 2020). The crisis caused by the pandemic altered consumption habits, with a significant increase observed in online sales. The logistics of many companies were not prepared for such a rapid demand, making it difficult for them to guarantee a fast and efficient service.

During the pandemic, interest in e-commerce increased even among consumers in middle and older age groups. The growth in e-commerce trade volumes, apart from certain sectors such as ready-made clothing, electronic items, personal hygiene, and cosmetics, led to a surge in the food sector in the e-commerce market.

Delivery on-demand of groceries gained immense popularity among buyers, combining mobile technology and urban logistics as a substitute for self-service grocery shopping. The pandemic compelled a larger number of consumers to favour e-commerce to meet their grocery needs. In July 2020, about a quarter of Turkey's population shopped for groceries online (Altay, Okumuş, Adıgüzel Mercangöz, 2022), and this upward trend is expected to continue even after the pandemic.

The significant increase in online sales prompted companies to reorganize warehouse operations to ensure that more efficient e-commerce logistics would yield greater profits. Special emphasis was placed on the health and safety of operators at every stage of the supply chain. Faced with such strong demand, the supply chain of some companies collapsed, making them unable to fulfil part of the orders. Circumstances required many e-commerce companies to employ tens, hundreds, or even thousands of workers to handle the rapidly growing number of orders.

Sułkowski et al., (2022) analysed the links between innovations introduced by Polish logistics companies (especially courier-express-parcel shipments) in response to the COVID-19 pandemic to enhance the level of services provided to customers. During the pandemic, sales and purchases through the e-commerce channel increased. It was also suggested that digital technologies can serve as a lever to increase the resilience of companies in the logistics and transportation sector.

E-commerce significantly helped boost the economies of many countries facing a serious public health pandemic. The COVID-19 pandemic created significant demand for online sales, but it also posed many threats to supply chains that often cross multiple national borders. Disrupting such a chain seriously affects a company's business performance, making crisis management in the supply chain crucial for e-commerce businesses, and effective detection and response to these crises have become very important (Ma, Chang, Lin, 2021).

E-commerce significantly aided in stimulating the economies of many countries facing a serious public health pandemic. The COVID-19 pandemic has generated substantial demand for online sales, but it has also posed numerous threats to the supply chain, often crossing many national borders. Disruption of such a chain has a profound impact on the business efficiency of a company, making crisis management in the supply chain crucial for e-commerce enterprises, and effective detection and response to these crises have become very important (Ma, Chang, Lin, 2021).

COVID-19 has exerted a significant long-term impact on passenger mobility in cities and rural areas in India. The fear of infection from social interactions prompted individuals with vehicles to refrain from using public transport. The authors suggest that this influenced the growing attractiveness of private vehicles as daily means of transportation (Aaditya, Rahul, 2023).

Goodland and Potoglou (2023) point out another challenge associated with increased use of private vehicles, which is the heightened greenhouse gas (GHG) emissions. If the number of private vehicles on the roads continues to rise, it will have adverse effects on human health, especially among those living near busy roads.

A study conducted by Downey et al., (2022) among 994 residents of Scotland indicates a potential shift in the type of transportation from public transport. Over one-third of the respondents expect to use buses (36%) and trains (34%) less frequently, with a significant potential for increased use of cars by drivers in the post-pandemic era (25%).

The COVID-19 pandemic triggered a national-level response regarding rail ownership and services in Wales and Scotland. In 2021, the Welsh government, through Transport for Wales, took ownership of the rail network and assumed direct responsibility for the Wales and Border rail network to safeguard services, protect jobs, and enhance infrastructure considering the ongoing challenges posed by the coronavirus. Similarly, the Scottish government took over control and ownership of rail services in 2022. Some rail services in England also became publicly owned. Another long-term effect of the pandemic in the UK was a shortage of bus drivers, as many bus drivers opted for a career change (Goodland, Potoglou, 2023).

In Turkey, due to rising freight prices and transit times in air and sea transportation, rail freight transportation gained competitiveness due to the COVID-19 pandemic. This was also facilitated by the lifting of pandemic restrictions imposed on all other forms of international freight transport (Ozkanlısoy, 2021).

As reported by Senir and Büyükkeklik (2020), there was also a decision to increase rail transport capacity on the Baku-Tbilisi-Kars route from 2500 tons to 6000 tons per day.

N. Taleb emphasizes the futility of historical data when attempting to predict events referred to as black swans (Taleb, 2008). This does not mean that we should not draw conclusions from them. However, creating highly detailed crisis management plans based on previous black swan events is not sensible. Instead, it is crucial to accept that we must live in times of uncertainty and be prepared for new challenges. However, companies implementing resilience strategies, such as dual sourcing, supplier diversification, and risk mitigation plans, seem to better withstand disruptions (Sheffi, 2007).

Unpredictability and instability have become commonplace in logistics and supply chain management. The pandemic forced organizations to prioritize supply chain resilience. Supply chain resilience is the organization's ability to recover after disruptions in the supply chain and quickly adapt to adversities or disruptions (Kumar, Singh, 2019). Companies faced challenges in the logistics sector. COVID-19 showed that supply chains must be efficient and flexible to respond quickly to any changes and adapt to potential disruptions. Time and speed of reaction are crucial.

According to a study by the Capgemini Research Institute titled "Fast forward: Rethinking Chain Resilience for an After-COVID-19 World", over 80% of businesses felt a negative impact on their supply chains due to the pandemic (Capgemini Research Institute, 2020). Two-thirds (66%) of the managers who participated in Capgemini's survey believe that the pandemic compelled organizations to prioritize supply chain resilience. Therefore, they declare that their supply chain strategy will need significant changes. Only 14% of those surveyed did not expect any changes and plan to return to pre-pandemic conditions. Hence, for 62% of respondents, enhancing supply chain resilience after COVID-19 is a priority. The most common problems include shortages of necessary components (74%), delayed deliveries and extended lead times (74%), difficulties in adapting production capacities (69%), and planning processes amidst demand fluctuations (68%). Capgemini's research proves that to cope with a similar crisis in the future, companies must focus on areas that build resilience.

The study also shows that an effective response to numerous disruptions in the supply chain can be achieved by shortening it and increasing interest in collaborating with local and regional suppliers and manufacturers. Furthermore, 65% of respondents state that they are actively developing a local or regional network of partners among both suppliers and the production base. 68% of companies invest in diversifying their supplier base, and 62% in diversifying their production base.

Three-quarters of organizations (77%) recognize the need for changes and are accelerating their investments. Nearly half (47%) of respondents are accelerating investments in automation, and 39% in robotics.

In another study conducted by Rinaldi and Bottani in Italy, (2023) companies associated with plant and machinery manufacturing identified multiple sourcing as the most frequently adopted strategy in response to the extraordinary situation of COVID-19. This strategy enables the purchase of components from a greater number of suppliers, thereby increasing the robustness of the supply chain. These companies are fully convinced of the importance of global sourcing and do not plan to abandon this strategy despite transportation challenges caused by COVID-19. Some of them started implementing new modes of transport during the pandemic, shifting from road to rail transport to improve delivery timeliness and avoid travel restrictions between countries.

In a survey regarding the impact of COVID-19 on Business Continuity Planning conducted in March 2020 by Beroe, a U.S.-based market analysis firm specializing in procurement and logistics, over 450 professionals related to purchasing and logistics participated. Almost 50% of the respondents stated that their organization had implemented a Business Continuity Plan (BCP). At the same time, 26% had not yet identified key raw materials or components necessary to prepare risk management plans, a task accomplished, however, by 57% of the respondents. Nearly 60% of the respondents admitted not being familiar with the Business Continuity Plan of their critical suppliers. The analyses carried out highlight that companies are not truly concerned with the entire supply chain. They only pay attention to their direct supplier, without analysing how decentralized the supply sources used by their direct business partner are. Lack of this knowledge hampers effective risk management in extended supply chains (Prasad, 2020).

The pandemic has permanently altered the global economy, resulting in a partial retreat from globalization. The operation of the existing GVC model allowed for minimizing production costs. However, both the trade war between the USA and China and the ongoing economic crisis revealed the risks associated with it. Concentrating production in China turned out to be risky, prompting companies to diversify their geographic investments in manufacturing plants. Production was also moved closer to consumer markets to reduce risk. Companies began stockpiling parts to continue production despite supply disruptions. Avoiding the need for warehousing had previously helped reduce costs.

Many authors include changes in procurement location, easy accessibility for suppliers and customers, a flexible approach to product and inventory diversity, dynamism and digitization, as well as identifying alternative suppliers, logistics service providers, and distribution channels among the long-term effects on supply chains and logistics (Ozkanlısoy, 2021).

Regionalizing supplies is not only a means of securing business in the event of such a threat but also contributes to minimizing transportation, logistics, and warehouse rental costs. Furthermore, regionalization enables attracting new foreign investments in production and logistics to the country.

Global supply chains will distribute supply, production, storage, and sales to different regions and even continents to protect their SCs from unexpected events such as disasters and epidemics that may occur in the future. Companies will start implementing new SC strategies. One of them will be co-opetition, also known as collaboration with competitors (Sanders, 2020).

It is anticipated that changes in supply chains, particularly a new approach to manufacturers' inventory policy, will lead to an increased demand for warehouse space and overall logistics services. It is likely that some sectors will increase raw material or finished product inventories, while others will start maintaining safety stocks. The growth in inventories will necessitate an increase in warehouse capacity and the creation of new warehouse space. Additionally, to be close to customers and reduce risks during extraordinary periods, companies may need to maintain stocks in different cities or countries (Senir, Büyükkeklik, 2020).

When supply chains face the risk of a natural disaster, such as a pandemic, they must proactively make efforts in risk management to mitigate this risk with minimal damage. Resilience of the supply chain must be enhanced. Furthermore, enterprises must increase investments in digital transformation and transform their supply chains into connected and autonomous ecosystems. These supply chains will be the winning supply chains of tomorrow (Ozkanlısoy, 2021).

Every crisis is an opportunity for radical positive changes. Undoubtedly, the global COVID-19 pandemic has contributed to the development of a knowledge-based economy, online trade, remote access to public services, and the advancement of e-learning (Szczepański, 2020).

3. Methodology

Considering the aforementioned information, to ascertain the potential disparities among countries concerning the impact on organizations during the COVID-19 pandemic, we posited the following hypotheses for examination:

H_{a0}: There is no difference between countries in terms of share of affected organizations during the COVID-19 pandemic.

H_{b0}: There is no significant difference in affected organization extent by countries.

H_{c0}: There is no significant difference having supply chain disruption plan by countries.

H_{d0}: There is no difference between having supply chain disruption plan and enterprise size by country.

H_{e0}: There is no difference between affection and enterprise size by country.

The present study, primarily of an exploratory nature, includes 13 questions that encompass both explanatory and descriptive inquiries. This survey aimed to gather information from entities that are currently operating and have an active status, specifically focusing on the effects of the COVID-19 pandemic on their supply chains. Participants were asked to provide information regarding the nature and causes of supply chain disruptions inside their firms. In addition, participants were also prompted to elucidate whether contingency plans were in place to address such disruptions. Complementing these inquiries were descriptive questions pertaining to factors such as the size of the companies, the role of the respondents, and the sectors in which they operate. In our study, the essence of survey participation lies in voluntarism. As a result, a total of 358 questionnaires were received, with 106 responses from Poland, 140 from Georgia, and 112 from Turkey.

In conducting a cross-cultural study spanning three diverse countries—Georgia, Poland, and Turkey—the process of sample collection was meticulously orchestrated to ensure representative and reliable data. Employing a unified approach, we utilized online questionnaires as the primary instrument for data gathering. The utilization of online or web-based surveys is seeing a growing trend, and when administered appropriately, they have demonstrated considerable efficacy (Rowley, 2014). Given the digital nature of our survey instrument, configured as an online questionnaire, a discerning approach was employed in selecting communication channels aligned with prevalent practices among industry professionals in each respective country. In the context of Georgia, a concerted effort was made to engage with the entire spectrum of active organizations operating within the country. This was achieved through the dissemination of the survey via targeted email invitations extended to organizations considered integral to the landscape under investigation. In Poland, a deliberate choice was made to leverage the expansive reach of industry communities on the Facebook platform as the conduit for data collection. The survey, strategically positioned within relevant professional groups, served as a focal point for soliciting responses from the discerning pool of industry practitioners. Similarly, in Turkey, the survey link was disseminated within the confines of professional groups on the LinkedIn platform, with an expectation that stakeholders within the supply chain domain would actively participate in the survey process. The tailoring of distribution channels to the idiosyncratic characteristics of each country's supply chain networks was deliberate, underscoring our commitment to securing data that is not only comprehensive but also imbued with substantive content, thereby contributing to a nuanced understanding of the distinct regional contexts under examination. Recognizing the significance of linguistic nuances, each survey was meticulously translated into the respective national languages of the participating countries. Careful attention was devoted to preserving the integrity and meaning of the questions, ensuring that cultural and linguistic disparities did not compromise the validity of the collected data. This comprehensive approach to sample collection reflects a commitment to inclusivity, cultural sensitivity, and methodological rigor in our pursuit of a nuanced understanding of the diverse perspectives across these distinct geographical regions.

Confronted with categorical data, researchers often rely on Cramér's V as a statistical measure that extends the chi-squared (χ^2) test for independence. Cramér's V provides significant information regarding the level of relationship between two categorical variables. The importance of Cramér's V values becomes prominent when the Chi-Squared Test achieves statistical significance. The values, which span from 0 to 1, provide a quantitative basis for assessing the degree of association, where higher values signify a more prominent relationship between the variables. Due to the categorical structure of the data, Cramér's V was opted into our analytical framework as a methodological approach to identify the relationships within the dataset.

There is insufficient statistical evidence to reject the null hypothesis at the 5% level of significance based on the H test statistic. Cramér's V coefficient to determine the association between variables was used (1).

$$V = \sqrt{\frac{\chi^2 / n}{\min(r-1),(c-1)}} \quad (1)$$

where:

n – total sample size,

r – number of rows,

c – number of columns.

The adjustment is such that V will range from 0 to 1. A large value of V merely indicates a high degree of association. It does not indicate how the variables are associated (Malhotra, 2017).

4. Results and Discussion

Upon amalgamating and cleaning the data procured from all three nations, a thorough analysis was executed employing the Statistical Package for the Social Sciences (SPSS). The underlying premise of our study posited that there exists a lack of disparity among countries in relation to the proportion of organizations affected. It was also postulated that there exists no substantial disparity in the proportion of countries that possess strategies for managing supply chain disruptions. It was also assumed that there is no statistically significant difference among the three countries in terms of whether organizations had a plan in place to address supply chain disruptions.

Figure 1. shows the share of the respondents in the Polish, Georgian and Turkish organizations which was affected by COVID-19 pandemic.

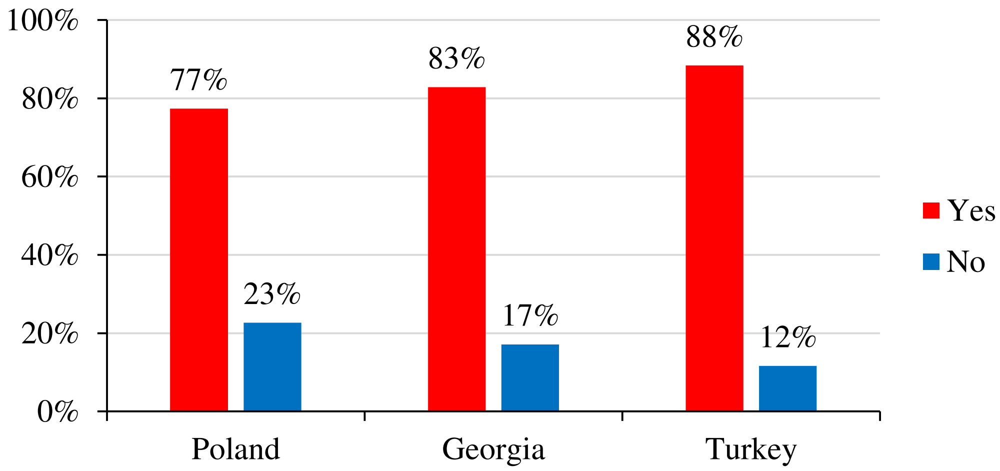

Figure 1. Share of affected organizations by countries.

Source: own study.

As can be seen from the diagram, the share of affected organizations is significantly higher in all three countries. In Turkey, 88% of the respondents answered yes, while in Georgia and Poland, this answer was 83% and 77%, respectively. Therefore, the cross-tabulation analysis shows that a yes answer cannot determine which country the issue concerns, as the COVID-19 pandemic has massively affected all three countries. This is confirmed by the low association index of Cramer's V and the level of significance, which is higher than 0.05. The calculations are presented and summarized in the Table 1.

Table 1.
Symmetric Measures

Symmetric measures			
		value	**approx. sig.**
Nominal by nominal	Phi	0.114	0.096
	Cramer's V	0.114	0.096
N of Valid Cases		358	

Source: own study.

Figure 2 shows the share of the respondents in the Polish, Georgian and Turkey organizations by affection extend of COVID-19 pandemic.

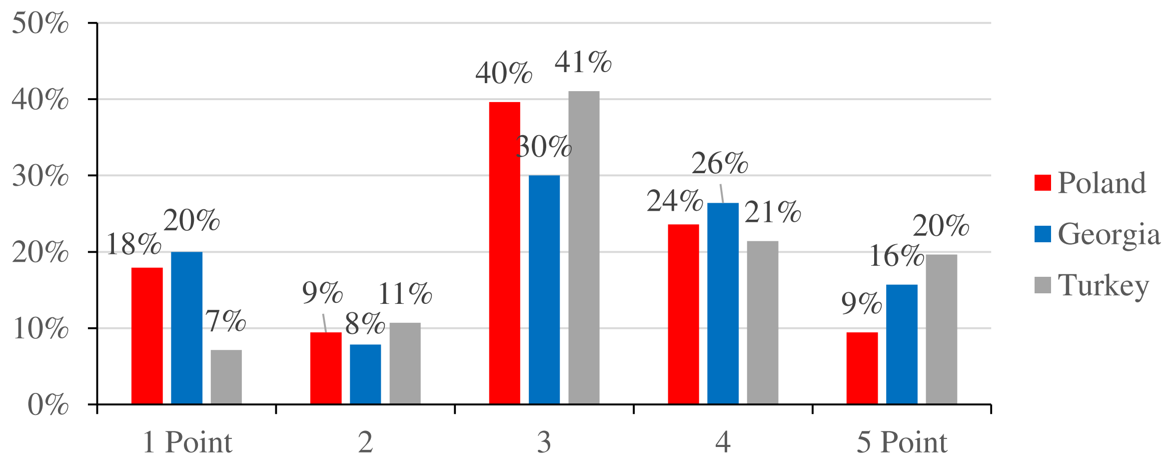

Figure 2. Distribution of firms affected by COVID-19 across the country in terms of degree of impact. Source: own study.

The chart shows a more or less equal distribution in these three countries. As we can see, 3 points, which means an average rating, leads in all three countries.

As we can see from the table 2., mean points are close to each other, which is supported by the level of the significance (0.062) which is higher than 0.05. Therefore, our null hypothesis accepted. It means that perception of COVID-19 pandemic between countries was the same.

Table 2.
Descriptives

Descriptives						
Extent points						
	N	**mean**	**std. deviation**	**std. error**	**minimum**	**maximum**
Poland	106	2.972	1.1989	0.1164	1.0	5.0
Georgia	140	3.100	1.3320	0.1126	1.0	5.0
Turkey	112	3.357	1.1299	0.1068	1.0	5.0
Total	358	3.142	1.2387	0.0655	1.0	5.0

Source: own study.

We conducted analysis of variance (ANOVA) to determine if it was statistically important difference between means by counties as seen Table 3.

Table 3.
Analysis of Variance (ANOVA)

ANOVA					
Extent points					
	sum of squares	**df**	**mean square**	**f**	**sig.**
Between groups	8.505	2	4.253	2.800	0.062
Within groups	539.229	355	1.519		
Total	547.735	357			

Source: own study.

Figure 3 shows the share of the respondents in the Polish, Georgian, and Turkey organizations who have a plan for dealing with supply chain disruptions.

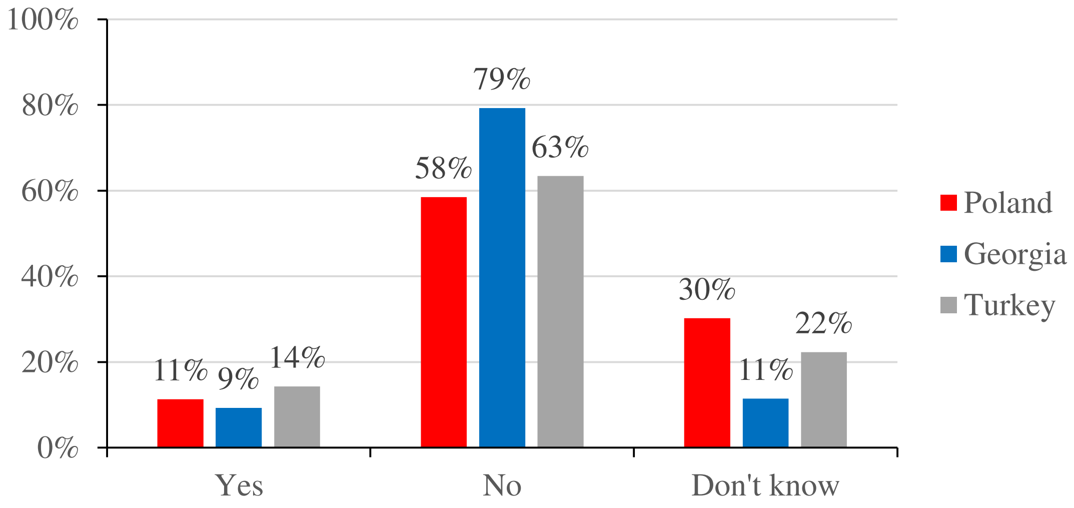

Figure 3. Having a plan for dealing with supply chain disruptions.

Source: own study.

Cross-tabulation analysis shows that the significance level is less than 0.05 and the null hypothesis should be rejected as seen Table 4. and Table 5. From the figure 3 we see that Georgia has the largest share of No answers than Poland and Turkey. Therefore, it needs further research what may be the results of this issue.

Table 4.
Chi-Square Tests

Chi-square tests			
	value	df	asymp. sig. (2-sided)
Pearson Chi-square	16.440[a]	4	0.002
Likelihood ratio	16.775	4	0.002
N of valid cases	358		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.14.			

Source: own study.

Table 5.
Symmetric Measures

Symmetric measures			
		value	approx. sig.
Nominal by nominal	Phi	.214	0.002
	Cramer's V	.152	0.002
N of valid cases		358	

Source: own study.

To go deep, we introduced an additional variable, enterprise size, which we grouped into 3 categories. Our goal was to show how organizations' readiness to have a plan for dealing with supply chain disruptions varies by enterprise size and country.

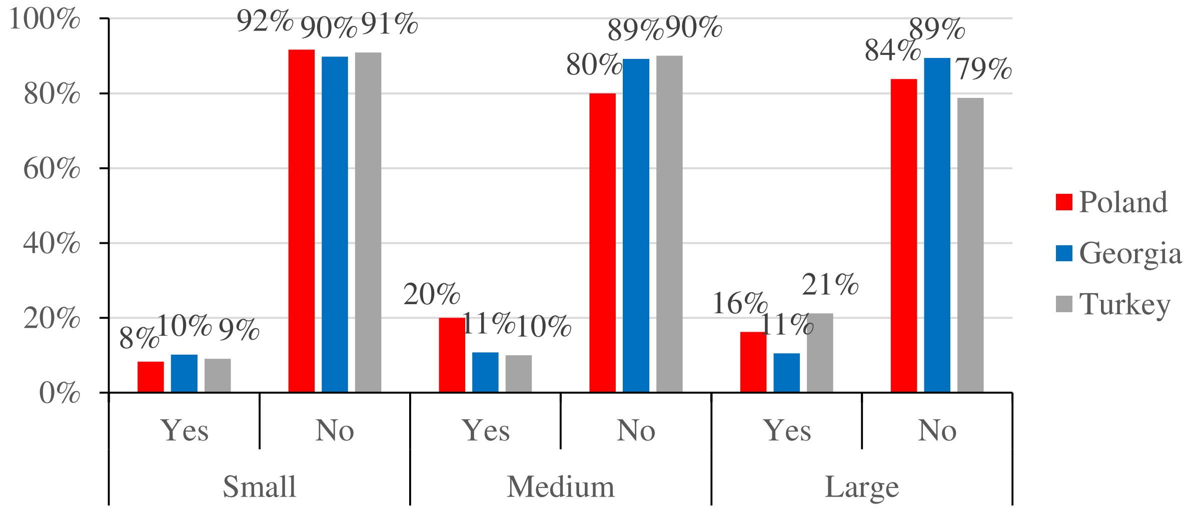

Figure 5. Distribution of dealing with supply chain disruption plan by organization size and country.

Source: own study.

Table 6.
Symmetric Measures

Symmetric measures				
size			value	approx. sig.
Small	Nominal by nominal	Phi	0.025	0.978
		Cramer's V	0.025	0.978
	N of valid cases		72	
Medium	Nominal by nominal	Phi	0.129	0.549
		Cramer's V	0.129	0.549
	N of valid cases		72	

Cont. table 6.

Large	Nominal by nominal	Phi	0.118	0.373
		Cramer's V	0.118	0.373
	N of valid cases		141	
Total	Nominal by nominal	Phi	0.100	0.238
		Cramer's V	0.100	0.238
	N of valid cases		285	

Source: own study.

As we can see, pandemic preparedness, as expressed by the supply chain disruption plan, does not differ by country. Cross-tabulation analysis shows that the significance level is more than 0.05 and the null hypothesis should be accepted as seen Table 6. That means that there is also no statistically significant difference depending on the size of the enterprises. This indicates that pandemic preparedness was roughly equal in relation to the criteria mentioned above. It is interesting how organizations will change their attitude towards crises by developing supply chain disruption plans. Depending on the size of the enterprise, they may adapt to the changed environment differently. This emphasizes conducting research in a similar direction in the future. Figure 6 shows if the firms based on their size affected by COVID-19 among countries.

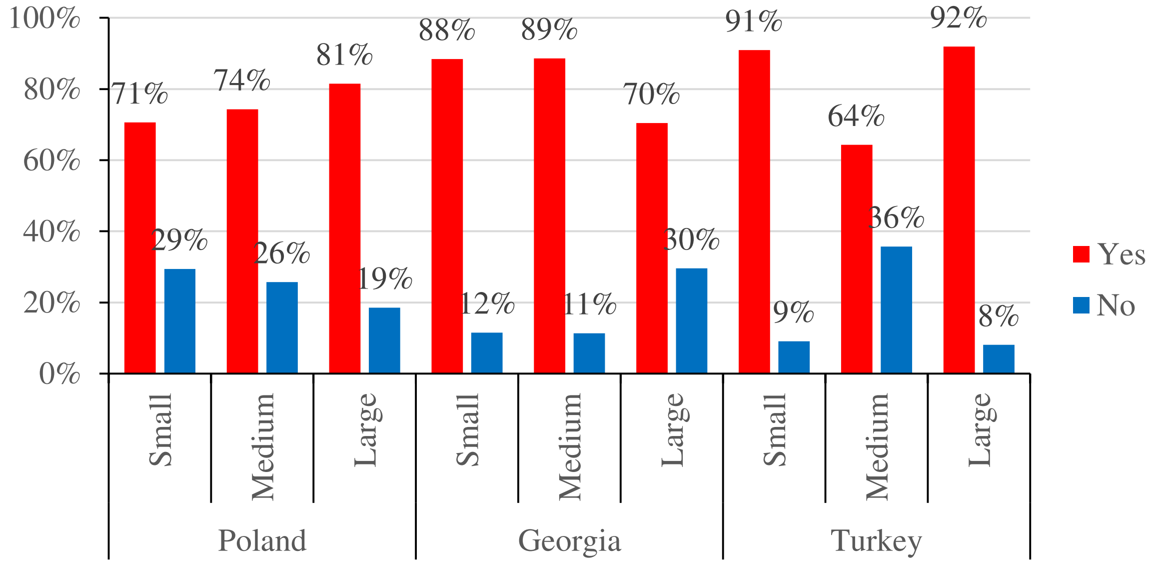

Figure 6. Affection by country and size.

Source: own study.

Table 7.
Symmetric Measures

Symmetric measures				
country			**value**	**approx. sig.**
Poland	Nominal by nominal	Phi	0.105	0.561
		Cramer's V	0.105	0.561
	N of valid cases		106	
Georgia	Nominal by nominal	Phi	0.223	0.031
		Cramer's V	0.223	0.031
	N of valid cases		140	

Cont. table 7.

Turkey	Nominal by Nominal	Phi	0.285	0.011
		Cramer's V	0.285	0.011
	N of valid cases		112	
Total	Nominal by nominal	Phi	0.055	0.583
		Cramer's V	0.055	0.583
	N of valid cases		358	

Source: own study.

Figure 6 shows the share of the respondents in the Polish, Georgian and Turkey organizations by affection extend of COVID-19 pandemic. Although the level of significance in the overall indicator is higher than 0.05, in the case of Georgia and Turkey it is lower than 0.05, which means that the differences are statistically significant as seen Table 7. However, this may be due to the fact that the share of affection in the large and medium organizations included in the study in Georgia and Turkey was significantly different from each other. It follows from the above that there is a difference within the country on the examples of Georgia and Turkey, although the difference between all three countries is not statistically significant and the null hypothesis has been confirmed. This means that overall, there is no difference in enterprise size and affection extent in the three countries.

Summarily, Table 8. provides a concise overview of the level of support for our research hypotheses.

Table 8.
The results of the analysis of the association between the variables

Hypothesis	Null hypothesis	Cramér's V	Sig.
H_{a0}	Supported	0.114	0.096
H_{b0}	Supported	-	0.062
H_{c0}	Not Supported	0.152	0.002
H_{d0}	Supported	0.100	0.238
H_{e0}	Supported	0.055	0.583

Source: own study.

The H_{a0} hypothesis indicated that there is no difference between countries in terms of share of affected organizations during the COVID-19 pandemic. We accepted H_{a0} hypothesis that means that that countries can't be determined by yes answers. So, we conclude that because share of the positive answers was high, the COVID-19 pandemic has massively affected Polish, Georgian, and Turkish entities.

The H_{b0} shows that there is no significant difference in affected organization extent by countries. Analysis of variance (ANOVA) introduced to determine if it was statistically important difference between mean points by counties. The result shows that means are close to each other. Level of the significance (0.062) which is higher than 0.05 also support this idea. Null hypothesis was accepted. Therefore, we can conclude that perception of COVID-19 pandemic affect to active entities between countries was the same.

The H_{c0} says that there is no significant difference having supply chain disruption plan by countries. It was rejected by assumption that statistically significant difference was between having a plan for dealing with supply chain disruptions. Georgia has the relatively large share of No answers. From our point of view, it needs further research to be understood the reasons of it and potential benefits of having plans for dealing with supply chain disruptions from Georgia perspective.

Meanwhile the H_{d0} concludes that there is no difference between having supply chain disruption plan and enterprise size by countries. As expressed by having the supply chain disruption plan, pandemic preparedness does not differ by country. Through cross-tabulation analysis, it is evident that the significance level exceeds 0.05, leading to the acceptance of the null hypothesis. Consequently, there is no statistically significant variance based on enterprise size. This indicates that pandemic preparedness was roughly equal in relation to the criteria mentioned above. The adaptation to the altered environment may vary depending on the enterprise's size, underscoring the importance of future research exploring this aspect.

Finally, the H_{e0} says that there is no difference between affection and enterprise size by countries. While the overall indicator's significance level exceeds 0.05, it is noteworthy that for Georgia and Turkey, the level drops below 0.05, indicating statistically significant differences. Consequently, even though the distinctions among all three countries lack statistical significance, confirming the null hypothesis, there exists a disparity within large and medium organizations results in Georgia and Turkey. In summary, there is no discernible difference in enterprise size and the extent of affection across the three countries.

Upon testing all five hypotheses, the findings revealed the acceptance of four and the rejection of one. This indicates that most of the proposed COVID-19 factors exhibit no statistically significant differences among Poland, Georgia, and Turkey. Consequently, we may infer that the COVID-19 pandemic was an overwhelmingly influential event for the entities under consideration.

5. Conclusions

The COVID-19 pandemic exhibited a global scope, as seen by its widespread impact across various industries and enterprises, as supported by scholarly literature. This research investigated the implications of the COVID-19 pandemic on global supply chains, analysing the strategies and adaptations implemented by firms in Poland, Georgia, and Turkey. The objective was to provide insightful viewpoints on the long-lasting impacts of the pandemic on supply chain management, with a focus on the solutions implemented and obstacles faced by firms in various nations. The obstacles consist of disruptions in transportation, changes in demand patterns, and the susceptibilities that are intrinsic to various industries. The results indicate that, among the organizations included in the sample, there were no statistically significant variations seen among nations in terms of the presence and extent of the impact experienced by organizations due to the COVID-19 pandemic.

The practical implications of this study provide useful insights for businesses and organizations as they navigate the complicated challenges of supply chain management in a world that has been shaped by the effects of the epidemic. The results, obtained from an extensive empirical inquiry conducted in Poland, Georgia, and Turkey, shed light on similarities in the effects of the COVID-19 pandemic on supply chains in several geographical areas. Organizations can leverage this research to inform strategic decision-making, enhance resilience, and develop adaptation within their supply chains. The prioritization of the implementation of good risk management strategies provides firms with practical guidance. Furthermore, the supply chain environment experienced by these three countries during the COVID-19 period may serve as a valuable foresight for companies embarking on new international market pursuits.

The research presented in this study, while contributing valuable insights into the lasting repercussions of the COVID-19 pandemic on global supply chains, is not without its limitations. Initially, despite our efforts to ensure that the sample is diverse and representative, it is acknowledged that the study may not cover all sectors and organizations equally, limiting the generalizability of the findings. Secondly, it is essential to acknowledge that participation in the online survey was voluntary, thus potentially introducing a selection bias as only companies willing to engage voluntarily contributed to the data pool. Moreover, the reliance on self-reported data introduces inherent limitations, as responses are subject to individual perceptions and biases, posing a challenge to the objectivity of the results.

For further research, expanding the study to include additional nations would provide a more expansive and diversified perspective on the enduring impacts of the COVID-19 pandemic on global supply chains. Furthermore, conducting sector-specific investigations within the existing or expanded geographical scope could offer nuanced insights into the unique challenges and adaptations prevalent in different industries. Alternatively, collaboration with governmental bodies could enhance the depth of research by accessing additional datasets and insights, thereby enabling a more comprehensive analysis of the long-term implications of the pandemic on supply chain management. These potential avenues underscore the adaptability of the study framework and its capacity for further refinement through broader geographic representation, sector-specific analyses, or leveraging governmental support for enriched datasets.

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COMPETITION ON THE COURIER, EXPRESS AND POSTAL SERVICES MARKET

Marek SIKORA

Bydgoszcz University of Science and Technology, Department of Management Engineering;
m.sikora@pbs.edu.pl, ORCID: 0000-0001-9773-8527

Purpose: The purpose of the publication is to conduct a comprehensive analysis of the courier services market (CEP) in Poland. The research focuses on identifying the main players in the market, understanding their operating strategies and assessing the impact of innovative solutions on the market. In addition, the aim is to examine the competitive advantages of companies against the background of customer satisfaction levels, the way courier services are delivered, and to analyse innovations in logistics.
Design/methodology/approach: The surveys were conducted in three stages in 2020, 2021, and 2022/2023 in the Bydgoszcz metropolitan area. Conducting the surveys in three stages in different years made it possible to analyse changes over time and the mixed methodology using both online (CAWI) and face-to-face (PAPI) surveys allowed us to reach a wider group of respondents.
Findings: Pandemic COVID-19 has increased the use of courier services. The current market leader is InPost and the high level of customer satisfaction is due to innovative parcel machines, speed of delivery and convenience of tracking parcels. Research shows that courier company customers value timeliness, efficiency and modern solutions such as parcel machines, which is an important area for courier companies to focus on in their quest for customer satisfaction and loyalty.
Research limitations/implications: The results of the study are not representative, but they may be a contribution to a broader and more in-depth analysis of the KEP market and the level of customer satisfaction of courier companies. The limitations of the study include the limited geographical area (Bydgoszcz conurbation) and the small representativeness of the sample, which may affect the generalisation of the results. Research conducted on a larger scale, taking into account different regions of Poland, would provide a more complete picture of the courier services market.
Practical implications: The increase in the use of courier services during the pandemic indicates changes in shopping behaviour. It was also found that older people are less likely to use courier services for online purchases, suggesting the need to educate and adapt offers to this customer group. Courier companies should therefore focus on improving service quality, offering innovative delivery solutions, adapting to changing customer preferences and responding flexibly to changing market conditions.

Originality/value: The article provides information that can be used to make strategic decisions, tailor services to meet customer needs, increase the company's competitiveness in the CEP market, and build a strong reputation based on actual customer preferences.
Keywords: innovation, competitive advantages, postal service logistics, courier service market.
Category of the paper: research paper.

1. Introduction

Around the world, as well as in Poland, the courier services market is one of the fastest growing segments in logistics. Courier services are global, a huge industry with annual revenues exceeding USD 300 billion. Currently, there are about 580 000 courier companies around the world, employing about 4 million employees (Trzupek, 2020), with more than 300 registered in Poland (UKE, 2023). The growth rate of the courier services market is nearly 3 times the growth rate of Poland's GDP, which indicates that despite its already significant value, the Polish postal services market has prospects for further development.

The CEP industry, like the TSL sector, is a barometer of the economy, as the growing demand for transport services is a reflection of market demand for various goods, and thus confirms the increased activity of enterprises. Courier services have a huge impact on the development of the Polish economy, directly by increasing employment, investment and revenue, and indirectly by increasing the competitiveness of Polish companies internationally (Rucińska, 2016). Influenced by two megatrends - urbanisation and e-commerce - demand for last-mile delivery services has increased. Urbanisation has led to massive population growth in urban areas and some studies estimate that by 2050 there will be around 6.3 billion people living in large cities, or around 70% of the world's population (Bretzke, 2013).

The annual increase in shipments is heavily influenced by changing habits of the public, which is related to increasing computerization and easier access to online shopping, as well as the general facilities offered by courier companies for shipping a variety of items. Almost one in five Poles buys all non-food products from online stores. As a result, total retail sales in e-commerce channels in Poland in 2021 exceeded 100 billion zlotys and the Compound Annual Growth Rate averaged 28.1% (LME, 2022). Currently, areas used by the e-commerce industry in Poland occupy nearly 7.5 million square meters, accounting for 30% of the total supply. However, the intensive growth of the e-commerce sector comes with a number of challenges, among which experts most often cite supply chain efficiency and the need to further invest in last mile logistics, including courier, express and postal services. The market for CEP services in Poland in 2019 accounted for only 2.5% of the European market by value, and the forecast for 2023 indicated a slight increase to just 3% (Gawryluk, 2019).

After accelerating during the pandemic period on the back of a sharp increase in courier shipments in 2022 (up 44.2% over 2020), there was a slight deceleration. A report by the Office of Electronic Communications (UKE, 2023) shows that a total of 921.6 million pieces of courier and traditional postal parcels were carried out in 2022 (up 14.5% from 2021), generating PLN 9,934.6 million in revenue (up 15.4% from 2021), which means that 2022 was another year in a row in which an increase in revenue from these services was observed. The "Polish CEP Report 2022" shows that the Polish CEP market is valued at PLN 17 billion (LME, 2022). UKE's forecast assumes that the market will reach 1 billion shipments in 2023 and 1.05 billion in 2024.

1.1. Development of the courier service industry in Poland

The courier market is part of the transportation, freight forwarding and logistics (TSL) services sector. The first courier companies originated in the U.S. where they expanded into Europe and other continental markets in the 1970s. In the 1990s, the main activity of these companies was the delivery of parcels from sender to addressee, and the biggest advantage of these services was reliability. With the development of information and communication technology, courier companies have made improvements, related to better timeliness, precision and higher quality. In the 21st century, these companies are able to offer their customers service packages, based on information management systems and flexibility in performing the services of principals (Rydzkowski, 2011). In Poland, the industry is relatively young, as the first courier companies only appeared in the 1980s (Marcysiak, Pieniak-Lendzion, Lendzion, 2013). This was due to the fall of communism and the change of regulations in international shipping law (Pliszka, 2008).

Courier companies are the main logistics intermediaries that, without acquiring ownership of products, function in a specialized way, which allows them to offer high-quality logistics services (Stojanov, Zhelyazkova, Gramatikova, 2018). There is no clear definition of courier services in Polish law, although it is commonly and in the literature on the subject. Courier service is classified on the one hand as a postal service and on the other as a transportation service (Gulc, 2017). We can define courier service as a service that involves collecting a shipment from a customer ordering a particular service and delivering it to the recipient at a specified address, within a specified time. However, in the Postal Law, amended in 2022, there is a definition of courier service, according to which it is a registered letter or postal parcel, received, sorted, moved and delivered in a manner that ensures recording of the time of posting and delivery, tracking of the route of the parcel, timely delivery of the parcel to the recipient at the place specified by the sender or addressee (parcel redirection). The definition universalizes, among other things, modern technological solutions, including digital services and communications, takes into account service through self-service parcel machines (Prawo Pocztowe, 2012).

It should be taken into account that the courier company, in addition to postal services, also provides services under the transportation law. In this case, the carriage service may involve a consignment of goods, which are items accepted on the basis of a single shipping document. However, the carriage service may not include postal items (Prawo Przewozowe, 2000). Courier services are often referred to interchangeably as CEP (courier, express and parcel) services. It is problematic to separate express services from courier or parcel services due to the lack of major differences between them.

A CEP service can be defined as a service that involves the delivery of a shipment from the sender to the recipient or to the recipient's designated location by a qualified company, using an appropriate logistics network, with the ability to both track the status of the shipment and the delivery date. The delivery of the shipment is to be in the shortest possible time, at an appropriate cost, and in accordance with the customer's predetermined expectations (Kawa, 2018).

At the beginning of its development, the CEP market belonged to the Poczta Polska (Polish Post Office) and global integrators: DHL, UPS and DPD. The operators specialized mainly in servicing B2B customers and most of them were just beginning to learn the eCommerce area. The fulfilment of shipments by eCommerce stores consisted of either letter mail or normal postal parcels. CEP shipment processing consisted of simple posting and delivery. There was the possibility of tracking the shipment and additional, but quite rarely used at the beginning of the development of this industry, services such as confirmation of receipt or cash on delivery, which had to be paid extra. The beginnings of the development of services offered by CEP operators were difficult in particular for retail customers, who, when sending a parcel, had to pay a higher price in case of "delivery to" or "pickup from" a private person (Gawryluk, 2019).

In the following years, the development of CEP parcel service offerings for eCommerce customers began. At the beginning of the development of this industry, delivery was door-to-door, but now it is possible to order a shipment to specific pick-up locations, such as grocery stores, gas stations, newsstands and parcel machines. Such solutions have gained a lot of interest among customers, which has been influenced by the increased availability of the Internet in households. More and more Internet users were also interested in eCommerce, generating an increasing number of shipments. Volume dynamics increased, with almost 100 million more shipments in 2014 compared to 2010. The increase in volumes prompted CEP operators to make pricing and communication changes – text messages or emails with information about the status of the shipment and the courier's planned delivery date (and often a contact number for the courier) were introduced, helping to increase the efficiency of order fulfilment.

The financial as well as insurance and telecommunications industries, by offering eSales of their products, initiated procedural services: the courier not only delivered the contract and the goods, but was obliged to check the recipient's data, follow procedures, download attachments, sign and return the parcel to the sender. It became standard to insure shipments (Kawa, 2018).

With advances in technology, companies also introduced mobile apps. Increasing competition and customer expectations have led CEP operators to focus primarily on the quality of their services (Ratajczak, Lorenc, 2015) by investing in infrastructure development, modern technology and human resource development (Krasuski, 2016).

In recent years, courier companies have had to adapt very quickly to market changes. While other industries have had to give up rented premises, lay off employees or forcibly send employees on holidays, the courier industry has seen rapid growth in shipment volumes and companies have been expanding their services and deliveries. In 2019, more than 440 million courier shipments were delivered to Poles - almost 20% more than in 2018. According to many analyses, the courier service industry is one of those for which the global crisis caused by the SARS-CoV-2 coronavirus provided a major boost to development with the continued growth and participation of online commerce. According to Central Statistical Office (CSO) data, April 2020 saw the largest drop in retail sales due to the restrictions. There was also a 27.7% increase in online sales compared to April 2019 (GUS, 2020).

Running an e-commerce business requires an offer tailored to the needs of today's consumers. It is no longer just the quality and price of goods that determine whether a customer decides to buy from a particular shop, but also the speed of delivery. According to data from the Gemius Research Institute, delivery of goods within 8 hours motivates as many as 95% of respondents to buy online. The percentage of internet users who declare that they buy online has stabilised and currently amounts to 77%, with significantly more people shopping on Polish (75%) than foreign websites (32%) (Gemius, 2022).

1.2. Competitiveness of the courier services market

The courier services market is the most competitive market in the postal services market. Between 1996 and 2022, there was a 20-fold increase in the number of non-public operators (Figure 1) and currently there are 302 such operators on the Polish market (as at December 2022).

Unlike Polish Post Office, which as the designated operator is obliged to provide services in domestic and cross-border traffic, alternative postal operators may provide their services nationally, internationally or only locally. The analysis of activity conducted by alternative postal operators indicates that in 2022, 105 of them provided services exclusively in one of the three market segments (including 64 exclusively in the courier mail segment). Only 3 alternative operators were active in all three postal market segments.

The market of courier, express and postal services (CEP) in Poland is one of the most competitive in the European Union, which results mainly from the presence of large players, such as Polish Post Office, courier companies, express services and the emergence of innovative solutions, such as Paczkomaty 24/7 InPost.

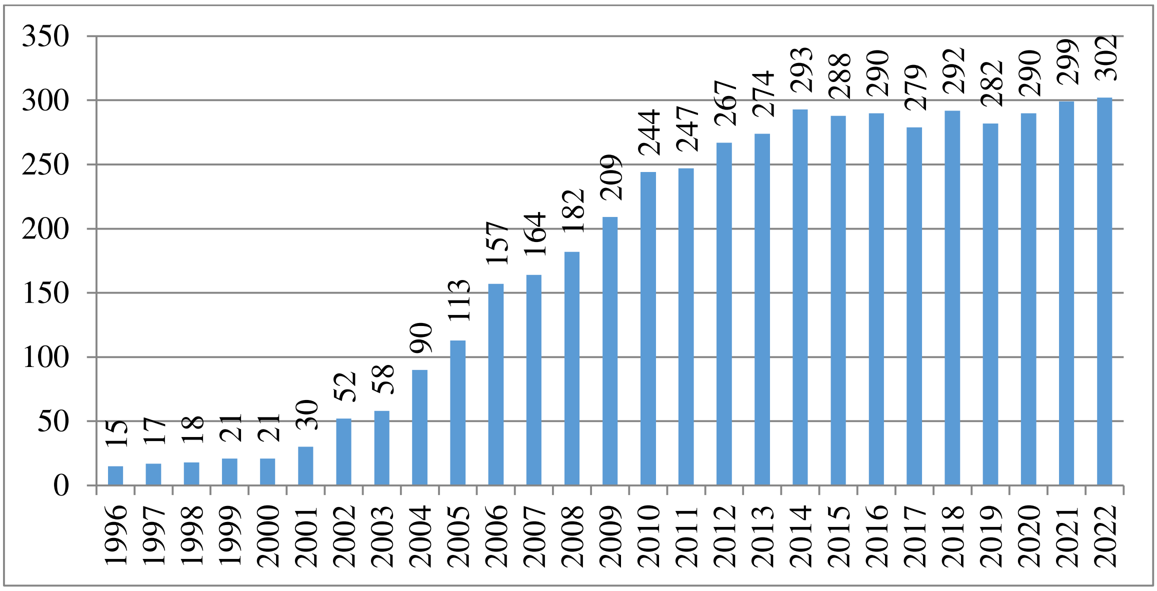

Figure 1. Number of registered alternative postal operators in the period 1996-2022 (as at 31 December each year).

Source: own study based on UKE data.

The CEP market in Poland is dominated by seven players (GS1 Polska, 2020):

- postal operator: Polish Post Office;
- three global integrators: DHL, UPS and FedEx (TNT);
- two companies owned by European post offices: DPD (French Post) and GLS (British Post);
- a national entity with foreign capital: InPost (Advent International).

However, these are not all entities that provide express and distribution and postal services. There are a dozen more companies that have services similar to CEP and many local couriers and service intermediaries.

The Polish Post Office is a state-owned company with a 465-year tradition, which acts as the designated operator, i.e. the operator obliged to provide universal postal services. Polish Post Office has the largest logistics network in Poland, comprising almost 7600 offices, branches and postal agencies and employs approximately 60 000 employees (Poczta Polska, 2023). It enables the collection or sending of parcels in postal outlets, Ruch kiosks, Orlen stations, Żabka shops and parcel machines. In total, it has about 12 000 PUDO (Pick-Up and Drop-Off) points. Poland Post, dominating the CEP market with its low prices and extensive network of post offices and delivery points, has had to adapt its approach to market competition and new innovations that have changed the industry. In addition, it provides parcel post services, courier services, logistics and banking and insurance services. It is also developing the area of digital services provided by the Envelo online platform.

Another major player on the Polish CEP market are courier companies, providing door-to-door delivery services for parcels and other items. The courier market in Poland has been experiencing an influx of new companies since the 2000s, increasing competition and driving down prices. In this dynamic environment, key players include global corporations such as

DHL, UPS, FedEx, European postal companies DPD and GLS as well as numerous local and regional companies competing for market share. Competition is not only about prices, but also about the variety of services offered to customers. Courier companies have an advantage over Polish Post Office due to their ability to provide faster delivery times and more reliable services. However, they tend to be more expensive than Polish Post Office and are not able to provide the same level of coverage as Polish Post Office. Courier companies are trying to differentiate themselves by offering, among other things, express delivery, same-day delivery and door-to-door delivery. Investment in modern technologies such as GPS tracking and electronic signatures allows companies to improve their reception among customers. As a result, competition in the Polish courier market is intense and companies are constantly striving to differentiate themselves with prices, services and technological innovations to benefit customers.

Evidence of the high competitiveness of the courier segment in the Polish postal market was the decline in average revenue per courier parcel, observed for several years. In 2022, the average revenue per courier parcel increased, meaning that some operators decided to moderately increase prices in response to rising operating costs (UKE, 2023).

The largest CEP operator in Poland until recently was DPD Polska. Its position strengthened significantly after the acquisition of Siódemka in 2015, which mainly served smaller customers and the B2C segment. In 2021, the company delivered 226 million parcels. DPD currently works with 10000 couriers and has a network of around 25 000 sending and receiving points including city branches and parcel machines (O DPD Polska, 2023).

In 2022, InPost became the market leader in terms of both volume and revenue. The company has grown by nearly 40% over the past year alone, with its key competitive advantage being the largest parcel machine network in Europe. InPost delivered 507.2 million parcels in 2022 and is now almost twice the size of DPD (255.6 million) and four times the size of Polish Post Office (126.2 million) (LME, 2022).

An analysis of the data shows that the 7 largest courier operators in terms of volume and revenue had a 98.8% share of total volume and 97.6% share of total revenue in this market segment in 2022, respectively. InPost and second-ranked DPD account for approximately 64% in terms of volume and just under 50% in terms of revenue in the CEP market (Table 1).

Table 1.
The largest postal operators in the courier segment in 2022

Ranking position	By volume	By revenue
1.	InPost Paczkomaty sp. z o.o.	InPost Paczkomaty sp. z o.o.
2.	DPD Polska sp.z o.o.	DPD Polska sp.z o.o.
3.	Poczta Polska S.A.	GLS Polnad sp. z o.o.
4.	GLS Polnad sp. z o.o.	UPS Polska sp. z o.o.
5.	UPS Polska sp. z o.o.	FedEX Express Polska sp. z o.o.
6.	FedEX Express Polska sp. z o.o.	Poczta Polska S.A.
7.	DHL Parcel Polska sp. z o.o. i DHL Express (Poland) sp. z o.o.	DHL Parcel Polska sp. z o.o. i DHL Express (Poland) sp. z o.o.

Source: (UKE, 2023).

InPost has introduced Paczkomaty 24/7 as a way of delivering goods to special post office boxes owned by the network. The parcel machines allow customers to pick up a parcel from a convenient location at any time of the day or night, without having to wait for a courier. Their main advantage is their availability 24 hours a day, seven days a week, convenient locations, lack of queues typical of post offices and the competitive price of the service (lower than the door-to-door services of the Polish Post Office and courier companies). InPost parcel machines are becoming increasingly popular among online shops because of their convenience and competitive price. By adapting to the lifestyle and increasing expectations of consumers, the aforementioned courier service has become the most popular delivery option (Żak, Kowalski, 2017).

1.3. Impact of innovative solutions on the market

The emergence of innovative solutions such as Paczkomaty 24/7 InPost has had a significant impact on the Polish CEP market. The introduction of this innovative solution has enabled InPost to gain a competitive advantage over Polish Post Office and other postal services and courier companies in the market (Szewczyk, Trajer, 2017). The total time spent by the user at the parcel machine is reduced to a minimum and the use of a dedicated app on the phone makes it possible to locate the parcel machine, check the status of the parcel, open the box remotely, and pay for the parcel without a label from any parcel machine.

These solutions have also forced other players in the market to be more innovative and have had a positive impact on the entire CEP market in Poland, increasing competition, which has translated into lower prices and better customer service. This has made the Polish CEP market more attractive to customers and allowed it to grow and expand.

One example is the Polish Post Office, which has introduced its own version of the Paczkomaty 24/7 solution called "Postomaty". Internet service Allegro has also launched its own parcel machines under the name "Allegro One Box". Another example is the "ORLEN Paczka" machines, located at Orlen petrol stations, housing estates, service and retail outlets. "Alimaty", on the other hand, are devices operated by Chinese logistics company Cainiao Network, founded by AliExpress website owner Alibaba Group, enabling parcels from Asia to reach Poland faster. The courier company DPD is also developing a network of "DPD Pickup Station" parcel vending machines in Poland's largest cities. DHL is also joining the ranks of competitors with parcel machines under the name "POP Box".

Some competing machines offer fewer boxes, the machines do not have touch screens or scanners and the parcel can only be sent or collected via a mobile app. InPost has more than 19 000 parcel machines in 2022, which fit into the urban and rural landscape. Competitors together have many times fewer machines than InPost alone, but they do not want to give up the fight and are aiming to increase their market share.

At DHL Express Poland, more than half of the shipments involve e-commerce. For parcel recipients, it is very important to organise an efficient and flexible delivery. On Demand Delivery is a service that allows the recipient to change the place or date of collection of the shipment, to transfer the collection of the shipment to another person, to change the method of delivery and, very important since the pandemic, the possibility to deliver without a signature. DHL Express customers have a choice of delivery options thanks to its network of Service Points and POP Box machines. A great convenience is the possibility to easily and quickly pay customs and taxes via a web application and the possibility to pay at the courier - thanks to payment terminals (Michalski, 2020).

In addition to innovative technologies, DPD also focuses on comfort, flexibility and, above all, the convenience of receiving parcels, offering recipients to manage their parcel through Predict interactive notifications, and the MojaPaczka app. This makes it possible to quickly contact the courier, set a date and secure delivery of the parcel. The company's customers have the option of using several payment options, including: the possibility to pay by card at the courier's desk or during purchase via an e-shop form. The "DPD Pickup City Branches" have fitting rooms, where you can try on clothes, check whether the purchased item meets your expectations and, if not, you can immediately send a return. These branches offer the possibility to use special materials to pack the parcels, to make a delivery note and to have a coffee (Markowska, 2020).

Last-mile deliveries involve loads that are stochastic and vary considerably from period to period. A modern approach to such deliveries must therefore be both flexible and scalable (Mohammad, 2023). As an alternative solution in urban areas, pick-up and delivery points can improve logistics efficiency and reduce emissions. Particularly in populated city centres or near high-traffic areas, these points may be preferred by customers. As studies indicate, the future of last-mile logistics will be shaped by technology, innovation and customer demands (Demir, Syntetos, van Woensel, 2022).

2. Methods

The aim of this article is to analyse the CEP market in Poland, identify the main players and their strategies, assess the impact of the emergence of innovative solutions on the market and examine the competitive advantages of the players in this market.

The research problem is to identify the main challenges and determinants of competition in the Polish courier, express and parcel services market, as well as to identify the impact of innovations on this competition?

The study uses a critical content analysis of the available literature: academic publications, industry reports and other materials related to the courier services market to identify the main themes, trends, theories and solutions presented by various authors.

The study is an attempt to fill the cognitive gap related to the impact of the pandemic on the business models of courier companies. It is noted that the COVID-19 pandemic has significantly increased the use of courier services. The research focuses on analysing the changes in business models of courier companies due to the pandemic, including strategy adjustments, logistical innovations and flexibility in handling increased demand.

In order to analyse the courier services market in detail, beyond the available statistics, three different surveys were conducted in 2020, 2021 and at the end of 2022 and the beginning of 2023. The surveys covered: 1. an assessment of customer satisfaction with the use of selected courier companies, 2. an assessment of how courier services are delivered by the selected company, and 3. an analysis of innovations in logistics that solve the 'last mile problem' in courier services. A limitation of the study is that it focuses on the Bydgoszcz conurbation. Another survey extended to different regions of Poland could reveal regional variations in customer preferences, as well as specific challenges and opportunities for courier companies in different areas of the country. Therefore, the next stage will be a broad survey of selected issues across the country, which is planned for 2024.

The aim of the first stage of the research was to assess the level of customer satisfaction with the use of selected courier services in Poland. The survey focused on the quality of courier service provision and the quality of customer service.

The survey was conducted from June to August 2020. A survey questionnaire was prepared which was completed by 130 respondents: 60 in the form of a web survey using the CAWI (Computer-Assisted Web Interview) method, and 70 in the form of a face-to-face survey using the PAPI (Paper & Pen Personal Interview) method. The combination of the online survey method and the face-to-face survey method provides an opportunity not only to reach young, frequent Internet users, but also older and less computer literate people. This made it possible to reach different age groups, which would have been difficult using only the online survey method.

The survey was conducted on customers of courier companies residing in Bydgoszcz and the surrounding area. In the case of this survey, a non-random sample was selected and the method for selecting sample units was quota selection.

The questionnaire was made available several times on Facebook in the group "Bydgoszczanie" and others associating the residents of Bydgoszcz and its surroundings to reach only people affiliated with the Bydgoszcz agglomeration. The printed survey questionnaires, meanwhile, were made available to several institutions whose employees or customers reside in the Bydgoszcz agglomeration. Of the 130 responses collected, there were 66 women and 64 men, representing 50.77% and 49.23% respectively. 88 respondents were from urban areas (67.69%) and 42 lived in rural areas (32.31%).

The aim of the second stage of the research was to evaluate the delivery of courier services at the selected company. This company was DPD Polska, the leader of the courier market in 2021 both in terms of volume and revenue. The research was conducted in April and May 2021 in the form of an online survey using the CAWI method. The questionnaire was shared several times on Facebook with a description that the survey was aimed at online shoppers and those using DPD's services.

The survey elicited 130 views from online shoppers and DPD users. A non-random purposive selection was used. In order to meet the purpose of the study - only those who shop online and use or have used DPD services were invited to take part in the study. 83.1% of the respondents were female, while 16.9% were male. 66.2% of respondents were from urban areas 33.8% lived in rural areas.

The aim of the third phase of the research was to analyse innovations in logistics that solve the 'last mile problem' in courier services. It investigated whether self-pick-up at InPost parcel service points is a good alternative to traditional courier services. The study was designed to test the level of quality of service available at InPost parcel services compared to DHL courier and to diagnose the problems faced by customers using both types of service.

The research was conducted in December 2022 and January 2023 in the form of an online survey using the CAWI method. The questionnaire was shared several times on Facebook and Instagram platforms. 200 responses were obtained from respondents, of which 55.5% were given by women and 44.5% by men. The majority of respondents lived in urban areas (95%) and only 5% of respondents lived in rural areas.

3. Results

3.1. First stage of research

In 2020, of the online shoppers surveyed, the vast majority, as many as 90.77%, used courier services, including 6.92% more than once a week. About 9.23% of respondents do not use courier services at all, two thirds of whom are over the age of 64. Older people often do not know how to use a computer or do not have access to the internet, and are afraid of potential scams when shopping online.

The priority when choosing a courier service is the delivery time with the average of respondents indicating 4.45 on a scale of 1 - 5 (where: 1 - least important, 5 - most important). Slightly less important was the price - 4.36 and the third highest average was the quality of delivery - 4.21. The fourth position was occupied by the proximity of the collection point with an average of 4.12, followed respectively by the quality of service (4.11), the possibility to pick up the parcel 24/7 (3.70) the payment method (3.70) and customisation of the offer (3.43). The least important was recognition of the company (3.14).

In the multiple-choice question, the most frequently indicated courier company used by the respondents was Polish Post Office, with as many as 90.68% of answers. Next, respondents indicated 3 companies almost equally: DPD, which was used by 77.97% of respondents, InPost (76.27%) and DHL (76.27%). This was followed respectively by GLS, used by 50.85% of respondents so far, UPS with 44.92% and FedEx with 30.51% of indications. Other companies had marginal indications.

When asked to rate the quality of courier services on a scale of 1 - 5, respondents rated InPost best (average 4.30). It is the only company with an average above 4.0, which leads significantly over the rest. This was probably heavily influenced by the ability to use 24/7 parcel machines to collect ordered parcels. DHL came second with an average of 3.88 followed by DPD (3.80). UPS was ranked fourth with an average of 3.76 and Polish Post Office was only fifth (3.56). This was followed by GLS (3.55), FedEx (3.36) and other lesser-known companies, with an average of 3.05.

As many as 60% of those taking part in the survey are not attached to one courier company. 19% of those surveyed have no opinion on the subject and for only 21% of people, consistently using one chosen courier company is important. This may mean that, while it is easier to acquire new customers from other providers, it is just as easy to lose such customers to competitors by failing to meet certain expectations.

In as many as 70% of cases, there was a situation where the courier did not find anyone at the indicated delivery location. This indicates the importance of the courier's contact with the recipient before delivery and the company's behaviour in the event that the parcel cannot be handed over to the recipient. Courier companies deal with such a problem in different ways.

When assessing the quality of deliveries on a scale of 1 to 5, the most important factor was the condition of the parcel, which scored an average of 4.75 among respondents. The second most important factor for courier company customers is the timeliness of deliveries with an average of 4.69 and in third place was the short delivery time. Also important were the adequate flow of information about the delivery (4.12) or the staff's handling of problematic situations (4.08), e.g. when a parcel is damaged, when an item does not match the description or when there is a long delay in delivery. This was followed by telephone contact before delivery (mean score of 4.03), the courier's personal culture (4.00) and, in last place, the ability to choose or change the delivery time (3.78). This last indication may come as a surprise in the context of previous statements that in 70% of cases the courier did not find anyone at the indicated delivery location. 75% of the customers surveyed had not experienced a lost parcel, 11% did not remember such situations and as many as 14% had experienced a situation where their parcel was lost, which seems quite a high percentage.

Respondents rated on a scale from 1 to 5 (where 1 - very bad, 5 - very good) the possibility of using 24/7 parcel collection facilities (e.g. 24/7 parcel machines). As many as 85.59% of those taking part in the survey considered such an option to be very good. 10.17% found it good, 3.39% found it average and a marginal number of respondents (0.85%) found it bad.

No one considered this solution to be very bad. These responses clearly indicate that the idea of 24-hour pick-up facilities has been welcomed by parcel recipients, which is, in fact, reflected in the investment of many courier companies in similar facilities.

Respondents were also asked whether they had used courier services more frequently during the COVID-19 outbreak. As many as 62.71% of respondents answered in the affirmative. 29.66% of respondents did not use courier companies more often and 7.63% gave the answer "don't know/don't have an opinion". This allows us to conclude that a significant proportion of people have started to shop online more often during the pandemic period and thus use courier services.

3.2. Second stage of research

Respondents, when asked in 2021 about the frequency of their online shopping, most often indicated the answer 'once a week' or 'several times a month' (63.9%). 14.6% buy once a month and the same number less frequently than once a month, while almost 7% buy online very often, several times a week.

According to the respondents, the most well-known online shopping site is Allegro, mentioned by 92.3% of the respondents and the next most popular brand, Zalando, was indicated by 23.1% of them. This is followed by OLX (21.5%), Aliexpress (20%) and Ceneo (10%). Other responses totalled 16.2%, which included Amazon, Rossmann, Online Pharmacy, clothing shops: Smyk, Vinted, Shein, Born2be, Reserved, House or Sinsay. As the question was multiple choice - the sum of the answers exceeds 100%.

Respondents were also asked which courier companies they choose most often. In the multiple-choice question, the most frequently indicated courier companies were InPost (80.8% of respondents), followed by DPD (76.2%), DHL (40%), Pocztex (18.5%), or GLS (16.2%), UPS (10.8%) and FedEx (5.4%). Other companies had marginal indications.

Respondents rated DPD against other courier companies. The company was rated very good and good by as many as 90.7% of respondents and rather bad and very bad by only 2.3% of respondents (6.9% had no opinion).

Respondents were asked about the impact of selected elements on their assessment of DPD's performance. The most important was the transportation of parcels in undamaged condition, as 83.1% of respondents marked the answer "this is the most important for me", and for 15.4% it was of great importance. The timing of the service is also important in both of these characteristics, 97.7%, and in third place for customers were experience and reliability (91.5% in total). Only in fourth place was the price of services (88.5%) and the least important was the way complaints were handled - 83.1%.

When asked to rate the prices of DPD's services on a scale of 1 to 5 (where 1 means bad and 5 means very good), the majority of respondents indicated a good rating (58.5%) and 32.3% even a very good rating. Bad and very bad were perceived by 1.5% and 7.7% of respondents respectively. This may indicate that DPD's prices remain at a similar level to those of its courier competitors.

Although the majority of respondents, 86.2%, did not encounter parcel damage by the company, the remaining 13.8% of those who were affected by such a situation may be concerned. Only or as many as 10% of respondents had made complaints about DPD's service delivery, indicating that this may still be room for improvement for the company.

The option to track a parcel is now available from almost every courier company. It was checked how often this service is used by the respondents and it turned out that only 5.4% of those asked never used this function and 37.7% of the respondents sometimes monitor their parcel. However, more than half of them (58.8%) use the option of tracking a parcel frequently or very frequently, which, for example, may be related to the need to wait at the place of collection for the courier's visit.

When asked about the duration of delivery, the majority of respondents answered that the parcel is delivered on the second consecutive working day as standard - 56.2%. A sizable group of respondents receive their parcel on the next working day using the DPD NEXT DAY service. None of the respondents, on the other hand, used the more expensive DPD TODAY service - i.e. receiving the parcel on the same working day, and no one marked the answer "on a later date" - which may indicate a smooth delivery process.

The form of delivery is one of the most important things that often influences the choice of company. DPD provides delivery by courier or to DPD Pickup points. When asked about the most frequently chosen form of delivery, respondents indicated delivery directly to the home (often and very often - 73.1%) and to pick-up points often and very and often only 23.8%. 42.3% of respondents never used DPD pickup points and only 1 person never used home delivery. Surprisingly, 70% of those asked indicated that they use parcel machines (which DPD did not yet have at the time of the survey). It was not until mid-2021 that DPD started installing DPD Pickup Station parcel machines in Poland's largest cities. This may indicate the strong association of parcel machines with courier services and the prevalence of their use, regardless of the company's brand.

3.3. Third stage of research

When respondents were asked in 2022/2023 how often they shop online, 48% indicated the answer 'several times a month'. Once a month purchases are made by 33.5% of respondents and at least once a week by 16%. Only 2.5% of those asked do not shop online.

In order to compare the services of the two analysed companies InPost and DHL, customers were asked to choose between them. 93% of respondents chose InPost parcel machines, while only 5.5% chose DHL courier. The answer 'none of the above' was selected by 1.5% of respondents.

When assessing factors affecting the quality of courier services, respondents were able to select more than one answer. Among the most highly rated factors, on-time delivery (75.5% of indications), lower cost of services (64%) and reduced paperwork (58.5%) came first. Other factors that influenced the improvement of courier services were increased reach (37.5%), easy contact with the courier (37%) and higher supplier competence (36.5%). In last place were: expansion of the existing offer - 34.5% of respondents and modern rolling stock - 33.5%.

More than half of the respondents (67.5%) are satisfied with the level of service provided by InPost Paczkomaty, with 16.5% of those surveyed rating it good. A total of 8% rate the company very badly and badly, indicating that there is still considerable room for improvement.

Comparatively, respondents were also asked to rate the level of service provided by the DHL courier. The results show the opposite situation to that of InPost. Most people (30.5%) marked the answer "bad" and "very bad" (23.5%), while good and very good were rated by 9% and 7% of respondents respectively. The puzzlingly high percentage of negative ratings may indicate an overall negative perception of couriers.

In a direct comparison of these companies in terms of the selected criteria, respondents could mark more than one answer. The courier company InPost Paczkomaty was rated significantly better, receiving the most indications among criteria such as delivery time (88.8% compared to 11.2% for DHL courier), the ability to track the parcel, 87.9%, or more convenient delivery (84.8%). This was followed by price (83.5%) and timeliness (81.7%).

The survey addressed the usefulness of the innovative parcel service offered by InPost. 82% of respondents believe that self-pick-up of parcels at InPost parcel service points is a better alternative than courier delivery 'to the door', which was chosen by only 14% of respondents (4% had no opinion).

Among the problems encountered by users of both companies' services, delivery delay was indicated by 19% of InPost Parcel Service users and 49.5% of DHL customers. Damage to the parcel was indicated by 16% (InPost) and 42% (DHL) and loss of the parcel by 11% and 40.5% respectively. In contrast, the absence of any problems was indicated by 65% of InPost customers and only 10.5% of DHL courier customers.

4. Discussion

4.1. Factors influencing the development of the courier service industry

The growing demand for online shopping has led to a situation where, in 2019, for the first time ever in Poland, more than half of the value of the postal services market came from the share of courier services (an increase of 11.5% compared to 2018). It is now more than 2/3 because the share of courier services in 2022 was 66.8% (UKE, 2023).

The changing expectations of consumers, who are beginning to demand more personalisation and convenience from e-commerce services, have been exacerbated by the COVID-19 pandemic and the resulting restrictions, which has contributed to increased acceptance of e-commerce practices (Kim, 2020). The increase in courier and parcel shipments compared to 2018 was largely due to the coronavirus pandemic. The pandemic has significantly influenced how Poles shop and how they use different types of services and, over the course of several months, online shops have gained a significant advantage over traditional trade, not least because of the social distance attributed to this channel. This has also been confirmed by studies conducted.

The 2020 lockdown resulting from COVID-19 affected the entire economy, leading to instability in supply chains (Trzupek, 2020), however, the courier industry faced the biggest challenge. The huge increase in shipment volumes as well as the new conditions of sanitary rigour were a drastic change for the CEP industry. The closure of stationary shops drove the growth of e-commerce and in March 2020, parcel postings increased by more than % (Paprocki, 2020). According to the report "E-commerce in a time of crisis 2020" 37 % of respondents considered online shopping to be safer than the traditional form. Some companies saw a decrease in sales, while others recorded record sales, which depended on the industry and the extent to which e-commerce sales contributed to the company's revenue. Increases of more than 70% in shipments were observed in industries such as e-grocery, zoology, supplements and over-the-counter drugs. Declines of over 15% in the clothing and jewellery industries (Sass-Staniszewska, Czuchaj-Łagód, 2020).

In 2020, Polish entrepreneurs registered nearly 11.8 thousand new online shops. At the beginning of January 2021, the number of registered e-stores in Poland was close to 44.5 thousand. This represents an increase of 21.5% compared to the same period last year. The mass emergence of e-stores means a drastic increase in competition in search results. According to an analysis by PriceWaterhouseCoopers, 90% of Poles declared that they would maintain their level of online shopping after the pandemic, globally it is 86 %. As indicated by data from the Chamber of Electronic Commerce, 3% of consumers declare combining online and offline shopping (PwC, 2020).

E-commerce largely drives the courier industry and the number of Poles buying online continues to grow. According to the report E-commerce in Poland in 2022, already 77 % of Internet users have once shopped online, 75 % of Internet users buy from Polish e-shops and 32 % buy from foreign e-shops. The survey conducted in December 2022 and January 2023 shows that only 2.5% of respondents do not buy online. As only social media users were asked, online shoppers may be overrepresented here. Nevertheless, such a large percentage of e-consumers clearly includes all groups of internet users. Nevertheless, online shoppers are more likely to be residents of large cities, people with a higher education and those with a good opinion of their household's financial situation. The report also shows that the most well-known e-commerce sites are Allegro, mentioned by 85% of the respondents, followed by OLX, mentioned by 36%. This is followed by Zalando 19%, Amazon 17% and Aliexpress 15% (Gemius, 2022). Similar results were shown in the 2021 survey, where Allegro also came first, indicated by 92.3% of respondents, Zalando was indicated by 23.1% of them and OLX received slightly fewer votes (21.5%).

Thanks to the growth of online shopping, the development of courier companies will continue. The report 'E-commerce in Poland 2022' shows that in 2022, the value of online retail in Poland is PLN 92 billion, of which e-stores account for 61 %, with the remainder going to shopping platforms (PMR, 2022). As recently as 2018, e-commerce in Poland was worth around PLN 50 billion and over 230 million parcels were delivered to customers, confirming that the growth rate for e-commerce in Poland is one of the highest in the entire EU.

The ever-growing development of e-commerce is influenced by the increasing mobility of society and the growing popularity of mobile devices. Customers are more likely to order goods at their convenience, e.g. at night, when stationary shops are already closed, and expect their order to be processed quickly. From the 'Polish CEP Report 2022', it can be concluded that the dynamic growth of the e-commerce and CEP market will continue, despite the difficult economic situation and that related to tensions between countries (LME, 2022).

4.2. Problems and barriers to the development of courier services in Poland

However, there are barriers that limit the possibility of developing the courier services market in Poland. The main impediment includes the lack of adequately developed road network infrastructure in some areas of Poland, which affects the efficiency and speed of deliveries. This includes limited access to roads, bridges and other necessary transport infrastructure. Carriers have to deal with a constant increase in road traffic, which makes it difficult to transport goods efficiently via courier services. The distribution of modern logistics centres in Poland is also uneven, which may limit the possibilities to optimise routes and storage.

The costs of using courier services in Poland are relatively high compared to other European Union countries and the increasing costs of transport activities are related to the ever-increasing fuel prices. Also, strict transport and delivery regulations as well as the complicated process of obtaining relevant licences and permits may hamper courier company operations and increase operating costs.

Many logistics companies are experiencing a shortage of qualified staff, the result of which can be a delay in the delivery of parcels and therefore a lower quality of service. A survey conducted by ManpowerGroup and the Institute of Logistics and Warehousing in 2021 shows that the reasons for difficulties in filling jobs with new employees are mainly due to too high financial expectations of potential employees (61 %), lack of available candidates (58 %) and their insufficient work experience (44 %) (ManpowerGroup, 2021).

One of the biggest problems for haulage companies is the fluctuating demand for their services. It's not just the fashion for certain products or their seasonality, but also the mass of orders on certain days of the week or seasonal peaks. The aforementioned peaks, such as Black Friday, Cyber Monday, Free Delivery Day, result in a flurry of orders during a particular period only, which it is difficult for companies to handle in a satisfactory time for the customer. Also seasonal is the Christmas period, which is a huge challenge for courier companies every year.

E-commerce is also often associated with high order fragmentation, which forces companies to ship small batches of products. Companies involved in such online sales and logistics companies then have to develop dedicated solutions for individual customers. The expectations of e-commerce customers also have non-standard characteristics compared to other areas of the economy. In the case of e-commerce, for logistics companies the customer is both the seller of the product and its customer, i.e. the final recipient. CEP companies therefore have to adapt to two 'their customers' in the case of one shipment. For the sender of the product, quality, system integration, reliability or easy dispatch of the order are important. For the recipient of the order, on the other hand, price, convenience, flexibility and the quality of the service provided are important. Shippers also expect extended shipping times and receivers expect flexibility in delivery times.

All CEP operators that deliver within a maximum of two working days have a chance to enter the market and compete with other companies. However, e-stores cooperate with many courier companies so that their customer also has a choice and can choose what suits them best (GS1 Polska, 2020). Customers are most likely to use companies they know well, whether from their own experience or from recommendations from relatives and friends. A well-known carrier will not cause concern to customers and they are more likely to decide to place an order. It is also presumed that interactive channels of communication with customers will become increasingly important.

4.3. The last mile problem and an innovative solution - parcel machines

Online shopping, unlike traditional commerce, involves delivery to the final customer, a process that is time-consuming and costly. This is known as the last mile - the final stage of delivery to the recipient. It most often starts at the CEP operator's sorting facility or branch and ends at a specific location (at the recipient's door, Pick-Up and Drop-Off points, parcel machine or other location (GS1 Polska, 2020). The problem of the last mile can in fact be as much as tens of miles or kilometres, and the name is only customary and refers to the final stretch of the route from the moment the product leaves the warehouse to reaching the end customer. The last mile delivery is both the most expensive and the slowest part of the shipping process. Urban last-mile logistics is a significant source of traffic and air pollution. The impact of commercial vehicles on traffic can vary depending on the methodology and the area studied, but accounts for more than 20% of the total vehicle kilometres travelled within a city

(Bachofner et al., 2022). In the supply chain, last-mile logistics is the least efficient stage and causes as much as 28% of the total cost of delivery (Wang et al., 2016). According to analysts Frost & Sullivan (2018), as much as % of global logistics spending in will be generated by transportation and 40% by the last mile, which offers potential major optimisation opportunities and can be a source of great savings.

The last mile problem affects all industries that deal with direct delivery to the end customer, including:

- courier companies primarily engaged in the transport of goods ordered online,
- couriers delivering goods on demand,
- couriers operating locally,
- companies offering their own delivery service (restaurants, boxed diets, clothing, furniture, florists, grocers, etc.).

This is mainly influenced by factors such as an incorrectly stated address, difficulties in finding the location, the absence of the addressee of the parcel. It is the different working hours of courier companies and the hours of availability of private recipients at their place of residence that is the biggest problem of the last mile. One solution to this problem is to adjust the delivery time of parcels to the time when the recipient can be found at the residence (afternoon and evening hours). Therefore, for B2C e-commerce, one of the main challenges is to reduce the number of delivery failures on the first delivery attempt. This failure rate, estimated to be around 20 per cent in European cities (Van Duin et al., 2016), forces the driver to repeat the delivery without charging the customer extra (Bachofner et al., 2022). Last-mile delivery and collection are usually operational in nature and involve the knowledge fields of transport, economics and operations research. The main focus in this field is the distribution of costs and benefits for companies and society. Variables include vehicle capacity utilisation, number of kilometres travelled, fuel consumption, number of stops, loading costs, operations time and environmental measurements (Cardenas et al., 2017).

The cost of parcels not delivered the first time relates to the cost of couriers, fuel and dispatchers. The high percentage of parcels that cannot be delivered on the courier's first visit disorganises the courier's work, as well as causing additional work to be done in the dispatch centre and dissatisfied customers who have not received a parcel (Chodak, Łęczek, 2014). In some cases, the courier has to visit the recipient 3 times. The problem of repeat delivery affects about 20-30 % of all recipients.

However, not all e-buyers are willing to change their habits to make the system more sustainable. In Germany, even though the parcel network is dense and efficient, 90% of customers prefer to have their parcels delivered at home (Morganti et al., 2014).

According to EFT research, 48% of consumers request next-day delivery and 23% of same-day delivery (EFT, 2018). In urban centres though delivery times are increased by traffic jams, road accidents and parking problems. These factors are forcing logistics companies to implement solutions that minimise the costs incurred. For last-mile technical solutions, the possibility of using drones is increasingly being discussed, however, this is still a distant prospect with the larger-scale introduction of such devices. The use of bicycles in the case of large cities, where there are large traffic jams and car access is limited, has great potential in ecological practical terms. Such a courier bicycle is used in Krakow - it was specially designed for parcel delivery (Markowska, 2020).

Last-mile delivery also faces other challenges: it must meet the demands of globalised trade and meet environmental requirements. In this context, innovation is a key theme to enable the transition from current configurations of logistics systems to more sustainable ones (Ranieri et al., 2018).

One of the most frequently suggested alternatives to streamline the entire delivery process is the use of pick-up points. In order to change the state of a sector, it is necessary to introduce a surprising innovation; in the case of the last mile problem, InPost introduced Parcel Machines 24/7 and thus gained a huge competitive advantage. Initially, parcel machines were only available in a few major cities, but over time their number grew very quickly. The original idea for the parcel machines was born in 2008 and since then the company has been growing rapidly and this solution is popular with both online shops and consumers. Currently, InPost operates in several European countries, and its parcel machines can also be found in the USA. According to statistics provided by InPost, customers are keen to take advantage of the 24-hour service and 58% of parcels are collected between 6pm and 8am. This solution is also supported by the fact that, thanks to the convenient location of parcel machines, the number of delivery points in a given city can be increased.

Another interesting alternative seems to be Amazon's project created in cooperation with General Motors and Volvo, which allows for the delivery of goods to customers in their boot (in-car delivery). By entering a special code, the courier will be able to open the boot of the vehicle and leave the parcel inside then securely lock the car.

5. Conclusions

E-commerce is a dynamic phenomenon that is constantly evolving through technological developments, access to newer technologies and legal considerations. Companies providing e-commerce services are racing to meet the expectations of existing users and to attract new ones. The pandemic has not only influenced the development of e-commerce, but also the development of the Polish courier services market.

The courier, express and postal (CEP) services market in Poland is one of the most competitive in the European Union. This is mainly due to the presence of large players such as Polish Post Office, courier companies, express services and the emergence of innovative solutions such as InPost's Paczkomaaty 24/7. The Polish Post Office has been the dominant player in the CEP market for many years, but the emergence of innovative solutions and strong competition has forced the market to change to a more innovative and customer-oriented approach. The publication analyses the CEP market in Poland, identifies the current major players and their strategies, describes the impact of the emergence of innovative solutions on the market and examines the competitive advantages of the players. The emergence of innovative solutions has had a significant impact on the CEP market in Poland, as it has allowed InPost to gain a competitive advantage over Polish Post Office and other postal services and courier companies in the market.

An analysis of the KEP market in Poland has shown that the innovative solutions implemented by InPost have had a key impact on increasing the competitiveness of the industry. InPost has gained an advantage over traditional postal services, while forcing its competitors to be more innovative. This rapid growth in the industry translates into benefits for customers, such as lower prices and better service. The COVID-19 pandemic has only accelerated this process, increasing the use of courier services, and customer preference surveys have shown that timeliness, lower cost, efficiency and modern solutions such as parcel machines are important factors.

Research into customer preferences and experience of courier services has shown the COVID-19 pandemic has increased the use of online shops and, consequently, courier services. Factors influencing the evaluation of courier services include timeliness, lower cost, efficiency and modern solutions such as parcel machines, which is an important area for courier companies to focus on in their quest for customer satisfaction and loyalty. Despite a preference for specific companies, as many as 60% of respondents were not attached to a specific courier company.

In order to cope with the demands of ever-increasing scale, courier companies will have to introduce new solutions. Modern technology can contribute to greater flexibility and efficiency in courier services and ultimately increase throughput. Changes may involve broader solutions and include courier management systems, as well as route optimisation software or more innovative solutions (Trzupek, 2020).

A new challenge facing operators in the coming years is the further development of e-commerce. Factors that will determine the further dynamic development of the CEP industry in Poland will be transparent and simplified legal regulations favouring the establishment of operations in the country, expansion of the existing road and air network, optimisation of labour costs and investment in the development of professional qualifications of personnel (Gulc, 2020).

Research indicates a dynamic change in customer preferences in Poland, with a marked increase in the popularity of online shopping and the use of innovative solutions. Courier companies are responding effectively to these changes, but the market still poses challenges, especially related to delivering parcels in a convenient manner for customers.

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ACADEMIC MOBILITY IN THE DECLARATIONS AND COMMUNIQUÉS OF THE HIGHER EDUCATION MINISTERS OF THE BOLOGNA PROCESS MEMBER STATES IN STAGE 1 OF SYSTEMIC HARMONIZATION IN EUROPE

Marcin SKINDER

Politechnika Bydgoska; marcin.skinder@pbs.edu.pl, ORCID: 0000-0001-5876-8977

Purpose: The subject of the study is the issue of mobility related to the harmonization of higher education systems within the framework of the bologna process. As a theoretical and cognitive goal, the author has adopted the presentation of the characteristics of the bologna process and its deisiderations with regard to academic mobility. The analysis is in line with the conference theme on knowledge management at the higher education level, in which learning institutions are among the learning organizations, playing a rudimentary role in the generation and implementation of scientific knowledge. They foster the development of a knowledge-based economy, in which access to high technology is essential, so considerable attention is paid to knowledge management combining concepts and ideas from many parts of Europe resulting in higher education institutions increasing innovation and competitiveness in the market of educational services. An opportunity for higher education institutions is provided by socio-educational projects such as the Bologna Process, which has been successfully harmonizing academic management systems since 1999.

Design/methodology/approach: The article adopts methodological elements specific to the field of social sciences, including the monographic method. It is implemented in this work as a way of researching specific, individual cases and focuses on the overall recognition of one relevant problem, in this case the Bologna process and mobility. What is important here is the verification of each element of a given phenomenon, which is implemented by focusing on the mobility desideratum as a component of the issue addressed based on qualitative-descriptive elements. The work uses the declarations of representatives of the member states of the Bologna process, communiqués of European ministers of higher education and continuous prints, including the *European Journal of Higher Education, International Higher Education, The European Journal of Social Science Research, Zarządzanie Publiczne, Podstawy Edukacji. Język w edukacji – edukacja językowa, Lubelski rocznik pedagogiczny, Kultura–Społeczeństwo– Edukacja, Kultura i Edukacja* oraz *Zoon Politikon.*

Findings: The research problem is framed by the questions: what are the characteristics of the Bologna Process as a socio-educational project, and what is the role of academic mobility as a Bologna Decider in the European Higher Education Area (EHEA)? It is also problematically important to establish the characteristics of academic mobility in the early period of the Bologna process on the basis of the Sorbonne Declaration, the Bologna Declaration and the communiqués of the higher education ministers of Prague, Berlin, Bergen, London and Leuven, and thus until the full EHEA was announced.

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Practical implications: The practical-implementation goal was defined in the form of comments on the needs for changes in the course of the Bologna process in relation to the mobility deisderate.
Originality/value: The study consists of three rudimentary parts and a summary, including a characterization of the Bologna process and its de-statements with regard to academic mobility, the role of academic mobility as a Bologna de-statement. The warp of the work also includes an analysis of the implementation of academic mobility in the early stages of the Bologna process on the basis of the Sorbonne Declaration, the Bologna Declaration and the communiqués of the ministers of higher education from Prague, Berlin, Bergen, London and Leuven. This characterization fits into the thematic area of education management understood as a potential of the European region. The author of this article takes up the issue of higher education management as a factor in the development of the European region, and in doing so aims to analyze the most current de-siderations for harmonizing higher education systems in Europe, especially those raised at the periodically held conferences of ministers of higher education of the member states of the Bologna process.
Keywords: Higher (tertiary) education, Bologna Process, harmonization, academic mobility.
Category of the paper: Conceptual paper.

1. Introduction: characteristics of the Bologna process and its de-siderations with regard to academic mobility

In terms of the subject matter of harmonizing higher education systems in accordance with the bologna de-siderata, national studies can be cited, including works by Dominik Antonowicz, Małgorzata Dąbrowa-Szefler, Anna Frąckowiak, Julita Jabłecka-Prysłopska, Andrzej Kraśniewski, Alfred Lutrzykowski, Bohdan Macukow, Tomasz Saryusz-Wolski and Pavel Zgaga (D. Antonowicz, 2005; A. Frąckowiak, 2007; A. Kraśniewski, 2004; A. Lutrzykowski, 2006; M. Dąbrowa-Szefler, J. Jabłecka-Prysłopska, 2005) and environmental reports, including entities such as: Ernst and Young, Instytut badań nad Gospodarką Rynkową, Fundacja Rektorów Polskich, Fundacja Rozwoju Systemów Edukacji. Current national studies in which references to the Bologna process can be found include the journal: Nauka i Szkolnictwo Wyższe (since 2019 year not published), Nauka, E-mentor and Forum Akademickie.

Foreign studies are centered around journals, including: Excellence in Higher Education in University of Pittsburg (USA), Higher Education Springer Publishing (USA), Higher Education Research and Development Taylor & Francis Publishing (Australia), International Journal of Higher Education Sciedu Press Publishing (Canada), International Journal of Teaching and Learning in Higher Education Campus Compact Publishing (USA), Research in Higher Education Springer Publishing (Netherlands).

The document marking the beginning of international cooperation in higher education (including mobility) was Magna Charta Universitatum (1988). It was signed by 388 university rectors, who thus, contemporaneously, pledged for the first time to consolidate such a significant part of the academic community. Included in the document was the creation of a unified system of evaluation and promotion of graduates, as well as a common system of undergraduate and graduate education. The rectors' aspiration was for cooperation among the nations of Europe and the belief that member states would begin to recognize universities as exhibitors of an internationalist society (Magna Charta Univeristatum Principles, 1988)

An important document, with regard to mobility, was the Lisbon Convention, signed on April 11, 1997, which was a convention of UNESCO and the Council of Europe, in which the process of recognition of qualifications related to higher education in Europe was regulated (Braband, Powell, 2021).

A year later, the higher education ministers of France, Germany, Italy and the United Kingdom, at the University of Paris anniversary celebration, suggested that the fragmentation of the European higher education area would not be conducive to socio-economic development. As a result of the work undertaken in this vein, the Sorbonne Declaration was signed in May 1998, through which the introduction of a common system of educational levels and the fostering of student and faculty mobility began. Soon this initiative began to gain rapid popularity in European academic circles. In the following years, ministers from other countries also signed on to it, which allowed hope for real changes in European higher education. The far-reaching goals of the Sorbonne Declaration (like those of the Bologna Declaration) were to harmonize higher education systems in a manner conducive to meeting the needs of society and the economies of Europe. It is noteworthy that even then it was possible to see the emerging need to compete with the US economy, especially because it was strongly associated with the supportive activities of American universities (np. Massachusetts Institute of Technology), whose graduates most often received Nobel prizes, and whose schools themselves topped various global rankings (Sorbonne Joint Declaration, 1988).

The Bologna Process, initiated by the Bologna Declaration, has been a socio-educational project since 1999 and is considered an example of harmonizing higher education systems in most European countries. Its main goal is to make them as consistent as possible, which is achieved in the form of convergence. As part of the Bologna process, a European Higher Education Area was established in 2010. European Higher Education Area (EHEA), which is intended to foster the mobility of students and employees of all 48 member states (Belarus and Russia were removed from the process on June 6, 2021) participating in the harmonization, as well as to promote easy and universal access to European higher education and increase its attractiveness and competitiveness at the global level (Klemenčič, 2019).

The Bologna Process is one of the most contentious and one of the most influential long-term policy changes ever to be initiated in the European Union. Though there are also critical reflections. On the one hand, its goals seemed rather basic: to increase the comparability and compatibility of European higher education structures. On the other hand, it is more than astonishing that the process has not yet been more successful in changing university structures, entrenched in the Middle Ages, in so many EU member states (Dienel, 2019).

The Bologna Process is legitimized by the voluntary declarations of the signatory states, which also makes it not in the form of a convention. It constitutes an agreement between European states, on which no implementation obligations have been imposed for the agreed measures, which fundamentally limits the effect of sanctions in the event of failure to implement within the planned timeframe. Thus, we can say that the Bologna Declaration document is a form of political commitment, which does not legally bind, member states. What is worth emphasizing, even more so, is the expression of will towards activity in education for building the field of higher education in Europe. Instead of legal mechanisms (directives and guidelines), incentives and support are used. One can also note here another mechanism in the form of legal harmonization, which has been replaced by a softer instrument - harmonizing the system. Thus, the Bologna process is the harmonization and convergence of higher education systems, and not, as is erroneously assumed, their standardization or unification (Piekarski, Urbaniak-Zając, 2010, pp. 109-110).

The goals of the Bologna Process are achieved as a result of intergovernmental cooperation in the adjustment of legal regulations, organizational institutional changes and in the activity of student organizations and institutions participating in harmonization. The Bologna Process is also an integrative project in the field of higher education, and it is coordinated by ministers issuing legal documents containing assessments of results and decisions guiding further directions (Solska, 2011, pp. 201-203).

As part of the Bologna process, European ministers have been continuing to reform higher education systems for many years now, and are trying to overcome the obstacles that have been piling up for the EHEA. The key directions of reform are improving the quality of education and making mobility more dynamic, which, according to Bologna standards, is not taking place uniformly everywhere. These statements similarly apply to other desiderata, including the use of the ECTS points system, multidegree studies, employability of graduates, inclusiveness of higher education systems, the diploma supplement, various forms of distance learning (distance learning, lifelong learning), as well as recognition of diplomas, degrees and titles and the European Training Framework. It should be remembered that since the late 1990s, this process has largely determined the shape of reforms of most higher education systems of countries in the European region. Regular implementation reports indicate that significant progress has been made in this regard, in EU member states and beyond.

The results of the work of the participants in the Bologna process are announced in the framework of periodically organized conferences and communiqués of European ministers of higher education in important cities for harmonizing stage 1, including Bologna, Berlin, Prague, London, Leuven and Bergen (Table 1). The activity of member states, understood as the activities of the Bologna Follow Up Group and other entities representing member states (currently 48) in the Bologna process from 1999 to 2023 included the following provisions, which were successively implemented in national academic systems in the form of de-statements (Chmielecka, 2019; Bologna Process, 1999; Skinder, 2021).

Table 1.
Stages of development of the Bologna process. Stadium 1

Stages of development	Bologna Documents	Number of countries	Countries participating and successively joining the Bologna Process
Sorbonne stage	Sorbonne Declaration 1998	4	France, Germany, Italy, United Kingdom
Bologna stage	Bologne Declaration 1999	29	Austria, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Malta, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland
Prague stage	Prague communiqué 2001	33	Croatia, Cyprus, Liechtenstein, Turkie
Berlin stage	Berlin communiqué 2003	40	Albania, Andorra, Bosnia and Herzegovina, Vatican City, Russia, Serbia and Montenegro, Macedonia
Bergen stage	Bergen communiqué 2005	45	Armenia, Azerbaijan, Georgia, Moldova, Ukraine
London stage	London communiqué 2007	46	Republic of Montenegro, communiqué of global expansion of the Bologna Process
Leuven stage	Leuven communiqué 2009	0	The announcement of the global expansion of the Bologna Process and the establishment of the European Higher Education Area (EHEA)

Source: Bologna process declaration and communiques (1998-2009).

Among all the deisderates, one can point to mobility, which links others, including the Erasmus program (European Community Action Scheme for the Mobility of University Students), promotions of the Bologna process throughout Europe, multidegree studies and ECTS credits. Thus, the mobility of the entire academic community is a fundamental Bologna de-sideration and successfully compensates for barriers of intra-European and global scope. The European Union is therefore developing a number of programs funded by the European Commission. They enable students and academics to travel to study part of their studies and internships at foreign universities (Berkowicz, Wlodarska, Gurba, 2011, p. 141). As student mobility gained popularity, it became clear how difficult it was for individual institutions to recognize periods of study in different national higher education systems with divergent academic structures and traditions. Since the launch of the Erasmus program some 30 years ago, the European Commission, together with national authorities, higher education institutions, affiliated students and other stakeholders, has contributed to more intensive and structured cooperation to increase mobility achievements between European higher education institutions. It can be emphasized that the reforms proposed under the Bologna Process are rudimentary for building trust between its implementers, which can be important for the success of academic mobility, cross-border cooperation between universities, as well as mutual recognition of periods of study and qualifications obtained in other countries. Here, the Bologna Process provides a forum for dialogue with neighbouring countries, but also more distant member states, regarding higher education reforms and issues related to common academic principles regarding university autonomy.

In the following sections of the paper, references will be made to the characteristics of the Bologna Process as a socio-educational project and the role of academic mobility as a Bologna Deisder in the European Higher Education Area (EHEA)? It will be important to establish the characteristics of academic mobility in the early period of the Bologna process on the basis of the Sorbonne Declaration, the Bologna Declaration and the communiqués of the Ministers of Higher Education of Prague, Berlin, Bergen, London and Leuven.

2. The role of academic mobility as a Bologna deisier

The concept of mobility has quite a few philosophical-historical-social references. Views about this category were presented, for example, by Zygmunt Bauman (Bauman, 2007), if only in the context of the characteristics of liquid-modern reality, including to mobility in social space, as well as physical space, that is, materially existing places. These peculiar types of space are united by the necessity to be ready to "travel" in each of them, and any form of attachment to anything in a given space takes away flexibility, restrains "freedom of movement" and, from this perspective, is undesirable. This can be closed with the observation that the happiness of society is associated with the process of mobility, not with the place. Rootedness is sought less and less, and all places are traversed as quickly as possible, and the process of mobility is understood as ease of movement while constituting a remedy for uncertainty and transience. Such a way of life also has pejorative references, as it can promote the stratification of the existing collective system, a new elite is being produced for whom space has little meaning, distances cease to matter, no place deserves to stay for long. Unfortunately, in the long run, the ruthless pursuit of mobility leads to fundamental changes in the social space, especially it is a matter of entering into impermanent relationships without commitments, which inevitably leads to various devaluations in the functioning of society as a whole and its infrastructure (Marciniak, 2019, p. 207).

The mobility of higher education has developed into education across borders (transnational education). The form of such education consists in the transfer of study authorizations abroad and their certification, the creation of a subsidiary of a foreign education provider in the student's home country or the use of the mechanism of joint degree programs (Knight, 2015, pp. 1-3). International student mobility is understood as taking up full higher education or part of it, various internships, placements, courses in a country other than the country of residence. Mobility defined in this way is part of a broader internationalization strategy developed by major European political bodies, including the Council of Europe, UNESCO, OECD and the European Commission. It is intended to increase the quality and coherence of educational programs and strengthen the multicultural dimension of higher education in Europe. A tool for achieving this goal is the Erasmus program, launched within the formal framework of university cooperation. It can be added that activities oriented toward the promotion of student mobility were already undertaken in the first half of the 20th century. The period between 1950 and 1970 is referred to as benevolent laissez-faire (benevolent laissez-faire) because of its open-door policy for foreign students, who came mainly from various foreign colonies. At the time, this way of promoting mobility was part of France's and Britain's foreign policy toward the dominions, stemming from the desire to maintain political influence in the colonized territories. On the other hand, between 1970 and 1990, there was a turnaround, and mobility efforts took a turn in the opposite direction, and began to promote study abroad. In turn, in the 1990s, the idea of educational mobility for students was popularized, later also addressed to university employees. Between 1999 and 2006, mobility was determined by technological development and the need for highly skilled workers in the sciences, especially talented students from abroad. At the time, this applied to the US as a destination country for traveling students, but after the 9/11 attacks on the WTC, this process weakened significantly (making the EHEA a much more attractive academic flow). In turn, between 2007 and 2013, due to the global crisis and recession, there were budget reductions in higher education, but interestingly, the interest of higher education institutions in recruiting foreign students increased, primarily due to the much higher subsidies received for foreign students. Between 2014 and 2019, Europe's overall migration policy suffered a crisis, compounded by Brexit and the slowdown of many economies, including China's. At the same time, the aging of Europeans grew stronger, then foreign students were seen as a potential group of workers of the future. The breakthrough, by all accounts, came in 2023, with the Covid-19 pandemic resulting in a significant reformulation of mobility-related policies. Universities around the world focused more on ensuring the continuity of remote classes and health security, with the number and turnover of foreign students significantly reduced (Zapotoczna, 2021, pp. 119-122).

In addition to the genesis of mobility, it is also worth citing the stages of development of the Erasmus program, including the years 1987-1995, in which the most significant was the exchange of students and academic staff, the development of study programs at the interuniversity level, and so-called, intensive courses. Between 1995 and 2006, Erasmus became a component of a broader EU cooperation program called Socrates, aimed at establishing teaching cooperation among universities and internationalizing studies. In turn, between 2007 and 2013, Erasmus became part of the Lifelong Learning Program, based on the idea of lifelong learning, at which time alternative forms of mobility were offered related to internships abroad for students and training trips for lecturers and university administration. Between 2014 and 2020, the program was renamed Erasmus plus, and between 2021 and 2027 it returned to its traditional name while increasing the budget to as much as 30 billion euros. It is worth noting that since the program's launch, three and a half million students from all over Europe have participated in Erasmus. Certainly, such interest in student travel abroad is due to the progress of the Bologna process with the participation of higher education ministers (Zapotoczna, 2021, pp. 221-223).

Among the benefits achieved through Erasmus are an increase in linguistic competence, cultural competence, adaptation, openness to diversity and a consequent increase in employability. There is also a greater likelihood of living or working abroad and realizing an international career. Based on various analyses of Erasmus participation rates, it can be assumed that the majority of students participating in the program report the need to include the obligatory nature of a short exchange abroad in the course of education for all majors. This would be beneficial for Polish students, whose declarations of participation have always been and still are below average (at 24% of declarations, of which 2% actually realized it). The reason for this state of affairs may be the barriers to access to the Erasmus program, with restrictions on admission due to the inequality of scholarship funds, the problem of recognizing the effects of foreign education, the different content of agreements with partner universities and the required fairly fluent knowledge of English (Marciniak, 2019, p. 209).

It is also worth referring to the various forms of mobility that have emerged with the transformation of the higher education system and in connection with socio-economic changes. Horizontal mobility, for example, refers to students pursuing part of their program of study, including first or second degrees, in foreign academic centers. Horizontal mobility promotes the improvement of social, communication and intercultural competencies, which is made possible by distinctive tools, including international exchange programs. Vertical mobility, on the other hand, refers to students who change academic center or field of study when moving from first- to second-level studies. Vertical mobility promotes the acquisition of qualifications in a variety of disciplines and the adaptation of educational paths to changes in the labor market. Vertical mobility is conducive to the implementation of the Bologna deidentification of multidegree studies. Any student, in principle, with a bachelor's or equivalent degree, can continue their studies in subsequent degrees, in the same field of study, sometimes universities apply additional filters in the form of entrance exams (Zając, 2012, p. 74).

The mobility of the entire academic community is a fundamental de-sideration of the Bologna Process and serves to bridge obstacles of both intra-European and global nature, as its implementers have ambitions to extend the harmonizing idea to the entire world. In this regard, the European Union is developing a number of programs funded by the European Commission. They support the travel of students and academics to do part of their studies or internships at foreign universities. This creates a friendly environment for university-university, company-university relations, joint research and experience, and the application of international information technology (Berkowicz, Włodarska, Gurba, 2011, p. 141).

The creation of the European Higher Education Area in 2010. European Higher Education Area has dynamized reforms in higher education systems that now make it much easier to study abroad. The primary task was to spread multidegree education in line with the three-tier structure. Subsequent steps have focused on improving quality assurance and strengthening national higher education systems, which has helped build mutual trust and recognition of university qualifications virtually throughout Europe. Mobility would certainly not have gained such importance were it not for the European Credit Transfer and Accumulation System (ECTS) and the Diploma Supplement. Also of significance was the creation in 2010, under the aegis of ENQA, EUA, ESU and EURASHE, of the MAP-ESG project on the implementation of the Quality Assurance Deisder in the European Higher Education Area. The ESG formula prepared in this way resulted in the enactment of the European Quality Assurance Register (EQAR, 2008) which significantly changed the approach of the Bologna Process member states to the quality assurance deisderate.

It should be emphasized that the European Commission's support activities currently provide important support to the member states of the Bologna process. Thus, the Commission has published a proposal for a recommendation to the European Council on promoting automatic mutual recognition of higher education diplomas and secondary school certificates, as well as learning outcomes achieved during periods of study abroad. This goal is a key element in the drive to create a European education area by 2025, according to which "…Europe [...] should be a place where borders are no obstacle to learning, studying and research. It should be a continent where it is the norm to spend time in another member state to learn, study or work, and to speak two languages in addition to one's mother tongue; a continent where people have a strong sense of European identity, European cultural heritage and its diversity" (Proposal for a Council…, 2018).

The Commission also supports the European Student Card Initiative, which can improve the exchange of student information, and wants to create a network of associations of European universities (European Universities Initiative). Taken together, this is aimed at increasing competitiveness and improving quality and pursuing excellence in the areas of teaching, research and innovation. Three initiatives on the European student ID card are worth citing:

- European student ID card – replaces existing student ID cards, so that during the exchange students can use various services both on and off the university campus;
- Erasmus+ application – an application that helps Erasmus students with all practical administrative activities – before departure, during their stay abroad and after their return (Erasmus information, 2023).

It is worth recalling that efforts to increase international student mobility began just after the end of World War II, mainly through agreements on the recognition of studies and attempts at financial support for mobile students. The Bologna process can build on this experience, as well as on the immense popularity of the Erasmus program, often called the European Union's most popular program. It offers direct support to those wishing to study or train abroad, and also supports projects that promote cross-border cooperation between higher education institutions.

An interesting question remains what effects were achieved by spreading mobility in academic education back in its early, post-war stage? The spread of multidegree studies has increased student mobility, but rather from outside Europe. Intra-European mobility rates have remained stable. Certainly, the Bologna Process has provided a significant impetus for structural development and cooperation in the field of higher education around the world. Pavel Zgaga, as a researcher as well as a politician who himself signed the Bologna Declaration on behalf of Slovenia in 1999, confirms this theoretical explanation of the trans-European impact of the Bologna process (https://eqaa.eu/en/about/board/zgaga). In fact, a consensus has formed in academia that while the Bologna process was intended to solve internal European problems, it has had a stronger impact outside Europe (Dienel, 2019, pp. 403-405).

One can go much further in this argument, as academic mobility even benefits nations far removed from our culture, including the Nepalese. In 2010, some 24,000 Nepalese students studied outside their country. Factors pushing young people to study abroad include the precarious political situation in Nepal, the instability of the economy, the poor quality of education and politicization of universities, the failure to match curricula with labor market requirements, the lack of prospects for getting a job consistent with their education after graduation and transparent recruitment rules, the commercialization of education, the simplification of emigration regulations, and the formation of a new middle class. The Nepalese benefited from the Erasmus Mundus project (with the participation of Lund, Linkoping and Uppsala Universities), Uppsala University's Nepal scholarship program, and programs announced by several universities from Europe in 2015, after the Nepal earthquake (Sadecka, 2018, pp. 193-195).

3. Academic mobility in the early stages of the Bologna process on the basis of the Sorbonne Declaration, the Bologna Declaration and the communiqués of the ministers of higher education from Prague, Berlin, Bergen, London and Leuven

Academic mobility in the initial period of implementation of the Bologna Process deisderates is referred to as Stadium 1. It represents the preparatory stage of the construction of the European Higher Education Area and falls between 1999 and 2009. This caesura includes the signing of the Sorbonne and Bologna declarations and the communiqués of the ministers of higher education of the member states from Prague, Berlin, Bergen, London, Leuven. This stage is sometimes characterized as instrumental, in terms of the implementation of instruments to increase the coherence of higher education systems in Europe. Their function was to generate transparency and comparability of national higher education systems to facilitate comparisons of student and academic performance, and serve to boost mobility in the labor and education markets and lifelong learning. This was the time of implementation of the ECTS system, the basic principles of educational quality assurance enshrined in the Standards and Guidelines for Quality Assurance in the European Higher Education Area ESG (Standards and Guidelines…, 2015), the dissemination of the Diploma Supplement, the Bologna and European

Qualifications Framework, the recognition of learning outcomes acquired outside formal education, and the principles of diploma recognition. These ideas and concepts arose mainly within the framework of the work of the Bologna Follow-Up Group, and their implementation was decided by the ministers of higher education, signing successive communiqués from conferences in the capitals of the Bologna Process member states. It is worth noting that their implementation into higher education systems at national and institutional levels determined strong tensions between the academic community and the state administration, and aroused irritation within the higher education institutions themselves. The academic community initially felt this as a curtailment of educational freedoms and institutional autonomy, and as an abandonment of rudimentary academic values and a move toward unnecessary bureaucratic ballast. The implementers of the Bologna Process in Stage 1, introduced into all higher education systems the basic tools forming the final shape of the EHEA (Chmielecka, 2019).

The Sorbonne Declaration, which was signed on May 25, 1998 by the ministers responsible for higher education of France, Germany, the United Kingdom and Italy, included the goal of promoting mobility in Europe, as well as increasing the competitiveness of European educational offerings in relation to the US, with a particular focus on mobility and attractiveness of education, which were not yet (in the 1990s) sufficiently representative of the European Union's higher education systems. The harmonization de-siderations established at the University of Paris included study structures, degrees and support for the movement of students across the continent with the implementation of the European Credit Transfer System (ECTS).

The idea of harmonizing with priority for mobility was rapidly evaluating, and ministers of higher education of successive countries then came to the work, which resulted in the preparation of the **Bologna Declaration**. In it, the ministers expressed their resolve to coordinate policies in order to achieve, within the first decade of the third millennium, the goals they considered vital to the creation of the European Higher Education Area. These included the establishment of a credit system-such as ECTS-as an appropriate means of promoting the greatest possible mobility for students. They also agreed that credits could also be earned outside the higher education system, and they wanted to achieve the promotion of mobility by eliminating obstacles to actual freedom of movement, with particular attention to students' needs for access to education and training opportunities and related student care, assistance and social benefits. With regard to other participants in the Bologna process, on the other hand, the ministers decided to facilitate the recognition of periods of research, education and training in another European country (The Bologna Declaration, 1999).

The first communiqué of higher education ministers was drafted in Prague in 2001. Two years after the signing of the Bologna Declaration and three years after the signing of the Sorbonne Declaration, the ministers responsible for higher education in Europe, representing the 32 signatory countries, reviewed the report "Continuing the Bologna Process" of the Bologna Follow Up Group (BFUG), which concluded that efforts to promote mobility should continue. To this end, it was important to increase the turnover of students, teachers, academics and administrative staff by gradually removing all obstacles to their free movement. They also affirmed the need to make use of European Community programs and launch the Action Plan for Mobility, adopted by the Nice European Council in 2000. The ministers also highlighted quality as a fundamental condition for developing mobility and the attractiveness of the EHEA. With a view to further progress in mobility, seminars were launched to analyze the degree of involvement of member states in the accreditation, recognition and application of ECTS credits, where various omissions would be obstacles to the full implementation of EHEA mobility (Towards The European Higher Education Area, 2001).

On September 19, 2003, higher education ministers from 33 European countries met in Berlin to review achievements and set priorities for the coming years. In relation to mobility, they agreed that students as well as academics and administrative staff collectively form the foundation of the European Higher Education Area, and that their effective movement is important for academic, cultural and policy circles as well as for the social and economic dimensions of the Bologna Process. Indeed, after the 2001 Prague Conference, indications of these flows increased noticeably, thanks to significant support from European Union programs. In addition, for statistical and comparative purposes, it was decided to take the necessary steps to improve the quality and availability of data on student mobility, and to take the necessary steps to facilitate the use of national loans and scholarships. For the mobility situation analyzed in Berlin, the ministers decided to become more strongly involved in the introduction of the ECTS system, which served to facilitate student mobility and the development of an international education program. It was important that ECTS become not only a transfer system, but also a credit accumulation system, which will soon be consistently applied at the halfway point of the establishment of the EHEA. In connection with the proposal of the updated deisder of merging the European Higher Education Area and the European Research Area, it was also declared that mobility at the doctoral and post-doctoral level would be made more dynamic, and incentives were made for the involvement of educational institutions to increase cooperation in training young researchers (Realising the European Higher Education Area, 2003).

The 2005 Bergen Ministerial Communiqué was the first to set a timeline for achieving the European Higher Education Area and European Research Area. The ministers announced a mid-term assessment of achievements and the setting of priorities until 2010, which was the expected year of completion of the full harmonization of higher education systems in Europe. Certainly, in such a short period of time, it was not possible to realistically and effectively include new countries in this effort, including Armenia, Azerbaijan, Georgia, Moldova, or Ukraine (already 45 countries in total). With regard to the mobility de-sideration, the ministers, this time more realistically addressed the still unresolved problems, while at the same time reiterating their commitment to introducing solutions to facilitate the "portability" of scholarships and loans, with a view to making mobility within the EHEA a reality soon.

The ministers multiplied efforts to remove obstacles to mobility by facilitating the issuance of visas and work permits, and by re-encouraging participation in mobility programs already characterized by full recognition of periods of study abroad. The ministers of higher education `in Bergen also decided to implement the task of reliably assessing progress based on an appropriate methodology, which will include the issues of the two-degree system, quality assurance and recognition of diplomas and periods of study. What is most important is the presentation of comparable data on the mobility of university employees and students, as a basis for future evaluation of the progress of the work, as well as for the preparation of a report before the next conference of ministers (The European Higher Education Area, 2005).

The communiqué of the London Ministerial Conference was released on May 17-18, 2007. The document focused on the de-emphasis of academic mobility in relation to recognition of qualifications, quality assurance of education, doctoral studies and employability of graduates. In terms of mobility barriers to cooperation between universities, issues of immigration, recognition, insufficient financial incentives and inflexible pension arrangements were important to the ministers. To this end, they addressed, the spread of visa facilitation and residence and work permits in Europe. They also launched solutions to further make mobility more attractive for both workers and students. These included increasing the state of joint degree programs and the creation of flexible education programs, as well as urging universities to take more responsibility for the mobility of employees and students. Attention was also given to clear and comparable job titles, degrees and easily accessible information about education systems and qualification structures, which, after all, are a basic condition for citizens' mobility. Higher education ministers, in national reports prepared for 2009, outlined measures to promote student and worker mobility, including mechanisms for future evaluation. They also decided to create a network of national experts to analyze the reasons that hinder the "portability" of scholarships and loans. The ministers, mindful of the need to increase the availability of mobility data, asked Eurostat, through the European Commission, to develop comparable indicators to measure the progress of student and worker mobility in all probolon countries (London Communiqué, 2007).

The communiqué of the Leuven Conference of Higher Education Ministers, held April 28-29, 2009, established that in the decade to 2020, European higher education is to begin to incorporate mobility-oriented forms of education that will make it easier for students to develop the competencies they need in a changing labor market. The Bologna process is leading to greater compatibility and comparability of higher education systems, and facilitating the mobility of learners and the ability of universities to attract students and researchers from other continents. To support the quality of education to be comparable across the EHEA, a European Register of Quality Assurance Agencies (EQAR) has also been created, and a Diploma Supplement has been promoted to further enhance the transparency and recognition of qualifications. The ministers continued the steps announced in the London Communiqué for an independent evaluation of the Bologna process. This involved defining indicators to measure and monitor mobility, considering how to ensure sustainable mobility in the EHEA. The tools to do so included monitoring the work on transparency and recognition mechanisms, creating the network necessary to share information and promote the Bologna Process outside the EHEA. The Leuven Ministerial Communiqué quite significantly emphasized the priority of mobility to respect diversity and develop the ability to connect with other cultures. It stimulates linguistic pluralism, thus strengthening the multilingual tradition of the European Higher Education Area, and expands cooperation and increases competition among educational institutions. Ministers have stipulated that by 2020, at least 20% of students earning a diploma inside the EHEA should have previously completed a period of study or training abroad for each of their three degrees, and joint diplomas (joint diplomas) should become common academic practice. In addition, the ministers proposed solutions to foster funding for mobility programs, recognition of education, accessible infrastructure, and provisions related to visas and work permits. Mobility was also to lead to a more balanced balance of student arrivals and departures across the EHEA, while working conditions and career advancement paths, as well as open international recruitment, were to attract highly qualified researchers to universities. For the first time, ministers announced framework conditions to ensure adequate access to social security and facilitate the transfer of pension rights (The Bologna Process 2020, 2009).

4. Summary and conclusions

With regard to the introduction: characterization of the Bologna process and its desiderata with regard to academic mobility, it is worth pointing out the need for changes and criticism of the implementation of some of the desiderata, as well as its inadequacy to the realities of the national higher education system. It can be assumed that most of the actions of various bodies in the European Union are corrective in nature, and this attribute can also be attributed to the Bologna process. Already in the introductions to the declaration, a statement was used about the need to catch up and overtake American universities in access to international rankings, using tools (desiderata) such as improving the quality of education, achieving comparability and recognition of education (diplomas) across Europe, which together were supposed to promote the mobility of the academic community. One can also exegesis the multidegree system, which in the field of social sciences may work, while in the field of technical sciences it raises doubts, if only those related to the actual competence of young engineers. Employers in established workplaces make it clear here that they need longer-educated workers. This is evidenced by the situation of graduates, most if not all of whom choose to pursue a second degree. A similar argument can be made with regard to the desideratum of continuing education, which is certainly necessary in countries with highly developed technology and various innovations, but is this the case in Central and Eastern

Europe? This is evidenced by the relatively low share of graduates in the postgraduate sector, with more interest possibly being shown in refresher courses.

Similar conundrums arise from an analysis of the state of academic mobility. It can be concluded that the short mode of study does not allow future undergraduates and engineers to have sufficiently productive stays abroad, which could be used in later professional life. Another problem is the overlooked, invisible, or transparent ignorance of even communicative English by domestic students, which is essential for any foreign education. It is worth criticizing the ECTS system, which, according to higher education ministers, served as a kind of valuation of students' knowledge, qualifications and competencies in order to obtain confirmation of their acquisition at foreign universities. Formally it certainly works, but in reality there are considerable differences between the Western and Eastern member states of the Bologna process. In Poland, the system was introduced haphazardly, without a stage of so-called "solidification" and to this day there are many uncertainties with the assignment of knowledge accumulation points to various subjects, from which pro-deans and program councils assign accumulation in order to meet the conditions of accreditation control.

With regard to the role of academic mobility as a Bologna deiside, it can be said that under the conditions of globalization, increasing mobility processes are easily observable, albeit of varying intensity, permanence and direction. Certainly, mobility will determine the lives of students in the coming years, as it has always done in the US. One can also approach this concept critically, if only because moving between foreign countries causes uncertain existential conditions during various credits and exams, the need to learn the language, or apply for funding for the trip (Erasmus). Polish students also have to contend with cultural habits. According to empirical data (CBOS 2010), Poles are not mobile, as 65% of them have never changed their place of residence. In the case of the analysis of those under 30 years of age, and therefore potentially students, it can be said that about three-quarters (75%) of the respondents have never changed their place of residence in their previous lives, but if they did, it was mainly for educational and earning reasons. We can speak here of a relatively persistent motivational trend among educated youth, based on the view of seeking social spaces that allow for self-realization and self-development regardless of attachment to a particular culture, place of residence or country (Leszniewski, 2022, pp. 200-203).

The state of inadequacy of the assumptions contained in the communiqués of the ministers of higher education to the realities of specific member states can be illustrated by the example of Poland. Back in the year of the Bologna Process implementers' noisy announcement of the completion of the European Higher Education Area, a report was published on the real situation related to the mobility of the Polish academic community. It showed that only 9% of those with doctoral degrees lived outside Poland. Only a little more than 2.5% had actually moved out, the rest had already lived abroad. Thus, only 1.3% of all PhDs have their main place of employment outside Poland, and if we look only at those who were born in Poland, barely 1% have worked abroad. Among the main destinations of employees who based their work on a PhD, the UK and the US dominated, followed by probolon countries, including Germany, Belgium, China, France and Italy (Knapińska, 2010).

It is also worth noting the philosophical and social parallels of mobility, the finality of which can be destructive, in a sense fostering the stratification of the existing collective arrangement. Completely involuntarily, an avant-garde elite may be formed, for whom space does not matter much, distances cease to matter, no place deserves to stay for long. In the long run, the ruthless pursuit of such an outlined concept of mobility will inevitably lead to fundamental changes in social space, and in part this is already happening. This is especially true of entering into relationships that are impermanent and without commitment. Copying such behavior from the US will not serve the society of the European Union well either, and this will lead to various devaluations on the back of the geographic and historical differences between the two continents, not previously taken into account by the decision-makers.

Criticism must also be levied at the Erasmus program, which is characterized by its incorporation into a centralized structure, which was originally intended to foster efficient management of funds, with the mistaken assumption of reducing bureaucracy. Decentralizing Erasmus would have allowed for better tailoring to the specific target group of a given program and for greater control over its effectiveness, assuming that the management team manages to specialize in remaining in direct contact with beneficiaries. On the other hand, tests carried out before students leave for foreign scholarships and just after their return show that students return not only more confident, more tolerant of other cultures, but also able to solve problems more quickly, adapt to new circumstances and with greater organizational skills. At the same time, these are the character traits most valued by most employers (Erasmus Impact Study, 2017).

The question of extending the influence of the Bologna Process and programs such as Erasmus beyond the European region remains to be resolved. Pavel Zgaga has already theoretically explained the evanescence of the trans-European influence of the Bologna process, which, although intended to solve internal European problems, has had a stronger impact outside Europe. Perhaps this is the right way forward for Europe, they will attract a multitude of students and employees from outside the continent, some experience is already there, if only with Nepalese students.

With regard to academic mobility during the initial period of the Bologna process on the basis of the Sorbonne Declaration, the Bologna Declaration and the communiqués of the higher education ministers of Prague, Berlin, Bergen, London and Leuven, it should be recalled that the implementation of the Bologna process deisiderations is referred to as Stadium 1. It represents the preparatory stage of the construction of the European Higher Education Area and falls between 1999 and 2009. This caesura includes the signing of the Sorbonne and Bologna declarations, as well as communiqués from the higher education ministers of the member states of Prague, Berlin, Bergen, London and Leuven. Stage 2 is more extensive and includes communiqués from the higher education ministers of Budapest and Vienna (2010), Bucharest (2012), Yerevan (2015), Paris (2018), Rome (2020) and Tirana

(2024). These will be the subject of continuing claims from this analysis. Stadium 2, which can be called consolidation, falls between 2010 and 2019. This is a period of taming and using the tools implemented in Stadium 1, both by the administration and by the academic community, with increasing participation of external university stakeholders.

Each of the ministerial communiqués from 2001-2009 referred to a mobility deisderate. In principle, if you take into account recognition, ECTS and multidegree, they were all conducive to promoting mobility, in varying proportions, of course. In addition, the ministers in the communiqués tried to emphasize something innovative, serving to highlight the importance of the idea of academic mobility. In the communiqué of higher education ministers from Prague (2001), it was the gradual removal of all obstacles to the free movement of the entire academic community using the Mobility Action Plan of 2000. In the Berlin Higher Education Ministers' Communiqué (2003), in relation to mobility, the ministers agreed that it was necessary to focus on collecting data for statistical and comparative purposes and to take the necessary steps to facilitate the use of national credits and scholarships. It was also proposed that the European Higher Education Area and the European Research Area be merged. The Bergen Communiqué of Higher Education Ministers (2005), in turn, established a timeframe for achieving the European Higher Education Area and the European Research Area. The ministers announced a mid-term assessment of achievements and the setting of priorities until 2010, which was the expected year of completion of the full harmonization of higher education systems in Europe. Ministers have multiplied efforts to remove obstacles to mobility by facilitating the issuance of visas and work permits. The London Communiqué of Higher Education Ministers (2007) focused on de-emphasizing academic mobility in relation to the recognition of qualifications, quality assurance of education, doctoral studies and graduate employability. In terms of mobility barriers to cooperation between higher education institutions, issues of immigration, recognition, insufficient financial incentives and inflexible pension arrangements figured prominently for ministers. Solutions have also been launched to further make mobility more attractive to both employees and students. The ministers asked Eurostat, through the European Commission, to develop comparable indicators to measure progress in student and staff mobility. In turn, the Leuven Communiqué of Higher Education Ministers (2009) announced the establishment of the European Quality Assurance Agency Register (EQAR), and promoted the Diploma Supplement to further enhance transparency and recognition of qualifications. The ministers assumed, also for the first time, that by 2020 at least 20% of students obtaining a diploma inside the EHEA, and joint diplomas (joint diplomas) should become common academic practice. For the first time, ministers announced framework conditions to ensure adequate access to social security.

It is possible to express the opinion that the de-statement of mobility has become a permanent part of the announced development needs of the European Higher Education Area. The later the communiqués of ministers appeared, the more provisions and assurances about promoting mobility were included in them. The most content in this regard can be read from the 2007 London Communiqué. Certainly, it was circumstantially connected with the soon-to-be-opened borders of the EU labor market, as it became an area without border controls on December 21, 2007 - the Schengen Agreement (Olak, Konecka-Szydełko, Maruszak, 2020). Realistically, there is still a lot of work to be done by higher education ministers in the mobility deisderat, especially when it comes to supporting socially disadvantaged students. The idea is that mobility should begin to foster the process of social inclusion, take into account the traditions of countries, culture, or social situation, and, above all, language skills. A wide range of electronic education can be used, which as a tool against the Covid-19 pandemic has worked, if only in Poland, perfectly.

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YOUNG PEOPLE'S ENTREPRENEURIAL ATTITUDES TO CREATING AND RUNNING BUSINESS

Jakub SKORUPA[1*], Sebastian STĘPIEŃ[2]

[1] Poznań University of Economics and Business; 82863@student.ue.pl, ORCID: 0000-0002-4609-2583
[2] Poznań University of Economics and Business; sebastian.stepien@ue.poznan.pl, ORCID: 0000-0001-9475-8418
* Correspondence author

Purpose: The main objective of the study is to indicate the determinants of taking up and running business by young people. Since the spatial scope of the research covers three countries, the authors aim to answer the question about similarities and differences between these states. In addition, the survey was conducted after the COVID-19 pandemic, hence part of the analysis includes issues related to the assessment of the crisis in terms of the economic activity of the surveyed individuals.
Design/methodology/approach: the problem concerns the determinants of young people's entrepreneurial activity. The subject includes also entrepreneurial attitudes of actors under study and their approach to business. The empirical analysis involved students from selected universities in 3 countries: Poland, Romania and North Macedonia. The analysis was conducted using online survey questionnaire. The survey covered a total of 161 respondents.
Findings: The students emphasised the role of competition as an element shaping the business environment. This factor influenced the relatively high proportion of those seeing difficulties in opening a new business. They realised that knowledge and education were helpful in achieving success in the market, although financial resources and luck were also important. In the consensus view of respondents, the pandemic increased the risk of operating for entrepreneurs.
Research limitations/implications: firstly, the research sample is relatively small (especially for Macedonia) and purposively selected (students), thus the results cannot be representative of the entire population of young people in the selected countries. Secondly, the survey is static and does not indicate trends in the perception of the problem at hand. In the future, it is planned to repeat the analysis on a larger group of respondents in order to eliminate the weaknesses indicated.
Originality/value: The article brings elements of originality in the layer concerning the attitudes of young people (students) towards entrepreneurship in a post-pandemic environment. The added value is the comparative analysis of the three countries included in the study.
Keywords: students, entrepreneurial attitudes, setting up and running business, questionnaire.
Category of the paper: research paper.

1. Introduction

Entrepreneurship is characterized by innovation and risk-taking. Entrepreneurs are known for their ability to identify market shortages and develop new solutions to meet them, as well as their creativity and ability to develop new ideas that can change the way we live and work (Qureshi, 2018). Risk-taking is also a key characteristic of entrepreneurship, as entrepreneurs must be willing to invest their time, energy, and resources into a new venture with no guarantee of success. They must be comfortable with uncertainty and willing to pivot when necessary (Cooney, 2012; Kerr et al., 2017). Entrepreneurship is a growing area of interest among academics and researchers from different disciplines, becoming a source of discovery and the production of innovative ideas (Głodowska, Wach, 2022; Chandra, 2018).

There are many factors influencing entrepreneurship. According to Drucker (2009), entrepreneurship depends on the entrepreneurial potential, the situation, the working environment and the external environment. In turn, Kozioł (2006) proposes the following list of determinants creating entrepreneurship: the need to cope with intensifying competition; creating new market spaces; better meeting customer needs; modern management methods and techniques; stimulating and developing entrepreneurial activities among employees. undertaking entrepreneurial activities that stimulate productivity and increase the quality of manufactured goods is forced by competitive pressure, both nationally and internationally. Successively, Maul and Maufield (1991) mention self-confidence and one's own idea, breadth of perspective, ingenuity and creativity, flexibility of planning, optimism, realism, the art of persuasion, risk-taking, emphasis on action as the characteristics of entrepreneurship. To complete the set of features, one could add initiative, strong persuasion, autonomy, leadership, ability to work hard, energy, etc.

Intentions are important in building entrepreneurship. Entrepreneurial intentions are defined as "the self-perceived belief in the intention to create an economic enterprise and the conscious planning of creating this process in the future" (Thompson, 2009). the process of shaping entrepreneurial intention depends on many factors. From this point of view, personality traits and abilities are important, as well as the environment in which the person functions, situational factors, social and cultural standards and upbringing. Entrepreneurial attitudes, on the other hand, are personality traits that describe specific human behaviors and actions aimed at innovation, the ability to accept change, the ability to take advantage of opportunities and take risks. An interesting proposal for the classification of determinants of entrepreneurship was proposed by Peters et al. (2007), who created it for research on academic entrepreneurship. These authors showed that two significant characteristics of the entrepreneur, such as the desire to be independent and the willingness to be entrepreneurial, are the result of both internal and external conditions.

Young people play a unique role in the development of entrepreneurship. If we look at younger generation, students, some factors influencing the business attitudes might be very specifically related to this age group (Papulova, Papula, 2015). They have a high tolerance for entrepreneurial risk, relatively easily decide to open their own business, quickly shape entrepreneurial intentions (Gerry et al., 2008). A deep understanding of the attitudes, needs and expectations of young entrepreneurs, especially in multicultural terms, is a huge challenge for the labour market as well as for policy makers for building an economic development strategy based on a young generation of educated people. Thus, the main objective of the study is to indicate the determinants of taking up and running business by young people. Due to the fact that the spatial scope of the research covers three countries - Poland, Romania, North Macedonia, the authors aim to answer the question about similarities and differences in the factors shaping entrepreneurship among young people, as well as their business attitudes. In addition, the survey was conducted in the period after the COVID-19 pandemic, hence part of the analysis includes issues related to the assessment of the crisis in terms of the economic activity of the surveyed individuals. The article brings elements of originality in the layer concerning the attitudes of young people (students) towards entrepreneurship in a post-pandemic environment. The added value is the comparative analysis of the three countries included in the study: Poland, Romania and Macedonia. The structure of the paper is as follows: the next section presents the methodology of the paper, followed by a description of the spatial scope and data set, the fourth section presents the results, and the paper concludes with a summary.

2. Methods

Apanowicz defines scientific research as cognition of the world in all its manifestations. He writes that it is a process of action starting from the determination of a research problem to its written elaboration (Apanowicz, 2002). In turn, Maszke characterises scientific research as a term for collective activities that aim to explain and understand a certain phenomenon (Maszke, 2008). One of the most important factors in choosing a research subject are emotions that affect interest in the topic. When choosing the study area, scientist should be guided by an individual connection with a given issue (Pilch, Bauman, 1999). Hence, the problem adopted in the research stems from the authors' interests and concerns the determinants of young people's entrepreneurial activity. The subject of the investigation includes also entrepreneurial attitudes of actors under study and their approach to business. As mentioned before, the empirical analysis involved citizens from 3 countries: Poland, Romania, and North Macedonia, which makes the study multicultural in nature. More specifically, students from various universities in those countries were selected as subjects for the study. Students studied mainly economics, but also management, finance and accounting. The selection of the research sample was based on the personal experience and knowledge of one of the co-authors, who had the opportunity to participate in Erasmus+ programmes and become familiar with the academic environment abroad.

The analysis was conducted using the diagnostic survey method, and an online survey questionnaire was used as a research tool. The questionnaire was designed using Google Forms and was sent to respondents via the most commonly used social networks (Facebook, WhatsApp and Facebook Messenger). These channels allowed to collect data relatively quickly and enabled to start the analysis simultaneously for all countries. At the same time, the method used had a low cost of implementation, was easy to reach all students and promoted anonymity making answers more reliable. The questionnaire contained 20 questions, namely: 9 closed questions with one correct answer, 8 closed multiple choice questions, 2 closed questions with a rating scale from 1 to 5 (Likert scale), 1 open question. The answers were divided into 4 sections: the first section was devoted to general information about respondents (gender, age, country, whether respondents were engaged in business activity or not); the second section contained issues related to setting up and running business in the view of respondents; the third section was dedicated only to those who intended to launch a business in the near future; the fourth part showed the opinion of young people on doing business in terms of pandemic crisis. The actual survey was conducted in November 2022-January 2023 and was preceded by a pilot survey in autumn 2022.

3. Spatial scope and data set

In order to determine similarities or differences in young people's interest in starting a business and their attitudes towards entrepreneurship, research was conducted in 3 countries. They are differently situated in terms of geographical localization, culture, membership in the European Union or time of accession to the European Union, absorption of programmes supporting young people in setting up a business, legislation for entrepreneurs, etc. A synthetic measure of entrepreneurial development in the countries studied can be the doing business indicator. It is based on the results of research on legal regulations and their application in practice and includes representatives of state authorities, lawyers, consultants, accountants, and other professionals. The position of a given country in the ranking is based on the average of 10 categories, such as: setting up a company, obtaining building permits, electricity ratio, registering ownership, receiving credit, investor protection, paying taxes, foreign trade, concluding contracts, liquidation of the company. The indicator helps to assess the absolute level of regulatory performance over time. The assessment of the ease of doing business by the economy is reflected on a scale from 0 to 100, where 0 is the lowest and 100 is the best performance. The results for each of the countries analysed are presented below, as well as background information.

Poland, located in Central Europe, joined the EU in 2004. According to the Ease of Business Index, Poland ranks 40th out of 190 countries with an overall rating of 76.4. In terms of cross-border trade opportunities, it ranks first, and as a platform for starting a business, it ranks 128th. Romania is located in the southeastern part of Europe, became a member of the European Union in 2007. Romania's overall assessment of the ease of doing business was 73.3, with the highest rating in the category of cross-border transactions and the lowest in the category of electricity generation. North Macedonia is located on the Balkan Peninsula in Southeastern Europe and is one of the countries of the former Yugoslavia. It is not a member of the European Union, but has the status of an EU candidate country. In the 2020 World Bank's Ease of Business Ranking, North Macedonia was ranked 17th out of 190 countries and achieved an overall score of 80.7, with the highest score in the cross-border trade category and the lowest in the executive contracts category.

The survey covered a total of 161 respondents (students from University of Economics and Business in Poznan, University of Technology in Bydgoszcz, University of Life Sciences “King Mihai I” from Timisoara and Ss. Cyril and Methodius University of Skopje), including 86 women and 75 men (53% and 47% of population). Respondents from Romania were the most numerous group with 100 people, followed by those from Poland with 53 people, and the least represented was Macedonia with 8 people. In Macedonia, the distribution of the population between men and women was the least equal, as 7 out of 8 people were women (87.5%). In Poland and Romania, the distribution was more proportional, with 45% women and 55% men in Poland, respectively, and the opposite proportions in Romania. The age of the respondents ranged from 18 to 40 years. In the entire sample of respondents, the average age was about 23 years, while in individual countries the average age was as follows: Romania 26, Macedonia 23, Poland 21. The greatest variation (stretch mark 22 years) was observed in Romania, where the minimum age was 18 years and the maximum was 40. High variation was observed also in Macedonia, with the minimum age of 20 and maximum of 35 (stretch mark 15 years). In Poland, the minimum age was 18 years and the maximum was 29 (11 years of age). As for running a business, 65 women and 49 men did not have their own business until the survey, 20 women and 22 men indicated that they run such an activity, and 1 woman and 4 men chose the answer that they previously ran a business, but at the moment it is not operating. Basic characteristics for gender, age and a business status are given in Table 1.

Table 1.
Gender, age and business status characteristics for the analysed countries

Specification	Poland		Romania		North Macedonia	
	Gender characteristics					
Female	24	45,3%	55	55%	8	87,5%
Male	29	54,7%	45	45%	1	12,5%
	Age characteristics					
Average	21,5		26,1		23,3	
Maximum	18		18		20	
Minimum	29		40		35	
	Business status - female					
No business	22		37		6	
Yes, I have my own business	2		17		1	
I ran in the past, but not at the moment	-		1		-	
Male	Business status – male					
No business	26		23		-	
Yes, I have my own business	3		19		-	
I ran in the past, but not at the moment	-		3		1	

Source: Own elaboration based on a questionnaire survey.

4. Results

In the following, partial results from the research will be presented to meet the objective of the publication. One of the questions in the survey asked for an assessment of the business environment (this was a single-choice question). Analysing the entire population of respondents, the most frequent answer was 'competitive' (43% of indications), followed by contradictory 'hard to enter' (20%) and 'easy to enter' (17%) (table 2). In contrast, the lowest number of responses was: ‘inlcusive’ (0%) or exclusive (1%) and closed (1%). As for the division by country, the most frequent answer in Poland was ‘hard to enter’ (36%), but also ‘easy to enter’ (30%). In Romania, on the other hand, the answer ‘competitive’ prevailed (57%). In Macedonia, three answers received the same percentage of 25% - 'easy to enter', 'hard to enter' and 'complicated'. The occurrence of mutually exclusive answers ('easy to enter', 'hard to enter') may indicate different personality traits among the respondents.

The next question concerned the chances of starting a business and included a scale from 1 to 5, where 1 meant very low and 5 meant very high chances. According to all respondents, the chance of starting a business is “medium” (43%) or “low” (34%). A rating of 'high' was given by 13% of respondents, and no one chose the answer 'very high'. On the other hand, there were ‘very low’ answers (11%). These results indicate a relatively low level of optimism regarding the chances of creating one's own business, especially among young women, among whom only 5 out of 86 answered ‘high’. This also corresponds to the results of the previous question and the answer ‘hard to enter’. Also the answer 'competitive' can be seen as 'necessary to compete', which limits the chance of starting a new business. As far as the comparison between countries is concerned, the answer ‘medium’ appeared most frequently in all of them. At the same time, in all countries, the sum of the answers 'low' and 'very low' exceeded the answer 'high' (table 3).

Table 2.

Distribution of answers to the question 'How do you asses the business environment in your country?'

The business environment in your country is:	Total		Poland		Romania		North Macedonia	
Easy to enter	27	17%	16	30%	9	9%	2	25%
Hard to enter	32	20%	19	36%	11	11%	2	25%
Competitive	70	43%	12	23%	57	57%	1	13%
Clesed	2	1%	1	2%	0	0%	1	13%
Accessible	5	3%	2	4%	3	3%	0	0%
Complicated	20	12%	2	4%	16	16%	2	25%
Stable	2	1%	1	2%	0	0%	1	13%
Unstable	4	2%	1	2%	3	3%	0	0%
Inclusive	0	0%	0	0%	0	0%	0	0%
Exclusive	1	1%	0	0%	1	1%	0	0%

Source: Own elaboration based on a questionnaire survey.

Table 3.

Distribution of answers to the question 'How do you assess the chances of starting a business in your country?'

How do you assess the chances of starting a business?	Poland		Romania		North Macedonia		Total	
Female	24	45%	55	55%	7	86%	86	53%
1. Very low	3	6%	9	9%	2	29%	14	9%
2. Low	9	17%	20	20%	0	0%	29	18%
3. Medium	10	19%	23	23%	5	71%	38	24%
4. High	2	4%	3	3%	0	0%	5	3%
5. Very high	0	0%	0	0%	0	0%	0	0%
Male	29	55%	45	45%	1	14%	75	47%
1. Very low	0	0%	4	4%	0	0%	4	2%
2. Low	7	13%	18	18%	0	0%	25	16%
3. Medium	14	26%	16	16%	0	0%	30	19%
4. High	8	15%	7	7%	1	14%	16	10%
5. Very high	0	0%	0	0%	0	0%	0	0%

Source: Own elaboration based on a questionnaire survey.

Interesting conclusions are brought by the analysis of the results to the question on the needs of young people for starting a business (it was a multiple choice question, hence the results do not add up to 161, see table 4). It turns out that knowledge/education was in first place (this answer received 111 indications), which should be assessed positively in the context of the education system and young people's attitudes as to the need for learning. It can be assumed that this result is due to the fact that the persons surveyed were students. Knowledge certainly facilitates the development of a proper business plan, and this was regarded as the second most important need for starting a business (79 indications). Only in third place come 'money, financial support' (55 indications), which, in light of the widespread dominance of materialism in the world, may come as a bit of a surprise. It appears that, at least for some young students, money is not a sin equa non condition for starting a business. On the other hand, a relatively low score was given to the answer 'right personal traits' (42 indications), as compared to the role of entrepreneurship as a factor for success in business. Perhaps this score would be higher for those who prioritise personal traits over knowledge and education. Of the country comparisons, in Poland and Macedonia, knowledge and education play a special role, for Poland a well-prepared business concept is equally important. In Romania, knowledge also received the highest number of responses, but slightly less was attributed to 'money'.

Table 4.
Distribution of answers to the question 'What do you consider you need most to start a business?'

What do you consider you need most to start a business?	Poland	Romania	North Macedonia	Total
Knowledge, education	44	59	8	111
Money, financial support	9	45	1	55
Training, courses	6	13	1	20
Consultancy	2	1	0	3
Right personal traits	10	30	2	42
Right business plan	40	38	2	79

Source: Own elaboration based on a questionnaire survey.

Success factors in business were another area of the study (next multiple choice question, see table 5), and so respondents indicated that it depends primarily on financial sources (70 indications), strong motivation (51) and luck in business (43). In contrast to the previous question, money came first. Thus, while students do not consider money to be a key determinant of starting a business, when it comes to assessing the success of running a business, it is most important.

Table 5.
Distribution of answers to the question 'What are the most important business success factors?'

Business success depends on:	Poland	Romania	Macedonia	Total
Realism	11	19	0	30
Flexibility	17	17	1	35
Focus on objectives	15	14	4	33
Fortune, luck	11	31	1	43
Human resources	7	13	1	21
Positive attitude	11	16	2	29
Financial resources	18	48	4	70
Good relation with clients and suppliers	19	16	3	38
Strong motivation	16	34	1	51
Pleasure of managing the business	3	32	0	35
Detailed planning	16	12	1	29
Ability to do what it is needed	13	12	3	28
External help (e.g. consultants)	0	0	1	1

Source: Own elaboration based on a questionnaire survey.

Interestingly, as educated individuals, students attach great importance to fortune as an element of business success. Fortune, for example, is more important than realism in business, adequate planning or human resources. If one does a comparative analysis, the result from the previous question regarding the role of money for Romania is confirmed - it is by far the most important factor. It is only followed by 'strong motivation', 'pleasure of managing' and 'fortune'. For Poland, on the other hand, 'good relations with clients and suppliers' emerged as the most important success determinant. 'Financial resources' came second, closely followed by 'flexibility', 'strong motivation' and 'detailed planning'. In Macedonia, next to 'financial resources' was 'focus on objectives'.

The last part of the study was to analyze the impact of COVID-19 pandemic on the attitudes of young people regarding willingness to start a business. The majority of respondents, in every country analyzed, indicated that the pandemic has changed their view of business opportunities. Romania and Macedonia were most affected; in Poland, just over half of respondents declared that the crisis had changed their attitude. The vast majority indicated that the biggest change that had occurred as a result of the pandemic was an increase in the risk of doing business. Out of 161 respondents, as many as 153 answered 'yes, slightly' (100) or 'yes, significantly' (53). When asked 'Which industries were most affected', respondents from all countries unanimously identified tourism (68% of total respondents) and the health sector (48%). This result is in line with official statistics, indicating that students have a strong understanding of the subject. Besides, a relatively high score was recorded for food industry in Poland, production and education in Romania. Respondents from the three countries also agreed on government support during the crisis, rating it rather negatively. The answer 'low' and 'very low' was indicated by 104 people, the answer 'medium' was chosen by 48 people and 'high' by 9 people (no one marked 'very high'). What was missing from the government programmes was 'financing the restructuring of the business' with 38% of indications (the most important element for Polish and Romanian students) and 'long-term guaranteed loans' with 37% (the most important for Macedonian students). Of the remaining responses, relatively high percentages were given to: 'exceptions from social-insurance payments' and 'co-financing the employees'.

5. Conclusions

The entrepreneurial attitudes of students, regardless of the country of origin, are divided into the innate ones, which are associated with the personality traits possessed, and the acquired ones, which can be learned and trained. When deciding to set up a company, young people are guided by the economic conditions in their country, the procedures for setting up a company, but also their qualifications and experience in a given field. Thus, the aim of the study was to discover what determinants, as perceived by the selected students, are key to starting and running a business. As the study covered three countries, the learned students' opinions and attitudes were analysed from a multicultural perspective. The conducted research pointed to many similarities, as well as indicated differences. The main conclusions of the study are set out below. Firstly, the factor that most defines the business environment is competitiveness (43% of indications), which is on the one hand an opportunity for start-ups, but on the other hand a threat related to competition with stronger players in the market. Hence the simultaneous assessments of the environment as 'easy to enter' and 'hard to enter' appeared. Young people, regardless of cultural differences, rated the chances of starting a business in the near future mainly as medium or low (women generally were more sceptic). This may be due to the fear of starting own business, as respondents indicated the need to broaden knowledge and education in the field of running business. According to the respondents, less than half needs a good business idea, and a third needs the financial support to start a business. In contrast, while running business, success depends primarily on financial sources (43%), high motivation (32%) and luck (27%). Some differences of opinion were observed in this area, as Romanian students underlined mainly financial aspects, while Polish respondents highlighted good relationships with customers and suppliers. For students from Macedonia, on a par with money, was the answer 'focus on objectives'. Other important business success' factors include flexibility, good planning (Poland), pleasure of business management (Romania).

Young people were aware of the pandemic. Research confirms that in their opinion, starting a business is now much riskier. The respondents indicated that as many as 95% are afraid to start a business at a large and medium level, only 5% of respondents are not afraid to start a business despite the threat of a global crisis. The respondents' indications in terms of government assistance to entrepreneurs during the crisis were also similar. Research shows that respondents rated this aid very low and low (65%) or as medium (30%), and only 6% of respondents believe that this aid was positive. Regardless of the country, students opinions converge on the expected forms of government support - financing the restructuring of the business and long-term guaranteed loans. This piece of research shows that, regardless of cultural differences, young people's views on the covid crisis are similar.

Finally, it is necessary to mention two limitations of the analysis, of which the authors are aware, which could not be eliminated given the nature of the study, time and budget conditions. Firstly, the research sample is relatively small (especially for Macedonia) and purposively selected (students), thus the results cannot be representative of the entire population of young people in the selected countries. Secondly, the survey is static and does not indicate trends in the perception of the problem at hand. In the future, it is planned to repeat the analysis on a larger group of respondents in order to eliminate the weaknesses indicated.

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REMOTE WORK IN SOCIETY 5.0 – EMPLOYEE'S PERSPECTIVE, MOTIVES AND FREQUENCY OF USE

Urszula SŁUPSKA

Bydgoszcz University of Science and Technology; urszula.slupska@pbs.edu.pl, ORCID: 0000-0001-6140-9713

Purpose: The purpose of the article is to diagnose the motives of remote work among working students in the context of creating a 5.0 society. The study focuses on analyzing the motives that lead young employees to choose remote work, and on determining the frequency of use of this form of employment.
Design/methodology/approach: The reseach was a pilot study and included professionally active and working students of the Faculty of Management at the University of Technology in Bydgoszcz. The research method was an electronic survey. Among the data analysis methods used were structure analysis and cluster analysis.
Findings: The results of the research indicate that young employees mostly prefer stationary work, especially if the tasks assigned to them require social interaction. In assessing the importance of motives for working remotely, respondents disagreed. However, the motives of greatest importance in their opinion turned out to be time saving, easier reconciliation of work and family life and flexible working hours.
Research limitations/implications: The study was limited to a small group of WZ PBŚ students, so future research may include a wider group of employees from different organizations.
Practical implications: The article provides information on the employee's perspective on the motives for using remote work and its frequency.
Social implications: The article addresses issues of work-life balance implications, employee well-being, changing the way we interact socially and sustainability.
Originality/value: The study provides empirical evidence on how young workers perceive aspects of remote work, what motivates them to work remotely and with what frequency they use it in a post-pandemic environment.
Keywords: remote work, society 5.0, super-intelligent society.
Category of the paper: research paper.

1. Introduction

Today's society is undergoing dynamic transformations related to the development of technology, the knowledge economy and the evolution of work roles. In the context of this transformation, society 5.0 represents a new stage of development, characterized by the integration of digital technologies, the automation of work, and the pursuit of sustainable development (Fujiwara, 2017). The key values of this society are flexibility, adaptability and the use of modern communication and IT tools. One of the main manifestations of the digital transformation is remote work, which has become an integral part of many employees' working lives. Remote work undoubtedly has an impact on employee behavior and expectations. Therefore, it is important to examine the employee's perspective on remote work, understand the motives that drive this form of employment and determine how often employees use this form of work.

The purpose of this article is to diagnose the motives of remote work among working students in the context of creating a 5.0 society. The completed study focuses on analyzing the motives that drive young employees to choose remote work and determining the frequency of use of this form of employment.

2. Literature review

Created in 2016, by the Japanese government, the concept of society 5.0 focuses on creating a future where technology serves people. It is a people-centered society that solves social problems by integrating virtual space with physical space. The concept of society 5.0 has yet to receive a single, precise, universally accepted definition. It is a concept of society that will evolve in accordance with technological advances, social changes and values that will prevail in the future, and the development of society will include technological innovation, social transformation and the interconnectedness of people, technology and the environment (Czapran, 2023; Shiroishi et al., 2018). It is a society that represents the stage of intelligence reached by the development of the information society (Wu et al., 2023).

Society 5.0 does not happen on its own, but it should be gradually created by using modern technologies (Internet of things, artificial intelligence, robotization and distributed ledger technology) to solve social problems, promoting innovations involving the economy and society, and creating a new quality in economic and social relations (Du Wall, 2019; Mavrodieva, Show, 2020). This, in turn, creates new guiding principles of innovation. Innovation, as an important factor in economic and social development, has the effect of increasing knowledge creation, economic growth, increasing productivity, and thus multiplying wealth (Romanowski, 2015). The creation of innovation and new knowledge should be the result of the participation of all participants in the ecosytem and sharing processes. The environment is therefore an active partner in innovation setting priorities for sustainable development (Carayannis, Morawska-Jancelewicz, 2022; Carayannis et al., 2020; Zhang et al., 2020). Society 5.0 should be built on three main pillars: a cyber-physical system that connects virtual space with physical space; the use of smart technologies and artificial intelligence to solve social problems; and environmental sustainability, which is important for the quality of life and future of the entire planet (Fujiwara, 2017). This is a super-intelligent society focusing its activities on the concept of sustainable society, which is based on providing the population with concrete and targeted solutions aimed at human well-being in a healthy and safe environment (Sułkowski et al.,2021).

Rapid technological advances and the creation of society 5.0 have forced changes in the management of organizations. Rapid adaptation to changes in the environment, emphasis on innovation and knowledge management have become integral elements of effective management. Cooperation and building the right relationships with the organization's stakeholders have become key, hard-to-mimic resources for organizations to achieve competitive advantage in the market. The development of relational capital built on the basis of relationships both inside the organization with employees and outside the organization is now an indicator of an organization's effectiveness and market success (Drewniak et al., 2020; Słupska et al., 2020). In addition, the emphasis on corporate social responsibility and sustainable development taking into account environmental protection and social factors in a 5.0 society makes it imperative that strategic decision-making in organizations take into account social benefits. Knowledge management, on the other hand, forces teamwork in organizations and creates an inclusive work environment that fosters creativity and innovation (Czapran, 2023). Knowledge should be used by employees to work more efficiently and effectively, thus maximizing the organization's chances of achieving a competitive advantage in the market (Paliszkiewicz et al., 2015). Knowledge management is intended to acquire, analyze and use knowledge to make faster, more accurate decisions and, as a result, to create faster responses to market needs (Edvardsson, Oskarsson, 2011). Of particular importance is the search for knowledge-based capabilities that will not be accompanied by the risk of rapid obsolescence. This is because knowledge contains creative processes that are difficult to copy. At the same time, it is important both to possess it and to use it appropriately and skillfully (Słupska et al., 2019). Knowledge in the modern business world has become a key resource of enterprises, demonstrating enormous competitive potential, and knowledge sharing is also a prerequisite for the development of new technologies and products (Krogh et al., 2001). The issue of knowledge diffusion is of great importance for eliminating the growing digital inequality, so stimulating the free flow of knowledge among employees becomes a priority. Openness and involvement of employees, devoid of opportunistic attitudes and limiting the flow of knowledge are prerequisites for creating a super-intelligent society (Pietruszka-Ortyl, Ćwiek, 2021). In addition, the creation of society 5.0 has caused organizations to move away from performance management to betting on the development of employees and their capabilities. Employees have become a strategic resource for a company to develop and invest in (Canals, Heukamp, 2020). The use of modern technology is not insignificant here either. On the one hand, it represents a challenge and, on the other hand, a great opportunity to bring the organization to a higher level of competitiveness and undoubtedly affect the level of innovation of the organization. A super-intelligent society combines digital transformation with people's creativity for sustainable development by solving social problems and creating value (Pereira et al., 2020; Gladden, 2019).

The 5.0 society, characterized by intense collaboration between people and technology, is shaping new work paradigms in which remote work plays a key role. Remote work is an integral part of the creation of society 5.0. In this context, technological change and digital transformation are opening up new opportunities and challenges for workers around the world. Remote work is a form of remote work that has long been used in organizations, both in virtual organizations and in traditional organizations in the form of virtual teams (Słupska, 2023). Initially, it was most often referred to as telework and was seen as such in the literature and in various legal records. The concept of telework was introduced into the scientific literature by J. Nilles, in 1973, who introduced the terms teleworking, meaning the substitution of an existing form of work with information technology, and telecommuting, meaning the periodic performance of employee duties outside the traditional workplace. With telecommuting being a form of teleworking (Ślężak, 2012). Telecommuting aims to make work more flexible and accessible, allowing employees to perform their duties from anywhere they have access to the appropriate telecommunications tools and an Internet connection.

The events of recent years, particularly the tremendous advances in technology, the processes of globalization and the pandemic COVID-19, have made remote work a more common term. Remote work is defined as work performed at any distance from where it is expected to be performed or where it would be performed under the traditional employment system, using available information and telecommunications technology (Zalega, 2009; Spreitzer et al., 2017; Shirmohammadi et al., 2022). Remote work, therefore, refers to a flexible work arrangement in which an employee performs his or her job duties, but the work is performed at a location other than the standard location, using remote tools. In remote work, communication takes place virtually using email, chat rooms, video conferencing, instant messaging and other online tools to contact co-workers and superiors. Technological advances and the pandemic COVID-19 have undoubtedly accelerated the development of remote work because organizations have been forced to implement it overnight, transform elements of their business processes and adapt to the new work organization. Remote work has increased the complexity of work, blurred spatial and temporal boundaries, and increased the use of modern technologies and information systems (Yogesh et al., 2020; Shirmohammadi et al., 2022; Modrzynski et al., 2023). This form of work, or hybrid work (partly remote, partly stationary) is now used by many more workers than before the pandemic COVID-19 (Milasi et al., 2020; Asatiani, Noström, 2023, Yang, 2022).

In Poland, this has forced changes in legislation. Hence, after the amendments to the Labor Code, which came into force on April 7, 2023, three types of remote work were introduced (Dziennik Ustaw, 2023). The first is total remote work, which is a solution similar to the earlier telework. The second is partial telework, which is the equivalent of covid remote work and various forms of hybrid work that have emerged on the labor market. The third is occasional remote work, which is the equivalent of the so-called home office, i.e. work provided from home. The first two types of remote work require the implementation in the organization of rules and regulations consulted with employee representatives or an agreement reached with trade unions. Total or partial remote work is performed at a location designated by the employee and agreed with the employer. The employer in these cases is obliged to provide the employee with all the necessary materials and tools to perform remote work and to cover the costs associated with the performance of remote work. Occasional remote work, on the other hand, is an employee entitlement and no separate regulations are required in this case. The employer is not obliged in this case to provide materials and tools to the employee or reimburse the employee. Occasional remote work may be provided for up to 24 days in a calendar year (Ziółkowska, 2023). Remote work can therefore be one of the benefits for the employee, as well as help generate savings for the employer and reduce environmental degradation (Dolot, 2020).

Implementing remote work is possible thanks to modern technology. Technology plays a key role in remote work. Employees use computers, the Internet, communication software and remote work tools. These include project management software, virtual offices, video conferencing platforms, artificial intelligence, augmented reality, virtual reality and blockchain. However, technology is not a sufficient condition for remote work because work organization is an equally important element. The effective use of remote work also depends on the organization's culture, communication processes and coordination mechanisms for remote workers. Indeed, the nature of remote work requires building a digitally connected but physically distributed work environment (Wróbel, 2021; Asatiani, Noström, 2023).

As we move toward a 5.0 society, it is important to keep in mind that prevailing conditions make employees less physically and socially connected. Difficulties therefore arise in sharing knowledge and ideas, leading to difficulties in creating new value. This is also linked to sustainability. Under these conditions, remote work provides more flexibility for employees and organizations. Employees need more flexibility because of their work-life balance. Organizations, on the other hand, need more flexibility in how they use their human resources (Sokolic, 2022). Remote work gives employees flexibility in terms of working hours and the work organization itself (Reisinger, Fetterer, 2021). They can work remotely full time, or in a hybrid system (part of the time remotely and part of it stationary), and decide for themselves how they schedule their workday. Remote workers are not limited geographically.

They can work for companies located in different parts of the world, making global collaboration possible. However, working remotely requires employees to be highly disciplined, as they must manage their own time, maintain a high level of productivity and take responsibility for their job duties. In addition, remote workers are required to adhere to professional ethics and take care of data and information security. Working remotely from an employee's point of view has many advantages, such as flexibility, saving time and commuting costs, and greater work-life balance. However, it also comes with challenges, such as isolation, difficulty managing time, increased pressure, lack of face-to-face interactions with co-workers and lack of opportunity to build social connections, as well as a lack of boundaries between work and home, and thus a disrupted work-life balance. (Sokolic, 2022; Abujarour et al., 2021; Bouziri et al., 2020; Michaelides, 2021; Shirmohammadi et al., 2022).

Thus, the hybrid work model seems to be a more attractive solution for employees because it combines the advantages of stationary and remote work, while giving employees more flexibility, eliminating some of the commuting and offsetting the social and organizational disadvantages caused by remote work alone. Most likely, this model of work will become the most popular model of work organization in organizations in the near future (Sokolic, 2022; Haque, 2023).

In generating new knowledge, innovating and preparing people for the challenges and opportunities of society 5.0, the emphasis is on an interdisciplinary approach, developing creativity and critical thinking, and promoting lifelong learning and adaptation to rapidly changing conditions. Remote work therefore fits into this context by promoting flexibility and the use of modern technology to face challenges and create new opportunities.

3. Research methodology

The research was conducted in June 2023. The research was a pilot and included professionally active and working students of the Faculty of Management at Bydgoszcz University of Technology. Many students of the Faculty of Management balance studying and working at the same time. In addition, students of the Faculty of Management, due to the nature of the courses they take, have a great deal of knowledge about remote work. The scope of the subject matter of the study concerned young employees' perceptions of aspects of remote work, ergonomics of remote work and building virtual relationships. This article presents only an excerpt from the completed research. The research method used was an electronic survey, and the research tool was an electronic survey questionnaire. The questions in the questionnaire were prepared based on literature studies. All students of the Faculty of Management, both undergraduate and postgraduate, regardless of their field of study, received a link to the questionnaire posted on Google Forms, with a request that it be filled out by those who are professionally active and work in organizations using remote work. The questionnaire was secured so that it could be filled out only once. 63 students responded to the request; however, only 53 questionnaires were completed correctly.

Among those surveyed, 49% were women and 51% were men. The vast majority of respondents were aged 18-29, who accounted for 83% of those surveyed. Those aged 30-39 accounted for 13% of the respondents, and those aged 40 and over accounted for 4%. Undergraduate students accounted for 55% of the respondents (including part-time 21% and full-time 34%). Second-degree students accounted for 45% of respondents (including part-time 39% and full-time 6%). The vast majority of respondents work in the private sector (94%), and only 6% work in the public sector. In addition, 64% of the respondents were employed under employment contracts, 30% worked under civil law contracts, and 6% under contractual agreements. Most of the respondents, mainly due to their young age, have relatively short work experience (30% up to 1 year; 53% from 1 to 5 years; over 6 years 17%). The majority of respondents in the survey worked in a large city (62%). 11% of respondents worked in a medium-sized city, 25% of respondents worked in a small city, and 2% worked in a rural area.

Among the objectives of the research were to determine the frequency of use of remote work by young employees and to identify the motives of employees for using remote work. To achieve the set objectives, an analysis of the structure of the data collected during the research was carried out. The structure analysis used structure indicators expressed in percentages. A cluster analysis was also conducted to determine whether respondents' evaluations are consistent or not. We use cluster analysis when we want to distinguish clusters of similar objects, in cases where the objects are described by more than one characteristic. As a method of combining clusters from agglomerative clustering methods, it was decided to use Ward's method, which makes it possible to obtain very homogeneous groups. Thus, creating even less numerous clusters of objects or clusters of similar size, but natural clusters with minimal internal variation and reflecting the true structure is a justified action in the context of the issues under consideration. Euclidean distance was used as a measure of distance. The process of cluster analysis ends when all objects are in one cluster. Homogeneous, separate clusters are obtained by "cutting off" the branches of the dendrogram in places where they are relatively long. The decision on the number of separate clusters was made on the basis of the analysis of the length of the dendrogram branches, but also the analysis of the agglomeration curve. This is because the agglomeration curve becomes flatter when the additional information gain is small by joining more objects to an existing group (StatSoft Poland). The cluster analysis was completed by describing the obtained clusters on the basis of profiles characterizing the clusters. A comparison of average values was used to determine the profiles of the obtained clusters.

The data obtained within the framework of the research was analyzed, which made it possible to identify the leading aspects within the framework of the studied issues. Based on the results, relevant conclusions were drawn and the set objectives of the study were met.

4. Empirical results and Discussion

Due to changes in legislation in Poland, respondents were first asked what type of remote work is used at their place of employment. Respondents indicated that the vast majority is occasional remote work (performed each time at the request of the employee submitted in writing or electronically, for a maximum of 24 days per calendar year) - 75% of respondents. In contrast, 17% of respondents indicated partial remote work, the so-called hybrid remote work (work performed partly at the workplace and partly in the form of remote work, e.g. 2-3 days a week). Only 8% of respondents indicated total remote work (work done exclusively remotely - 100% of the working time). They were further asked about the frequency of use of remote work. Of course, respondents who previously indicated that total remote work is used in their companies indicated that they work in this form all the time (8% of respondents). In contrast, it turned out that as many as 59% of respondents do not use the option of remote work practically at all. 11% of respondents use this form of work often (maximum number of days), 9% of respondents moderately often (several times a year) and 13% only occasionally (several times a year). This may indicate that the surveyed young workers mostly work in companies where remote work is an employee's privilege. However, as it turns out, the surveyed young people are mostly unlikely to take advantage of this privilege. Therefore, this does not confirm the considerations in the theoretical section that the most attractive form of work for employees will be hybrid work. However, it should be emphasized that the study was a pilot and was conducted on a small sample of participants (in addition, young and leading an active social life) hence it cannot be denied that this form of work will indeed, in the near future, gain in popularity. However, available research indicates that this will be the dominant trend when it comes to the form of work (see: Wigert, 2022; Saad, Jones, 2021).

An important element in the research conducted was the aspect of young workers' motivation according to the type of work. Thus, respondents were asked to assess their motivation for work. The results are presented in Figure 1.

47% of respondents indicated that they are highly motivated to work regardless of whether they work stationary or remotely. 28% of respondents indicated that their motivation to work is higher when they only work stationary. For 8% of respondents, their motivation to work is higher when they only work remotely. For 9% of those surveyed, their motivation to work is greater when they work hybrid (partly remotely and partly stationary). Interestingly, 8% of respondents indicated that they are lowly motivated to work regardless of whether they work stationary or remotely.

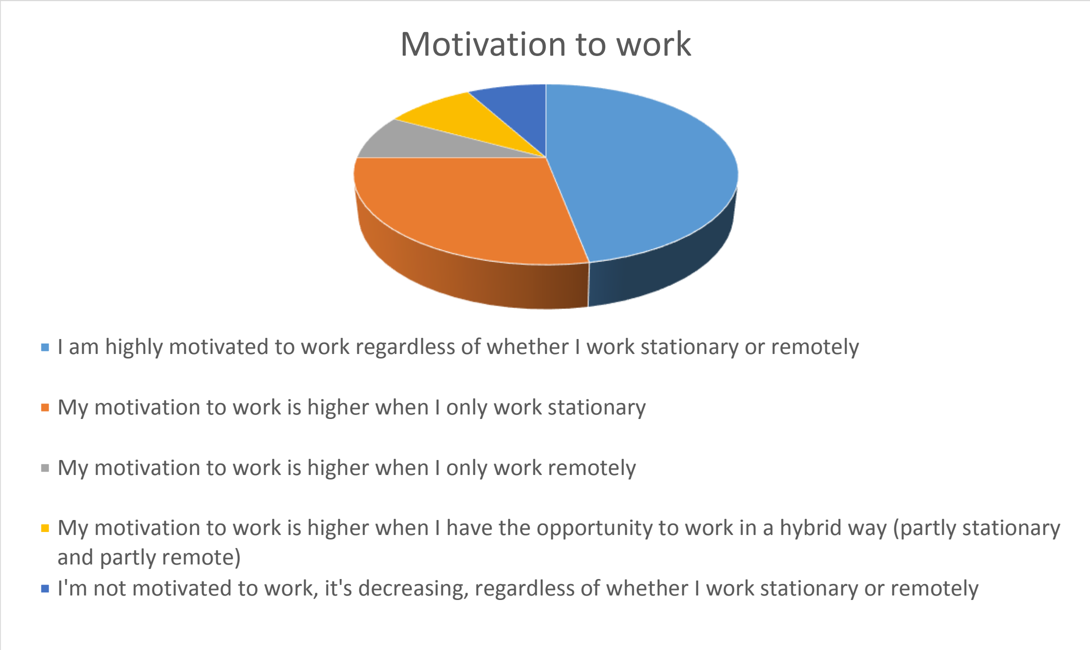

Figure 1. Motivation to work.

Source: own work.

In addition, a comparison was also made between the activities that respondents prefer to perform while working stationary and those they prefer to perform while working remotely. The results obtained in percentage terms are presented in Table 1.

Table 1.
Respondents' preferences for stationary and remote activities

Activity	Stationary work at the place of employment	Remote work performed, for example, at home
individual work in concentration	25%	75%
creative work, requiring ingenuity	66%	34%
team work	92%	8%
meetings with co-workers (internal)	85%	15%
meetings with clients/suppliers/contractors/business partners (external)	83%	17%
meetings with supervisor	87%	13%
analytical activities	36%	64%
routine activities that do not require further consideration	34%	66%
implementation of new activities/projects requiring additional knowledge/skills	72%	28%

Source: own work.

The results show that activities that require more concentration (one-on-one focused work, analytical activities) and routine activities respondents mostly prefer to perform while working remotely. On the other hand, all activities requiring interaction with another person (meetings, teamwork, or implementation of new activities) respondents strongly prefer to perform while working stationary. Teamwork requiring ingenuity respondents also prefer to perform while working stationary. P. Wróbel (2023) in his research also indicates that the implementation of tasks requiring interpersonal contacts during remote work is much more difficult.

Next, respondents were asked to rate the importance of their motives for working remotely. The research team wanted to know what drives young workers to choose remote work opportunities. Respondents were asked to rate the importance of each of the indicated motives, regardless of whether they use remote work opportunities on a daily basis or not, according to a three-point scale. The ratings thus represent the subjective opinions of the respondents. The results obtained in percentage terms are presented in Table 2.

Table 2.
Evaluating the motives for remote work

Motives	Low importance	Medium importance	High importance
easier reconciliation of work and family life	9%	19%	72%
time savings (through, for example, no commute to work)	2%	15%	83%
convenience and freedom of working from home (e.g., no need to put on makeup; ability to work in sweatpants; freedom to move around in private space)	6%	25%	70%
easier reconciliation of professional life with the pursuit of hobbies/life passions	8%	36%	57%
possibility to increase your earnings (e.g., by accepting additional assignments)	19%	26%	55%
reduction of costs (e.g. related to commuting)	4%	30%	66%
flexible working hours	6%	23%	72%
the desire to be isolated from co-workers	57%	23%	21%
increased concentration on the tasks at hand when others do not disturb us	21%	42%	38%
increased freedom of decision-making	30%	38%	32%
no need to follow the rules adopted in the team	43%	40%	17%

Source: own work.

The data presented shows that the motives of greatest importance in the assessment of respondents surveyed appeared to be time savings, easier reconciliation of work and family life and flexible working hours. In available studies, these aspects of remote work are also indicated as particularly valued by employees (see: PARP, 2021). In contrast, the motives of least importance in the opinion of respondents surveyed were the desire to be isolated from co-workers and the lack of need to comply with the rules adopted in the team. The results in this regard are not surprising since young people definitely do not want to isolate themselves and rather seek contact and interaction with other people, especially after a 2-year pandemic period where personal contacts were kept to a minimum. Previous research indicates that isolation adversely affects the functioning of employees and entire organizations (Yang et al., 2022; Dolot 2020).

In order to deepen the analysis, an attempt was made to see how close together, or how far apart, the surveyed respondents are in terms of assessing the importance of remote work motives. For this purpose, cluster analysis was used. The most desirable solution would be the identification of a single cluster, which would mean the similarity of all respondents in terms of the studied aspects. A graphical representation of the cluster analysis performed is the dendrogram presented in Figure 2.

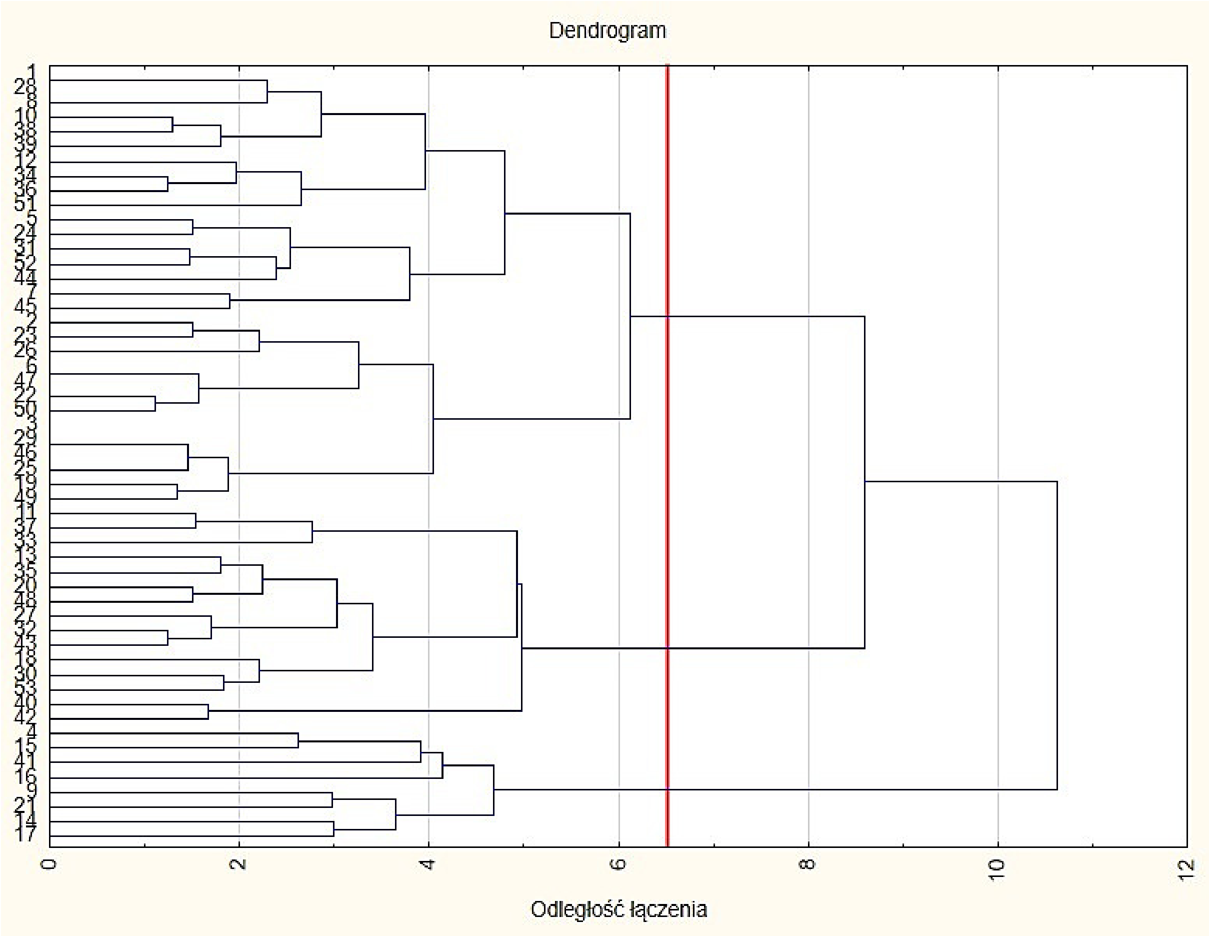

Figure 2. Dendrogram showing clusters according to respondents' opinions illustrating the hierarchy of clusters.

Source: own work.

Using the agglomeration curve, a point was obtained suggesting a "cutoff" of branches of the dendrogram (as shown by the red line added to the dendrogram). The methods used made it possible to isolate 3 clusters. This means, therefore, that the ideal desired state, i.e. one large cluster containing all researched objects, was not achieved. This suggests that the respondents did not agree in assessing the importance of the motives for working remotely. Thus, cluster one is formed by 30 respondents, cluster two by 8 respondents, and cluster three by 15 respondents. To further characterize the clusters, their profiles were determined using average values. The results obtained are presented in Figure 3.

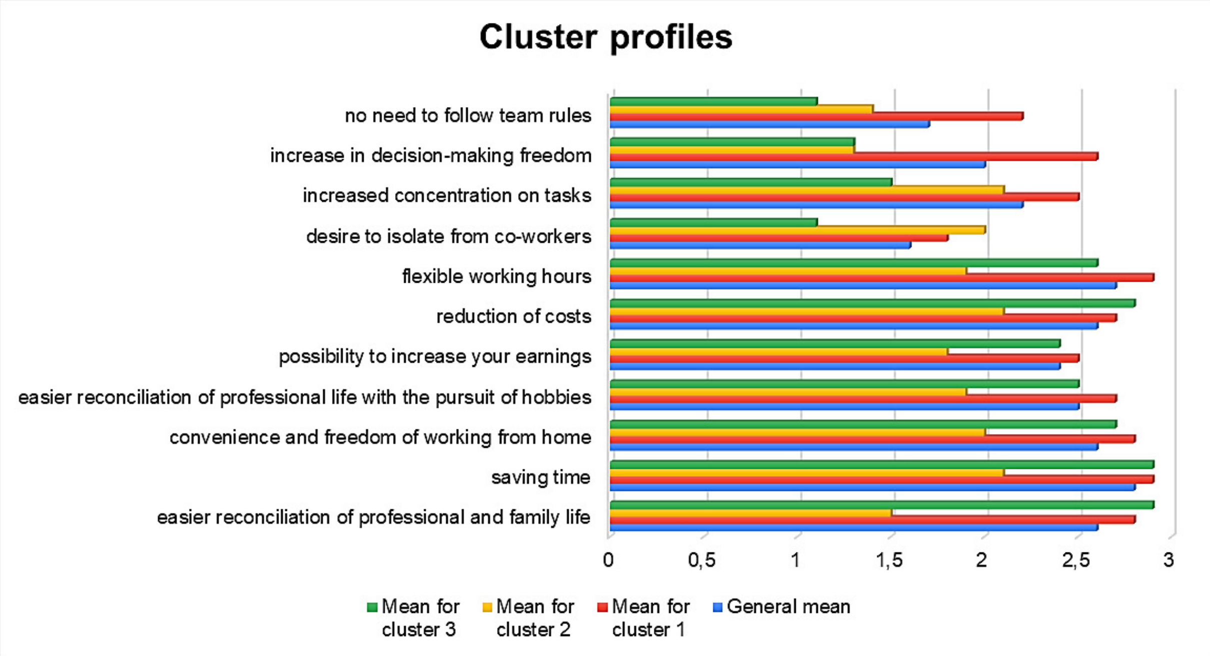

Figure 3. Comparison of averages for total respondents and for individual clusters based on respondents' opinions

Source: own work.

The obtained cluster profiles indicate that respondents assigned to the first cluster rated the importance of remote work motives at a significantly higher level than the other respondents. In their opinion, the indicated motives are definitely of high importance. Respondents belonging to the second cluster rated the importance of the motives for working remotely significantly lower than the other respondents. The indications of respondents belonging to the third cluster, on the other hand, differ from the others and suggest that some of the motives, the importance of which was rated at a higher level by the other respondents, were of little importance to this group. The results obtained therefore show that the respondents were not unanimous in their assessment of the importance of the motives for working remotely. This is not a major surprise because everyone may be guided by a different motive when undertaking remote work. What is interesting, however, is the considerable divergence of opinions among respondents, the vast majority of whom represent the same generation and belong to the same age group.

5. Conclusions

The completed survey provided empirical evidence that remote work has remained in companies after the COVID pandemic19. This therefore implies the persistence of the practice of remote work in enterprises, which will undoubtedly support the creation of society 5.0. However, the survey shows that among young workers, it is more often a privilege for the employee than the main form of fulfillment of professional duties. As it turned out, the surveyed young employees mostly prefer to work in a stationary form, especially if the tasks assigned to them require social interaction. When working remotely, they prefer to perform only routine or analytical activities. In addition, it should be noted that nearly half of the respondents indicated that they are highly motivated to work regardless of whether they work remotely or stationary, and nearly 30% of the respondents indicated that they are more motivated to work when they work stationary.

Regarding the assessment of the importance of the motives for working remotely, the surveyed young workers were not in complete agreement. The majority of respondents indicated a high importance of most of the indicated motives for working remotely. Others, on the other hand, showed a difference in their assessments of the importance of the indicated motives. Some of them rated all the indicated motives for working remotely much lower than the rest of the respondents - as motives of low importance. Others, in turn, indicated the importance of these motives quite differently than the rest of the respondents (those which the majority rated high they rated low, and those which the majority rated low they rated high). This divergence of respondents' opinions came as a surprise to the researchers, due to the fact that the respondents belonged to the same age group. Nevertheless, the motives of greatest importance in the opinion of the vast majority of respondents turned out to be time saving, easier reconciliation of work and family life and flexible working hours. The results obtained in this regard therefore confirm the theoretical considerations. On the other hand, the motives of least importance in the opinion of the surveyed respondents were the desire for isolation from co-workers and the lack of need to follow the rules adopted in the team. The empirical study carried out allowed the realization of the purpose, which was to diagnose the motives of remote work among working students in the context of the creation of society 5.0.

The results indicate that there is ample scope for further, in-depth research on much larger samples of employees, on aspects of remote work, especially in the context of creating a 5.0 society. Such research could make a significant contribution to understanding aspects of remote work, especially in the process of building a super-intelligent society.

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BUSINESS CYCLES IN EUROPEAN REGIONS

Marcin SPYCHAŁA[1*], Joanna SPYCHAŁA[2]

[1] Poznań University of Economics and Business; marcin.spychala@ue.poznan.pl,
ORCID: 0000-0002-3860-303X
[2] Poznań University of Economics and Business; joanna.spychala@ue.poznan.pl, ORCID: 0000-0002-0706-4205
* Correspondence author

Purpose: The main purpose of the considerations is to present and analyze the most important morphological features of cyclical fluctuations for the 27 European Union countries as a whole (aggregated indicator – EU27) and for individual EU countries in the period from the first quarter of 2000 to the fourth quarter of 2022 based on the gross domestic product dynamics indicator. On the basis of the constructed indicators, which made it possible to isolate business cycle fluctuations, the degree of synchronization of the cycles of individual EU regions with the EU27 reference cycle was assessed.
Design/methodology/approach: The methodological foundations of the research process and the empirical assessment of regional business cycles in the EU were preceded by theoretical analyzes regarding the concept, essence and morphological features of regional business cycle fluctuations. The study is based on 92 observations for each studied region. Dynamic indicators were built reflecting changes in general economic activity, i.e. quarterly time series of GDP. The obtained series were decomposed and deseasonalized. Upper and lower turning points were identified, resulting in phases of growth and slump in a given economy. This made it possible to present full business cycles and then assess them (in particular, determine the degree of synchronization between individual countries and the reference cycle).
Findings: By assessing the course of fluctuations in business cycles of the entire economy of the European Union as a whole and fluctuations in business cycles of individual regions making up the EU in the period from the first quarter of 2000 to the fourth quarter of 2022, it can be concluded that this progression is not uniform. Divergences in business cycles in the European Union are an important feature of the data. This differentiation depends largely on the specific development of each region.
Originality/value: The course of cyclical fluctuations was determined for all countries that are members of the European Union, as well as in individual EU regions.
Keywords: economic fluctuations, international business cycles, cycle synchronization, region, European Union.
Category of the paper: Research paper.

1. Introduction

One of the most important policies conducted within the European Union is regional policy. Since the end of the 1960s, a process of strengthening the position of regions perceived as an autonomous economic and social system has been observed. This is related to the tendency promoted by the EU to raise the importance of the region in the administrative and economic system. The issue of regional business cycles becomes important in the context of the relevance and effectiveness of economic policy. The uneven dynamics of regional development results in economic divergence of European regions, which may result in different resistance to economic crises.

Understanding the phenomenon of cyclicality is crucial for the proper conduct of economic policy, which is why issues related to business cycle fluctuations are an area of interest for modern economists (Spychała, 2015). One of the features of the modern, globalized world economy is closer economic cooperation. This is accompanied by an increasing convergence of the business cycles of the economies of the countries participating in this process. This mainly applies to the European Union, and in particular to the euro zone countries, as an example of the most integrated economies in the world.

The problem of rapprochement, similarity, interplay, co-movement, and finally synchronization of business cycles, as a direct effect of globalization and regionalization, is currently the topic of many scientific studies that fall within the broader trend of analyzing the effects of international economic integration. In this context, many researchers ask about the existence or formation of a global business cycle as a result of globalization. R. Lumsdaine and E. Prasad (2003) define this issue by pointing out that the intensification of international trade and dynamic financial flows between countries have raised the question about the impact of the phenomenon of globalization on the transmission, spread and channels of mutual influence of business fluctuations between individual countries. Understanding the essence of international business cycles, or rather recognizing the relationship between short-term economic booms and busts experienced by economies in different parts of the world, is of great importance today (Lumsdaine, Prasad, 2003; Domańska, 2013).

Dynamically developing regions with significant diversification of the economic structure are considered more resistant to economic breakdowns. In turn, regions with a less diversified economic structure and, at the same time, a lower level and pace of development experience economic changes more rapidly (Niemira, Klein, 1994). With this in mind, understanding the regularity and morphological divergences of regional business cycles allows for more effective counteracting of the negative effects related to the course of changes in economic activity that characterize individual areas.

2. The essence of business cycles and economic development

The most famous definition of the business cycle occurring in a market economy was developed by A. Burns and W. Mitchell, according to which "the business cycle is a type of fluctuations occurring in aggregates representing the economic activity of nations organizing their production in enterprises. Cycles consist of periods of expansion occurring at the same time in many economic activities, followed by crises, slumps, and booms that connect with the expansion phase of the next cycle" (Burns, Mitchell, 1946). The cited definition was modified by I. Mintz, who defined the growth cycle as "regular fluctuations in aggregate economic activities. Growth cycles consist of a period of high growth rate, occurring simultaneously in most economic activities, followed by a period of relatively low growth rate, leading to a high growth rate phase of the next cycle" (Mintz, 1972). According to I. Mintz, the business cycle consists of only two phases, therefore the periods of recovery and expansion of the classic cycle according to the definition of A.F. Burns and W.C. Mitchell's term was replaced by a period of high growth rate, while periods of crisis and stagnation were replaced by a period of relatively low growth rate.

The economic process, defined by the course of the main macroeconomic variables (e.g. Gross Domestic Product, aggregate demand, aggregate value of industrial production), consists of: the trend and deviations from it in the form of periodic fluctuations, as well as irregular fluctuations of a random nature. A trend is always related to the occurrence of a long-term development tendency. However, periodic fluctuations include: cyclical medium-term fluctuations that repeat with more than a year's regularity, and seasonal fluctuations that repeat in time intervals shorter than a year. This understanding of economic development is widely accepted among economists, and it results from the combination of the assumptions of the neoclassical theory of growth (stimulated in the long run by the accumulation of production factors) with elements of neo-Keynesian analysis, which seeks the causes of deviations in the values of macroeconomic variables from the long-term trend in price and wage rigidity in the economy. Therefore, the issue of different economies becoming more similar as a result of integration and globalization processes should be reduced to the question of the convergence of their cyclical fluctuations and the possible convergence of long-term trends (Domańska, 2013). World literature refers to this issue as international synchronization of business cycles and in this respect analyzes, among others, similarity of morphological features in the course of variables, such as: the nature of the upper and lower turning points, the duration of individual phases of cycles and entire cycles, their frequency, amplitude and intensity of fluctuations, the characteristics of turning points, as well as their objective and temporal structure.

3. Concepts of the development of business cycles in the conditions of European integration

There are two strands of views in the literature on the subject regarding the international and interregional effects of deepening economic integration. The beginning of this division was initiated by the results of research on the effects of a single monetary policy within the common currency area in regional terms. As a result of these considerations, the problem of economic fluctuations in the regional aspect is currently approached in two ways in the literature on the subject (Spychała, 2020).

The basics of the first concept were formulated by P. Krugman (1991). His analysis was comparative in nature between the regions of the European Union and those in the United States. P. Krugman pointed out that the intensification of economic cooperation between the countries of the monetary union over time leads to specialization of production and regional concentration of industry in accordance with the theory of comparative costs. It also favors economies of scale and limited export diversification, which intensifies the desynchronization of fluctuations in economic activity (Krugman, 1991; Camacho, Perez-Quiros, Saiz, 2008; Markowski, 2022).

The second concept is related to the hypothesis of endogeneity of the criteria of the optimal currency area. The concept proposed by J. Frankel and A. Rose (1998) assumes that with deepening economic integration, symmetrical changes occur, leading to more synchronized business cycles in national and regional terms. According to this concept, as a result of the elimination of economic barriers between countries and regions of one currency area, trade intensifies. An increase in the level of synchronization of cyclical fluctuations was considered to be a direct effect of this process. J. Frankel and A. Rose pointed out the pursuit of a common economic policy in the integrating area as an additional factor contributing to the synchronization of business cycles (Frankel, Rose, 1998; Warżała, 2014).

J. Frankel and A. Rose, who made a fundamental contribution to the development of the endogeneity theory, stated that assessing a given country's readiness to join the monetary union on the basis of historical data is misleading. Based on their assumptions, one may be tempted to say that only the adoption of a common currency "releases" the tendency to intensify trade and convergence of economic fluctuations (Markowski, 2022). Other studies in the world literature also prove that European national-regional business cycles are characterized by greater synchronization in the more developed countries of the monetary union (Artis, Hang, 1997; Beine, Candelon, Sekkat, 2003; Barrios, Lucio, 2003; Marelli, 2007) . On the other hand, among the publications in which an attempt was made to verify endogeneity, we can find works showing the lack of a relationship between, for example, trade interdependence and cyclical convergence (Hallet, Piscitelli, 2002; Canova, Dellas, 1993). These works cast doubt on the conclusions of J. Frankel and A. Rose.

R. Warżała (2018) lists at least two arguments limiting the importance of the synchronicity of business cycles in the Economic and Monetary Union. Firstly, differences in economic conditions in individual Member States may be a countercyclical factor. This will be the case when domestic demand and exports are interchangeable components of aggregate demand. When the domestic economic situation deteriorates and the economic situation in the partner country improves at the same time, the reduction in domestic demand could be replaced by exports. Similarly, the reduction in domestic production would be mitigated, and exports would act as a stabilizer of the economic situation. In turn, the increase in domestic demand could be met by production capacity released as a result of weakening exports. Then the risk of economic overheating or the pressure on price increases would be limited (Lubiński, 2004). R. Stefański (2008) indicates that the substitution of exports and internal demand cannot sufficiently replace the countercyclical function of monetary policy. Certainly, in the case of economic synchronicity in partner countries, fluctuations in aggregate demand are even stronger, so the countercyclical function of the common monetary policy becomes even more important.

Secondly, the endogeneity theory proposed by J. Frankel and A. Rose (1998) may be the second argument limiting the importance of business cycle synchronicity as a necessary condition for candidates for monetary union. Joining the monetary union leads to profound structural changes, deepens trade, smoothes the flow of labor and capital, and is a factor that increases economic connections between member countries. Even if countries were not an optimal currency area at the time of joining the monetary union, business cycles are synchronized during its duration. According to the endogeneity theory, the very fact of the administrative merger of countries into a single-currency area triggers a process that automatically creates an optimal currency area.

4. Research methodology

Every business cycle consists of two basic elements: turning points and phases. Turning points are elements that start individual phases – they determine the starting and ending moments of phases and enable the examination of other features of oscillations. Turning points can be divided into two groups:

- upper turning points, marking the end of the successful economic phase and at the same time the beginning of the downward phase,
- lower turning points, determining the moment when the period of low activity ends and the economy enters the period of economic recovery.

Assuming that each business cycle is a certain time interval lying between two turning points that are identical in nature, it can be said by analogy that the cycle phase is a certain period occurring between successive, different turning points (Stock, 1979). Accordingly, the business cycle is composed of two parts: the economic growth phase (located between the lower and upper turning points) and the economic decline phase (located between the upper and lower turning points). The specification of individual phases is determined by the adopted definition and the method used to isolate individual turning moments.

An important morphological feature characterizing entire business cycles, but also their phases, is the length of the cycles. The length is assumed to be determined by the periods occurring between each turning point. Typically, the length of the business cycle phase is identical to the time interval lying between two consecutive (different in nature) extremes of the examined time series. If the turning points of the oscillation are defined by the intersections of the estimated trend line with the empirical values, then the length of the phase is equal to the period determined by the two successive turning points so defined. The length of the business cycle is equal to the duration of two separate phases, i.e. the growth phase and the decline phase (Barczyk, Lubiński, 2009; Barczyk, 2004).

Bearing in mind that economic processes take place in cycles with a non-uniform structure, the analysis of the synchronization of business cycles involves the comparison of individual previously isolated components. Due to the fact that economic reality is very complicated, determining empirical trends is not an easy task. The main reason is the variability of long-term growth paths over time.

It is necessary to decompose the series and isolate the components of the cycle. For this purpose, appropriate statistical tests or filters are used to isolate the desired components according to: frequency, duration or amplitude of fluctuations. The use of filters called: defiltration, filtration, series decomposition, detrending also allows for reducing non-stationary variables to a stationary form and can therefore be considered as preparing data for further analysis (Domańska, 2013). Filtration as a transformation aims to isolate certain components of the process, such as the trend, seasonal fluctuations and the irregular component (Bruzda, 2008).

For the purposes of analyzing the international synchronization of business cycles, the cointegration of time series is examined, representing a given category of variables across the analyzed economies (e.g. quarterly GDP data, monthly industrial production in various countries or e.g. in the euro zone and its individual members). Therefore, the area of multi-equation models and the study of cointegration between equations describing economic dependencies and processes in different countries is noticed here (Domańska, 2013; Beck, 2017).

The group of indicators enabling the identification of turning points of business cycles and the analysis of their most important features included quarterly gross domestic product dynamics indexes (where the corresponding quarter of the previous year = 100).

The first stage of preparing data for further procedures was the elimination of seasonal and random fluctuations, smoothing the chronological series with repeatedly selected moving averages using deseasonalization using the TRAMO-SEATS procedure. A series containing the combined effect of the trend and the cycle was adopted for further analysis. In order to isolate cyclical fluctuations, the concept of the growth cycle was used, which is based on the analysis of the dynamics of changes in the growth rates of a selected variable and the examination of fluctuations in aggregate activity around the trend.

Assuming that the examined series contain a unit root and are therefore non-stationary (Kruszka, 2009), it was assumed that the cyclical component of the variable is the difference between its current value and the trend value (weighted average of past, present and future observations). Therefore, a stochastic trend was isolated in the form of a development trend using the Hodrick-Prescott filter. Thus, fluctuations were separated into two components: trend and cyclical component.

The most important limitation of the mentioned filter is the required minimum length of the time series that is subjected to such filtering. The recommended minimum number of observations is 32 (Mills, 2003). The time series used in the analysis meet the formal requirements for the use of the Hodrick-Prescott filter (the empirical analysis was based on 92 observations). As a result of filtering, a number of values were obtained showing the long-term development tendency in the form of isolated business fluctuations which are the basis for further analyses.

In the analysis of the course of business cycles, practical assumptions regarding deviation cycles resulting from previous theoretical considerations were adopted. It was assumed that modern cycles consist of two elements: turning points (up and down) and phases (up and down). The upper (lower) turning point occurs when the value of a series element from which random, seasonal changes and development trends have been removed reaches the maximum (minimum) in relation to the estimated trend line. Turning points must occur alternately (Barczyk et al., 2010). It was assumed that the minimum length of the phase is 3 quarters. This means that the minimum cycle length may be 6 quarters. Analyzing the length of individual cycles, it was also assumed that the quarter in which the upper turning point occurs will be included in the upward phase, and the period in which the lower turning point is identified will belong to the downward phase. Coherence coefficients determining the strength of concurrency between two selected time series were also estimated. The degree of synchronization of economic oscillations was assessed using recursive correlation with a rolling window.

The study is based on 92 observations for each studied region. Countries belonging to the European Union were adopted as individual regions. The processes of synchronization of economic fluctuations in the analyzed countries were examined in relation to the fluctuations occurring in the group of 27 EU countries treated as a whole. Therefore, the time series for changes in gross domestic product for the 27 Member States of the European Union (EU27) was adopted as the reference series. The research was conducted for the years 2000-2022, and their selection was related to access to comparable and reliable quarterly GDP data. In the empirical study of the synchronization of business cycle fluctuations, it was assumed that the indicator reflecting changes in general economic activity would be the quarterly time series of GDP downloaded from the OECD database (available to all surveyed entities on a quarterly basis). The created indicators are dynamics indexes in relation to the same period (quarter) in the previous year. The use of this data in the analysis is due to the fact that the GDP series largely characterize the most important aspects of the economic process (informing about both changes in demand and market supply). Moreover, they are estimated using unified principles on an international scale, therefore the created indicators can be considered fully comparable. Moreover, the turning points determined on the basis of the constructed indicators are highly real, as GDP is included in the group of simultaneous indicators.

5. Research results

Analyzing the course of business fluctuations for the GDP series in the period from the first quarter of 2000 to the fourth quarter of 2022, significant disproportions can be observed between the EU27 reference cycle and its individual EU countries (figure 1).

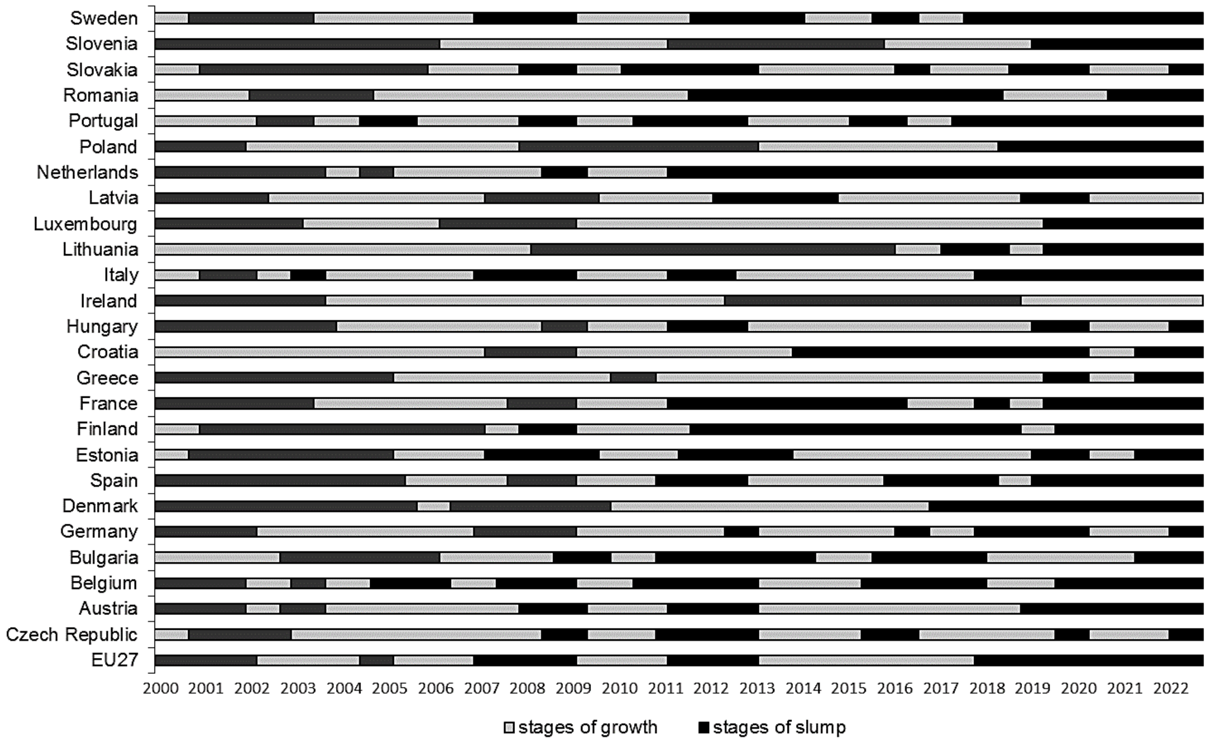

Figure 1. The indication of the stages of slump and the stages of growth in the period between the first quarter of 2000 and the fourth quarter of 2022.

Source: own compilation based on the research conducted.

For the time series of gross domestic product for the EU27 as a whole, nine phases were distinguished, and their sequence allowed us to distinguish three full business cycles. The length of the distinguished business cycles for the EU as a whole ranged from 12 to 16 quarters. The first of the separate business cycles lasted from the second quarter of 2002 to the first quarter of 2005 and was a cycle with a predominant growth phase. The second separate cycle, started in the second quarter of 2005 and ended in the first quarter of 2009, was characterized by a shorter growth phase. It can be assumed that it was a consequence of the economic collapse caused by the global financial crisis. The last, third cycle falling between the second quarter of 2009 and the first quarter of 2013 was consistent with the second cycle in terms of their duration (16 quarters). The phases of growth and decline during this period were identical. In the second quarter of 2013, there was a turnaround that started the last - and at the same time the longest - business cycle in this series. The growth phase of this initiated cycle lasted as many as 19 quarters until the end of 2017. The observations show that the subsequent phase of economic decline that started in 2018 was still ongoing at the time the research was completed (i.e. October 2023). Therefore, these two longest phases cannot formally be considered a full closed business cycle.

Similarities in the number of separate business cycles in the analyzed period were observed in Austria, Spain, Finland, France, Romania and Hungary. Among these regions, Austria, Romania and Hungary dominated the growth phases.

The Czech Republic, Belgium, Slovakia and Portugal are the regions with the highest number of cycles observed in the period under study. In the group of these countries, 5 full cycles were distinguished, which largely consisted of short phases. In turn, particularly long cycles (9 years and longer) occurred in Croatia, Greece, Finland, Romania, Lithuania, Poland, Slovenia and Luxembourg. Poland, Slovenia, Luxembourg, Denmark and Ireland can be considered an interesting case – during the long 23-year research period, only one full business cycle was distinguished among these regions. The first four of them recorded 5 phases, while Ireland had only 4 phases. Luxembourg is also the region with the longest economic phase, lasting 41 quarters – from the second quarter of 2009 to the second quarter of 2019, the country was in a period of economic growth.

It may be important that most of the surveyed countries were in the beginning phase of economic decline at the time the study was completed. The only exceptions were Ireland and Latvia.

Based on so many entities studied, it would be a difficult task to assess the synchronization of cycles solely on the basis of designated turning points, separate growth/decrease phases, as well as entire cycles. Of course, a graphical presentation of successive moments of growth and decline can be a useful tool and a significant facilitation for comparing several dozen economies with each other, but it is not a reliable instrument for assessing the degree of synchronization of individual regions' cycles with the reference series.

After separating the turning points and phases of business cycles, the next part of the analyzes attempted to determine the degree of their synchronization. In these analyses, it was assumed that the convergence of cycles occurring in the individual studied regions would be determined in relation to the EU27 reference cycle. The coherence coefficient was used as a measure of the fit of the time series data for the two groups. Also, as part of the simultaneous and time-shifted correlation analysis, the strength of the correlation of cyclical changes in two groups was measured: for a given region and for the reference series.

In order to capture the direction of changes in synchronization in individual regions with the reference cycle, the technique of calculating correlation coefficients within rolling windows was used.

Table 1.
The level of convergence of business cycles on the level of provinces with the business cycle of EU27 as a whole in the period of the first quarter of 2000 and the fourth quarter of 2022

Country	The level of convergence	Country	The level of convergence
Italy	**0,97812**	Sweden	0,88051
France	**0,96013**	Croatia	0,87233
Netherlands	**0,95973**	Poland	0,83365
Belgium	**0,95442**	Slovakia	0,81079
Spain	0,94391	Finland	0,79942
Austria	0,94028	Bulgaria	0,77143
Germany	0,93239	Estonia	0,67784
Hungary	0,92646	Greece	0,67055
Czech Republic	0,92635	Luxembourg	0,65087
Slovenia	0,91827	**Latvia**	**0,62640**
Portugal	0,91147	**Lithuania**	**0,62525**
Denmark	0,89194	**Romania**	**0,60759**
		Ireland	**0,49564**

Source: own compilation based on a research conducted.

By examining the degree of synchronization of the EU27 business cycle with its individual regions in the period of the first quarter of 2000 and the fourth quarter of 2022, it can be concluded that the level of cycle covariation was on average positive (table 1). The table arranges European regions based on the criterion of the degree of synchronization. More than 70% of the studied regions were characterized by a convergence coefficient above 0.70.

Due to the number of surveyed entities, they were selected and two groups of regions were graphically presented. The first group consists of four regions whose cycle shows the greatest convergence over time with the EU27 reference business cycle (figure 2). The recursive correlation coefficient of these entities is very similar and ranges from 0.95442 to 0.97812. During the period under review, the highest degree of synchronization with the business cycle of the EU as a whole concerned Italy. Next, significant synchronization of the cycles of European regions with the reference cycle characterized France and the Netherlands. A slightly lower rate concerned Belgium, followed by Spain, Austria and Germany. The great convergence in the course of economic activity of these countries may, to a large extent, result from the greatest importance of these regions in generating the GDP of the European Union. It can be assumed that these are regions with great economic potential. The high synchronization coefficient of these regions may indicate their greater resistance to possible economic shocks.

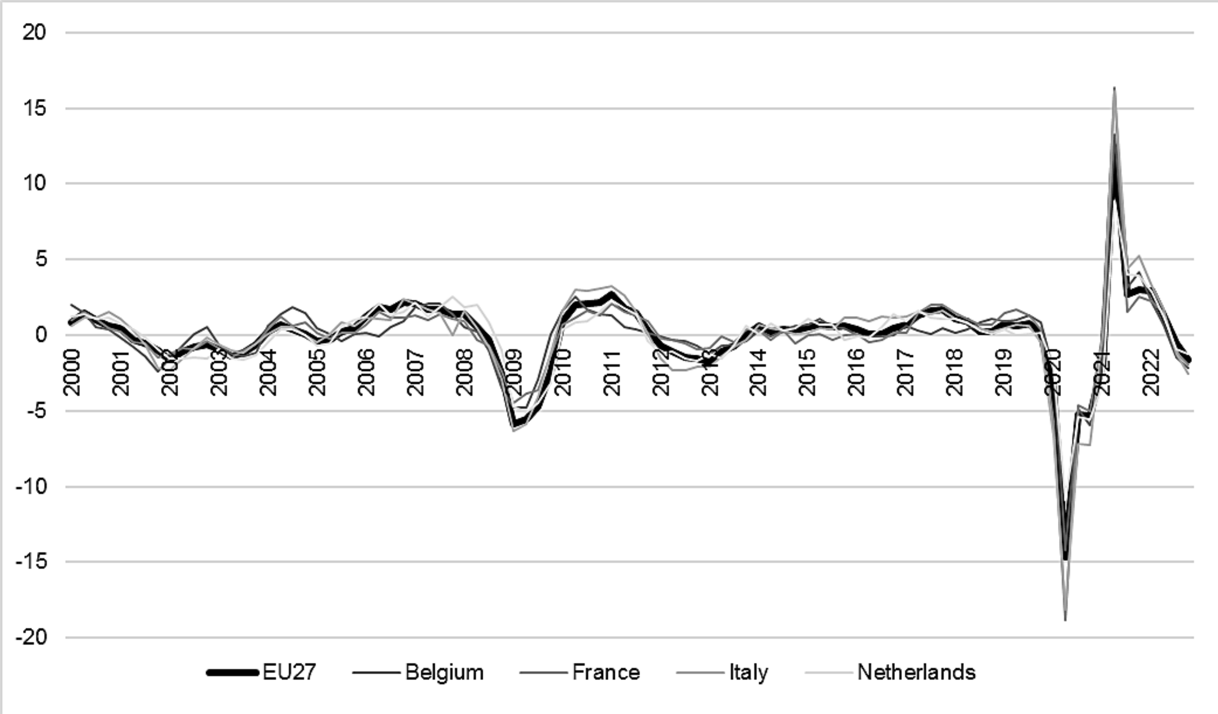

Figure 2. The progression of cyclical fluctuations for a time series of the GDP in the period of the first quarter of 2000 until the fourth quarter of 2022 for EU27 and the regions of the lowest coefficient of synchronisation.

Source: own compilation based on the research conducted.

The second group consists of four regions that are least correlated with the EU27 reference cycle (figure 3). This group (sorted from the lowest coefficient) includes Ireland, Romania, Lithuania and Latvia. The correlation coefficients of these regions ranged from 0.49564 to 0.62640. Despite the low coherence coefficient, the graph clearly shows a similar course of the business climate index in the period 2008-2011, but the changes in economic activity in these series are characterized by varying intensity. This direction of changes was certainly influenced by the global economic crisis. Lithuania and Latvia faced the greatest economic collapse. However, the correlation coefficient with the reference series that differs the most concerns Ireland – the asymmetry in the course of this cycle mainly concerned the period 2014-2017.

We can talk about the relative convergence of the fluctuations of these regions with the reference cycle from the first quarter of 2020 to the end of the analyzed period. This should be considered a very interesting phenomenon, because the beginning of 2020 is inextricably linked with the outbreak of the pandemic in the world and in Europe. The results show that the Covid-19 pandemic may have had a positive impact on the synchronization of business cycles in Europe.

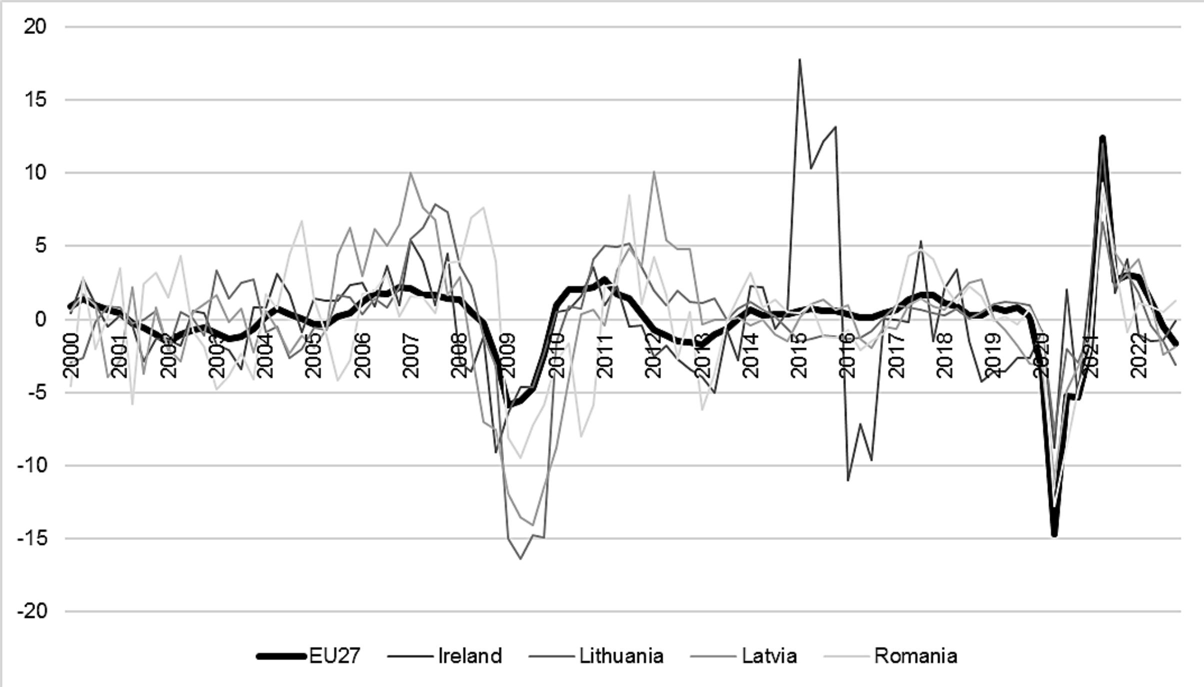

Figure 3. The progression of cyclical fluctuations for a time series of the GDP in the period of the first quarter of 2000 until the fourth quarter of 2022 for EU27 and the regions of the highest coefficient of synchronisation.

Source: own compilation based on the research conducted.

The Covid-19 pandemic may have a positive impact on the synchronization of economic fluctuations both in the short and long term. The 2020 epidemic outbreak, like the 2008 financial crisis, can be considered a large adverse symmetric shock that ensured a simultaneous slowdown of all European economies. Covid-19 has contributed to increased synchronization in the short term. The phase in which different countries cope with the effects of the pandemic may, in turn, usher in a gradual decline in synchronization, as was observed in the wake of the 2008 crisis (Beck, 2021, 2022).

6. Conclusions

Cyclical fluctuations have been and are an inherent element of the functioning of both developed and developing countries. The convergence of economic processes in various countries is a clear effect of globalization processes, including the mutual influence of national economies and the joint impact of shocks, both positive and crisis-related.

The variability of business cycles creates the need to monitor economic indicators not only at the level of the European Union as a whole, but also at the level of its members. This is important for conducting regional policy stimulating balanced development. Knowledge of the specific nature of economic oscillations enables appropriate responses to changes in the level of economic activity in the regions. Differences in the economic situation in individual regions may result, to a large extent, from delays and accelerations occurring in the economy (Spychała, 2020).

When assessing the course of economic fluctuations of the European Union economy as a whole and the economic fluctuations of the Member States in the period from the first quarter of 2000 to the fourth quarter of 2022, it can be concluded that this course is not uniform. This differentiation results largely from the specific development of individual regions. Over the analyzed 23 years, the initial research period was characterized by relatively small changes in business cycles. The period until 2005 marks the moment immediately after the largest enlargement of the European Union. After this time, the degree of convergence increased rapidly and then remained at a similar level or began to gradually decrease. Similarly, in the first decade of the monetary union, business cycle fluctuations among euro area countries were relatively synchronized and of similar magnitude. This compliance disappeared during the financial turmoil of 2008 and the subsequent European debt crisis, when key flaws in the eurozone architecture came to light. The decline in the convergence of the studied series has become more pronounced since the middle of the debt crisis in 2010-2011. Since then, business cycle disturbances in Europe have been decreasing. In turn, the outbreak of the Covid-19 epidemic has caused synchronization on a record scale, but the increase in convergence is also accompanied by an increase in the diversification of the GDP growth rate. The Covid-19 crisis has provided some momentum towards deeper fiscal integration in the EU. To support those more affected by the epidemic, EU Member States have agreed a series of new financial measures, which represent a significant step towards a stronger framework for cross-country fiscal support in response to the crisis (Gori, 2022). The Covid-19 pandemic may have a positive impact on the synchronization of business cycles in Europe in both the short and long term.

Interpretations resulting from theoretical and empirical analyzes may be of significant practical importance and constitute the basis for defining the goals and tools of stabilization policy in the European Union. Proper use of existing analytical tools is a prerequisite for understanding the mechanism of cyclical fluctuations. The use of appropriate instruments in a given phase of the business cycle could prevent unfavorable phenomena in the region's economy or help stimulate its development.

The issue of differences in the effects of economic changes at the level of individual EU Member States seems to be important in economic practice. The considerations undertaken, the research conducted, and the results obtained may therefore constitute a starting point for undertaking more extended analyzes in this direction, including: considering the most important factors determining the synchronization of business cycles throughout the European Union.

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DISCREPANCIES IN THE REGIONAL DEVELOPMENT OF THE EU MEMBER STATES

Marcin SPYCHAŁA[1*], Joanna SPYCHAŁA[2]

[1] Poznań University of Economics and Business; marcin.spychala@ue.poznan.pl, ORCID: 0000-0002-3860-303X
[2] Poznań University of Economics and Business; joanna.spychala@ue.poznan.pl, ORCID: 0000-0002-0706-4205
* Correspondence author

Purpose: The purpose of the article is to present the variation in the level of the socio-economic development of the regions of 28 EU member states within the arrangement of 281 NUTS-2 units (including the United Kingdom). The level of the development shall be established in a multi-criterion manner, separating three factors of the regional development: the human capital, the natural environment as well as entrepreneurship and innovativeness.
Design/methodology/approach: The article presents the level of the socio-economic development of the NUTS-2 regions based on 42 indicators based on public statistical data of the Eurostat database. The level of the development has been presented based on the synthetic gauge exhibiting the taxonomic distance of each region from the established pattern of development. The research procedure was composed of five stages and comprised: identifying the factors of regional development, a selection of variables, a reduction of multi-attribute space, specifying the level of the socio-economic development of the researched units as well as a classification of regions against the scale of the level of the socio-economic development based on the ranking created according to a decreasing value of the synthetic gauge.
Findings: As a result of the research procedure conducted, spatial differentiation of 281 regions of the NUTS-2 level in 28 EU member states (that is before Brexit) with respect to the level of the socio-economic development as well as three components constituting the factors of the said growth is presented. The highest value of the synthetic gauge has been registered in regions comprising the capitals of the respective states. Moreover, large developmental discrepancies within the respective member states have been identified.
Originality/value: The results obtained as a result of having conducted the research may constitute a source of inspiration for the EU institutions within the scope of specifying the richest and the poorest EU regions with the purpose of an efficient management of the cohesion policy in the subsequent programming periods.
Keywords: The regional development; the NUTS-2 units; developmental discrepancies; distance from the role model; Hellwig's reduction method.
Category of the paper: Research paper.

1. Introduction

Specifying the level of the socio-economic development as well as its changes is an extremely important research problem both in the theory of the economic science as well as in the economic practice. The amount of the EU fund allocation in regions as well as the intensity of state aid granted in the respective regions depends on the level of the development (Nistor, Glodeanu, 2014; Matsuura, 2015; Albulescu, Goyeau, 2014). Within the cohesion policy of the European Union, richer and poorer regions are classified, and based on that, the NUTS-2 units are subcategorised, falling under the EU aid fund support. The abovementioned classification is conducted solely based on GDP per capita of a particular region and by means of comparing its value against the background of the EU average. The purpose of the compilation shall be to specify the EU region level of development, however taking account of a larger number of indicators than GDP per capita.

Researching the significance of the socio-economic development, its core, causes and consequences is a subject of many research works (Vučković et al., 2018; Dreyer et al., 2006; Mukhametzhan et al., 2020; Orlova et al., 2018; Jašková, Haviernikovà, 2020; Shikverdiev et al., 2019). A characteristic feature of the regional development is its spatial variation. The growing discrepancies in the regional development in turn are one of the crucial problems of the modern economy, and the main purpose of the EU cohesion policy is convergence, i.e. activities directed towards decreasing the differences in the level of the development of the EU regions (Beugelsdijk et al., 2018; Martin, Sunley, 1998; Charron et al., 2014; Azis, 2020).

The paper presents the level of the socio-economic development of all 281 NUTS-2 regions of the European Union (according to the state of affairs as of 2019 – the last full year of the presence of the United Kingdom in the European Community) based on 42 indicators comprised within 3 subcomponents (factors) of the regional development: the human capital, the natural environment, as well as entrepreneurship and innovativeness. The basis used for calculating the indicators were statistical data from a publicly available Eurostat database. The main goal of the article is to present the varying of the level of the socio-economic development of the regions of 28 EU member states within the arrangement of 281 NUTS-2 units, i.e. the second level of classifying the territorial units for statistical purposes used by Eurostat. The level of the socio-economic development shall be presented based on a synthetic gauge representing a taxonomic distance of a particular region from the established pattern of development.

In the article, a review of literature shall be conducted in the first place from the scope of the factors of the regional development. Next, a methodology of the research shall be presented together with a description of the respective stages of the research procedure. Consequently, the received results of the research shall be presented. In the final part of the publication, however, the conclusions and recommendations shall be specified within the scope of the establishment of the level of the regional development.

2. Regional development in subject literature

In the subject literature, a lot of reviews of theories and concepts of the regional development have been compiled. Part of them undertake to systematize them, using different perspectives on that (Martin, 2015; Illeris, 1993). In the article, a review of concepts of the regional development shall be done within the angle of factors of the said development based on two main trends of economic thoughts: the neoclassical and neo-Keynesian one.

A concept of the regional development of the neoclassical trend is a concept of convergence which was formulated by a laureate of the Nobel Prize, Jan Tinbergen. The concept is directly related to the theory of comparative cost, and its proponents claim trade exchange between developed and backward countries may with time lead to a decrease in the differences in the level of their development, and even to the balancing out of the level of income of both those groups. Apart from the international exchange, a factor of development in that concept is also the capital as well as technological advancement (Henrekson, Jakobsson, 2003; Friedmann, 1983; Bystrova et al., 2015).

As opposed to neoclassical concepts, in the first part of the twentieth century, theories have emerged relating to John Maynard Keynes' doctrine. The prior concepts focused on the supply aspect, and Keynes and his followers focused on the demand analysis. The demand theories postulate different administrative activities, striving towards the creation and/or the strengthening of the factors of development, such as: increasing the qualifications of the workforce, promoting export, investment in infrastructure, supporting the development of entrepreneurship or creating innovativeness (Zemtsov, Smelov, 2018; Diebolt, Hippe, 2019; Li et al., 2019; Florida, 2002).

The importance of innovativeness in the process of the regional development was emphasized by, among others, Joseph Schumpeter, a representative of the Austrian school. The development resembles, in his opinion, a process of creative destruction (Emami-Langroodi, 2018; De Castro et al., 2018). Innovation ensures on one hand structural change and development, and on the other – they destroy the former economic and social structures. Not all entities are prepared for such changes. Sometimes they are forced to self-destruct and introduce new technological solutions. Otherwise they stop being economically viable.

A new theory of growth, initiated by Paul Romer, assumes the possibility of accumulating the factors of growth, which assumes the possibility of obtaining sustainable development, as well as maintaining or even increasing the economic differences between the regions. A stable and longlasting development is specified within the concept as an endogenous concept. The basic factors generating growth are: the human and physical capital, as well as technological innovativeness. Poor regions may not make up for the developmental differences in a different manner than by increasing their technological level as well as by investing in human qualifications (Baklanov, 2020; Arranz et al., 2019; Rodionov et al., 2018; Benner, 2003).

Against the background of the neoclassical trend, a contemporary model of the so-called new economic geography emerges, which combines three elements: the agglomeration benefits, transport costs and the cost of production mean flows (Krugman, 1998). The model assumes the possibility of the occurrence of, and even the deepening of, interregional differences, which, according to Grosse (2018), is a result of the tendency to accumulate the factors of the development in the most developed metropolitan areas.

The regional development may take place in a spontaneous manner or in a preordained manner. The second option is related to the shaping of the development through stimulating the factors of the regional development within the regional policy managed. The problem of the regional policy is a subject of lively debates among the representatives of different fields of knowledge: Economics, Law, Geography or political science (Moroshkina, 2020; Milenković et al., 2021).

According to Smętkowski (2015), the regional policy within the economic dimension comprises all forms of state intervention which are directed towards the change in the spatial distribution of the economic activity. Within such an arrangement, its goal is to correct the effects of the impact of the free market forces aimed at ensuring the economic development as well as a change in income redistribution (Pfirrmann, 1995). Within the general framework, the regional policy may be defined as activities aimed at maximizing the usability function, i.e. whose goal is to improve the economic situation of one or several regions (Démurger, 2001).

The regional policy is related to the occurrence of variations in the level of the development of the respective regions. An uneven regional development resulting from the decisions of the investors, the specificity of the free market mechanism, or the geographical factors leads to the variation in the level of income, as well as the conditions of life of the population. The basic task of the regional policy is thus the necessity to limit the scale of those variations (Liu et al., 2018; Fongwa, Marais, 2016; Avgerou, 2008).

3. Stages of the research procedure – research methodology

The study aims to verify a hypothesis according to which the socio-economic development of the EU regions is highly varied, and its highest level is registered in the NUTS-2 units comprising the capitals of the researched states, and the lowest – in the regions the farthest away from the capital units indicated. All NUTS-2 units subcategorized within the 28 EU member states are comprised within the research – 281 units in total. 2019 is the last year of the survey, due to the full availability of Eurostat data resulting from two factors: a wide range of 42 indicators concerning various areas of life and Brexit, which took place in 2020. The authors of the research wanted to present the development disproportions of the area, which also includes the United Kingdom, therefore, in this article, it is treated as the 28th member of the EU.

In order to research the level of the socio-economic development of the NUTS-2 level regions in the EU member states, a synthetic gauge of the distance from the established pattern of development has been used. The research procedure has been conducted parallel – in the static dimension (based on the value of indicators in 2019) as well as in the dynamic dimension (based on the change in the value of indicators in the years of 2010-2019). The research procedure consisted of five subsequent stages:

1. specifying the subcomponents – i.e. the factors of the regional development,
2. a selection of variables – a creation of the matrix of geographical information,
3. a reduction of the multifeature space,
4. indicating the level of the socio-economic development of the researched units,
5. a classification of regions at the level of the socio-economic development based on the ranking created according to the diminishing value of the synthetic gauge.

At the first stage, based on the review of literature conducted, comprising the concept of the regional development, the most important subcomponents have been specified, i.e. the factors of the regional development. A factor of development may be a component, a property of the region or an occurrence which exerts an influence over the socio-economic development (Feldman, 1999; Naydenov, 2019; Khasanova et al., 2020; Yun et al., 2017). The article undertakes to characterize the socio-economic development based on its three subcomponents, called for the purpose of the study: „the human capital", „the natural environment" as well as „entrepreneurship and innovativeness". The „human capital" subcomponent has been specified through the indicators presenting a population potential of a particular region, referring to the migration balance and the birth rate, fertility, the level of education, the risk of falling into poverty as well as the age structure. Within the „natural environment" category, indicators concerning the use of land have been taken into account as well as the structure of farms, urban waste, the burden connected with road transport of products as well as the use of energy for the purpose of heating and freezing the living quarters, as well as the mortality rates due to cancer and because of poisoning as well as toxic substances. Within the „entrepreneurship and innovativeness" factor, the indicators concerning entrepreneurship have been taken into account, the structure of the employment, GDP, the unemployment rate, the length of highways per 1000 km^2, the scale of using the Internet as well as the scale of innovativeness measured by the number of trademarks and consumables. All the abovementioned factors of the regional development are interrelated. In the striving towards a competitive development of the region, the factors should be included into the long-term strategy (Palvia et al., 2018). As Smętkowski (2015) claims, one may thus assume that the regional development comprises both the dynamic processes taking place under the influence of specific factors which determine the character, the direction and the speed of the socio-economic changes, as well as the purposefully directed changes which, through the pro-development factors, are aimed at realizing the tasks within the regional policy. Publicly available Eurostat data has been used in the research. The authors of the article realize the shortcomings and inadequacies inherent in the construction of the respective indicators characterizing the factors of development. The respective characteristics might have been built more accurately, however all available public data have been taken into account, data which may determine the level of the development of the respective subcomponents of the development. In the future, it is worth considering whether to complete a wider spectrum of indicators, e.g. from different sources.

Table 1.
Indicators considered within the analysis specifying the regional development subcomponents

Factor of development	Indicators
Human capital (14 variables)	The migration balance per 1000 inhabitants; the birth rate per 1000 inhabitants; the feminization coefficient in total; the share of people at the post-production age in the total number of people; the share of people at the pre-production age in the total number of people; the number of people at the non-production age per 100 people; the number of people at the post-production age per 100 people; the median age of the population; the total fertility rate; the average age of women at birth; the share of the unemployed, not-in-education and not in training (the so-called NEET indicator); risk of poverty; the share of households with the access to the Internet
The natural environment (12 variables)	the share of farmland as well as natural green spaces in the total area; the share of farms under 5 hectares in the total number of farms; the share of farmers – owners of farms under 35 years of age in the total number of farm owners; the registered minor offences and crimes concerning the natural environment per 1,000 inhabitants; road transport of goods measured in tonnes per 1,000 inhabitants; the use of electricity for the heating of living quarters (as the EU average), the use of electricity for the freezing of living quarters (as the EU average), the number of accommodation places per 1,000 inhabitants; urban waste per 1 inhabitant; the cancer mortality rate; mortality rate due to poisoning and toxic substances
Entrepreneurship and innovativeness (16 variables)	The share of microenterprises in the total number of economic entities; the rate of new enterprises being created; the share of the employed in farming in the total number of the employed; the share of the employed in the information and communication sector in the total number of the employed; the share of the employed in the finance sector in the total number of the employed; the share of the employed in the sector of professional services in the total number of the employed; the share of the employed in the services in the total number of the employed; the number of trademarks per 1 mln inhabitants; the number of consumables per 1 mln inhabitants; GDP per 1 inhabitant (as the EU average); the share of the employed in the R&D and Science sectors in the total number of the employed; the share of the employed in the Technology and knowledge-based sectors in the total number of the employed; the percentage of people using the Internet to interact with public authorities; the percentage of people ordering goods or services through the Internet; the unemployment rate; the length of highways per 1,000 square kilometers

Source: own research.

At the second stage of the research procedure conducted, a matrix of geographical information based on 42 indicators was built (table 1), which specified the level of the development of the NUTS-2 units in 2019 as well as the changes in the level of the development in the years of 2010-2019 in relation to the three subcomponents of the development: the human capital, the natural environment as well as entrepreneurship and innovativeness. Next, Pearson's linear correlation coefficients were calculated between all the departure indicators researched separately for 2019 and separately for their change in the years between 2010-2019. It is extremely important for the indicators selected for a synthetic gauge of the distance from the established pattern to be weakly correlated with one another. Thanks to that the information capacity of those indicators is varied.

The matrices of Pearson's correlation coefficients were the basis of conducting a reduction of the departure variables by using Z. Hellwig's reduction method – i.e. to separate the diagnostic features, i.e. those indicators which shall be taken into account in further research procedure (Balcerzak, 2016). Z. Hellwig's reduction method uses for calculation the correlation coefficients between the variables. In Z. Hellwig's reduction method, the diagnostic feature is the indicator whose sum total of the absolute correlation coefficients with other features is the highest (it is then called the central feature). Next those variables are eliminated for which the value of the correlation coefficient with the diagnostic feature is higher than the critical value specified based on the hereinbelow mentioned pattern (Nowak, 2018):

$$r^* = \sqrt{\frac{(t^*)^2}{n-2+(t^*)^2}} \tag{1}$$

where:
r^* – critical value of Pearson's linear correlation coefficient,
t^*– the t-Student statistics value (at the significance level p = 0.05),
n – the number of departure indicators (variables).

As a result of the method having been conducted, the eliminated variables were the ones that were significantly statistically correlated with the diagnostic feature (called satellite features). At every subsequent step, there was a reduction of the correlation matrix by the central feature and satellite features. Z. Hellwig's method is repeated by means of obtaining new reduced correlation matrices until the collection of features is exhausted or the isolated features are separated (Hauke, Kossowski, 2011). The procedure of variable reduction has been conducted eightfold: separately for the level of the socio-economic development as a whole and separately for the level of the development of each of the three subcomponents of the development both in the static (for the date for 2019) and the dynamic (for the data for the years between 2010 and 2019) dimension.

At the subsequent stage of the research procedure, a pattern and an anti-pattern of the socio-economic development have been devised. The pattern has been considered the maximum standardized values of the respective diagnostic features, and an anti-pattern – their minimum values (Spychała, 2020). Within the next step, a taxonomic distance of each NUTS-2 region researched from the pattern of the development based on the pattern hereinbelow has been specified (Reiff et al., 2016):

$$d_{i0} = \sqrt{\sum_{j=1}^{m}(z_{ij} - z_{0j})^2} \tag{2}$$

where:
d_{i0} – the taxonomic distance of the i region from the assumed pattern of development,
z_{ij} – the standardised value of the j indicator (feature) for the i region,
z_{0j} – the standardised value of the j indicator (feature) for the pattern of development.

At the final stage of the research procedure, a synthetic gauge for each NUTS-2 region has been devised, being an indicator of the level of the development in a particular region. The value of the synthetic gauge has been calculated for the general level of the socio-economic development and separately for each of the three factors of the development. The synthetic gauge has been calculated based on the following pattern:

$$v_i = 1 - \frac{d_{i0}}{d_0} \tag{3}$$

where:
v_i – a synthetic gauge of the level of development of the i region,
d_{i0} – the taxonomic distance of the i region from the assumed pattern of development,
d_0 – the taxonomic distance of the pattern from the antipattern of development.

A synthetic gauge of the level of the development takes values from 0 to 1, with a proviso that the higher its value, the higher the level of the development of a researched phenomenon. Based on the indicators calculated, a ranking of 281 NUTS-2 level regions was established in the EU countries, and next, they were divided into five groups: at a very high (20% of the regions at the highest value of the synthetic gauge – the first group – places within the ranking 1-56), high (the subsequent 20% of the regions – the second group – places within the ranking 57-112), average (NUTS-2 units located in places 113-169 taking account of their decreasing placing based on a particular synthetic gauge – the third group), low (regions in places 170-225 – the fourth group) and very low (20% regions at the lowest value of the synthetic gauge – the fifth group – places 226-281) level of development. Taking account of the research conducted within the dynamic dimension, NUTS-2 regions for whom the indicator took the highest values (20% of the researched units), have been classified into the group at a very change in the development of a particular phenomenon for whom the indicator took the lowest values (20% of the researched regions), have been classified into the group at a relatively low change in the level of the development of a particular phenomenon.

Table 2.
Extreme values of the synthetic gauge within the respective subcomponents of the socio-economic development in 2019

The highest values of the synthetic gauge (2019)			The lowest values of the synthetic gauge (2019)		
Item	The NUTS-2 region	Value	Item	The NUTS-2 region	Value
The human capital					
1	Eastern and Midland (IE)	0.426	281	Liguria (IT)	0.182
2	Outer London - East and North East (UK)	0.419	280	Molise (IT)	0.184
3	Flevoland (NL)	0.410	279	Severozapaden (BG)	0.186
4	Southern (IE)	0.396	278	Principado de Asturias (ES)	0.197
5	West Midlands (UK)	0.396	277	Ipeiros (EL)	0.200

Cont. table 2.

The natural environment					
1	Ionia Nisia (EL)	0.479	281	Dytiki Makedonia (EL)	0.246
2	Corse (FR)	0.471	280	Région de Bruxelles-Capitale (BE)	0.326
3	Notio Aigaio (EL)	0.468	279	Eesti (EE)	0.354
4	Salzburg (AT)	0.417	278	Tees Valley and Durham (UK)	0.358
5	Cornwall and Isles of Scilly (UK)	0.408	277	Övre Norrland (SE)	0.359
Entrepreneurship and innovativeness					
1	Inner London-West (UK)	0.585	281	Nord-Est (RO)	0.069
2	Luxembourg (LU)	0.474	280	Severozapaden (BG)	0.085
3	Noord-Holland (NL)	0.381	279	Sud-Vest Oltenia (RO)	0.090
4	Noord-Brabant (NL)	0.365	278	Severen tsentralen (BG)	0.093
5	Utrecht (NL)	0.362	277	Sud-Muntenia (RO)	0.107
The level of the socio-economic development in general					
1	Inner London - West (UK)	0.443	281	Dytiki Makedonia (EL)	0.185
2	Luxembourg (LU)	0.422	280	Severozapaden (BG)	0.199
3	Stockholm (SE)	0.377	279	Severen tsentralen (BG)	0.220
4	Utrecht (NL)	0.375	278	Ipeiros (EL)	0.227
5	Inner London - East (UK)	0.373	277	Peloponnisos (EL)	0.228
6	Eastern and Midland (IE)	0.372	276	Molise (IT)	0.228
7	Noord-Holland (NL)	0.371	275	Anatoliki Makedonia, Thraki (EL)	0.233
8	Hovedstaden (DK)	0.366	274	Thessalia (EL)	0.233
9	Flevoland (NL)	0.360	273	Sterea Ellada (EL)	0.234
10	Zuid-Holland (NL)	0.359	272	Sud-Vest Oltenia (RO)	0.235

Source: own research.

Table 3.
The highest and the lowest values of the synthetic gauge within the respective subcomponents of the socio-economic development in the years 2010-2019

The highest values of the synthetic gauge (2010-2019)			**The lowest values of the synthetic gauge (2010-2019)**		
Item	**The NUTS-2 region**	**Value**	**Item**	**The NUTS-2 region**	**Value**
The human capital					
1	Bucuresti-Ilfov (RO)	0.554	281	Ciudad de Melilla (ES)	0.303
2	Berlin (DE)	0.538	280	Martinique (FR)	0.318
3	Koblenz (DE)	0.536	279	Ciudad de Ceuta (ES)	0.336
4	Mittelfranken (DE)	0.533	278	Etelä-Suomi (FI)	0.371
5	Bremen (DE)	0.533	277	Drenthe (NL)	0.387
The natural environment					
1	Dytiki Makedonia (EL)	0.473	281	Åland (FI)	0.212
2	Valle d'Aosta (IT)	0.431	280	Malta (MT)	0.302
3	Rhône-Alpes (FR)	0.423	279	Niederbayern (DE)	0.320
4	Kriti (EL)	0.416	278	Eastern Scotland (UK)	0.326
5	Cornwall and Isles of Scilly (UK)	0.415	277	Oberpfalz (DE)	0.329
Entrepreneurship and innovativeness					
1	Bucuresti-Ilfov (RO)	0.355	281	Bratislavský kraj (SK)	0.177
2	Malta (MT)	0.355	280	Guadeloupe (FR)	0.199
3	Inner London-West (UK)	0.339	279	Attiki (EL)	0.203
4	Praha (CZ)	0.332	278	Guyane (FR)	0.203
5	Luxembourg (LU)	0.332	277	Vzhodna Slovenija (SL)	0.204

Cont. table 3.

The level of the socio-economic development in general					
1	Bucuresti-Ilfov (RO)	0.402	281	Åland (FI)	0.266
2	Praha (CZ)	0.380	280	Martinique (FR)	0.282
3	Berlin (DE)	0.375	279	Guadeloupe (FR)	0.294
4	Nyugat-Dunántúl (HU)	0.371	278	Ciudad de Melilla (ES)	0.299
5	Luxembourg (LU)	0.368	277	Ciudad de Ceuta (ES)	0.302
6	Yugozapaden (BG)	0.368	276	Bratislavský kraj (SK)	0.305
7	Sostines regionas (LT)	0.366	275	Languedoc-Roussillon (FR)	0.305
8	Bremen (DE)	0.364	274	Attiki (EL)	0.305
9	Eesti (EE)	0.364	273	Anatoliki Makedonia, Thraki (EL)	0.306
10	Közép-Dunántúl (HU)	0.363	272	Marche (IT)	0.307

Source: own research.

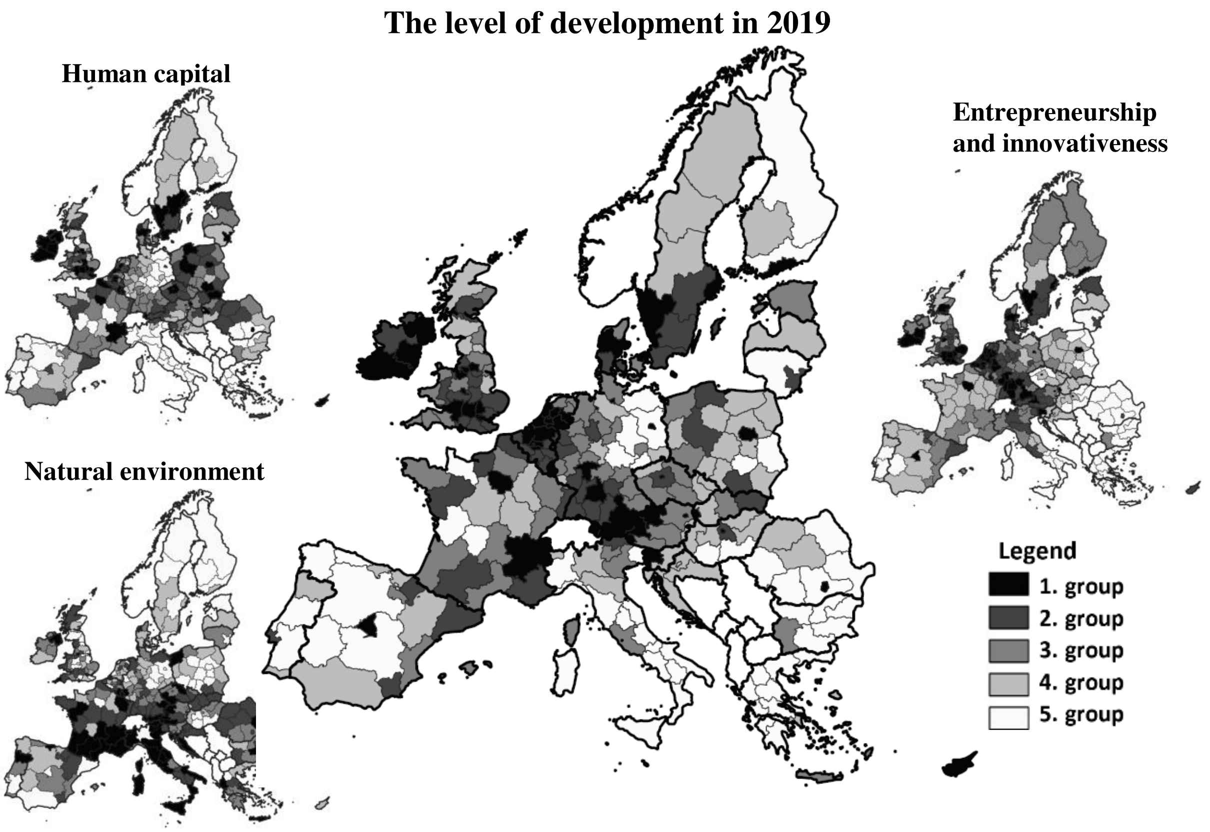
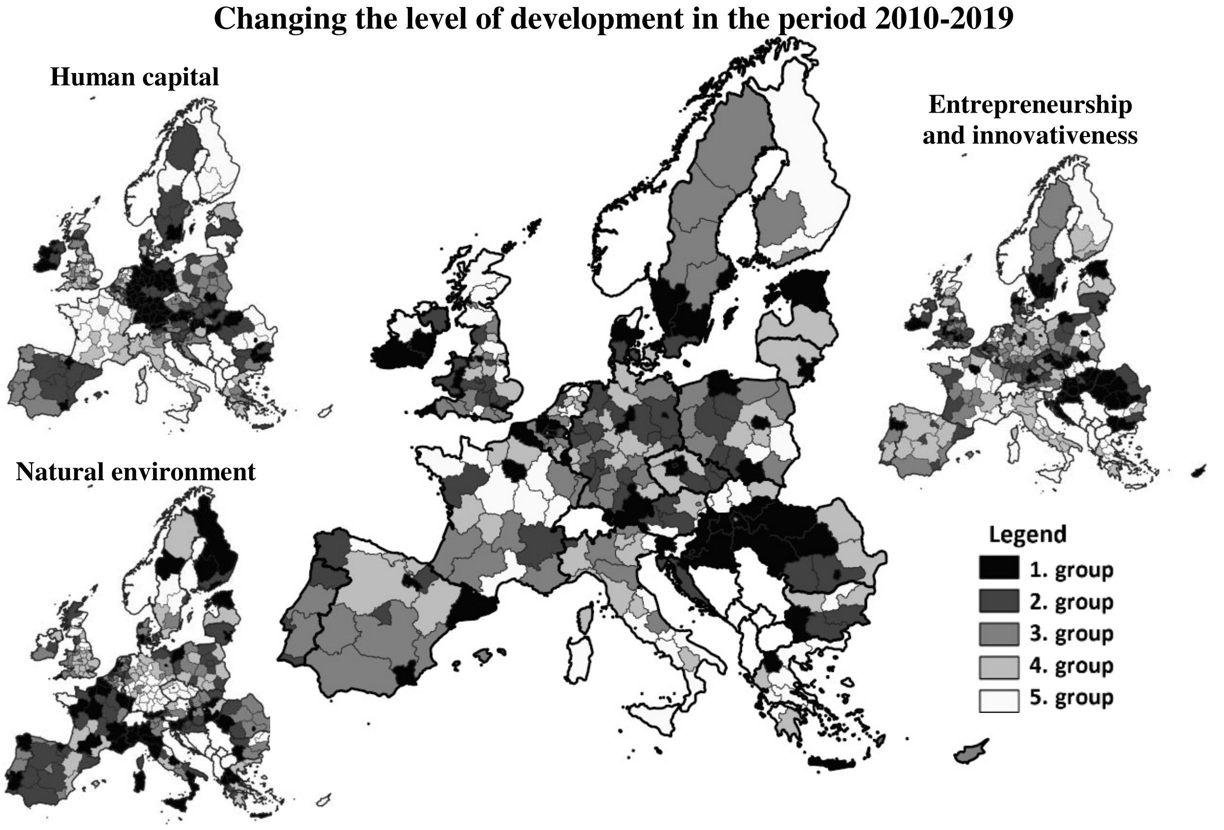


Figure 1. Variation in the level of the socio-economic development in EU regions.

Source: own research.



Cont. Figure 1. Variation in the level of the socio-economic development in EU regions.

Source: own research.

In figure 1 as well as in table 2 and 3, the results of the research conducted have been presented. Table 2 presents the NUTS-2 units exhibiting the highest and the lowest values of the synthetic gauge within the respective subcomponents of the socio-economic development calculated separately for 2019. In table 3, the NUTS-2 regions of the extreme values of the synthetic gauge were compiled calculated for the changes in the years of 2010-2019. Figure 1 contains choropleth maps representing the spatial variation of the socio-economic level of the NUTS-2 regions located in the Continental part of the European Union in 2019 as well as the changes of the level of the development in the years of 2010-2019.

4. Results – conclusions based on the research conducted concerning the respective subcomponents of the development

As a result of the research procedure conducted, spatial variation of 281 NUTS-2 level regions in the European Union in the 28 EU member states was presented with respect to the level of the socio-economic development as well as three subcomponents constituting the factors of that growth (fig. 1). In the researched group of units, the value of the synthetic gauge representing the level of the socio-economic development in 2019 ranged from 0.185 to 0.443

(tab. 2). The value of the gauge representing the change in the level of the socio-economic development of the regions in the years of 2010-2019 ranged from 0.266 to 0.402 (tab. 3). A similar differentiation was observed in the case of the human capital (0.182-0.426 for 2019 as well as 0.303-0.554 for the change in the years of 2010-2019), the natural environment (0.246-0.479 as well as 0.212-0.473 respectively) as well as the entrepreneurship and innovativeness (0.069-0.585 respectively as well as 0.177-0.355). Thus, it is well worth noting that the highest variation of the regions was registered in the areas of entrepreneurship and innovativeness in 2019 and the biggest similarity of the researched units was observed in the case of the changes in the general level of the socio-economic development in the years 2010-2019.

Taking account of the level of the development of the „human capital" subcomponent, the highest value of the synthetic gauge in 2019 was registered in the following regions: Eastern and Midland (IE – comprising the capital – Dublin), Outer London - East and North East (UK) and Flevoland (NL – the youngest of the Dutch provinces, are created as a conclusion of the project consisting of creating five new polders having built the Afsluitdijk degradation lock), and the lowest – in the following regions: Liguria (IT), Molise (IT) and Severozapaden (BG). The high position of the indicated NUTS-2 units was decided on by: a favourable age structure of the population, a significant share of people with higher education, a high balance of migration as well as a relatively high fertility ratio. A low position of the respective units was decided on by: the negative birth rate, a high percentage of young people who are unemployed, not in education and not in training, a very high percentage of people at the post-production age in the total number of people. Taking account of the analysis conducted in the dynamic dimension, the biggest change in the level of the development of the „human capital" in the years between 2010 and 2019 subcomponent was observed in the following regions: Bucuresti-Ilfov (RO), Berlin (DE) as well as Koblenz (DE). On a general level, the biggest improvement of the human capital in the researched years was observed in German regions: among 20 NUTS-2 units in which the highest values of the synthetic gauge representing a change in the level of the human capital were registered in 2010-2019, 17 regions were located in Germany. The lowest change in the level of the „human capital" change was observed in the following units: Ciudad de Melilla (ES), Martinique (FR) and Ciudad de Ceuta (ES). A weaker position of the indicated NUTS-2 units in the research on the change in the level of the development of the human capital was decided on by: a significant deepening of the negative migration balance, an increase in the indicator of the demographic growth, an increase in the indicator of the risk of poverty as well as a decrease in birthrate. A high position within the ranking of the respective regions was decided on by: a relatively high decrease of the average age of women at birth, a very high increase in the migration balance, as well as an increase in the share of people at the production age in the total number of people as well a significant decrease in the demographic burden indicator.

With respect to the natural environment, the highest value of the synthetic gauge in 2019 was registered in island regions: Ionia Nisia (EL), Corse (FR) as well as Notio Aigaio (EL), and the lowest – in units: Dytiki Makedonia (EL), Région de Bruxelles-Capitale (BE) as well as Eesti (EE). A high position of the NUTS-2 units in the research was decided on by: a significant share of farmland as well as natural green spaces in the area in total, the number of accommodation places per 1,000 inhabitants as well as a low scale of road transport of goods. A low position in the ranking of the abovementioned regions was decided on by: a high cancer mortality rate coefficient, a low share of farmland as well as natural green spaces in the total area as well as a high number of petty crime registered and crimes concerning the natural environment per 1,000 inhabitants. Taking account of the analysis conducted in the dynamic dimension, the biggest improvement of the state of the natural environment in the years between 2010-2019 was observed in the following regions: Dytiki Makedonia (EL), Valle d'Aosta (IT) and Rhône-Alpes (FR), and the lowest – in the following units: Åland (FI), Malta (MT) and Niederbayern (DE). The weak position of the units within the research was decided on by: a high increase in the mortality rate due to poisoning and toxic substances, as well as an increase in the amount of urban waste per 1 inhabitant. A high position in the ranking of particular units was decided on by: a decrease in the tediousness of road transport of products (the highest decrease was registered in the Dytiki Makedonia region), a high increase in the share of natural green areas in the area in total (the biggest improvement was observed in the Valle d'Aosta region) as well as a significant increase in the percentage of the neutralized waste (the highest increase in the period researched was registered in the Île de France and Rhône-Alpes region).

Taking account of the level of the development of entrepreneurship and innovativeness, the highest value of the synthetic gauge in 2019 was registered in the following regions: Inner London-West (UK), Luxembourg (LU) as well as Noord-Holland (NL – comprising the capital – Amsterdam) – in those regions the highest share of the employed in the financial sector in the total number of the employed, the highest number of trademarks per 1 mln inhabitants as well as the highest GDP per 1 inhabitant were registered. The lowest value of the synthetic gauge was registered in the following units: Nord-Est (RO), Severozapaden (BG) and Sud-Vest Oltenia (RO) (of the highest share of the employed in farming, the lowest share of people using the Internet to contact the public authority as well as a very low GDP per capita). Taking account of the analysis conducted within the dynamic dimension, the biggest progress in the level of the development of the „entrepreneurship and innovativeness" subcomponent in the years between 2010-2019 was observed in the units: Bucuresti-Ilfov (RO), Malta (MT) as well as Inner London-West (UK), and the smallest – in the regions: Bratislavský kraj (SK), Guadeloupe (FR) and Attika (EL). The position of the NUTS-2 units in the research conducted in the dynamic dimension was decided on by: the share of the employed in the advanced technology sector as well as a knowledge-based sector in the total number of the employed, the number of trademarks per 1 mln inhabitants as well as (in all three indicators, the highest increase was registered in Malta), as well as the share of the employed in the sector of information and communication in the total number of the employed (the highest increase in the Bucuresti-Ilfov region), the length of highways per 1000 square kilometers (the highest increase in Prague) as well as a relatively high increase in the percentage of people using the Internet to contact the public authority.

5. Discussion – the general level of the socio-economic development of the NUTS-2 regions in the EU member states

Summarizing the results of the research conducted on the socio-economic development of 281 NUTS-2 regions in Central-Eastern Europe, one may indicate the following conclusions. The level of the general development of regions in 2019 was specified based on 42 indicators subcategorized within three subcomponents of the development: the human capital, the natural environment as well as entrepreneurship and innovativeness. The highest value of the synthetic gauge was registered in the regions comprising the capitals of the respective states: Inner London-West (UK), Luxembourg (LU) and Stockholm (SE). A hypothesis stated at the beginning of the article was positively verified. Moreover, on the list of the first twenty best developed NUTS-2 regions in the European Union were 12 capital units – comprising the capitals of the respective countries, and the group of 20% of the best developed units includes 20 out of 28 units comprising the capitals of the respective EU states (which is 71% of their population). Taking account of the analysis conducted in the dynamic dimension, the biggest change in the level of the socio-economic development in 2010-2019 was observed in the following regions: Bucuresti – Ilfov (the 1. position), Praha (the 2. position) and Berlin (the 3. position). Among the capital regions, the top ten in the ranking includes also: Luxembourg (the 5. position), Yugozapaden (the 6. position), Sostines regionas (the 7. position) and Eesti (the 9. position). The group of 20% of regions, however, of the biggest change in the level of the socio-economic development includes 18 out of 28 of the regions including the capitals of the respective EU countries (which constitutes 64% of all the capital regions). Apart from the regions mentioned heretofore, the group includes also: Inner London-West (the 12. position in the ranking), the Warszawski capital region (the 17. position), Stockholm (the 20. position), Hovedstaden (the 27. position), Kontinentalna Hrvatska (the 29. position), Malta (the 32. position), Eastern and Midland (the 37. position), Île de France (the 39. position), Zahodna Slovenija (the 50. position), Área Metropolitana de Lisboa (the 53. position) and Noord-Holland (the 56. position). In the first half of the compilation, also the following regions have been found: Comunidad de Madrid (the 70. position), Kypros (the 125. position), Helsinki-Uusimaa (the 132. position) and Wien (the 140. position). Budapest in turn was classified on the 167. position, and the lowest position among the capitals were: Lazio, Région de Bruxelles, Attiki and Bratislavský kraj (the 260, 263, 274 and 276 position respectively). It is well worth noting a fact that the regions at a very high level of the socio-economic development are usually the units in which the biggest change in the level of the development in the years between 2010-2019 was registered (and the other way round). Apart from the capitals indicated, the group of regions of the highest level of the development in 2019 included, among others several units of the Benelux countries, as well as Alpine regions, and within the group of units with the biggest change in the level of the socio-economic development – apart from the capitals – among others, the Carpatian and Scandinavian regions were placed. On the other hand, the regions with the weakest level of the socio-economic development includes the NUTS-2 units located at the periphery as well as away from the strongest regions, for example the NUTS-2 units located in southern Italy, eastern Greece, or the farthest overseas departments and dependent areas, such as: the French Guyana, Martinique, Guadeloupe, Ciudad de Melilla, Ciudad de Ceuta as well as Madeira and the Azores.

One may thus conclude that – on one hand – the current level of the development of the respective EU countries is to a large extent decided on by the activity taken within the last decade, and on the other hand – bigger and bigger developmental discrepancies are being observed at the level of the NUTS-2 units, as to the largest extent the level of the socio-economic development increased in the economically strongest regions – in the relatively weaker developed regions, usually located away from the socio-economic centre of Europe, located in the area extending from London, through Benelux, up until the Alpine regions. Significant developmental discrepancies may also be observed in the respective states. Within the area of almost each of them, regions both at a very high level of the socio-economic development and the units subcategorized as the 20% of the weakest developed NUTS-2 units in the researched countries are located.

The research procedure conducted is unique, as in the subject literature, it is not possible to find a different publication in which the level of the regional development of the EU was, first of all, conducted in a holistic manner for all 28 EU member states at the level of all 281 NUTS-2 regions, and second of all – a synthetic gauge of the development created on the basis of Z. Hellwig's reduction method would be used. The conclusions of other authors researching the EU regional development who use different methods are, however, similar. They also specify the highest level of the development of the capital regions, and the level thereof usually decreases together with the distance from the central units. Similarly, analyses conducted by Eurostat based on GDP per capita, the richest regions include capital units. The abovementioned comparison thus confirms the correctness of the results obtained – irrespective of the method taken up, classifying of a particular region into the group of better or worse developed regions is appropriate.

6. Conclusions

Summarizing the research conducted, it is also worth looking into the results within the dimension of the respective states. The level of the socio-economic development is highly varied also in the respective countries, which was presented in the table 4 (obviously apart from the states in which only one NUTS-2 region is subcategorized, i.e. Estonia, Cyprus, Latvia, Luxembourg and Malta).

The largest developmental discrepancies measured by the value of the synthetic gauge were registered in the UK. The largest socio-economic developmental discrepancies measured by means of the position within the ranking of the best developed regions were observed in Germany. The states of high variation of the level of the socio-economic development are also: Greece, Bulgaria, France, Spain, Italy, Finland, Poland and Romania, whose capitals are mostly subcategorized as a group of 10% of the best developed regions, and a lot of NUTS-2 units were found on the last positions within the ranking. Taking account of the value of the synthetic gauge as well as the positions of the respective NUTS-2 units within the ranking, the states of the lowest developmental discrepancies are: Belgium, Ireland and Croatia.

Table 4.
The NUTS-2 regions at the highest and the lowest level of the socio-economic development among the countries of European Union in 2019

Country	The most developed region NUTS-2			The least developed region NUTS-2		
	The name of the region	**Value**	**Place**	**The name of the region**	**Value**	**Place**
Belgium	Région de Bruxelles-Capitale	0.358	14	Prov. Hainaut	0.306	109
Bulgaria	Yugozapaden	0.299	133	Severozapaden	0.199	280
Czech Republic	Praha	0.356	17	Severozápad	0.276	215
Denmark	Hovedstaden	0.366	9	Sjælland	0.292	159
Germany	Hamburg	0.352	22	Chemnitz	0.246	262
Estonia	Eesti	0.301	122	Eesti	0.301	122
Ireland	Eastern and Midland	0.372	6	Northern and Western	0.322	65
Greece	Notio Aigaio	0.300	129	Dytiki Makedonia	0.185	281
Spain	Comunidad de Madrid	0.330	50	Principado de Asturias	0.243	266
France	Île de France	0.351	20	Limousin	0.255	248
Croatia	Kontinentalna Hrvatska	0.276	213	Jadranska Hrvatska	0.276	214
Italy	Provincia Autonoma di Bolzano	0.325	60	Molise	0.228	276
Cyprus	Kypros	0.332	45	Kypros	0.332	45
Latvia	Latvija	0.280	202	Latvija	0.280	202
Lithuania	Sostines regionas	0.318	73	Vidurio ir vakaru Lietuvos regionas	0.262	244
Luxembourg	Luxembourg	0.422	2	Luxembourg	0.422	2
Hungary	Budapest	0.328	52	Dél-Dunántúl	0.266	239
Malta	Malta	0.342	32	Malta	0.342	32
Netherlands	Utrecht	0.375	4	Groningen	0.297	144
Austria	Salzburg	0.346	27	Burgenland	0.275	221
Poland	Warszawski stoleczny	0.358	13	Swietokrzyskie	0.261	245
Portugal	Área Metropolitana de Lisboa	0.308	107	Alentejo	0.235	271
Romania	Bucuresti - Ilfov	0.328	53	Sud-Vest Oltenia	0.235	272
Slovenia	Zahodna Slovenija	0.333	43	Vzhodna Slovenija	0.281	195

Cont. table 4.

Slovakia	Bratislavský kraj	0.354	19	Západné Slovensko	0.289	171
Finland	Helsinki-Uusimaa	0.354	18	Pohjois- ja Itä-Suomi	0.266	238
Sweden	Stockholm	0.377	3	Övre Norrland	0.279	203
United Kingdom	Inner London - West	0.443	1	Lincolnshire	0.276	211

Source: own research.

In the results of the research discussed heretofore, the most frequently mentioned were British, German and French regions, thus one may get an illusory impression they are the best (the least) developed. A higher frequency of the appearance of the regions from those states in the results of the research is a result of the UK subcategorizing as many as 41 NUTS-2 units (15% among all the ones being the subject of the research), in Germany – 38 regions (14% of the researched group), and in France – 27 units (10%). It is related to an assumption that a NUTS-2 region has to count – apart from certain extraordinary situations – at least 800,000 inhabitants, and a maximum of 3,000,000 people, therefore most such units were created in the most highly populated EU states and the other way round.

Table 5.
Average values of the synthetic gauge in the regions of the researched states

Item	Belgium	Bulgaria	Czech Rep.	Denmark	Germany	Estonia	Ireland
Number of NUTS-2 regions	11	6	8	5	38	1	3
The level of development in 2019							
General - the average value of the synthetic measure	0.328	0.246	0.299	0.320	0.302	0.301	0.348
The human capital - the average value of the synthetic measure	0.341	0.262	0.338	0.330	0.291	0.344	**0.404**
The natural environment - the average value of the measure	0.404	0.415	0.417	0.392	0.406	0.354	0.408
The entrepreneurship and innovativeness - the average value	0.262	0.120	0.180	0.258	0.241	0.218	0.250
Changing the level of development in the period 2010-2019							
General - the average value of the synthetic measure	0.336	0.336	0.341	0.338	0.337	0.364	0.339
The human capital - the average value of the synthetic measure	0.471	0.490	0.475	0.469	**0.518**	0.459	0.511
The natural environment - the average value of the measure	0.363	0.364	0.346	0.369	0.351	0.379	0.359
The entrepreneurship and innovativeness - the average value	0.259	0.253	0.283	0.259	0.256	0.311	0.257

Item	Greece	Spain	France	Croatia	Italy	Cyprus	Latvia
Number of NUTS-2 regions	13	18	27	2	21	1	1
The level of development in 2019							
General - the average value of the synthetic measure	0.250	0.282	0.302	0.276	0.266	0.332	0.280
The human capital - the average value of the synthetic measure	0.260	0.289	0.336	0.282	0.237	0.369	0.305
The natural environment - the average value of the measure	0.421	0.410	0.430	**0.439**	0.438	0.398	0.398
The entrepreneurship and innovativeness - the average value	0.129	0.190	0.185	0.164	0.185	0.246	0.173
Changing the level of development in the period 2010-2019							
General - the average value of the synthetic measure	0.323	0.331	0.326	0.343	0.323	0.334	0.328
The human capital - the average value of the synthetic measure	0.463	0.464	0.434	0.468	0.448	0.437	0.488
The natural environment - the average value of the measure	**0.382**	0.370	0.376	0.357	0.376	0.349	0.362
The entrepreneurship and innovativeness - the average value	0.221	0.247	0.242	0.281	0.230	0.279	0.237

Cont. table 5.

Item	Lithuania	Luxembourg	Hungary	Malta	Netherlands	Austria	Poland
Number of NUTS-2 regions	2	1	8	1	13	9	17
The level of development in 2019							
General - the average value of the synthetic measure	0.290	**0.422**	0.288	0.342	0.336	0.317	0.291
The human capital - the average value of the synthetic measure	0.327	0.374	0.319	0.351	0.327	0.320	0.333
The natural environment - the average value of the measure	0.394	0.431	0.398	0.397	0.402	0.435	0.397
The entrepreneurship and innovativeness - the average value	0.182	**0.474**	0.182	0.291	0.300	0.234	0.177
Changing the level of development in the period 2010-2019							
General - the average value of the synthetic measure	0.347	**0.368**	0.354	0.350	0.324	0.334	0.335
The human capital - the average value of the synthetic measure	0.441	0.461	0.485	0.440	0.437	0.490	0.471
The natural environment - the average value of the measure	0.374	0.365	0.373	0.302	0.373	0.365	0.366
The entrepreneurship and innovativeness - the average value	0.285	0.332	0.286	**0.355**	0.239	0.247	0.256

Item	Portugal	Romania	Slovenia	Slovakia	Finland	Sweden	UK	**UE**
Number of NUTS-2 regions	7	8	2	4	5	8	41	281
The level of development in 2019								
General - the average value of the synthetic measure	0.267	0.267	0.307	0.312	0.298	0.311	0.318	0.298
The human capital - the average value of the synthetic measure	0.281	0.314	0.328	0.358	0.297	0.332	0.341	0.312
The natural environment - the average value of the measure	0.403	0.419	0.406	0.417	0.395	0.388	0.405	0.411
The entrepreneurship and innovativeness - the average value	0.163	0.121	0.217	0.196	0.231	0.234	0.236	0.209
Changing the level of development in the period 2010-2019								
General - the average value of the synthetic measure	0.334	0.351	0.331	0.316	0.312	0.340	0.333	0.333
The human capital - the average value of the synthetic measure	0.454	0.456	0.486	0.494	0.406	0.482	0.461	0.468
The natural environment - the average value of the measure	0.370	0.372	0.381	0.368	0.353	0.359	0.358	0.365
The entrepreneurship and innovativeness - the average value	0.256	0.291	0.230	0.207	0.241	0.267	0.259	0.253

Source: own research.

In table 5, a different approach to specifying the level of the development was presented within the framework of the respective states. The level of the socio-economic development as well as the changes in the said development in the NUTS-2 regions of the EU member states were presented, taking account of the average values of the synthetic gauge of all the regions of a particular state. The highest average value of the synthetic gauge of the general level of the socio-economic development as well as the changes of the development, as well as the „entrepreneurship and innovativeness" subcomponent was registered in Luxembourg. It stems from the fact that in Luxembourg, there was only one NUTS-2 region subcategorized, the region which is at the same time the second best developed region of the EU. Among the states in which at least two NUTS-2 units were subcategorized, the highest average value of the synthetic gauge of the general level of the socio-economic development was registered in Ireland, the Netherlands and Belgium, and the highest average value of the synthetic gauge of the changes in the level of the development was observed in Romania and in Hungary. The highest level of the development of the „human capital" subcomponent in 2019 was observed in Ireland, and the biggest change in the subcomponent in the years between 2010-2019 was registered in German regions. The highest value of the synthetic gauge within the „entrepreneurship and innovativeness" subcomponent, among the states with at least two NUTS-2 regions, in the static dimension, was registered in the Netherlands, and in the dynamic dimension – in Romania. Within the natural environment, the highest average value of the synthetic gauge in the static dimension was observed in Croatia, and the biggest improvement in the state of the natural environment in the years between 2010-2019 was registered in Greece. In summary, one may thus conclude that in the analysis comprising the respective NUTS-2 units, British, German and French units dominate with respect to their biggest number. Taking account of the average value of the respective synthetic gauges, the best results were registered in the case of Irish, Dutch and Romanian regions. The abovementioned considerations, the research conducted as well as the results obtained may thus constitute both an impulse towards conducting deeper analyses in that direction, as well as being a potential inspiration for the EU organs within the scope of the manner of specifying the richest and the poorest EU regions with the purpose of securing an effective management of the cohesion policy in the conditions of spatial concentration.

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BUILDING TRUST IN PHYSICIANS – THE GENERATIONAL DIFFERENCES IN THE PERCEPTION OF TRUST IN HEALTH CARE SECTOR

Julianna STASICKA[1*], Igor SZYMAŃSKI[2], Joanna LEMAŃCZYK[3*]

[1] Poznan University of Economics and Business; julianna.stasicka@phd.ue.poznan.pl,
ORCID: 0000-0003-1656-5877
[2] Poznan University of Medical Sciences; igor.s.szymanski@gmail.com, ORCID: 0000-0002-4598-5224
[3] Poznan University of Economics and Business; joanna.lemanczyk@phd.ue.poznan.pl,
ORCID: 0000-0002-6195-8568
* Correspondence author

Purpose: The purpose of this article is to investigate the generational difference among patients' trust in medical practitioners and factors creating their credibility.
Design/methodology/approach: The theoretical basis is the literature on the subject. In the article, the authors use questionaries to answer to the questions related to image and trust in physicians among people represent different generations. In the empirical part, a survey was conducted among 370 Polish respondents representing generations: Baby Boomers, X, Y, Z. The objective of the research is to investigate patients' perception of the image of physicians and trust in them in Poland.
Findings: An analysis of 370 respondents revealed that different generations perceive the image of doctors differently. The overarching theme of trust underpins these results. The surveyed group tends to take a more calculated approach to trust, particularly when their health and lives are at risk or when they have experienced inadequate care more often than unsuccessful treatment in their interactions with healthcare professionals. It is notable that patients express the greatest confidence in the expectation that physicians will uphold medical confidentiality.
Research limitations/implications: A relevant problem was reaching representatives of the Baby Boomers generation. In the future, paper surveys can be considered so that digital exclusion is not an obstacle to reaching respondents. Also valuable could be to select one generation group and significantly deepen the research in the areas discussed.
Practical implications: It is possible to notice generational differences therefore to adjust the outreach strategy according to preferences and opportunities.
Originality/value: This article elucidates a salient concern pertaining to different generational perspectives on medical specialists. Employing survey methodologies, it endeavors to discern the determinants of trust in physicians and the primary reservoirs from which patients solicit recommendations.
Keywords: trust, image, generational differences in perceptions.
Category of the paper: This article indicates as a research paper.

1. Introduction

Nowadays health care systems have to face crises in many areas. Increased demand for medical services due to occurrence of civilization diseases, the demographic aging of the society and forecasts of this phenomenon to intensify in the coming decades (Adamczyk, 2017). Trust in physicians is fundamental for effective functioning of the healthcare market. Despite the information asymmetry in physician-patient relationship trust is essential to improve the health and welfare (Li, Khan, 2022). The primary objective of this article is to delve into the variations across generations concerning the level of trust exhibited by patients in medical practitioners, while also exploring the diverse factors that contribute to establishing credibility in the eyes of these patients. Patients' trust in health care professionals is crucial for clinical practice and should be the foundation for effective treatment. Patients should be able to trust physicians (Birkhäuer et al., 2017). Trust is one of the vital components of patient-physician relationship. Patients' trust is multidimensional and construct described in many ways (Thom, 2002; Pearson, Raeke, 2000). The imperative goals of health care law and public policy as well as medical ethics are enhancing, preserving, and justifying trust (Hall et al., 2001). Lack of patient's trust in physicians discourages the use of preventive services, lowers quality of medical care and influences patient's adherence to clinical recommendations (Li, Khan, 2022).

2. The Process of Building Authenticity and Trust by Physicians

Health systems are intrinsically characterized by relational dynamics, and numerous pivotal challenges confronting these systems stem from relational intricacies. Adverse staff attitudes towards patients have the capacity to engender dissatisfaction with healthcare services, with the implication that even proficient technical care may not entirely ameliorate these concerns (Gilson, 2003). Patients are more likely to share symptoms and adhere to treatment instructions when they trust their healthcare provider's commitment to confidentiality, competence, and respect. The significance of trust in therapeutic collaboration arises from the inherent power imbalance between healthcare professionals, equipped with medical knowledge and clinical expertise, and patients who seek care (Grimen, 2009). Beyond producing health outcomes, the healthcare sector shapes perceptions of state-provided social protection, as it falls under state regulation (Østergaard, 2015). This argument extends to broader considerations of the relationship between healthcare and citizenship, suggesting that individuals exhibit greater trust in the state when they receive quality care through public services (Gilson, 2006). Consequently, a healthcare system perceived as trustworthy has the potential to cultivate a strong connection between citizens and the state. Conversely, the public health sector's failure to establish conditions for trustful relationships can contribute to the societal marginalization of vulnerable population groups (Østergaard, 2015).

Trusting behavior is manifested when an individual acts in a manner that depends on another person, thereby subjecting the trustor to potential risk (Simpson, 2012). Russell Hardin's encapsulated interest account of trust aligns with rational choice models of action. In this framework, trust is defined as a belief in another person's trustworthiness. According to Hardin, the statements "I believe you are trustworthy" and "I trust you" are interchangeable (2002, p. 10). In the realm of cultivating a positive corporate image, relying solely on a transactional approach with customers is no longer sufficient. Business success is now contingent upon the establishment of robust relationships between service providers and recipients. The literature has extensively delved into the role that trust can play in transactional retail settings (Cowles, 1994). Cultivating a lasting relationship with a customer necessitates careful consideration of its distinct components: initiation, sustenance, and enhancement. These aspects are indispensable for realizing economic objectives. Moreover, this endeavor seeks to address the prevailing tendency among companies to allocate greater attention and marketing resources towards acquiring new customers, as opposed to retaining existing ones (Kotler, 2001).

3. Trust and it significance in medical area

In order to make an formal evaluation of trust, a global approach must be taken. Trust has a variety of definitions and a multitude of potential factors. One of the leading and most logical approaches to trust is the calculative approach, which is essentially derived from rational choice theory. This theory proclaims that individuals are rational and therefore evaluate the gains and losses connected with certain ways to achieve their goals. This means that at the end of the process they will choose the most optimal way to achieve them (Bogucki, 2008). On the other hand, the theory also anticipates that the goal chosen by the individual satisfies his interests to the greatest extent among all other. For an informed decision in the matter of trust, a reliable source of data is needed. In this regard it's best to draw data from one's own experience and on this basis calculate the trustworthiness of a potential partner. In this calculation, trust is derived from someone else's credibility and the best guarantee of another person's credibility is the security of his own interests. This means that trust may be perceived as a form of encapsulated interests, where someone else's interest is to act in my interest (Hardin, 2002).

In contrast, a competing concept of trust is the altruistic concept, which by definition rejects elements of rational choice theory (Głos, 2015). This approach departs from profit and loss balances and mutual interest. It is based primarily on someone’s benevolence/goodwill/bona fides and on confident expectation that the person we have put our trust into will be motivated by the knowledge that we are counting on them (Jones, 1996). Eventually when living in today's society we are forced to rely on the services of countless unknown people every day and without even a slightest amount of simple trust one would fall into stupor and would not be able to carry out basic tasks of daily living (Hardin, 1993).

Considering overall economics, trust is fundamental for effective partnerships. It increases efficiency, lowers the costs and has a beneficial effect on the satisfaction from work (Głos, 2015). This implies that in the medical sector, trust promotes good health. Patients who trust their physicians are more willing to follow their recommendations, are more likely to visit them and in general are more conscientious about patient-physician communication (Hillen, 2013). In some extent when struggling with a crisis in which health or life is at stake, patients can place almost boundless trust in their physicians (Hall, 2001). On the other hand the lack of trust can hold a reverse effect and lead to non-compliance with medical recommendations causing the patient's condition to worsen. Consequently, not witnessing an improvement in his health, the patient may lose his confidence even more (Pentor Research International Poznań, 2010).

Recent transformations in medicine and healthcare sector have made trustworthiness more challenging. The prevalence of evidence-based medicine (EBM) approach in today's healthcare practice unquestionably contributes to its development but on the other hand, arouse social anxieties through rationalization, depersonalization and the impossible pursuit of definitive evidence. The fairly recent change in the position of the patient himself has also had some ambivalent outcomes. The end of the physician's paternalistic credibility era and the prevailing principle of patient's autonomy as an absolute means that the patient gained more independence but also is expected to gain more orientation in the medical world (Głos, 2015). These phenomena may put a certain distress on an generally aging society thus promote uncertainty, distrust and entitlement attitude.

Among any other threats to health care trust, the greatest one is its ongoing commercialization. Despite the enhancement in services quality, it turns the personal relationship between physician and patient into a service relationship resembling contracts between a businessman and a customer which is bereft of voluntary solicitude (Mechanic, 1996). This intentional and strictly defined course of development may lead to a critical point in public trust to health care system. Under those assumptions the patient could base his expectations that physician will arrange supplementary, expensive examinations or otherwise undertake "over-the-top" measures just because physician's salary is high enough or the fear of losing his job is enough for him to make it unprofitable to let the patient down (Głos, 2015).

4. Generational perspectives in the perception of the medical profession

An examination of generational perspectives reveals subtle differentiations in the perception of the medical profession, as outlined in Table 1. Age emerges as a pivotal determinant influencing attitudes towards healthcare, methodologies employed in scheduling medical appointments, and the discernment of reputable recommendations within this context.

Table 1.
Classification of generations

Generation	Year of birth	Characteristics of the generation
Baby Boomers	1946-1964	True to authority, they usually handle stress and conflict situations well. They value stability the most. They are dutiful and loyal, patient and ready to make sacrifices.
Generation X	1965-1979	They are not afraid of hard work and avoid conflict. They value stability and security but are cautious about change. They are sceptical and independent but at the same time flexible.
Generation Y	1980-1995	Well-educated, development-oriented and competitive, they value high achievement. They are optimistic about the future. They are well versed in new technologies, enjoy teamwork and appreciate work-life balance.
Generation Z	1996-2012	Citizens of the world, national borders are not an obstacle for them plus they are very tolerant. Impatient, they expect fast results. They appreciate contact via the Internet and are very familiar with the latest technologies. They attach great importance to independence.

Source: own compilation based on (Dolecińska, Kołodziejczyk, 2016; Hysa et al., 2021).

Baby Boomers are those born between1946 and 1964. Some people in this cohort have already retired, while others have only a limited remaining working life. Notwithstanding these differences, a notable subgroup within this demographic shows a willingness to remain professionally engaged, with a preference for the professions and entrepreneurial activities (Dolecińska, Kołodziejczyk, 2016). The Baby Boomer cohort, who have worked hard to earn their professional position, inherently value work as a value in itself. The pursuit of stability is their top priority, and thanks to their years of experience, they have an unshakeable belief in their competence. Although they come from an analogue era, the people of this generation fit seamlessly into the contemporary digital milieu and embrace modern technologies. Although they prefer personal contact, they also recognise and appreciate technological progress (Hysa et al., 2021).

Generation X are those born between 1965 and 1979. Escalated inflation, augmented unemployment, and labor instability necessitated their acceptance of unfavorable working conditions and roles beneath their skill and qualification levels. This period of career initiation cultivated resourcefulness but concurrently heightened an atmosphere of uncertainty and job insecurity (Zabel et al., 2017). This generation holds family and friends in high regard. In the professional realm, they proficiently engage with new technologies, excel in collaborative settings, strive for work-life balance, maintain ethical standards, albeit with a propensity for workaholism and diminished self-esteem. Notably, their primary measure of achievement is linked to financial success (Dolecińska, Kołodziejczyk, 2016). They hold professionals in high regard, aspiring to cultivate advanced expertise in their respective domains. Marked by attributes of loyalty, responsibility, and deference to authority, they exhibit a strong work ethic and a proclivity for conflict avoidance. In their selection of a specialist, they accord significant weight to the physician's experience and professional achievements, often relying on advice from trusted acquaintances over online sources (Hysa et al., 2021).

The subsequent two generations exhibit apparent similarities, displaying a shared penchant for emerging technologies. It is noteworthy that Generation Y, commonly referred to as millennials, has been notably shaped by globalization, leading to the dissolution of national boundaries, the amalgamation of diverse cultures, and increased access to global products and services. Individuals born between 1980 and 1995, commonly referred to as millennials, embody characteristics such as independence, ambition, creativity, innovation, and a commitment to personal and societal development (McCrindle, Wolfinger, 2009). Possessing a strong educational background and orientation toward development, coupled with a competitive mindset, they place a premium on achieving high standards. Their outlook is marked by optimism regarding future prospects (Hysa et al., 2021). They prioritize time management and, consequently, opt for the most efficient methods when scheduling appointments with physicians, showing a preference for mobile applications or telephone registrations. Additionally, even when recommended by a trusted friend, they may seek further information about a physician through influential opinion-forming websites.

Characterized by a notable receptivity to technological advancements and a willingness to embrace diverse worldviews, Generation Z, born between 1996 and 2012, envisions a world intricately entwined with technological innovations. They hold an intrinsic appreciation for their leisure time, effectively leveraging technological tools to streamline not only their professional endeavors but also various aspects of daily life (Pichler et al., 2021). Global citizens, unfettered by national borders, demonstrate remarkable tolerance. Their impatience is evident in their expectation of swift results, and they value communication via the Internet, displaying adeptness with cutting-edge technologies. Emphasizing independence holds significant importance for them (Dolot, 2018). Their propensity to solicit advice in the digital domain is guided by a pragmatic disposition. Demonstrating a lack of trepidation towards the adoption of emerging technologies, they exhibit a preparedness to corroborate the professional standing of a specialist through scrutiny of patient testimonials on opinion portals.

5. Research method and sample

The main objective of the research was to investigate patients' perception of the physicians' image and following trust in them in Poland. For mentioned purpose the questionnaire in Google online survey tool was prepared. The link was shared among Polish respondents born between 1946-2005 selected randomly. The questionnaire was available for two weeks, and after getting the expected number of responses, it was deactivated. As a result a total of 370 answers were gathered and included into the research sample. In the Table 2 basic information about respondents are shown.

Table 2.

Information about respondents

Category	Feature	Share [%]
Gender	Female Male	54% 46%
Education	Basic, secondary Vocational Higher	11% 37% 52%
Generation	Baby Boomers X Y Z	15% 25% 25% 35%
Place of residence	Village City of up to 50,000 inhabitants City of 50,000 to 100,000 inhabitants City of more than 100,000 to 500,000 inhabitants City of more than 500,000	18% 29% 16% 7% 30%

Source: own elaboration.

Women and men with the various levels of education who are representatives of four generations took part in the research. The questionnaire utilizes five questions from Anderson and Dedrick's scale, which is a tool for assessing trust between patients and physicians (Krajewska-Kułak et al., 2008). The questionnaire also includes questions on basic information about the frequency and financing of consumed medical services. In addition, the following issues were discussed: sources of information used when choosing a physician, importance of appointment register methods, important factors affecting the choice of a certain physician, and overall trust in physicians.

6. Research results

As mentioned in the previous section, the survey was conducted for the empirical research. The results of the survey are described with emphasis on generational differences in the perception of trust in physicians and their image. First question referred to the frequency of medical visits in the last year in order to assess healthcare needs and divide respondents into groups according to the exposure to the patient-doctor relationship.

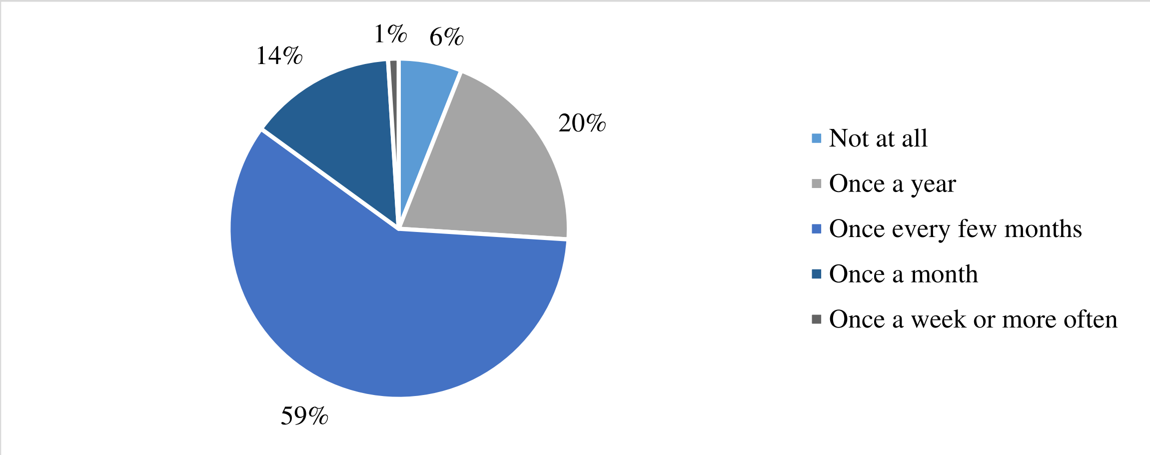

Figure 1. How many times in the past year have you used a visit to a physician?

Source: own elaboration.

The vast majority of people (59%) stated that they visit physician once every few months. Across all generational groups, the most frequently chosen answer was "once every few months". Furthermore, as many as 94% respondents stated that they consult physicians at least once a year. Also all representatives of generational groups chosen "once a month" on the second position. This means constant relationship and regular contact with physicians.

The next question concerned sources of medical services funding to assess whether patients use more of the public sector, or one of two options in the private sector: out of pocket payment, so-called private appointments or an individual private medical care package. Results are shown on the Figure 2.

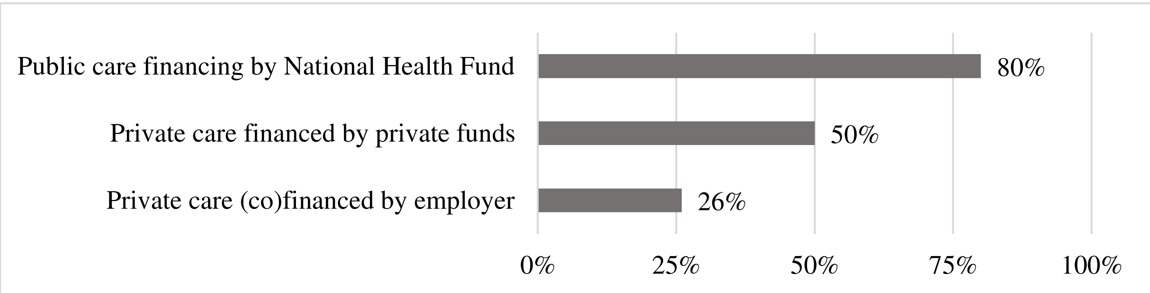

Figure 2. What type of health care financing have you relied on in the past 5 years?

Source: own elaboration.

As the question was marked multichoice, in the Table 3. the percentage of patients using a combination of methods was indicated.

Table 3.
Number and types of funding sources for medical services by respondents' answers

Type of sources used	Share of answers
Public health only	36%
Public and private care financed by own funds	27%
Private care financed by own funds	11%
All three types: public care, private care financed by own funds and (co)financed by employer	9%
Public health and private care (co)financed by employer	8%
Private care (co)financed by employer only	6%
Private care financed by own funds and (co)financed by employer	3%

Source: own elaboration.

The two most popular combinations are public health care only, and public health connected with private care financed by own funds. These two options cover 63% respondents' answers, meaning that it represents the majority of available combinations.

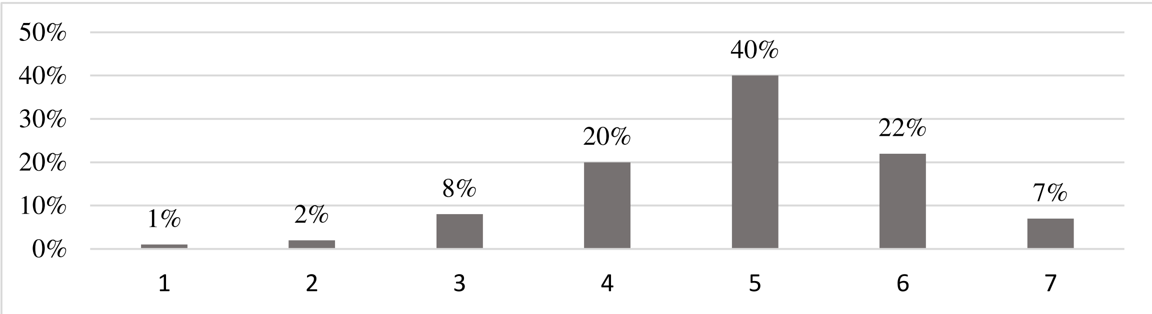

Figure 3. How much confidence do you have in specialist physician in Poland in general (1 – I don't trust physicians at all, 7 – complete trust in physicians)?

Source: own elaboration.

In order to access overall level of trust, respondents most often indicated 5 on a seven-point scale. Taking into account the average in each generation group it could be noted that older generations tend to manifest overall greater degree of confidence in specialist physicians. Among Baby Boomers average is 5,1; among Generation X it is 5,17, among Generation Y it is 4,7, and among Generation Z it is 4,0.

The question then focused on sources of information which are the most important for the decision to choose a specialist physician.

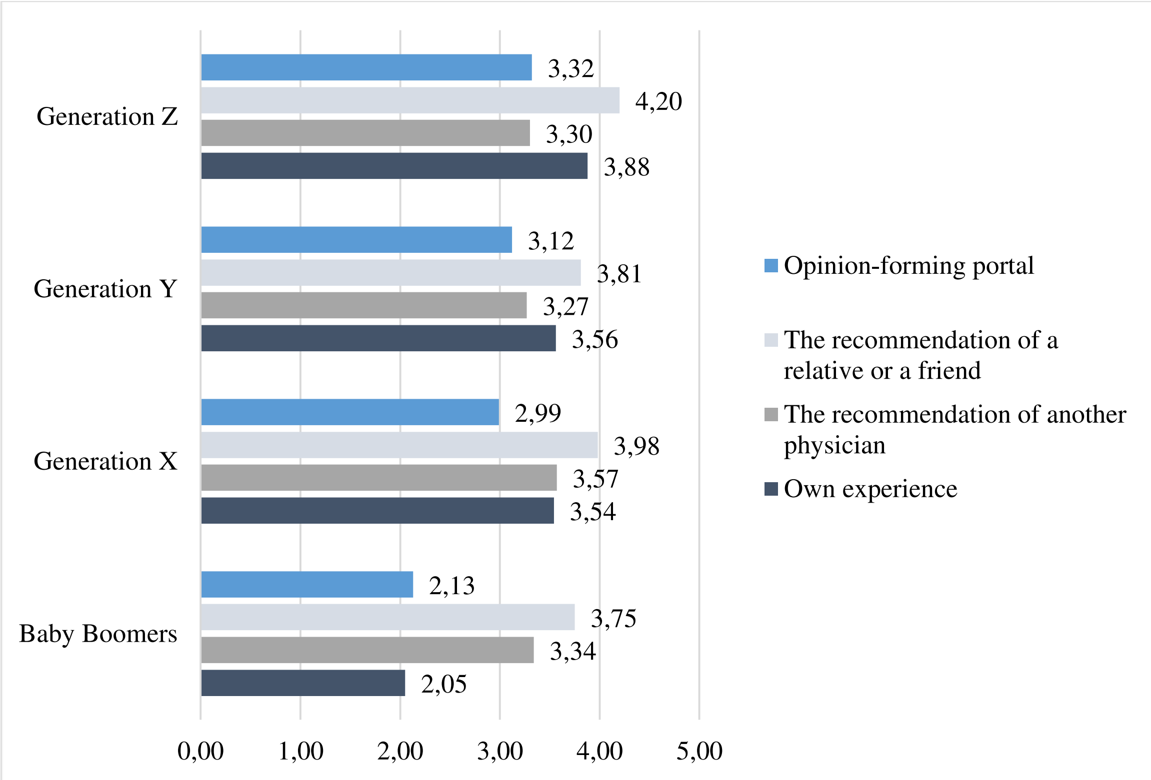

Figure 4. Which of the following sources of information are most important to you in terms of choosing a specialist physician (1 – completely irrelevant, 5 – crucial)?

Source: own elaboration.

Representatives of all generational groups identified the recommendation of a relative or a friend as the most important source of information to choose a certain specialist physician. Interestingly, opinion-formatting portals were chosen by representatives of all the generations to be roughly the least essential to such decision. What is more, representatives of Generation Z choose the recommendation between physicians as one of the least important.

The following question reviewed which qualities of a physician are most important in the matter of choosing his services.

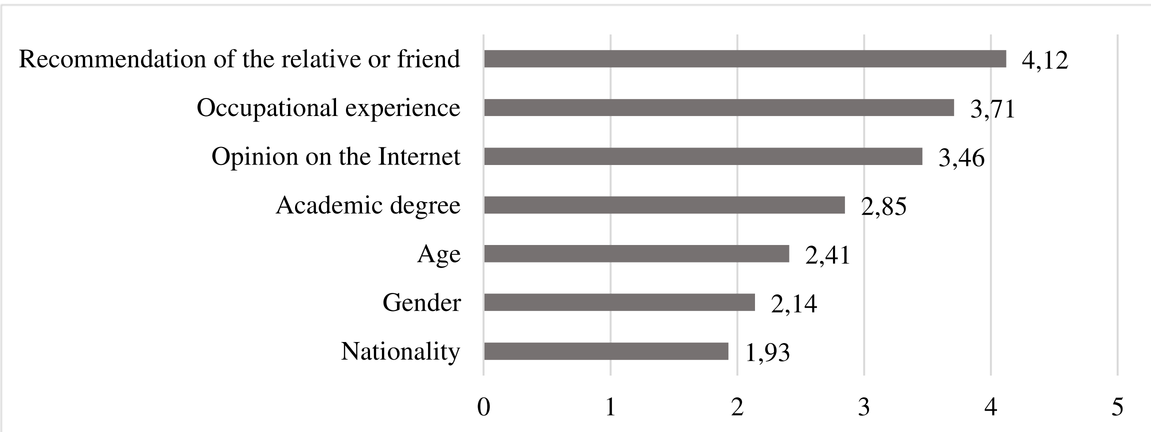

Figure 5. What is most important to you when choosing a specialist physician (1 – completely irrelevant, 5 – crucial)?

Source: own elaboration.

The most essential factors when choosing a specialist physician are recommendation of the relative or friend, occupational experience and opinion on the Internet. According to respondents, substantially less significant are academic degree, age, gender, and nationality. In all four generational groups analyzed, recommendation of the relative or friend emerged as the most important factor, particularly for Generation Z and Baby Boomers. The physicians' nationality came out as the least important factor, especially for Generation Y and Z.

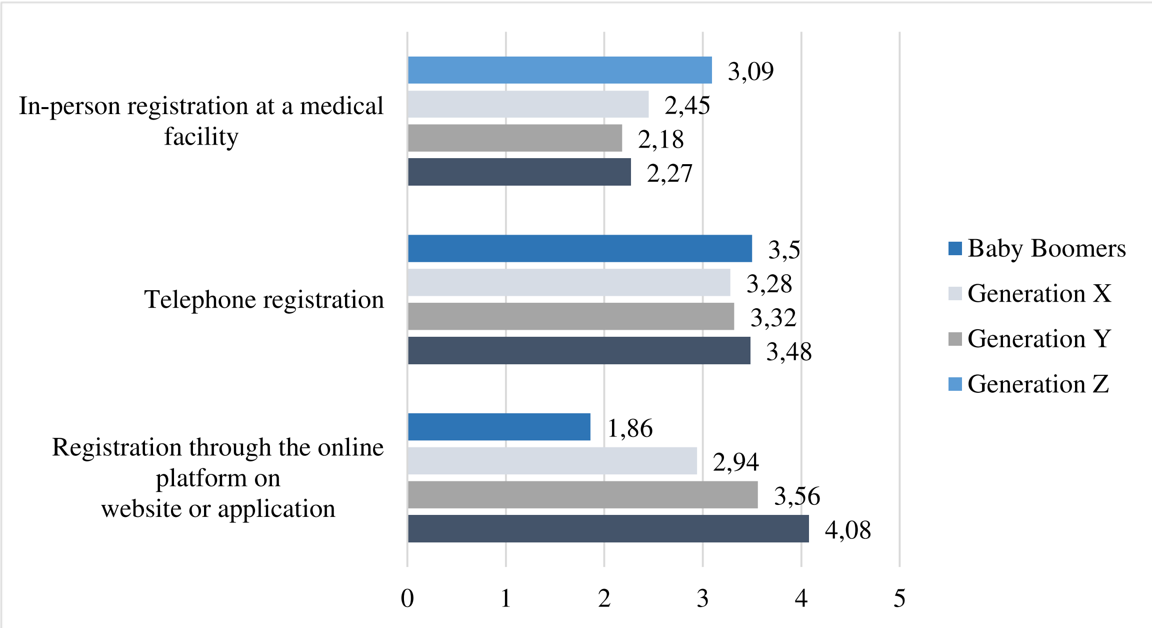

Figure 6. How important is for you mentioned way to register with a specialist physician (1 – completely irrelevant, 5 – crucial)?

Source: own elaboration.

From the data obtained, on average the most preferred method of registering with a specialist physician is telephone registration and personal registration at the facility is the least preferred method overall. However, specifically for Baby Boomers personal registration in facility is choice of second greatest importance. Moving onward, it can be noted that for older generations, taking into account Baby Boomers and generation X, the most preferred method is telephone registration. In contrast, for generations Y and Z, the most preferred method is enrollment via online platform or application witch telephone registration on a second place.

The last question concerned trust in the physician-patient relationship. Respondents were asked to rate the statements given in the survey on a scale from 1 to 7. The results are shown on the Figure 7.

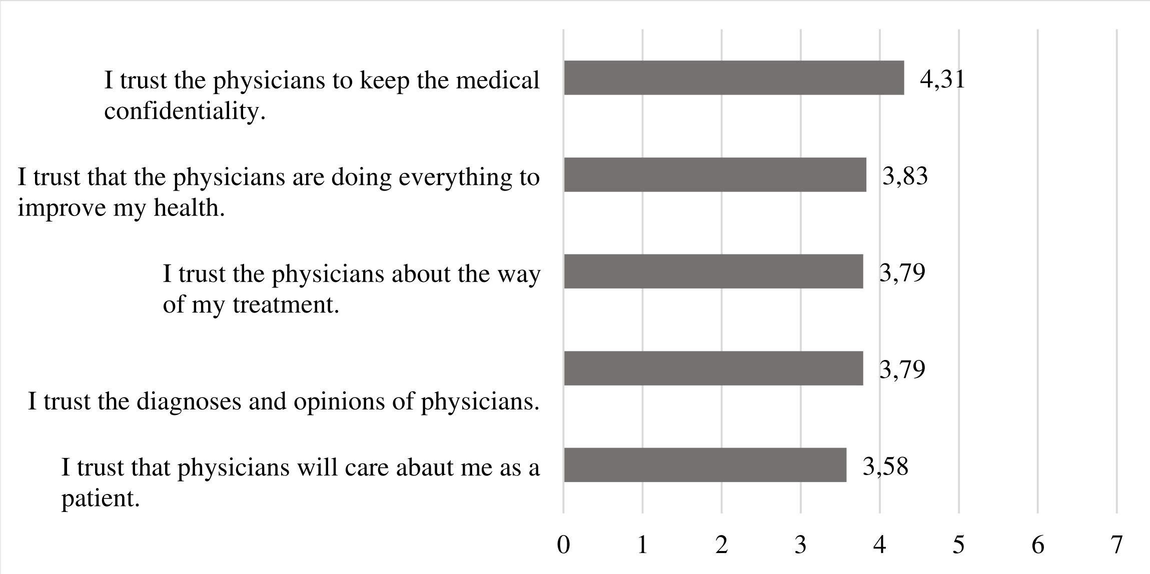

Figure 7. Please rate the following statements on a scale of 1-7 (1 – strongly disagree, 7 – fully agree) about the specialist physicians you are treated by.

Source: own elaboration.

Last question focused on the evaluation of statements regarding trust between patients and physicians in various aspects occurring in medical care, including diagnosis, treatment as well as medical confidentiality. Patients place greatest confidence in that the physician will maintain the medical confidentiality. 59% of all respondents rated this as 6 or 7. The least confidence among respondents was related with the statement concerning physician's care about them as a patient. This may imply either that the examined group of respondents hold more calculative approach to trust when their health and life is at stake, or they have experienced lack of care more frequently than lack of successful treatment in their relationships with practitioners.

7. Discussion and conclusions

Ninety-four percent of the surveyed population maintains regular contact with a doctor annually, facilitating the ongoing development of informed perspectives in this field. However, a concerning 6% of respondents reported no interaction with a doctor in the past year, posing the potential risk of their attitudes becoming deeply rooted and hindering active engagement in the establishment of future doctor-patient relationships. Additionally, a significant 74% of participants utilize medical services consistently, enabling them to observe changes and formulate opinions that they can subsequently share with others (Figure 1).

The predominant share of the medical services market, influencing the public perception of doctors, is held by public healthcare and private visits outside of medical insurance (refer to Figure 2 and Table 3). The research indicates that within the study group, trust decisions are largely influenced by personal authority and the opinions of trusted individuals, surpassing the significance of more objective sources. These include self-assessment of credibility based on publicly available information or endorsements from public authorities like scientific bodies. Notably, there is a discernible decline in the authority of medical recommendations among younger generations (Figure 4, 5).

The pivotal role of registration and telephone contact emerges as paramount, as it caters to the diverse needs of each age group most comprehensively (Figure 6). In the context of selecting a doctor for their care, respondents place greater emphasis on calculative trust in a doctor's competence and the efficacy of their work. The survey underscores that the portrayal of Polish doctors is predominantly framed by notions of professionalism and effective treatment rather than a focus on compassionate support for patients in their illness. In specific scenarios where effective treatment is scientifically unfeasible, anticipated complications arise, or medical errors occur, whether human or technical, there exists a potential risk of further erosion of authority (Figure 7).

In summary, baby boomers value stability and work and are adapting seamlessly to the digital age, but they prefer analogue contact opportunities. As a result, they are less interested in online reviews of medical specialists and signing up for appointments via mobile apps and online portals. Generation X, which is characterised by challenges, prioritises family, uses technology and relies on personal networks, so referrals from specialists among friends and family are particularly important. They appreciate the ability to make specialist appointments over the phone. Millennials value independence, ambition and technology when it comes to making effective healthcare decisions. Generation Z, which is tech-savvy and globally minded, strives for quick results, values independence and relies on digital platforms for healthcare recommendations. Representatives of the younger generations (Y and Z) value the opportunities that technology offers them and are most likely to use mobile apps and online platforms for enrollment.

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CREDIT PORTFOLIO STRUCTURE IN THE LIGHT OF GENERATED RISK AS A FUNDAMENTAL ELEMENT OF A COOPERATIVE BANK'S ACTIVITIES

Rafał SZOPIŃSKI[1], Aleksandra PŁONKA[2*]

[1] Cooperative Bank in Łącko; r.szopinski@bslacko.pl, ORCID: 0009-0005-7672-3453
[2] University of Agriculture in Krakow, Faculty of Agriculture and Economics; aleksandra.plonka@urk.edu.pl, ORCID: 0000-0001-5319-592X
* Correspondence author

Purpose: The primary purpose of this paper was to identify and evaluate the optimal structure for the credit portfolio of a specific cooperative bank, with a focus on both efficiency and the resultant credit risk.
Design/methodology/approach: The paper outlines strategies for sound credit risk management within the credit portfolio structure. Utilizing variable parameters, it provides various examples illustrating the potential development trajectories of a cooperative bank, along with the consequences of decisions concerning the credit portfolio structure which exemplifies risk management within a banking context and the commitment to pursuing both prudent and stable financial activities.
Findings: The research substantiated the idea of formulating an optimal structure for a bank's credit portfolio. It also validated the hypothesis that effective diversification of assets could swiftly recuperate the interest income lost by the examined Cooperative Bank X by increasing other income sources. The study's outcomes affirmed that the cornerstone of effective cooperative bank management lies in maintaining a balanced ratio among various assets, ensuring a sound structure of these assets, and possessing the ability to generate a sufficient level of profit capable of offsetting realized risks.
Practical implications: Applying the acquired knowledge and experiences to craft an optimal credit portfolio model for a cooperative bank.
Originality/value: Emphasizing the importance of the credit portfolio structure of a cooperative bank as a fundamental tool ensuring the security of business activities, bank reputation, and customer trust.
Keywords: credit portfolio, credit risk, cooperative bank, banking.
Category of the paper: case study.

1. Introduction

Cooperative banks, as small units in the financial sector, play a substantial role beyond merely contributing to the establishment of the banking system. They serve as a crucial element in the structure and operation of local economies. The expansive network formed by these financial institutions underscores the pivotal role of cooperative banks in fostering local entrepreneurship, particularly in rural and small municipal areas. Beyond being the initial point of contact for many clients in utilizing standard banking products, they undeniably stand as the primary source of external capital for the local community.

Cooperative banks, functioning as local financial institutions, are acknowledged for their crucial role in supporting local communities. They actively engage in various enterprises that contribute to the integration of local communities. The endeavors of the cooperative banking sector, beyond achieving significant economic and financial outcomes in the market economy, are also dedicated to fulfilling a social function. Notably, cooperative banks had been implementing the strategy of corporate social responsibility long before this concept gained widespread promotion and adoption by commercial entities.

Over several decades since the inception of cooperative banking, the concept of a cooperative bank appears to be timeless. This form of economic activity, grounded in cooperative principles, has proven resilient to the fluctuations in financial markets, adverse effects of the global economy, and world financial crises. Nevertheless, cooperative banking faces increasing competitive pressure from the commercial banking sector. This competition necessitates banks to operate more efficiently. It is crucial to note that these modest financial entities operating in local markets often grapple with limitations stemming from the level of equity capital required to cover lending risks and ensure the safety of their clients' deposits. Moreover, meeting various legal regulations applicable to cooperative banks, maintaining fundamental parameters reflecting their economic and financial standing, and conducting profitable lending activities pose significant challenges for them within competitive conditions.

For cooperative banks to sustain their market share and continue providing financial services to local communities, enhancing the effectiveness of their operations is imperative. This necessitates the adoption of solutions that seamlessly integrate efficiency with risk management. A fundamental mechanism for mitigating credit risk involves ensuring the proper structure of a bank's credit portfolio, including diversification and appropriate proportions tailored to the specificities of cooperative banks' operations. A bank's continuous commitment to maintaining an appropriate and secure structure for its credit portfolio, coupled with effective resource utilization, directly influences the security of its activities, its reputation, and client trust. Conversely, an inadequate credit portfolio structure can, in a short span and without warning signals, lead to the collapse of a bank. A high number of impaired loans and the subsequent need for creating loan-loss provisions, resulting in a decline in key performance indicators, can, in extreme cases, trigger a significant outflow of deposits, erode client trust, and prompt the withdrawal of clients' savings from the bank. This, in turn, severely constrains the bank's capacity for further lending, hindering its ability to generate financial results that ensure stable and secure growth.

2. Material and the research method

The primary purpose of the paper was to identify and evaluate the optimal structure of the credit portfolio of the selected cooperative bank. The evaluation of the structure focused on both its effectiveness and the associated credit risk.

The paper utilized data from Cooperative Bank X, operating in Little Poland Voivodeship and its neighboring counties. During the analyzed period, Cooperative Bank X exhibited the following economic parameters:

- The balance sheet total amounted to PLN 560 million,
- The total value of the own funds was PLN 32 million,
- The total capital ratio was 17.5,
- Granted loans totaled PLN 245 million,
- Impaired loans constituted 3% of the total amount of granted loans,
- The ratio of impaired loans coverage with provisions stood at 60%,
- The C/I ratio was 70%,
- The number of the bank's clients was 92,800 entities,
- The number of active credit agreements was 5410,
- The number of active deposit contracts was 6900,
- The number of held bank accounts reached 24,500.

To fulfill the research objective, the study drew upon internal documentation of the bank, such as the Bank statutes, Organizational rules, operational strategy, Strategy for risk management, and Credit risk management policy – an integral component of the economic and financial plan. Additionally, external regulations were consulted, including, among others:

- Banking Law (Act…, 1997),
- Regulation of the Finance Minister on the principles of creating provisions for the risks related to the activities of banks (Regulation…, 2015),
- T Recommendation (2013) and S Recommendation (2019) of the Financial Supervision Authority,
- Regulation of the European Parliament and European Council (EC) on prudential requirements for credit institutions and investment companies (Regulation…, 2013).

The paper outlines effective methods for credit risk management within the credit portfolio structure. Utilizing variable parameters, it provides several examples illustrating the potential development paths for cooperative banks and the consequences of decisions concerning the credit portfolio structure that illustrates risk management within a banking context and pursuit of both prudent and stable financial activities. Each example showcases how diverse credit exposures influence the capital ratio. Continuous monitoring of the value of the capital ratio (TCR) is essential, and accurate estimation during the crediting process is crucial in understanding the impact of a specific credit exposure on existing limits and the utilization of available capital. The capital ratio, representing the ratio of own funds to risk-weighted assets, serves as an indicator of a bank's ability to cover the minimum capital requirement for operational and other credit risks with its own funds. This is a fundamental parameter for ensuring the safety of bank activities, and the minimum value for the analyzed Cooperative Bank was determined to be 13.5%.

3. Characterization of cooperative banking

Cooperative banks or credit unions are prevalent in nearly all European Union states, with many institutions tracing their origins back to the latter half of the 19th century or the early 20th century. Rooted in the concepts of the rural Raiffeisen bank (Sadowska, 2019) or urban popular Schulze-Delitzch bank (Rolski, 2019), cooperative banks swiftly evolved to become integral and well-established components of the banking systems across EU countries. While sharing fundamental cooperative values, their business models have diverged significantly over time, not only across Europe but also within individual countries (Lepczyński, 2017). Despite these variations, all cooperative banks function as universal banks, providing clients access to financial services through both traditional channels, such as brick-and-mortar offices, and modern ones, including internet and mobile banking (Rolski, 2010). Unlike their early days when they actively supported the fight against exploitation and market exclusion of economically weaker social groups (Rosa, 2019), contemporary cooperative banks bear little difference from commercial banks in their operational methods (Kura, Płonka, 2023). Although generally small, these entities exhibit vibrancy and possess a remarkable ability to adapt swiftly to a changing environment, exerting a stabilizing influence on the banking services market during financial crises (Gostomski, 2019). A notable advantage of cooperative banks lies in their extensive network of branch offices strategically located near clients' workplaces or places of residence, coupled with a strong emphasis on providing excellent customer service (Sadurski, 2015).

Cooperative banks boast a substantial and steady deposit base, primarily extending loans to small and medium-sized businesses during periods when larger banks exhibit a temporary lack of trust. This lack of confidence may arise due to factors such as the international financial market situation or issues related to liquidity and reputation. As highlighted by Migliorella (2020), in the aftermath of the economic and financial crisis that eroded the reputation of commercial banks (Łukaszuk, 2018), cooperative banks identified a distinctive advantage setting them apart from traditional commercial banks — namely, their emphasis on membership and local impact. Since this realization, cooperative banks have effectively filled this void, assuming the role of stabilizers in the domestic economies of numerous EU countries (Belaisch et al., 2001; Fitch, 2003).

Cooperative banking has had a longstanding presence in Poland since the 19th century, playing a crucial role in the country's banking system across different epochs, including the present day. Notably, every third banking entity in Poland operates as a cooperative bank. As of the end of the first quarter of 2023, there were 492 cooperative banks in operation, collectively employing nearly 28 thousand individuals. This workforce accounted for over 18% of the total employment within the banking sector. The distinctive features that set cooperative banking apart from other bank types include its legal form as a cooperative, a mission that extends beyond profit-making to also maximize benefits for shareholders, geographical location primarily in rural areas or small towns, and a multigenerational tradition of market presence coupled with an in-depth understanding of local client needs (Płonka et al., 2023).

4. Banking risk – definitions, essence and generating factors

Banks, under escalating pressure from various environmental factors, including the economic and regulatory landscape, as well as the imperative of generating increasingly higher profits, find themselves compelled to perpetually enhance their economic effectiveness. The heightened volatility of fundamental macro-economic parameters further contributes to fluctuations in the risk level associated with their economic activities. Consequently, risk emerges as an inherent element intertwined with the pursuit of business objectives.

Risk can be defined as "the possibility of the occurrence of such a sequence of events that will cause the failure to achieve the planned business objectives" (Żółtkowski, 2017). Alternatively, another perspective defines risk as "deviation from the set values, whether positive or negative" (Jaworski, Zawadzka, 2008). Kalinowski (2012) offers another definition, characterizing risk as "a degree of uncertainty regarding loss occurrence, without addressing the likelihood of its occurrence. However he draws a clear distinction between risk and uncertainty, and portrays risk as the "combination of hazard measured by means of probability", contrasting it with uncertainty, which he defines as the "degree of conviction" (Kalinowski, 2012). Aligned with the research purpose of this paper, risk is construed as the "possibility of failure to achieve the intended objective (effect), i.e., a negative deviation from the desired state" (Iwanicz-Drozdowska, 2017). From a purely economic standpoint, "risk occurs insofar as it causes, directly or indirectly, financial loss" (Best, 2000).

There exist various classifications of risks associated with banking activities, and one of the most crucial among them is credit risk, which is defined in diverse ways. From the standpoint of timeliness, credit risk is characterized as the "impossibility of the credit recipient to repay their financial commitments in full or in part within the due time limit" (Gątarek et al., 2001). Alternatively, concerning adherence to terms within the specified time frame, credit risk is defined as the "risk of the possibility of the credit recipient's failure to abide by the terms of the contract within the due time limit, resulting in the bank not receiving the payment as per the contract within the expected time frame" (Jajuga, 2007). Examining credit risk in the context of repayment feasibility, Krysiak (2006) defines it as the "danger that the credit recipient is unable to repay their commitments," while Wiatr (1999) characterizes it as the "risk of financial loss when the company with which a bank cooperates stops paying its financial commitments or when the market situation may force the company to do so".

Factors impacting credit risk, as outlined by Gruszka and Zawadzka (1992), encompass a range of types:

- economic factors: a low value of a bank's equity, high credit and loan burden, as well as external influences such as exchange rate changes and inflation,
- social factors: financial education on credit transaction safety and the level of awareness among clients, particularly in rural areas,
- political factors: amendments to legal regulations,
- demographic factors: clients' migration from rural areas to larger agglomerations and the aging of cooperative banks' clients,
- technical factors: insufficient financial outlays for the implementation of new technologies, systemic and consociating difficulties, and the duplication of IT projects.

Another division of factors influencing risk generation in a bank's lending activity can be categorization by the scale of impact and place of origin. These factors can be broadly classified as either macroeconomic or microeconomic in nature. Macroeconomic factors primarily encompass interest rates, exchange rates, as well as the prices of raw materials and real estate prices. Microeconomic factors are factors related to:

- Unreliable, incomplete information about the economic entity applying for credit.
- A credit recipient's low own contribution with a relatively high need for external sources of investment financing.
- Lack of well-qualified staff capable of properly assessing or initially predicting credit risk based on provided data.

- Incorrect procedures, internal instructions within a bank.
- Issues connected with an intention to obtain credits through fraudulent means.
- Chance events that are difficult to predict.

One of the factors directly contributing to an excessive increase in credit risk for cooperative banks is the credit portfolio structure. Indirect causes of an improper credit portfolio structure include:

- Failure to properly identify the risk linked to a specific group of credit recipients.
- Lack of appropriate limits on the size of a given portfolio.
- Inadequate identification of external factors.
- Insufficient knowledge of the investment or industry in which the credit recipient operates.
- Financial result pressure.
- Inappropriate adaptation of resources to granted credit exposures in terms of capital and capacity to cover current losses.

As cooperative banks vary in their activities, scope of operation, and specificity, each cooperative bank should correctly identify all the factors contributing to the generation of excessive risk affecting operating activities, particularly credit risk. This identification is essential for the development and implementation of mechanisms aimed at mitigating the factors that generate various risks, thereby facilitating the cautious and stable functioning of a cooperative bank within a dynamic macro and microeconomic environment.

5. Credit portfolio in relation to stages of scaling in a Cooperative Bank's operations

During the transformation of the cooperative banking sector, numerous models emerged, delineating the independent functioning of individual entities. Some of these models were replicated, while others were specifically adapted to meet market requirements and align with the capabilities of banks. Nevertheless, these models were so distinctive that it is worthwhile to delve into the circumstances under which they were created and explore their impact on the current state of the cooperative banking sector.

One of the fundamental models for structuring a bank's credit portfolio involved the adoption of a homogeneous credit portfolio comprising financial instruments with a 0% risk weight. This primarily included long-term variable-interest-rate and fixed-interest-rate treasury bonds, along with treasury bonds with a maturity of 7 days. Funding for such a portfolio is derived from the overnight and fixed-term deposits of bank clients. The maximum size of the credit portfolio is determined by stable core deposits, and it is designed to remain below 70% of the balance sheet total. The cost of liabilities (stable fixed-term and overnight deposits) in the case of the analyzed Cooperative Bank X in the adopted credit portfolio model was at 0.7%. Considering that the profitability of the assets, namely the credit portfolio consisting of financial instruments issued by the State Treasury, comprised solely of treasury bonds with a yield of 1.4%, the interest margin for such a portfolio fluctuated around 0.7%.

In the second model, it was assumed that Cooperative Bank X aimed to enhance the effective management of its assets, prompting a change in the credit portfolio structure to achieve a significantly higher interest margin. The magnitude of this margin, however, depended on the acceptable appetite for credit risk and the profitability of various financial instruments constituting the credit portfolio. Cooperative Bank X accordingly adjusted its credit portfolio structure to attain a higher interest margin and generate a satisfactory financial outcome. To achieve this, the bank sold a substantial portion of its treasury bonds portfolio and acquired a different financial instrument that was equally safe, with a 0% risk weight, but offered higher profitability. This new instrument comprised variable-interest-rate and fixed-interest-rate treasury bonds with a maturity of 10 years. With three distinct financial instruments featured in the bank's assets and their overall profitability determined, the average interest of the assets reached 2%, while the cost of liabilities remained unchanged at 0.7%. Consequently, an interest margin of 1.3% was achieved, accompanied by a higher net interest income. In this model, despite the absence of an appetite for credit risk, the bank generated a positive net interest income.

To enhance the interest margin, in another model, Cooperative Bank X established an acceptable appetite for credit risk and replaced a portion of its assets (40%) with credits and loans, funding them through stable core overnight and fixed-term deposits. This strategic shift resulted in the credit portfolio's average interest reaching profitability at 3.3%. Concurrently, the bank maintained the cost of raising funds at 3.3%, consistent with previous models. As a consequence, Bank X achieved an interest margin of 2.6%, leading to a significantly higher net interest income. Under this credit portfolio structure, each PLN million translated into PLN 26 thousand in income per year. Encouraged by a high net interest income, the bank expanded its appetite for risk by replacing a larger proportion of safe financial instruments with credits and loans, particularly large-value credits and loans for private entrepreneurs and companies—institutional credits (comprising 65% of loan commitments relative to the balance sheet total, with a set limit of 70%). This strategic move further increased the interest margin from 2.6% to 3.2%, resulting in an even higher net interest income. Additionally, the introduction of extensive lending led to increased income from commissions on granted credits and loans. Fixed costs of liabilities, coupled with interest income and income from commissions, generated substantial revenue. Non-performing credits stood at around 3%, while the ratio of non-performing loans coverage with loan-loss provisions met the required level of 30%. The bank successfully achieved its main strategic objective—increasing the effectiveness of its activities while maintaining the set risk appetite. It also generated a high financial result at the end of the financial year, transferring 90% of the generated profit to current reserves, thereby improving its capital adequacy and expanding its capacity for further growth and lending. As these measures yielded the desired effects, the resulting credit portfolio structure comprised institutional credits representing 70% of the whole portfolio, followed by retail loans, loans granted to local government units, and loans targeted at farmers (Fig. 1). Overall, loan commitments represented 65% of the balance sheet total. Impaired credits and loans constituted less than 3%, showcasing the high quality of Cooperative Bank X's credit portfolio.

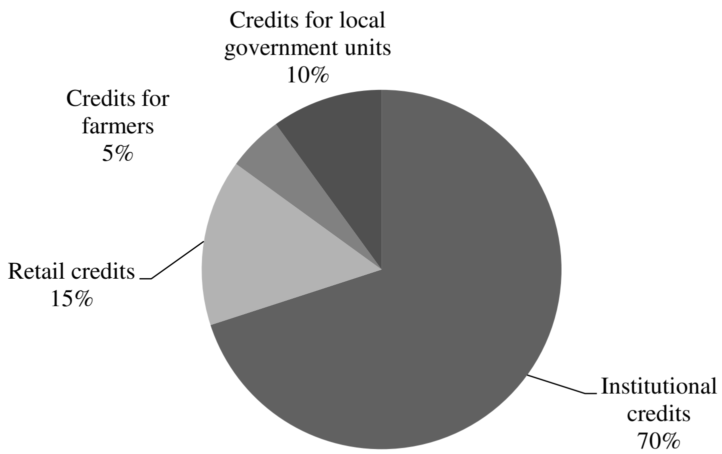

Figure 1. Structure of the bank's credit portfolio enhancing the effectiveness of its activity while maintaining the set risk appetite (%).

Source: own study based on the research.

In the presented model, Cooperative Bank X successfully achieved the intended credit portfolio structure without exceeding set limits that would directly impact credit risk reduction. This includes limits for specific industries, concentration limits for affiliated entities, and limits on applied safeguards. The total capital ratio surpassed the required level of 13.5% and was close to 14%. Utilizing the basic parameters of Cooperative Bank X's activity and adhering to statutory limits on the total exposure amount for a single entity or a group of companies related by equity or organizational structure, the bank could grant the highest credit exposure at the level of PLN 7 million. Its annual net profit reached PLN 4 million. Approximately 80% of the entire credit portfolio in Cooperative Bank X was identified as significant credit exposures, exceeding 5% of own funds (involving 43 credit agreements with a total balance sheet exposure within the range of PLN 5-7 million). The interest margin increased to 3.4%. Despite a low ratio of impaired loans to total loans at 3.5%, the bank accepted a higher credit risk appetite. The value of established loan-loss provisions also remained at an acceptable level of 40%.

It is worthwhile to analyze a hypothetical situation in which, despite maintaining the desired structure of the credit portfolio, the interest margin of Cooperative Bank X started to decrease. Similarly, the income from commissions would also decline. Conversely, the costs of obtaining liabilities slightly increased from 0.7% to 0.8%. Despite these challenges, the annual material and financial plan of Cooperative Bank X would still aim to achieve a profit at a similar level as in the previous year. These assumptions are substantiated by the identification of a deteriorating economic and financial situation for several clients of Cooperative Bank X. In two cases, quarterly credit exposure controls revealed nearly a 50% decline in turnover and a significant loss of financial liquidity. For another two clients of the bank, underestimations of the costs of investments were identified, and without additional capital, timely completion of the investments was impossible. The adopted projections were not realized, and cash flows remained negative. Additionally, the grace period ended for one client with a total balance sheet exposure of PLN 6.5 million, and the bank expected repayment of the principal and interest installments in accordance with the schedule. However, this proved impossible. The investment did not generate the target income, and given the situation, the client applied for postponing the repayment of the principal and interest installment by another 24 months.

Following audits, Cooperative Bank X classified and moved 4 credits with a nominal value of PLN 24 million to non-performing credits "below the standard." For the first two clients, despite using purchased process lines and specialist machinery as collateral, it did not allow the bank to take advantage of the reduced basis for calculating loan-loss provisions. Additionally, the delays in payment exceeded 90 days. In the case of the third client, the bank leveraged the opportunity to reduce the basis for determining the provision amount due to the sufficient value of the mortgage collateral. However, with another client, due to underestimation of investment costs, unplanned expenditure, lack of required permits, and inconsistency between the investment execution and the approved construction plan, the real value of the collateral was only the land with the possibility of development. This situation also did not permit the bank to take advantage of the reduced basis for determining loan-loss provisions. As a result, at the end of the financial year, Cooperative Bank X increased the required loan-loss provisions to PLN 4.8 million, while generating a net profit of PLN 3.8 million. Consequently, it recorded a loss of PLN 1 million. Simultaneously, the bank launched its Remedy program, which assumed coverage of this loss in the following year as well as improvement of the economic and financial situation of clients with identified risks of failure to timely repay the credits taken out.

Following the closure of the financial year, additional 3 cases requiring classification and the necessity of creating PLN 3.5 million in required loan-loss provisions were identified during quarterly monitoring. Despite efforts to manage the previous credit exposures, the desired effects were not achieved. This compelled Cooperative Bank X to create another PLN 5 million in loan-loss provisions at the end of the year, resulting in a loss of PLN 4.5 with the net result at PLN 4 million. In the subsequent year, additional loan-loss provisions of 100% were established for three clients, leading to a negative financial result and necessitating the coverage of losses with core capital. Furthermore, the risk of reputation loss materialized, causing a significant portion of clients to withdraw their deposits. This disruption significantly impacted the basis of stable core deposits necessary for financing lending activities. The capital ratio fell far below the required level of 8%. Consequently, the bank was unable to sustain its lending activity and was eventually taken over by another entity.

The aforementioned cases illustrate the stages of the bank's development, correct objectives, and an increase in the scale of operation. However, the failure to properly identify credit risk resulted in the development of an inappropriate credit portfolio structure. The excessive increase in high-value credit exposures necessitated the creation of additional loan-loss provisions that could not be covered with the current financial profit. Several factors contributed to this situation, including the financial and economic conditions of individual credit recipients, the overall economic situation, chance events, and the impact of market saturation or excessive competition. These factors occurred simultaneously and were beyond the bank's control. Moreover, the credit portfolio structure proved to be very vulnerable to events of this nature and, consequently, led to the bank's collapse

6. Optimal credit portfolio of a cooperative bank

Retail credits, including cash credits, loans, and credits to satisfy basic housing needs, have consistently formed a significant portion of the exposures granted by the analyzed Cooperative Bank X. The credit portfolio structure, considered optimal in terms of generated credit risk and profit, and one that is not highly sensitive to economic turbulence and potential issues of credit recipients conducting economic activities, should include the following distribution: retail credits (60%), institutional credits (25%), credits for local government units (10%), and credits granted to farmers (5%) (Fig. 2).

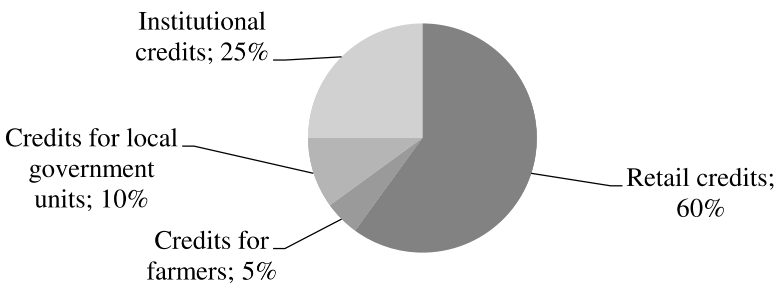

Figure 2. Optimal credit portfolio structure of Cooperative Bank X in terms of generated risk (in %).
Source: own study based on the research.

In the proposed optimal credit portfolio structure, retail credits hold the largest share, representing 60% of the entire credit portfolio. This category includes:

- Cash credits and loans, constituting 48% of retail credits. These encompass low-value exposures ranging from PLN 500 to PLN 255,000.
- Home loans, accounting for the remaining 52% of retail credits. These represent credit exposures within the range of PLN 50,000 to PLN 1 million.

The cash credit portfolio is characterized by a significant degree of fragmentation, with low-value and short-term exposures ranging from 6 to 36 months. This results in a high portfolio turnover, contributing to relatively low credit risk combined with a high-interest margin, thereby enhancing the overall effectiveness of the credit portfolio. However, to achieve this particular structure, where 60% of the entire portfolio comprises retail credit exposures, the process of granting retail credits must be well-organized, compliant with all legal requirements, and adhere to the good practices outlined in the Financial Supervision Authority's recommendations. To ensure the quality ratio of the retail credit portfolio does not exceed 1.5%, Cooperative Bank X employs various credit risk mitigation techniques. For transactions up to PLN 12,000 for the Bank's clients, no security is required, while transactions exceeding this threshold necessitate a bill. Higher-risk or higher-value transactions involve additional security measures, such as surety by financially liable individuals or mortgage collateral. When granting cash credits, the Bank also monitors the Debt to Income (DtI) ratio, assessing the ratio of payments related to managing credit and other financial obligations to the client's income. The Bank, in compliance with existing legal regulations, has set the maximum DtI rate at 60% and analyzes its established value in correlation with the credit portfolio quality.

The home loan portfolio constitutes the second-largest share of retail credits granted to natural persons by Cooperative Bank X, representing 50% of the entire retail credit exposure portfolio. This portfolio involves transactions ranging from PLN 100,000 to PLN 1 million and is designated for fulfilling basic housing needs, such as the acquisition of an apartment or house construction. Notably, home loans are not extended for the purchase of residential real estate intended for commercial purposes. The primary security for home loans is a proper entry in the land and mortgage register for the real estate involved in the transaction. The maximum duration of these loans is 25 years. The portfolio's profitability stands at approximately 4% per year, and the quality ratio is 0.5%. Home loans utilize 35% of the bank's capital, provided that these transactions are secured by a mortgage. This security measure accounts for approximately 80% of all mortgage security in Credit Bank X's credit portfolio. Within this category, the credit portfolio also includes exposures offered as loans (ranging from PLN 50,000 to PLN 200,000) for any purpose, secured by a mortgage. These loans make up about 2% of the entire retail credit exposure portfolio, with a profitability of around 7%. The key determinant for granting a home loan at Cooperative Bank X is the creditworthiness of the borrower, defined as the "capacity to repay the contracted credit along with due interest at dates specified in the contract" (Law…, 1997). To assess creditworthiness, the Bank evaluates the borrower's (or borrowers') income, monthly financial obligations, and the costs of living within the household, which in accordance with the guidelines of the Financial Supervision Authority are set at the level of existential costs for credit exposures of over 60 months.

In the presented Cooperative Bank X, the credit portfolio designated for institutional clients comprised 25% of the entire credit portfolio, amounting to approximately PLN 63 million in nominal value. Notably, credits up to PLN 1.6 million constituted 90% of all institutional credits, with the remaining 10% representing credits ranging from PLN 1.6 million to PLN 4 million. Importantly, the value of the most substantial credit exposures within this portfolio did not surpass PLN 4 million for a single borrower or entities related to one another, despite the fact that the available own funds could have supported exposures nearly twice this value. Cooperative Bank X adhered to a limit determined by the generated net profit throughout the year, earmarked to cover potential losses in the current financial year.

Credits granted to local government units are characterized by a low risk weight and a high level of transaction security. However, their share in the overall credit portfolio of Cooperative Bank X is moderate, standing at 10%, due to their relatively low profitability (around 2-2.5%). These transactions were high in value, ranging between PLN 1 million and PLN 12 million, and subject to a different limit compared to institutional credits. Throughout the extensive 120-year history of Cooperative Bank X, there has not been a single case of reclassifying a credit for local government units to a higher risk category. To diversify the bank's assets, credits for local government units served as an alternative to bonds and other securities with similar profitability.

Credit exposures granted to finance agricultural activities accounted for the smallest share in the credit portfolio structure of Cooperative Bank X. These credits, extended to farmers, fell within the value range of PLN 50,000 to PLN 350,000. The profitability of this portfolio was approximately 5%. It's worth noting that the bank did not extend credits to agricultural undertakings.

7. Conclusion

The proper management of a cooperative bank relies on maintaining the right proportion between different assets, ensuring a sound structure of assets, and having the capacity to generate an appropriate level of profit to cover materialized risks. Unfortunately, this objective cannot be achieved by a bank within a relatively short period of time. Developing and implementing an effective strategy for managing a cooperative bank typically necessitates several years of systematic revision and ongoing adjustments of strategic objectives based on prevailing macro- and micro-economic conditions. Well-formulated objectives not only ensure the security of a cooperative bank's clients' deposits but also contribute to the financial stability and growth capacity of the bank. In times of crisis, these objectives play a critical role in enabling the bank to survive.

The attainment of the research objective outlined in the paper, which presented the appropriate structure of a cooperative bank's assets, with a specific emphasis on the proper diversification of the credit portfolio amidst an unforeseen global crisis, underscores the significance of the addressed issues even more prominently. The case of Cooperative Bank X and its credit portfolio structure exemplifies that the bank created a robust "financial cushion" over several years, enabling it to navigate the recent economic downturn effectively. The prudent diversification of assets facilitated a swift recovery of lost interest profit, a consequence of interest rate reductions implemented to counter the economic repercussions of the coronavirus pandemic, by increasing alternative income sources.

The smallest banks, relying on homogeneous financial instruments tied to the basic reference rate, were disproportionately affected, a trend that is likely to persist. The reduction of this rate to 0.1% in 2020 resulted in these banks losing almost all their interest incomes. However, even large and medium-sized cooperative banks, which failed to establish suitable financing structures or enhance sales processes to fortify their market position, also confronted the risk of collapse. The inappropriate structure of a bank's assets and liabilities, notably in terms of credit portfolio structures, unmistakably signals, especially in times of economic downturn, that management errors were made in the bank's past.

It should also be noted that financial results in cooperative banks are very sensitive to changes in interest rates. Non-interest income is only a small fraction of the total financial result. They are strongly dependent on trends on the interbank market. The optimal structure of assets and liabilities in a bank should eliminate as much as possible the risk of loss of interest income in the event of an unfavorable drop in interest rates. It should be ensured that the bank's assets and liabilities are characterized by appropriate diversity and, if necessary, they should be stabilized with derivatives. Appropriate and well-thought-out management of the loan portfolio structure must go hand in hand with strategic management of interest rate risk, because inappropriate decisions that deepen the interest rate risk may also lead to the loss of financial results and, consequently, to the loss of the stability of the bank's operations and the ability to cover the generated risk.

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DIGITAL NOMADS AS RECIPIENTS AND USERS OF THE CITY'S OFFER. STATUS AND PROSPECTS OF RESEARCH

Aleksandra SZTUK

Wroclaw University of Economics and Business; aleksandra.sztuk@ue.wroc.pl, ORCID: 0000-0002-1845-0363

Purpose: This paper aims to identify the current state of knowledge and ongoing research related to the digital nomad segment from the perspective of territorial marketing.
Design/methodology/approach: The Scoping Review method was used, and the research material was collected from 3 databases: Scopus, Web of Science, and the Google Scholar academic browser. In order to graphically present the research conducted by scientists relating to digital nomads, VOSviewer software was used to build a map of connections between keywords appearing in publications.
Findings: Based on the Scoping Review, the author notices a sudden interest in the academic community in the issue of digital nomads, particularly in business economics and social sciences. The analysis of the collected materials allows to conclude that the technological facilities offered by territorial units are one of the critical features of the city as a destination from the perspective of digital nomads. Moreover, the author indicates that the characteristics of the profile of the digital nomad group require constant updates to conduct effective marketing communication of cities with this target group. Place marketing theorists and practitioners looking for effective ways to attract digital nomads should also focus on the possibilities of cooperation with residents because their attitudes and opinions strongly influence the perception of the city.
Originality/value: So far, few studies have combined the issue of digital nomads as a group of consumers of the city's offer with the area of city marketing. This paper consolidates previous findings in this area. The last part of the paper proposes future research directions, the results of which may positively affect the effectiveness of marketing activities used by territorial units to gain the interest of digital nomads.
Keywords: digital nomads, territorial marketing, place marketing, destination marketing.
Category of the paper: Research paper.

1. Introduction

Development of mobile technologies have revolutionized the modern labor market in recent years. In particular, the pandemic period contributed to the popularization and widespread use of the possibility of performing work duties remotely. Due to globalization and the digital transformation of many places and job positions, digital nomadism has become a rapidly developing trend in the labor market (Fibinger, 2021). The phenomenon of digital nomadism itself is defined as a traveling lifestyle with simultaneous paid work, which is enabled by access to mobile tools and technologies (Hannonen, 2020). Digital nomads are fully mobile remote workers who constantly change their residence, combining work duties with exploring visiting place and local culture. It is noted that nomads are one of the newest and fastest-growing groups of potential consumers of urban offers. This trend has caused high interest in the academic community (de Almeida, 2021), which can be observed based on the dates of published research.

Researchers indicate that the perception of the city's image, which includes the urban offer (Glińska, 2012), varies depending on the target group (Zenker, Beckmann, 2013). This means that designing a city's marketing strategy, including modifications to its offer, should correspond to a given segment of recipients' expectations, needs, and perspectives of reception. Therefore, knowledge about the factors influencing the choice of destination or the use of urban space by digital nomads is an essential source to help local authorities attract nomads.

This paper summarizes the existing research linking the digital nomad segment and city marketing. Based on the collected data, author also indicates directions for further research, the results of which would deepen the current knowledge that could benefit cities' development and competitiveness.

2. Digital nomads in the context of territorial marketing

Territorial marketing can be perceived as a system supporting the implementation of the goals of local authorities, thus contributing to the development of a given place (Florek, 2006). Although the main focus of place marketing should be residents (Szromnik, 2007), designing and promoting an offer that attracts external stakeholders determines a place's competitiveness, including residents' living standards. Consciously constructing a city's marketing strategy that supports the effective implementation of important goals, the path to achieving them and monitoring the effects significantly affects the city's economic and social situation.

Digital nomads are remote workers who combine work with travel, constantly changing their location. The duration of stay in a given destination is approximately 1-3 months, and according to data from the previous year, their number is currently 35 million in the world and constantly growing (Tagliaferri, 2022). What is important from a marketing point of view is that digital nomads choose their destination based on issues related to an exciting culture and the opportunity to relax, and not because of the labor market in the visited destination (Müller, 2016), which distinguishes them from emigrant workers. However, the issue that distinguishes their perception of the urban offer from the perspective of traditional tourists is the importance of the availability of digital infrastructure (Sari, Jason, 2023).

Digital nomads influence the development and competitiveness of destination on several levels, which is why they are perceived as a valuable group of potential consumers for territorial units. The most apparent benefit for cities hosting digital nomads is the economic value they bring during their stay. Due to the specificity of the trip, digital nomads consume tourist, gastronomic, cultural, residential, and gastronomic products offered by a given city. In particular, they bring economic value to the tourism and hospitality industry in the places they visit (Svobodová, 2022). Due to the desire to explore not only the visited area but also local culture and identity, they are often interested in purchasing local products, which may additionally influence the development of local businesses (Vagena, 2021). Moreover, benefits from the presence of digital nomads can be seen in city promotion area. Nomads are active social media users, describing the destinations they visit, sharing impressions and experiences from travel, providing recommendations, and popularizing this type of lifestyle (Bonneau, Aroles, 2021). By disseminating information about the cities they visit, nomads increase awareness, reputation, and image of the place among the recipients of the content they create, which indirectly affects, among others, the development of the tourism industry (Mladenović, 2016). Moreover, research shows that most digital nomads obtain information about their future destination from online sources, e.g., thematic groups and forums where nomads share experiences and photos from the places they visit (Sztuk, 2023). Thanks to this, cities hosting digital nomads who are satisfied with their stay can count on informal ambassadorial attitudes on their part, which can be an effective form of promoting a territorial unit, especially within this group.

3. Methodology and results of the study

In order to determine the current state of knowledge and research related to digital nomads from the perspective of territorial marketing, the scoping review method was used. This type of review, in its methodological foundations, assumes systematic analysis and registration of collected materials, including discoveries and definitions relevant to the researched issues. As a result, a scoping review of literature enables the synthesis of knowledge in the explored topic and the possible identification of research gaps. Unlike a systematic review, a scoping literature review allows for changing, expanding, or narrowing the topic of the review and, thus, the number and type of keywords used during the analysis. This type of review is recommended when the literature on the subject under study is scattered (Mays, Roberts, Popay, 2001).

The review began with formulating the topic to identify the current state of knowledge and prospects for future research related to digital nomads as potential city customers. The examined issues were set in the area of territorial marketing. The keywords used in the first stage of searching for appropriate sources were "digital nomads AND place OR city OR territorial marketing" (as synonyms often used by place marketing researchers). Then, three sources were selected to conduct the review: the licensed Scopus and Web of Science databases and the publicly available academic browser Google Scholar, due to the diverse scope of each database. The inclusion criterion included only limiting the searches to studies prepared in English. In the Scopus database, it brought 1 result; in the WoS database, the keywords used provided 3 results. Due to the relatively low return rate of the searched articles, it was decided to expand the search area using the following keywords in the databases: "digital nomads AND city." In this way, 19 records were obtained in the Scopus database and 6 in the WoS database, again using the criterion of inclusion of materials prepared in English. In each case, the research material for review was qualified based on abstracts. Articles whose content differed significantly from the purpose of the analysis were rejected, including those related to globalization and education, adapting national policies to remote work, or introducing the work hybridization process in companies. The keywords were also used in the Google Scholar browser, and the return of results was much higher compared to the two licensed databases. Ultimately, 28 articles and 4 post-conference materials were analyzed.

The largest group of analyzed studies contained information on the characteristics of digital nomads, which is critical data when designing offers addressed to them. Demographically, most nomads are Western citizens with relatively high incomes (Bonneau, Aroles, 2021) and are usually highly educated and specialized in their industry (Green, 2020). A feature that characterizes nomads is their high entrepreneurship (Jarrahi, 2019). Digital nomads are independent of the place of performance of their duties, and most of them are freelancers; these self-employed people perform specific work, projects, and commissioned orders without having a superior. Their most frequently performed professions include programming, education, marketing, journalism and travel reporting, translation, financial, banking, and legal consulting (Cook, 2020; Green, 2020).

Nomads consider themselves conscious travelers who care about in-depth knowledge of the local culture of the place they visit to a much greater extent than is the case with traditional tourists (Kannisto, 2014; Putra, Agirachman, 2016). On the other hand, research on how they spend their free time shows that they do not show any significant differences between ordinary tourists (Thompson, 2019). However, in marketing, knowledge of the target group's self-identification is crucial to adapting effective messages promoting the city. Multiple changes in place of stay, autonomy of action, and deciding on the time and scope of official duties have caused such a strong habit among many nomads that they want to avoid settling in a permanent residence (Fibingier, 2020). Therefore, the trend of digital nomadism may be relatively constant. From the perspective of the development of tourism in peripheral places, Almeida and

Belezas (2022) indicate that the trend of digital nomadism may be an opportunity, particularly for peripheral areas attracting nomads. However, Sztuk (2023) based on empirical research among an international group of digital nomads, indicates that although the size of the visited destination is unlikely to be important when choosing it, villages and peripheral areas are a rarely chosen type of territorial unit as a destination.

As a result of the literature review, a set of articles was also identified that indicated specific features of destinations that were particularly important from the perspective of digital nomads. In the context of climate and environment, warm destinations are a common choice for digital nomads (Thompson, 2018). Additionally, most nomads find attractive places that offer affordable accommodation prices, have an exciting culture, and are safe - having a low crime rate (Sztuk, 2023). However, in one of the latest analyzed articles, the authors (Sari, Jason, 2023) put forward the thesis that some existing theoretical frameworks for place branding require updating. This is due to a new but rapidly growing group of consumers interested in combining leisure with work. Currently, in addition to the generally attractive features of destinations (location, natural and cultural resources, heritage), digital infrastructure has become particularly important. The authors emphasize that cities should include information on the remote work opportunities offered within the territorial unit in their brand promotion strategy. Digital infrastructure is provided by facilities equipped with wireless Internet and coworking spaces, which are particularly popular among digital nomads. These facilities consist the possibility of paid use of space in the office, which is fully equipped and provides a working atmosphere conducive to productivity and establishing interpersonal contacts - professional and social (Brown, 2017). Vogl and Micek (2023) analyzed the relationship between coworking spaces and the hotel industry in Germany based on the collected data. The authors recommended changes in the strategies of hotel entities due to the emerging opportunity resulting from the growing demand for coworking spaces, including by digital nomads. The conclusion confirms the assumption about the necessary digital infrastructure in cities that strive to attract nomads. Also, Baluk et al. (2017), based on a case study of the Russian city of Tyumen, propose a model of an information system supporting the movement and use of the city by digital nomads, emphasizing primarily the importance of the Internet and its accessibility. Other researchers (Alekseevna et al., 2019), based on cartographic databases of two tourist regions, identified places where Wi-Fi was available and the possibility of practicing sports, thus indicating optimal points for nomads and proposing the creation of a nomad tourism cluster in these regions. Therefore, it should be recognized that the factor of digital infrastructure, and above all, the availability of high-speed wireless Internet, which is spread over numerous points of a given destination, is a crucial element influencing the attractiveness of the place from the perspective of digital nomads. Moreover, based on interviews with digital nomads in one of the Thai cities, Lhakard (2022) also distinguished another essential feature of the city: managing a territorial unit. The author points out the importance of transparency of the authorities' actions and the involvement of the local community, which makes efforts to develop the city.

A significant problem was addressed by Sánchez-Vergara, Orel, and Capdevila (2023), who discussed the issue of visa systems designed for digital nomads in the context of a destination strategy adapted to current trends, acquiring new customers and talents. The authors, in turn, pointed out that the choice of destination is not dictated only by the city's cultural, natural, or technological features but also by visa policy and residence regulations. This seems obvious, but the authors emphasized the transparency and understandability of these rules. Complicated regulations cause digital nomads to worry about their legal situation before departure (Orel, 2021). This, in turn, may result in giving up choosing a given destination. Svobodová (2022) analyzed visa policies in 23 countries to indicate the changes implemented in the context of attracting larger groups of nomads. It was observed that there has been an increase in countries that have already introduced special rules and visa preferences aimed at nomads or are in the process of designing these changes. Most often, the period of legal stay of digital nomads in the surveyed countries is one year, although the scope in all analyzed countries ranges from 3 months to 5 years. The author of the analysis also emphasized the need to monitor the relationship between the extension of visa facilities for digital nomads and the economic growth of individual industries in the host countries.

The last but essential identified aspect regarding digital nomads from the perspective of place marketing relates to the local community. Milano, González-Reverté, and Benet Mòdico (2023) analyzed residents' attitudes related to high tourist occupancy and the issue of local identity in one of Barcelona's tourist districts. Although digital nomads were not the focus of researchers' interest, one of the conclusions is that residents, despite their strong local identity and affiliation, express their concerns about the side effects of tourism, including the growing presence of digital nomads. Through their attitude towards external groups, residents significantly impact the city's image while being part of it. Moreover, the support of the local community towards the strategies adopted by the city authorities has a crucial impact on achieving the intended goals. Politicians who understand the local community's identity can better anticipate their reactions, attitudes, and concerns and be more effective in implementing their plans (Dampier et al., 2014).

The review was also complemented by identifying areas of research related to the issue of digital nomads and the definition of the scope of the issue of place marketing in this context. For this purpose, the VOSviewer mapping tool was used. The map created based on the collected data allows to observe the connections between keywords and list the sets in which the most common connections between terms are recorded. The procedure included 4 stages: data collection, filtration, mapping, and summary of results. In the licensed Web of Science database collected following key phrase was used: "digital nomads." This allowed to obtain 186 records in the database - 132 from the last 5 years. Business economics and social sciences predominate in the context of the studied fields. Then, the database search results were exported as a file (txt.) to the VOSviewer program. The number of all keywords was 958. Concept extraction was performed by analyzing words that appeared at least 3 times, obtaining

60 words. In order to create a clear map of the studied areas, the following terms were removed from the derived keyword database:

- indicating the country of origin of the research (e.g., Mongolia, China),
- being the plural of already qualified words (e.g., digital nomad-digital nomads, space-spaces, mobility-mobilities),
- synonyms (e.g. Covid-19 pandemic).

Ultimately, the database was reduced to 47 keywords, from which a map of connections was generated, creating 6 clusters (Figure 1).

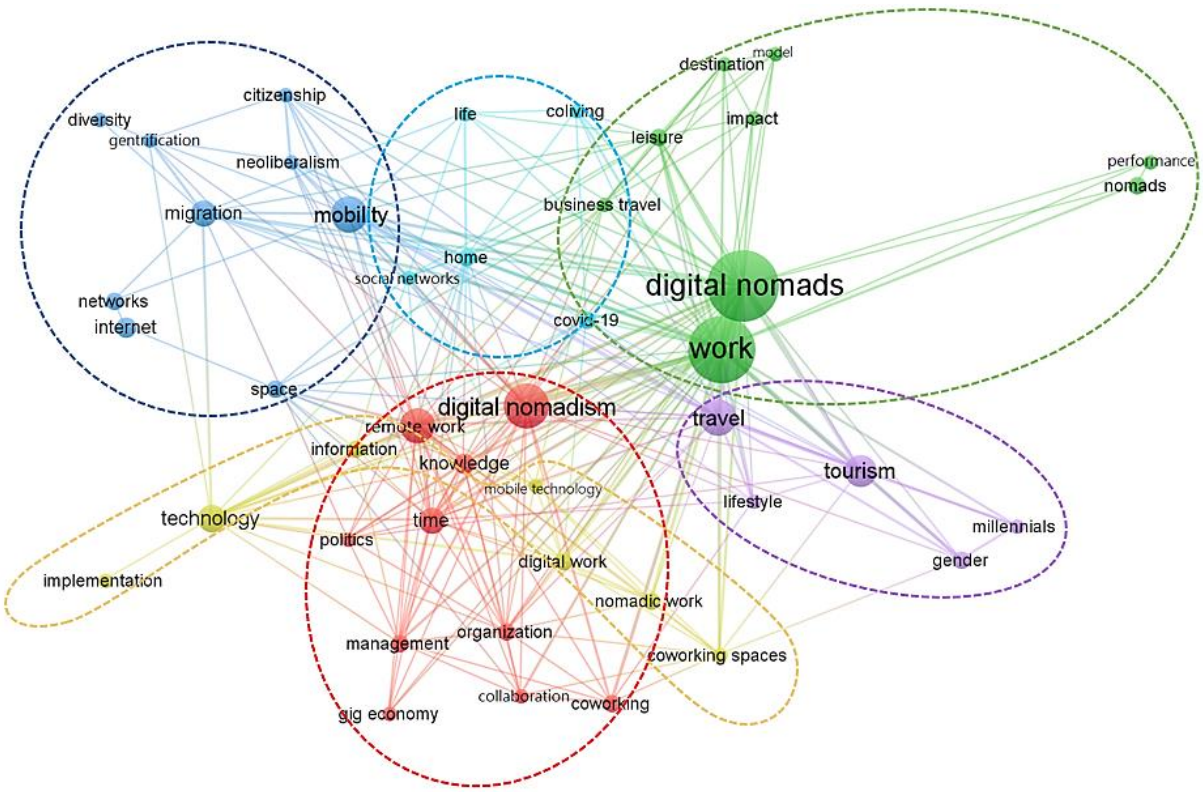

Figure 1. Map of the intensity of connections between keywords.

Source: own elaboration.

A keyword's membership in a cluster means the most considerable sum of connections within it but does not exclude links with words in other clusters. For a more precise interpretation of the map, names were proposed for the created clusters, which indicate the most common research areas related to digital nomads (Table 1).

Table 1.
Keywords and clusters appearing in the linkage map.

Cluster' number	Key words	Cluster' designation
Cluster 1	collaboration, coworking, digital nomadism, gig economy, knowledge, management, organization politics, remote work, time	specificity of work of remote workers and nomads
Cluster 2	business travel, destination, digital nomads, impact, leisure, model, nomads, performance, work	organization of time and work in the destination
Cluster 3	citizenship, diversity, gentrification, internet, migration, mobility, neoliberalism, networks, space	digital labor market
Cluster 4	coworking spaces, digital work, implementation, information, mobile technologoy, nomadic work, technology	digital nomads on the labor market
Cluster 5	gender, lifestyle, millennials, tourism, travel	characteristics of nomads and nomadism
Cluster 6	coliving, covid-19, home, life, social networks	the impact of the pandemic on relationships

Source: own elaboration.

The issue of digital nomads in the context of consuming the urban offer, shaping it, and promoting the destination fits best into cluster 2, considering the content of the terms "business travel, destination, leisure." However, this cluster is separate from the topic of the original review. Nevertheless, it is worth noting that even though the remaining clusters differ from the area of marketing, tracking the results of these studies may provide place marketing practitioners with valuable data that will contribute to better recognition of current trends or updating the profile of digital nomads (e.g., cluster 5). It could be helpful during construction of long-term goals in territorial units' marketing and branding strategies.

4. Conclusions and future research directions

The first information obtained from the conducted review is that most of the research on digital nomads, including those relating to city marketing, has been published in the last 5 years. A particular increase in research is noticeable during the COVID-19 pandemic and post-pandemic period. This means increasing interest in the issue of digital nomadism. By consolidating several studies, it is possible to confirm a vital factor of the technological infrastructure of cities, which should be included in strategies promoting destinations among digital nomads. Information about the number of coworking offices in a given city or other facilities enabling remote work may be a factor in the attractiveness of the city. Despite significant data supporting the design of activities and messages enabling cities to attract nomads, the perspective of territorial marketing occupies little space among the research on digital nomads.

As digital nomads constitute one of the newest groups of city users, and their number is constantly growing, popularizing an independent lifestyle, several research threads should be undertaken, which may result in support for city marketing practitioners. The first obvious issue concerns the ongoing monitoring and updating of the digital nomad's profile. Several years ago, empirical research indicated that nomads are mainly Western millennials with higher earnings. However, within 3 years, digital nomadism has become much more popular due to the end of the pandemic and the resumption and development of global transport. Up-to-date and accurate segment characterization is the first step in customizing marketing messages. A significant part of the problems of managers and people responsible for building effective strategies result from needing to know the complete profile of potential consumers or visiting guests (Orel, 2019). Secondly, research conducted among the city's internal groups, local entrepreneurs, investors, and residents may be helpful. In the context of local entrepreneurs, it could be interesting to study the real impact of the presence of digital nomads on the profitability and development of local businesses. Research on residents' attitudes and opinions towards digital nomads will help local authorities pursue a sustainable policy of accepting nomads.

From the perspective of place marketing, digital nomads are valuable recipients because they are consumers of the city's offer, promoters of the places they visit, and their lifestyle. However, city managers should consider specific risks related to the rapidly growing trend of digital nomadism and the mass nature of extended visits compared to traditional tourism. So far, overtourism has had negative consequences, including pollution and environmental degradation, overpopulation, resource consumption, inflated prices, and higher crime rates. In the context of digital nomads, residents' concerns may refer to cultural differences (Capocchi et al., 2021), which local authorities should consider.

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SCIENCE COMMERCIALISATION WITHIN UNIVERSITY-INDUSTRY NEXUS

Aleksandra SZULCZEWSKA-REMI

Poznan University of Economics and Business, Department of Controlling, Financial Analysis and Valuation; Aleksandra.Szulczewska-Remi@ue.poznan.pl, ORCID: 0000-0001-9043-8855)

Purpose: The current challenges science faces from the global market relate mainly to transferring knowledge, technical and scientific ideas to the economy, creating products, and developing processes and technologies promoting Social, Economic and Sustainable Development. Therefore, discussions regarding stimulating research commercialisation, along with university-industry cooperation as part of universities' third mission, persist. In light of these considerations, this research aimed to conceptualise and formulate a definition of research commercialisation in universities, while the second objective involved empirically verifying the incentives and barriers to R&D commercialisation within the university-industry nexus in Central and Eastern European country, Poland.
Design/methodology/approach: The commercialisation of scientific research is a complex process that involves multiple stages. It requires the implementation of tasks that are repeated at various points throughout the process. Hence, this research aims to answer the question: what is the approach model to universities' research commercialisation from enterprises' perspective? The study conducted systematic literature reviews and employed the SALSA (Search, Appraisal, Synthesis, Analysis) methodology. The second research question was phrased as: what are the incentives and barriers to R&D commercialisation in the university-industry nexus? Empirical research was employed to address this question through computer-assisted telephone interviews with 44 Polish companies. This qualitative study applied the methodologies which included data categorisation, contextualisation, preliminary within-case analysis, and cross-case analysis.
Findings: The research enhances our comprehension of universities' commercialisation process. The literature review enabled the formulation of a definition for science commercialisation and the graphical presentation of universities' commercialisation model. The study also confirmed that collaborating with highly qualified specialists, developing one's own staff during cooperation, exchanging knowledge, and achieving cost savings, e.g. on research and development expenses and acquiring new technologies, were the most significant benefits for respondents. In contrast, the most significant barriers were the lack of receptivity to industry needs, slow actions and decision-making during commercialisation, obsolete laboratories and equipment, as well as bureaucracy.
Research limitations: The research was not without constraints. Initially, a few respondents faced time constraints, and subsequently, the absence of visual and non-verbal cues that aid in situating the interviewee as observed in face-to-face interviews may have been lost.

Practical implications: The study enhances our comprehension of the process of commercialising research in universities and emphasises the most significant incentives and barriers to university-industry collaboration, as revealed by the respondents. Therefore, some recommendations for policymakers arise from this study, especially in the area of supporting university–industry cooperation.
Originality/value: The paper attempts to fulfil the research gap concerning the conceptual representation of universities' commercialisation process within university-industry nexus. In terms of theoretical implication, detailed literature studies about universities' research commercialisation and university – industry cooperation were preceded that allowed to answer the first research question. Additionally, empirical studies indicated incentives and barriers for university-industry cooperation. This research line contributes to management literature by complementing triple helix concept and knowledge spillover theory of entrepreneurship.
Keywords: science commercialisation, university-industry cooperation, triple helix concept, knowledge spillover theory of entrepreneurship.
Category of the paper: Research paper.

Introduction

The evolution of new technologies, digitization, and the growing diversity of customer needs has a significant impact on the development and implementation of various forms of innovations. This has heightened the importance of understanding the research commercialisation process. Despite the crucial role that the research commercialisation process plays in the advancement of regions and economies, the fragmented nature of scientific research on this matter has resulted in diverse and sometimes conflicting definitions of research commercialisation. This terminological inconsistency poses challenges both at the regulatory level, influenced by enacted legal measures and the overall implementation of the country's innovation policy, and at the practical level concerning the execution of scientific research in this domain.

Hence, the primary objective of this research was to formulate a comprehensive definition of the research commercialisation process, taking into consideration its intricate nature, potential commercialisation pathways, and the dynamic interactions between universities and industries. To progress in this investigation, a conceptual framework was developed, illustrating the research commercialisation model of universities from the perspective of enterprises. In formulating the commercialisation model for universities, emphasis was placed on principles closely associated with entrepreneurial universities and the triple helix, particularly in the context of university-industry collaboration and its importance for regions' development (Etzkowitz, Leydesdorff, 2000). To undertake this phase of the research, extensive literature reviews were conducted using a systematic literature review approach and the SALSA (Search, Appraisal, Synthesis, Analysis) methodology.

Drawing on the contingent model of research commercialisation, the second aim of this study was to determinate which factors are significant for the efficiency of commercialisation process, and which barriers are experienced by companies in Central and Eastern European country, Poland, in this process. To achieve this objective, multiple case study methodology and cross-case analysis covering 44 cases of university-industry cooperation through commercialisation process was applied. It was assumed that institutional and organizational conditions can impact research commercialisation process within the university-industry nexus. The objectives of the study emerged the following research questions: what is the model approach to universities' research commercialisation from the perspective of enterprises? and: what are the incentives and barriers to R&D commercialisation within university-industry nexus?

As numerous academic papers have shown, companies seek for new scientific knowledge and technological development opportunities, therefore often engage in licensing or purchasing academic research results or collaborative research opportunities (Thursby, Thursby, 2002). In the management science, of particular interest is the evidence that companies with direct research ties to universities significantly increase their innovation and competitive advantage (Fabrizio, 2009; Zucker et al., 2002), and universities serve as a major source of external knowledge for corporate world. As knowledge commercialisation serves as a catalyst for innovation in numerous companies and constitutes a crucial component of managing the innovation process, there remains considerable untapped potential for more targeted and conceptually driven research in this domain (Fini et al., 2019). As argues Kotlar et al. (2018), empirical data from the context of science commercialisation is underutilized in existing studies, and due to its multifaceted nature, there exists a gap in our theoretical comprehension of the process. With reference to this statement, the study posits that the research commercialisation process within the university-industry nexus involves the identification of opportunities arising from university research. This is viewed as a mechanism facilitating knowledge spillover to companies, aligning with the knowledge spillover theory of entrepreneurship described by Audretsch and Keilbach (2007).

Literature review

It is commonly expected that university research and its commercialisation should contribute towards solving grand challenges of our times, like global warming, climate change, biodiversity loss, pandemic or food security. The complexity, ambiguity and uncertainty of the commercialisation process require in-depth analysis but its main challenge is the fragmentation of knowledge in this area and the lack of a consistent definition of the commercialisation process (Perkmann et al., 2013).

Research commercialisation, viewed as an economic concept, is an intricate and diverse notion linked to a sequence of activities that result in conferring a commercial character to outcomes derived from scientific research. In this context, the university research commercialisation represents a multifaceted process that empowers creator to garner economic benefits through the practical application of his scientific research results. Recognizing both the scientific and market potential of an invention constitutes an integral aspect of the research commercialisation process. As a result, it is the economic ramifications of commercialisation, manifested in increased profits for individual companies or overall economic growth, that establishes a feedback loop wherein investment in innovation becomes a source of funding for various societal domains. Particularly significant in this context has been the creation of a new generation universities' knowledge that refers to the triple helix concept (Forliano et al., 2021; Etzkowitz, 2003). It is characterized by cooperation with the environment, manly with industry, government and society, as well as involvement of students and faculty members in various entrepreneurial activities, such as commercialisation process. Therefore, for the purpose of this study, research commercialisation definition was based on the assumption that knowledge exchange between university and industry becomes the source leading to the commercialisation process. In the accepted research context, science commercialisation spreads innovations within industries (Dosi et al., 2006) and also during this process innovations move from university research to commercial entities and then to public use (Van Norman, Eisenkot, 2017).

Additionally, according to previous studies referring to knowledge spillover theory of entrepreneurship, for legislative and organizational reasons, science commercialisation process was divided into direct (i.e. direct sell of research results) and indirect commercialisation (i.e. through creation of a spin-off, spin-out or start-up company) (Szulczewska-Remi, Nowak-Mizgalska, 2023). Also, the innovation process characteristics has been used to capture the complex, dynamic and adaptive relations among universities and private firms (Clayton et al., 2018). Eventually, taking into account the university-industry nexus, legislative and organizational conditions of the process, Table 1 summarizes various definitions of science commercialisation.

Table 1.
Definitions of science commercialisation within the university-industry nexus

Source	Definition
Dorf and Worthington (1987)	Technology commercialiation is the process of laboratory research results transformation into a marketable product
Mitchell and Singh (1996)	Research commercialisation is the process of acquiring new ideas, supplementing them with additional knowledge, developing and producing goods for sale and selling goods on the market
Jolly (1997)	Commercialisation is the transformation of knowledge and new (technological) solutions into money

Cont. table 1.

Zhao (2007)	Knowledge commercialisation is the process that involves new ideas and/or research results transformation into commercial products or services and their introduction to the market; it includes the transfer and development of intellectual property, as well as the provision of consulting services based primarily on technological innovation
Caerteling et al. (2008)	Technology commercialisation is a design, manufacture and marketing of products with developed technology, or technology transfer through licensing or other collaborative activities
Viale and Etzkowitz (2010)	Knowledge commercialisation occurs when knowledge generates added value from the economic point of view
OECD (2013)	Public research commercialisation refers to many ways in which knowledge from universities and public research institutions can be used by businesses to generate economic and social value as well as economic development
Perkmann et al. (2013)	Academic commercialisation implies market acceptance for outputs of academic research
Kirchberger and Pohl (2016)	Research commercialisation is the process of transferring a technological innovation from the technology creator to the organization that uses it and applies it in market products
Halilem et al. (2022)	Commercialisation can take several forms including IP-based commercialisation of science through patenting, licensing or spin-off creations

In most of the above presented definitions, commercialisataion process is primarily related to bringing research results to market (Kirchberger, Pohl, 2016; Perkmann et al., 2013; Caerteling et al., 2008; Zhao, 2007; Jolly, 1997; Mitchell, Singh, 1996; Dorf, Worthington, 1987). It is also the introduction and development of new products or services (innovations) that combines implementation of scientific research into economic practice (Kirchberger, Pohl, 2016; Zhao, 2007; Mitchell, Singh, 1996; Dorf, Worthington, 1987). Some definitions also refer to the added value generated by the commercialisation process (OECD, 2013; Viale, Etzkowitz, 2010) and its effects (patents, licenses, spin-off formation, other collaborative activities) (Halilem et al., 2022; Caerteling et al., 2008). Considering the above, the following definition was formulated: Science commercialisation is a process, in which scientific effects provided in the framework of university-business cooperation becomes the subject of market trading, and thus contribute to the added value generation for society and economy.

In addition to the above definition, conceptual framework of the study was constructed based on the innovation processes' models described in the literature. Utterback (1971) pioneered the modeling of the innovation process, delineating it as a sequence of activities: idea generation - technical problem resolution through invention - implementation leading to marketing - dissemination with a substantial impact on the economy. Subsequent developments in innovation process models are commonly framed through the lens of five distinct generations: 1. supply-side linear model of innovation propelled by science, 2. demand-side linear model of innovation driven by market forces, with a focus on consumer preferences (Žižlavsky, 2013), 3. third-generation nonlinear models, aiming to integrate demand and supply factors (e.g. Rothwell and Zegveld's (1985) coupled model or Cooper's (1990) phase-gate model). The subsequent two generations involve integrated and sequential models (Rothwell, 1992), emphasizing collaboration within R&D teams, involving suppliers and customers in the innovation process, and integrating R&D with production through R&D consortia. Traditional models were often modify into models that involved knowledge exchange and interaction with external entities through collaborative research like the Open Innovation Model (Chesbrough, 2003).

In the following study, also Guan and Chen (2010), Chen et al. (2018), as well as Yu et al. (2021) models were adopted, as they introduce two-stage approach to the innovation process comprises a research and development (R&D) stage and a subsequent commercialisation of R&D results. In this framework, research and experimental development (R&D) was defined as "creative and systematic work undertaken in order to increase the stock of knowledge – including knowledge of humankind, culture and society – and to devise new applications of available knowledge" (OECD, 2015). It was assumed, that research and development takes place within university-industry research collaboration that leads to commercialisation defined in previous section. The right-facing arrow points to commercialisation results that was described by Halilem et al. (2022) and Wang et al. (2022): number of R&D results including patents, new or improved products, services; number of licences, IP transfer agreements; number of spin-off/spin-out companies; number of collaborative research works (figure 1).

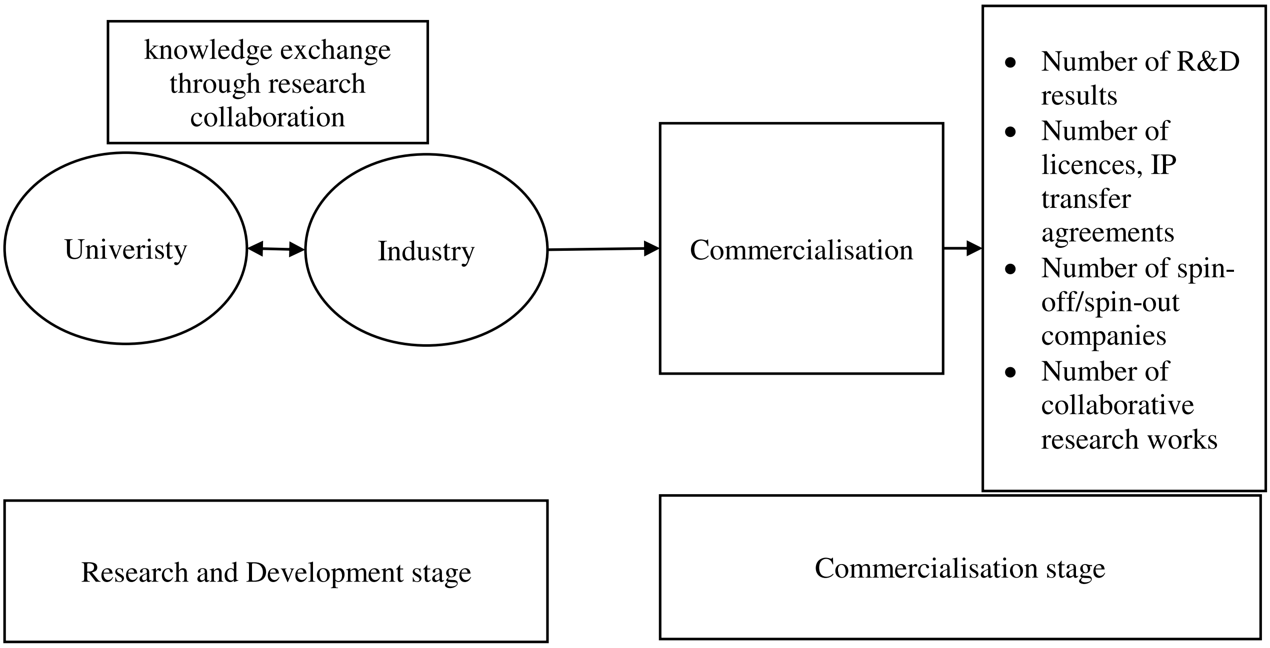

Figure 1. Conceptual framework of the study – universities' research commercialisation model from the perspective of enterprises.

Source: own development.

Methods

To explore research commercialisation, firstly extensive literature studies were conducted using systematic literature review and SALSA (Search, AppraisaL, Synthesis, Analysis) methodology (Booth et al., 2016), which aimed to provide research commercialisation definition and characteristics of research commercialisation models within the university-industry nexus. A preliminary literature search in Scopus electronic database collected 691 items, which were used to establish the criteria that guided the selection of literature in the full-text search (keywords, followed by inclusion and exclusion criteria). Items selected on the basis of analysis of abstracts and titles of articles and post-conference publications were allocated for full-text analysis (n = 32). In addition, a snowball sampling technique was used when reviewing the bibliography of each of these items (Jalali, Wohlin, 2012) and searching through citation indexes to obtain additional relevant articles (n = 35). In a further stage, data were synthesized by organizing them into logical categories: 1. research commercialisation definition, 2. research commercialisation in the context of the innovation process taking place in enterprises. In addition, an analysis of data from each item within the identified categories was applied (Petticrew, Roberts, 2006).

In order to accomplish the research objectives, empirical investigations was employed and a methodology involving multiple case studies, as outlined by Yin (2018). This approach facilitated a thorough examination of each case, enabling the identification of contingency variables that differentiate one case from another. Additionally, the adoption of multiple-case studies aimed to provide insights into explanatory processes through cross-case analysis, thereby externally validating the findings obtained from individual case studies. Data collection was carried out using computer-assisted web interviews triangulated with other documents like legislative acts on university research commercialisation, reports and data bases of the Ministry of Education and Science, Polish Agency for Enterprise Development or the National Center for Research and Development. A group of academics with the required qualifications and experience conducted the interviews during which they were able to clarify questions, summarize the questionnaire and very the accuracy of interpretations. The questionnaires remained accessible and were designed in a conversational manner, allowing respondents to articulate their comments and opinions. Therefore, the method used in the presented studies corresponded to both confirmatory methods, focusing on the conceptual representation of the research commercialisation process, and exploratory methods, examining the role of university-industry cooperation enhancing science commercialisation performance. Qualitative research was chosen for its ability to describe, understand and interpret phenomena, facilitating a comprehensive understanding of various factors (Merriam, 2009).

In order to select the companies, the aggregated profitability index was constructed and principal component analysis (PCA) was selected as it reduces the dimensionality of a dataset while preserving the maximum amount of information (IBM, 2021). The above procedure resulted in having companies from 19 different sectors (ranged from the most profitable company, to the least profitable one within a sector). Next, from each sector 3 companies were included in the study: one representing high-profitability companies, one representing average-profitability, and one representing low-profitability. Accordingly, 57 companies were initially included, representing all the sectors studied and all the profitability levels established. As there were not too many companies cooperating with universities, most of the interviews were not completed (Szulczewska-Remi, 2023). Therefore, in the second step of this study, other 44 companies were interviewed based on the companies' selection identified by Polish commercialisation intermediary institutions (Technology Transfer Offices and Special Purpose Vehicles) as cooperated with universities. This part of the empirical research took place in the first and the second quarter of 2023. Characteristics of companies operating in Central and Eastern Europe, Poland, taking part in the second round of empirical study are presented in Appendix 1.

The qualitative analysis was structured based on the methodologies outlined by Yin (2018), incorporating data categorization, data contextualization, preliminary within-case analysis, and cross-case analysis. The author used theory as a filter to organize the collected information as recommended in the previous works (Yin, 1994). The research methodology employed in the semi-structured interviews consisted of 11 substantive questions (Appendix 1 and 2). In the line with the findings in the literature (Langridge, Hagger-Johnson, 2009), six of these questions were open-ended, providing respondents with the opportunity to elaborate freely. Alongside the substantive questions were covering 18 statements where the respondents were required to indicate the strength of their agreement/disagreement with each statement on a 5-point Likert-type scale where 5 means strongly agree. The data analysis procedure aligned with both the confirmatory and exploratory requirements of the study. In the confirmatory aspect, the data were analyzed to provide additional validation for the theoretical model depicting the science commercialisation process. On the exploratory front, the data served to address knowledge gaps related to the role of university-industry cooperation in enhancing comercialisation process. The study population exhibited homogeneity, with precisely structured and focused research content, allowing the saturation point to be reached after 44 interviews.

The research was not free of limitations. First, some of the respondents experienced time pressure. Secondly, all the visual and non-verbal clues that can facilitate contextualizing the interviewee as seen in face-to-face interviews might be lost.

Results and discussion

Commercialisation of scientific discoveries is a complex process that involves commitment from and interaction with a myriad of organizational support and institutions. A special example of such cooperation is a university-industry collaboration that facilitate the direct translation of universities' research to the marketplace (Rothaermel et al., 2007). Still, the research on science commercialisation, especially from Central and Eastern European countries remains scare, and as Cunningham et al. (2017) postulate more studies from this region is needed for further contribution to the field, providing insights into different contextual approaches and practices.

Since science commercialisation is characterized by multifaceted interactions and the terminology in this area remains fragmented, the first objective of this study was to develop a comprehensive definition of the research commercialisation process. Based on literature studies, the following definition was formulated: Science commercialisation is a process, in which scientific effects provided in the framework of university-business cooperation becomes the subject of market trading, and thus contribute to the added value generation for society and economy. Relying on this definition, conceptual framework of the study was developed based on the two-stage innovation process described in the literature as a research and development stage and a commercialisation of R&D results stage (figure 1). It was assumed, that research and development takes place within university-industry research collaboration that leads to commercialisation. Hence, this part of research corresponds to the first research question.

Complementary to this study, empirical investigations was employed to provide insights into commericalisation process within the university-industry nexus. Firstly, respondents' experience in commercialisation was analyzed. At the organizational level, most of the respondents confirmed separated research and development (R&D) department within their companies' structure (n = 27). As it was commented by respondent 43: "The company is engaged in research and development activities in a wide range of fields (…)", respondent 37: "We established an R&D department with highly qualified specialists in 2019 for innovations in the production process", respondent 12: 'We have our own R&D department because we need to react quickly to market changes - our products are related to an industry where technology is aging very quickly, so we decided to conduct R&D internally to react faster and have full control over processes", respondent 5: "We are a manufacturing company. An R&D department is necessary for new product development and technological development. Outsourcing R&D to external parties would not be effective in our case". One respondent declared R&D carried out by another company belonging to the same capital group and some companies outsourced R&D to external entities (n = 6), which was explained by respondent 44: "We are a startup employing 8 people, that is why we outsource some of the work". In some cases (n = 10) R&D department was not implemented.

Transforming scientific research into technological development, product or process leading further to commercialisation often required patenting activities aimed at supporting commercialisation process (Shin et al., 2023). Patents are useful in understanding innovation trends and forecasting future technologies (Ernst, 1997), for that reason respondents were asked about their patenting experience. Most of them did not hold any patents and did not use any patents through a licence granted by another entity (n = 28), some held national (n = 11), international patents (n = 8) and/or used patents through a licence granted by another entity (n = 3). Respondents commented on the need for patent protection: “National patents were necessary to secure the formula on which the company manufactures, the basis of its business” (respondent 42), “Many proprietary and very clever functional food products require a patent claim” (respondent 40). During considered period, eleven companies received national and/or international patents, six companies were granted with licences, IP transfer agreements, seven sold their technologies, eleven companies performed contract R&D and seven set-up a spin-off/spin-out companies.

In relation to experience in R&D commercialisation within university-industry nexus, most of the companies were on one occasion cooperating with universities or other scientific institutes (n = 33, with the caveat that it was a one occasion collaboration with different universities, scientific institutes), some regularly cooperated with universities/scientific institutes (n = 14) and some did not cooperate with universities/scientific institutes (n = 11). Companies were mainly cooperating with universities (n = 20) and universities of technology (n = 13), followed by universities of economics (n = 7), scientific institutes (n = 6) and Polish Academy of Science (n = 5), medical universities (n = 3), universities of agricultural and life science (n = 3), universities of arts (n = 3). In one example, the cooperation was dictated by the academic experience of the founders: “The staff comes from universities and has the knowledge and ambition for additional R&D activities in addition to typical production activities. They know how to raise external funds. They are aware that this allows the company to stand out internationally and allows to distinguish itself from the competition. By focusing on new solutions, the company has the opportunity to offer them to its customers and thus access a wider market” (respondent 39).

Most respondents claimed commercial research works as an effect of cooperation with universities/scientific institutes (n = 14) and R&D results implementation (n = 13). It was commented by respondent 30: “A cheaper and better solution. We can't afford high-level experts on staff, and this is how we benefit and pay 'per use'. In addition, entities such as universities can efficiently tap into the intellectual resources of other experts that are too difficult for us to reach”. Two respondents also mentioned licenses, IP transfer agreements and one spin-off/pin-out company formation as results of university-industry collaboration. The following opinions also appeared in relation to cooperation with universities/scientific institutes: “High specialization requires constant adaptation” (respondent 28), “The company's object is largely research and development, hence much of its business is geared toward this type of activity, both for its own needs and those of external parties" (respondent 32).

With regards to the second research question, the incentives and barriers to R&D commercialisation within university-industry nexus are summarized in table 2, which is organized in line with the recommendations of Johnson et al. (2023). The level of significance of individual incentives and barriers was determined by the average score of respondents' agreement/disagreement strength. The results are listed in order from most significant to least significant.

Table 2.
Incentives and barriers to R&D commercialisation within university-industry nexus

Theoretical dimensions	Importance for respondents	Illustrative examples from respondents
Incentives to R&D commercialisation		
Opportunity to cooperate with highly qualified specialists	thirty respondents indicated this incentive as very important and twelve as somewhat important (average of all responses: 3.77)	"The development of new products, based on current experience, required the qualified personnel for the further development of functional foods" (respondent 40)
Own staff development during cooperation, exchange of knowledge	nineteen respondents indicated this incentive as very important and sixteen as somewhat important (average of all responses: 3.50)	"R&D work is carried out within the Technical Department and cooperation with University of Technology. This allows engineers to develop comprehensively in the areas of design and technology" (respondent 34)
Savings e.g. on research and development expenditures	fifteen respondents indicated this incentive as very important and other fifteen as somewhat important (average of all responses: 3.50)	"Such a solution is cost-optimal for us and allows us to benefit from external funds" (respondent 16)
Acquisition of new technologies	twenty four respondents indicated this incentive as very important and eight as somewhat important (average of all responses: 3.45)	"Greater access to all sorts of technology" (respondent 44)
Access to knowledge and research results	twenty four respondents indicated this incentive as very important and six as somewhat important (average of all responses: 3.41)	"We are innovating in the field of technology for the production of vegan dairy products and dietary supplements, so we are working with universities to continuously improve our products' offer" (respondent 9)
Access to research infrastructure	twenty one respondents indicated this incentive as very important and thirteen as somewhat important (average of all responses: 3.34)	"Lack of funds to finance a research center operating within the company's structure" (respondent 5)
Prestige of cooperation	eight respondents indicated this incentive as very important and nineteen as somewhat important (average of all responses: 2.93)	"The co-owners of the company are scientists employed at the University which increases the prestige of cooperation between these institutions" (respondent 3) "We outsource all of our research to R&D centers and university companies" (respondent 21)

Cont. table 2.

Barriers to R&D commercialisation		
Lack of openness to the industries' needs	twenty one respondents indicated this incentive as very important and ten as somewhat important (average of all responses: 3.70)	"We would be interested in marketing research in the field of functional food development in Poland and Europe or research in the field of communication with the consumer (modern channels of reaching the customer both B2B and B2C)" (respondent 40) "We would be interested in research targeting opportunities to increase sales volume and identifying customer market preferences that determine the choice of a particular service/product provider" (respondent 36) "We would be interested in market analyses and opinions, analysis of business risks with specific projects, improvement of management" (respondent 23)
Lack of rapid actions and decision-making during commercialisation	eighteen respondents indicated this incentive as very important and eleven as somewhat important (average of all responses: 3.66)	"The organization is very large and the scope of the commercialisation manager does not allow to carry out activities well" (respondent 29)
Outdated laboratories and equipment	ten respondents indicated this incentive as very important and thirteen as somewhat important (average of all responses: 3.61)	"We don't cooperate with universities. In a chemical company, there is no other solution than to build its own labo, which plays a research and development role" (respondent 35)
Bureaucracy	twenty one respondents indicated this incentive as very important and thirteen as somewhat important (average of all responses: 3.57)	"The company is engaged in a wide range of research and development activities, and due to the problems with universities' cooperation (e.g. bureaucracy), we do most of the research ourselves" (respondent 43)
Lack of offers or insufficient information on cooperation opportunities	sixteen respondents indicated this incentive as very important and seventeen as somewhat important (average of all responses: 3.48)	"We don't know what kind of offerings the e.g. economic university has (…)" (respondent 39)
Problem with valuing technology and royalties	thirteen respondents indicated this incentive as very important and fifteen as somewhat important (average of all responses: 3.48)	"Problem with valuing technology and royalties appears especially in commercialisation in international markets" (respondent 28)
Problem of financing such initiatives	twenty one respondents indicated this incentive as very important and twenty as somewhat important (average of all responses: 3.41)	"We do research in research in the area of AI for which it is difficult to find funding" (respondent 44)
Lack of specialized units responsible for external cooperation	eighteen respondents indicated this incentive as very important and eleven as somewhat important (average of all responses: 3.34)	"We would like to cooperate with departments of mechanical and power engineering" (respondent 34) "We would be interested in cooperating on commercialisation and implementation of technologies from the life-sciences industry" (respondent 32)
Lack of adequate commercialisation procedures (e.g., bylaws and unified contracts)	twelve respondents indicated this incentive as very important and eight as somewhat important (average of all responses: 3.32)	"It is a barrier for us and that is why our company designs and develops its product offerings itself. The founders are scientists" (respondent 41)

Cont. table 2.

Imperfection of legal regulations	ten respondents indicated this incentive as very important and twelve as somewhat important (average of all responses: 3.11)	"Insufficient protection of intellectual property at a rather high cost of protection" (respondent 32) "Lengthy patent process vs high rate of product change" (respondent 13) "Patent protection does not work in our case - the process is too time-consuming, and the need for new solutions occurs too quickly" (respondent 12)
Lack of specialized knowledge among university representatives, especially in the area of intellectual property protection and public aid	eight respondents indicated this incentive as very important and seven as somewhat important (average of all responses: 3.11)	"We do cooperate with universities but IP protection is a problem. That is why we do not use patents, it is better for us to use third-party software instead" (respondent 44)

Source: own development.

University-industry cooperation refers to interaction between universities' scientists, students and companies, which exchange their knowledge and/or developed technologies (Parmentola et al., 2021). The study examines this interaction by developing theoretical background through science commercialisation definition and conceptual model. The research also reveal the incentives and barriers of such cooperation in Central and Eastern European country, Poland. As main incentives in research commercialisation, respondents indicated opportunity to cooperate with highly qualified specialists, own staff development during cooperation, exchange of knowledge (as indicated in conceptual framework of this study), savings e.g. on research and development expenditures and acquisition of new technologies. In relation to barriers of such cooperation, respondents were pointing out lack of openness to the industries' needs, lack of rapid actions and decision-making during commercialisation, outdated laboratories and equipment, as well as bureaucracy. In another study, Portuguese researchers listed lack of procedures for such cooperation, lack of contacts with industry, lack of funding for such cooperation and analyzed (Moutinho et al., 2016), which were also barriers in Polish university-industry collaboration.

Conclusions

The primary scientific challenges pertain to the transfer of research results to the economy and society. Consequently, discussions persist concerning effective means of commercialising knowledge and technology. Thus, the research aimed to conceptualise and define the commercialisation of university research as its first objective. The second objective aimed to empirically verify incentives and barriers to R&D commercialisation within the university-industry nexus. This step forward enhances our understanding of science commercialisation in Central and Eastern Europe, specifically in Poland.

Through the research, collected data allowed to answer original research questions on the model approach to universities' research commercialisation from the perspective of enterprises. The model is derived from the definition of research commercialisation in universities and comprises of two stages, namely R&D phase, where the outcomes are produced via knowledge sharing between university and industry, and commercialisation phase. The study confirmed that the chance to collaborate with highly skilled professionals, improve staff development, exchange knowledge, and benefit from cost savings on research and development expenditures, as well as gaining access to new technologies, were the most significant benefits reported by respondents in their collaborations with universities. In contrast, the absence of receptiveness to the requirements of industries, delayed actions and decision-making throughout commercialisation, obsolete laboratories and equipment, as well as the bureaucracy posed the most significant obstacles to collaboration with universities. These findings has policy implications; strengthening the incentives outlined above and removing the identified barriers to university-industry cooperation can lead to effective science commercialisation, resulting in added value for society and the economy. This research line complements the triple helix concept and knowledge spillover theory of entrepreneurship in management literature.

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Appendix 1

Table 3.
Characteristics of respondents taking part in the second round of empirical study (n = 44)

Respondent	The level of company's internationalization	Ownership form	Average annual employment volume
1	Low (purely domestic operations)	Polish	Up to 1001-7000 employees (full time employment)
2	Medium (international operations)	Polish	Up to 11-50 employees (full time employment)
3	Low (purely domestic operations)	Polish	Up to 10 employees (full time employment)
4	Medium (international operations)	Polish	Up to 10 employees (full time employment)
5	Medium (international operations)	Polish	Up to 51-250 employees (full time employment)
6	Medium (international operations)	Polish	Up to 10 employees (full time employment)
7	Low (purely domestic operations)	Polish	Up to 51-250 employees (full time employment)
8	Medium (international operations)	Polish	Up to 10 employees (full time employment)
9	Medium (international operations)	Polish	Up to 11-50 employees (full time employment)
10	Medium (international operations)	Polish	Up to 11-50 employees (full time employment)
11	Medium (international operations)	Polish	Up to 11-50 employees (full time employment)
12	High (mainly international operations)	Polish	Up to 251-1000 employees (full time employment)
13	High (mainly international operations)	Polish	Up to 11-50 employees (full time employment)
14	High (mainly international operations)	Polish	Up to 11-50 employees (full time employment)
15	Low (purely domestic operations)	Polish	Up to 10 employees (full time employment)
16	Low (purely domestic operations)	Polish	Up to 10 employees (full time employment)
17	Low (purely domestic operations)	Enterprise with majority of Polish capital	Up to 251-1000 employees (full time employment)
18	Low (purely domestic operations)	Polish	Up to 10 employees (full time employment)
19	Medium (international operations)	Polish	Up to 11-50 employees (full time employment)
20	High (mainly international operations)	Polish	Up to 11-50 employees (full time employment)
21	Low (purely domestic operations)	Polish	Up to 11-50 employees (full time employment)
22	Medium (international operations)	Enterprise with predominantly foreign capital	Up to 251-1000 employees (full time employment)
23	Low (purely domestic operations)	Polish	Up to 51-250 employees (full time employment)
24	Medium (international operations)	Polish	Up to 11-50 employees (full time employment)
25	Low (purely domestic operations)	Foreign	Up to 51-250 employees (full time employment)

Cont. table 3.

26	Medium (international operations)	Polish	Up to 51-250 employees (full time employment)
27	High (mainly international operations)	Foreign	Up to 11-50 employees (full time employment)
28	High (mainly international operations)	Enterprise with majority of Polish capital	Up to 51-250 employees (full time employment)
29	Medium (international operations)	Polish	Up to 1001-7000 employees (full time employment)
30	Medium (international operations)	Polish	Up to 11-50 employees (full time employment)
31	Low (purely domestic operations)	Polish	Up to 51-250 employees (full time employment)
32	Medium (international operations)	Polish	Up to 10 employees (full time employment)
33	Medium (international operations)	Enterprise with majority of Polish capital	Up to 51-250 employees (full time employment)
34	High (mainly international operations)	Polish	Up to 11-50 employees (full time employment)
35	High (mainly international operations)	Polish	Up to 251-1000 employees (full time employment)
36	Medium (international operations)	Polish	Up to 11-50 employees (full time employment)
37	High (mainly international operations)	Polish	Up to 11-50 employees (full time employment)
38	High (mainly international operations)	Polish	Up to 51-250 employees (full time employment)
39	Medium (international operations)	Polish	Up to 11-50 employees (full time employment)
40	Low (purely domestic operations)	Polish	Up to 51-250 employees (full time employment)
41	High (mainly international operations)	Polish	Up to 10 employees (full time employment)
42	High (mainly international operations)	Polish	Up to 51-250 employees (full time employment)
43	Low (purely domestic operations)	Polish	Up to 10 employees (full time employment)
44	Low (purely domestic operations)	Polish	Up to 10 employees (full time employment)

Source: own development.

Appendix 2

Table 4.
Research protocol

<table>
<tr><td>Experience in R&D commercialisation</td></tr>
<tr><td>1. Does your company have formal research and development (R&D) department?

Yes, we do have dedicated R&D department
No, but R&D is carried out by another company belonging to the same capital group
No, R&D is outsourced to external entities (if this answer is selected, please specify which external entities)
No, we do not carried out R&D

If one out of the first three answers is indicated, please specify reasons for this solution</td></tr>
<tr><td>2. Does your company holds patents protecting its inventions? (multiple answer options)

Yes, our company holds national patents
Yes, our company holds international patents
No, our company uses patents through a license granted by another entity (if this answer is selected, please specify which entity)
No, our company does not hold any patents and do not use any patents through a license granted by another entity

Please specify reasons for the company particular patent management solution</td></tr>
<tr><td>3. Previous experience in R&D commercialisation in the last five years (2017-2022) (multiple answer options)

Number of patents granted (national and international)
Number of licences granted, IP transfer agreements
Number of technologies sold
Number of contract R&D
Number of spin-off/spin-out companies
Number of start-ups companies
Other (if this answer is selected, please specify)
Our company has no experience in commercialising R&D
</td></tr>
<tr><td>Experience in R&D commercialisation within university-industry* nexus</td></tr>
<tr><td>4. Does your company have any experience in cooperation with universities in the last five years (2017-2022)

Yes, our company regularly cooperated with universities
Yes, our company on one occasion cooperated with universities
No, our company does not cooperate with universities
</td></tr>
<tr><td>5. Please specify which universities and other research institutions did your company cooperate in the last five years (2017-2022) (multiple answer options)

University
University of Technology
Medical University
University of Economics
University of Agricultural and Life Sciences
University of Pedagogy
University of Arts
University of Physical Education
Maritime University
Military Higher Education Institution (HEI)
Government Service Higher Education Institution (HEI)
Polish Academy of Science
Scientific Institute
Other (if this answer is selected, please specify which entity)
</td></tr>
<tr><td>6. Previous experience in R&D commercialisation in cooperation with universities:

Number of R&D results implementation
Number of licences, IP transfer agreements
Number of spin-off/spin-out companies
Number of commercial research works
</td></tr>
</table>

Cont. table 4.

Incentives and barriers to R&D commercialisation within university-industry nexus					
Incentives to R&D commercialisation within university-industry nexus. Please indicate the strength of your agreement/disagreement with each statement on a 5-point Likert-type scale where 5 means strongly agree.					
	1	2	3	4	5
access to knowledge and research results					
access to research infrastructure					
acquisition of new technologies					
opportunity to coopearte with highly qualified specialists (e.g., on a consulting basis)					
savings e.g. on research and development expenditures					
prestige of cooperation					
own staff development during cooperation, exchange of knowledge					
other (please specify)					
Barriers to R&D commercialisation within university-industry nexus. Please indicate the strength of your agreement/disagreement with each statement on a 5-point Likert-type scale where 5 means strongly agree.					
	1	2	3	4	5
problem of financing such initiatives					
imperfection of legal regulations					
lack of specialized knowledge among university representatives, especially in the area of intellectual property protection and public aid					
lack of adequate commercialisation procedures (e.g., bylaws and unified contracts)					
bureaucracy					
problem with valuing technology and royalties					
lack of offers or insufficient information on cooperation opportunities					
lack of specialized units responsible for external cooperation					
lack of rapid actions and decision-making during commercialisation					
lack of openness to the industries' needs					
outdated laboratories and equipment					
other (please specify)					

* in each case of university-industry, reference is made to universities and scientific institutes.

Source: own development.

SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

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THE IMPACT OF MACROECONOMIC FACTORS ON THE PROFITABILITY OF COMPANIES. ANALYSIS USING NEURAL NETWORKS

Dawid SZUTOWSKI

Poznań University of Economics and Business; dawid.szutowski@ue.poznan.pl, ORCID: 0000-0002-5841-4973

Purpose: Despite the central role of profitability in economic analysis, previous research has yielded diverse and often unstructured conclusions regarding its determinants. To address this gap, this empirical investigation aimed to explore the major determinants of company profitability.
Design/methodology/approach: It conducted a comprehensive analysis of factors, encompassing: changes in the gross domestic product, Consumer Price Index, Producer Price Index, NBP's Reference rate, investment outlays, intramural expenditures on research and development, expenditures on innovation activities in enterprises, and patents granted, alongside company-level profitability indicators. The study's sample consisted of companies representing 19 sectors of the economy, spanning from 2004 to 2021. For data analysis, a neural network was employed, specifically a multi-layer perceptron (MLP) utilizing the sigmoid activation function.
Findings: The findings suggest that alterations in macroeconomic variables can significantly impact the profitability of companies. The analysis carried out revealed that consumer price index, reference rate, gross domestic product and producer price index were the most important exogeneous factors.
Originality/value: This study introduces several novelties, including the application of neural networks, which are infrequently utilized in this field, and the simultaneous analysis of a comprehensive set of independent variables.
Keywords: profitability, macroeconomic indicators, neural network.
Category of the paper: Research paper.

1. Introduction

Despite the central role of profitability in economic analysis, previous research has yielded diverse and often unstructured conclusions regarding its determinants. While it has been abundant in studying endogenous factors, it was also notably less focused on exogenous ones. To address this imbalance, this study primarily examines the sectoral and macroeconomic determinants of profitability.

The review of existing literature underscores the significance of the external environment in shaping company profitability. Surprisingly, both researchers and practitioners frequently neglect exogenous factors, detaching their analyses from the broader business environment. The importance of external factors in profitability analysis is particularly apparent in practical contexts, such as valuation, transactional analysis, financial analysis, operational and strategic analysis, and bankruptcy prediction. However, the general understanding of the role of exogenous factors in profitability analysis has limitations. The spectrum of sectoral and macroeconomic variables studied to date lacks consistency, prior studies often produce conflicting results due to limited empirical evidence, and traditional research methods have been routinely employed.

In light of these considerations, this paper aims to explore the major determinants of company profitability. It hypothesizes that all selected variables significantly affect company profitability.

The empirical study employed a dataset of companies representing the 19 sectors of the economy, spanning from 2004 to 2021. The initial number of data points matched 108.300 (300 companies * 19 sections * 19 years), but for the computational procedure, the data was aggregated on the sectoral level. To operationalize variables, twelve factors — changes in the gross domestic product, the Consumer Price Index, the Producer Price Index, NBP’s Reference rate, investment outlays in periods t and t-1, intramural expenditures on research and development in periods t and t-1, expenditures on innovation activities in enterprises in periods t and t-1, and patents granted in periods t and t-1 — were considered. Four distinct measures of company profitability — ROE, ROA, ROS, and ROIC — were used. Data analysis was conducted using a neural network, specifically a multi-layer perceptron (MLP), comprising an input layer, an output layer, and a hidden layer with no restrictions on neuron count. Variables were appropriately rescaled, and a sensitivity analysis assessed variable importance.

The results indicate that changes in macroeconomic variables may significantly influence company profitability. Notably, the most influential macroeconomic variables were Consumer Price Index, Reference rate, changes in gross domestic product and Producer Price Index. Other variables demonstrated relatively lower importance.

The structure of this paper comprises a literature review highlighting profitability's role in economic analysis and presenting existing evidence on determinants of profitability. It is followed by an exposition of the research methods, with specific focus on the neural network employed for data analysis. The results are subsequently presented and discussed in comparison to previous findings in the field, concluding with overarching insights.

2. Literature review

Profitability remains a central element in economic analysis because of its crucial role in operations and its significance as a key factor influencing a company's value (Dang, Vu, Ngo, Hoang, 2019). However, it's worth noting that profitability is influenced by various factors, and the existing scientific evidence on this topic is somewhat fragmented. To address this gap, this research proposes a comprehensive approach that involves analysing a wide array of variables.

Given that profitability acts as a vital link connecting a company's operational environment to its overall value, it holds a central position in financial management and necessitates a thorough understanding. At its core, profitability measures the return a company generates within a specific period relative to the underlying causal factor. Profitability ratios typically combine financial results with metrics such as sales, assets, the value of equity, or the total capital invested in the company. As a result, profitability analysis enables the assessment of a company's performance across various dimensions, each with its unique characteristics.

Both from financial and managerial perspectives, profitability is evaluated throughout day-to-day operations and in the formulation of strategic plans. Well-managed enterprises generally aim to enhance their profitability. The importance of profitability is further underscored by analytical practice, as demonstrated by the assertion that " the ability to generate profit on capital invested is a key determinant of a company’s overall value and the value of the securities it issues. Consequently, many equity analysts would consider profitability to be a key focus of their analytical efforts" (Robinson, Greuning, Henry, Broihahn, 2020, p. 291).

Profitability is influenced by a broad spectrum of factors, including both internal and external ones. While there is a wealth of research on the internal determinants of profitability, the body of evidence concerning the relationship between company profitability and macroeconomic variables is less extensive and will be the central focus of this study. This gap is particularly significant in open economies where there is a high degree of interdependence among companies, sectors, and nations. Current evidence suggests that in the global economy, companies are particularly vulnerable to various threats stemming from the unstable and uncertain business environment, both at the individual country level and within the global economy (Batra, Kalia, 2016).

In the context of studies examining the relationship between macroeconomic variables and company profitability, a review of the literature reveals some of the most commonly employed external (macroeconomic) variables. Although the research in this area remains somewhat fragmented, there are certain similarities that can be observed across various studies. For instance, in a study conducted in Greece, which examined non-financial Greek firms listed on the Athens Exchange, the findings indicated that company profitability is positively affected by factors such as company size, sales growth, and investment, while it is negatively impacted by leverage and current assets. From an external perspective, the research suggested a negative relationship between a firm's participation in the European monetary union and the adoption of the euro and its profitability (Asimakopoulos, Samitas, Papadogonas, 2009). Subsequent research further delved into the division of internal and external factors affecting profitability, analysing both aspects. Notably, one of the key findings emphasized a significant and negative correlation between the return on assets and changes in gross domestic product (GDP) and the inflation rate (Khrawish, 2011). These findings were partially supported by later studies, which revealed that, in the case of banks, higher rates of economic growth had a negative impact on profitability, while higher inflation rates had a positive influence (Sufian, 2009; Sufian, Noor, 2012). Continuing in this vein, subsequent research reaffirmed the importance of external (macroeconomic) variables in shaping a company's profitability. This research examined a sample of 108 banks specializing in real estate financing, located in the USA, Great Britain, and Germany. The results demonstrated that variables such as the Lerner Index, interest rate volatility, and the level of GDP significantly affected company profitability (Martins, Serra, Stevenson, 2019).

Furthermore, previous evidence suggests that the relationship between reference rates and the profitability of companies is significant. The principal argument provided here is that the reference rates influence the borrowing costs (Santsuosso, 2014). Furthermore, when it comes to working capital, again – changes in reference rates can affect the interest rates on the short-term loans and credit lines, impacting the cost of financing day-to-day operations. Thus, higher reference rates can increase expenses on the short-term borrowings, potentially squeezing profitability (Muscettola, Naccarato, 2016). Furthermore, for the companies involved in international trade, reference rates are of vital importance, as the changes may influence the exchange rate of the national currency (Basatry, Shella, 2019).

Next, using the example of renewable energy sector, it was suggested that the profitability of companies is primarily contingent on the stability and predictability of policies that promote renewable energy development in specific countries (Chebotareva, 2018). What stands out as particularly significant in this context is the inclusion of an investment perspective in this study. This holds crucial importance both from a scientific and practical standpoint, given that in some sectors the technological advancement may necessitate substantial investments.

Moreover, a substantial body of knowledge concerns the relation between R&D, patent and innovation-related activities and company profitability. In line with previous studies innovation, whether manifested through product development, process optimization, or strategic differentiation, holds the potential to significantly enhance a firm's profitability (Love, Roper, Du, 2009). On the revenue side - novel and improved products often command premium prices, contributing directly to revenue augmentation. Furthermore, innovation-driven operational efficiencies can curtail marginal costs (Jaumandreu, Mairesse, 2015), consequently augmenting profit margins. In the similar vein, previous evidence suggests that R&D investments serve as a critical driver of long-term profitability. While R&D expenses may initially burden a firm's financial statements, they often yield substantial returns through enhanced product offerings, improved efficiency, and competitive advantage. In line with previous evidence the relationship between R&D spending and firm performance resembles an inversed U-shape (Guo, Wang, Wei, 2018). In reference to patents, it was observed that they can substantially influence a company's profitability. More specifically, based on the analysis of patent portfolios it was suggested that the broad patent diversity is effective when the focal firm has very high technology stocks and profitability is used as a performance measure. The core field diversity is effective for a focal firm with above average technology stocks and where shareholder value is considered as a performance indicator (Ling, Chen, Wu, 2006). Patents also create opportunities for licensing or selling intellectual property rights, generating additional revenue streams (Lin, 2011).

Therefore, the analysis of the previous evidence points to changes in gross domestic product, inflation, reference rates, investment, R&D and innovation as the most commonly employed factors shaping company profitability.

3. Research methods

The study's design was grounded in the theoretical framework outlined in the previous section, facilitating an examination of the connection between key factors and company profitability. Consequently, the empirical investigation required a customized approach. To begin, it integrated two perspectives: internal and external. This approach involved the use of a broad range of variables, spanning from macroeconomic indicators to specific company-level profitability metrics. Second, given the relatively limited variation in macroeconomic and sectoral metrics, a sufficiently extended time span was necessary. In this study, the analysis encompassed the years 2004 to 2021. Third, recognizing that external and internal dynamics diverge and that the transmission of changes in sectoral and macroeconomic conditions to businesses depends on intersectoral business connections and can take a significant amount of time (Nguyen, Chevapatrakul, Mateut 2022), the issue of time lag needed to be addressed. Consequently, lagged variables were included in the model. Fourth, as this study analytically adopts a sectoral-perspective all the variables were aggregated or measured at the sector or country-wide levels.

The research targeted all the sectors characterised by Statistics Poland except for sections T (households with employees; households producing products and providing services for their own needs) and U (extraterritorial organizations and teams) and therefore, it covered 19 sectors. In each sector 300 companies were randomly drawn. This sample size was determined based on the statistical principles, where adapting z-alpha of 1.65 and the estimation error of 5% results in the sample size matching 272 observations. Next, this number was rounded up.

As in the study yearly data was gathered, the initial (before aggregation) number of data points matched 108.300 (300 companies * 19 sections * 19 years). However, the final number was smaller because of the cases with user-missing values on factors and dependant variables and the elimination of outliers. The remaining cases were then averaged in order to produce the sectoral average measures of profitability. All the subsequent calculations were performed based on the sectoral averages, which resulted in 361 data points (19 sectoral averages * 19 years).

To effectively combine internal and external perspectives, it was essential to establish a well-structured operational approach. This operationalization necessitated the careful selection of key variables, a process guided by a review of relevant literature. In the realm of macroeconomic factors, twelve variables were chosen: changes in the gross domestic product (referred to as changes in GDP), the Consumer Price Index (referred to as CPI), the Producer Price Index (referred to as PPI)[1], NBP's Reference rate (referred to as Reference rate), investment outlays in periods t and t-1 (referred to as Investment (t) and Investment (t-1)), intramural expenditures on research and development in periods t and t-1 (referred to as R&D (t) and R&D (t-1)), expenditures on innovation activities in enterprises in periods t and t-1 (referred to as Innovation (t) and Innovation (t-1)), patents granted in periods t and t-1 (referred to as Patents (t) and Patents (t-1)). These variables aligned with those commonly employed in most of the studies under examination, including those specifically conducted in Poland. As previously stated, Investment (t and t-1), R&D (t and t-1) Innovation (t and t-1) and Patents (t and t-1) were all aggregated, economy-wide measures.

As for assessing company profitability, given its multifaceted nature, using a single measure as a proxy would have been inadequate. Hence, four distinct profitability measures were employed: Return on Equity (ROE), Return on Assets (ROA), Return on Sales (ROS), and Return on Invested Capital (ROIC). It's worth noting that there is no universally accepted, standard set of formulas for computing these indicators, and formulaic variations often exist depending on the specific researcher or data source. Therefore, precise calculation methods had to be established. In this article, the approach that appears to be one of the most methodologically robust was adopted, wherein:

$$ROE = \frac{\text{net profit}}{\text{average total equity}} \tag{1}$$

$$ROA = \frac{\text{net profit}}{\text{average total assets}} \tag{2}$$

$$ROS = \frac{\text{net profit}}{\text{revenues}^{2}} \tag{3}$$

$$ROIC = \frac{\text{EBIT} * (1 - \text{t})}{\text{total equity} + \text{interest bearing debt}} \tag{4}$$

[1] More accurately, Statistics Poland calculates the Price indices of sold production of industry, which cover four industries: "Mining and quarrying", "Industrial processing", "Electricity, gas, steam and hot water production and supply" and "Water supply, sewage and waste management, reclamation" (Statistics Poland, 2023B).

[2] Revenues were calculated as the sum of net sales revenues, other operating income and finance income.

These equations have been extensively examined in the literature (Mikołajewicz, Nowicki, 2021) and are endorsed by specialized organizations such as the CFA Institute (Robinson, Greuning, Henry, Broihahn, 2020).

For the data analysis process, a neural network, specifically a multi-layer perceptron (MLP), was employed. While this approach was infrequently utilized in this context, it underwent preliminary testing (Szutowski, 2023). Initial tests indicated that the MLP network outperformed the radial basis function. Concerning the network's structure, the input layer comprised 12 variables representing all the selected factors, in some cases examined in both the current (t) and previous (t-1) periods. This corresponds to the need of analysing the delayed effects of changes in some external factors. The included variables were: GDP, CPI, PPI, Investment (t), Investment (t-1), R&D (t), R&D (t-1), Innovation (t), Innovation (t-1), Reference rate, Patents (t) and Patents (t-1). The output layer consisted of the four target profitability variables for the current period (t), namely ROE, ROA, ROS, and ROIC. There were no restrictions on the number of neurons in the hidden layer. As per theoretical considerations, all variables underwent appropriate rescaling (IBM, 2023). Covariates were rescaled using adjusted normalization, while scale dependents were standardized. Normalization was chosen as it is recommended for the sigmoid activation function used in this study. The division of data into training, testing and holdout sets was performed automatically using the proportions of 50%, 25% and 25% consecutively. An overview of case processing, including the division into training and testing samples, is presented in Table 1.

Table 1.
Case processing summary

		N	Percent
Sample	Training	174	48.2%
	Testing	92	25.5%
	Holdout	95	26.3%
Valid		361	100.0%
Excluded		0	
Total		361	

Source: own development.

The chosen learning approach was batch learning, where weight updates are based on information derived from the entire dataset. This type of learning is recommended because it minimizes the overall error and is particularly suitable for relatively small to medium-sized datasets, such as the one being studied here.

Since neural networks don't offer regression-like coefficients for independent variables, a separate analysis was conducted to assess the importance of these variables. To achieve this, a sensitivity analysis was performed, which determines the significance of each predictor in shaping the neural network (IBM, 2019). Given that the number of predictors was not excessively large, the sensitivity analysis did not pose significant computational or time-related challenges. IBM SPSS software was used for constructing the neural network.

This study drew data from two primary sources. First, macroeconomic data were sourced from the Macroeconomic Data Bank, a service provided by Statistics Poland. According to the source's description, it is a statistical database that compiles indicators characterizing the macroeconomic and social conditions in Poland. This database offers access to extensive time series data covering various macroeconomic categories (Statistics Poland, 2023A). Second, the endogenous financial data used for calculating profitability ratios were gathered from the EMIS (Emerging Markets Information Service) database. As per the database provider, EMIS offers access to financial information for 682 thousand companies registered in Poland, including both large and smaller businesses (EMIS, 2022).

Regarding the study's objective, which was to explore the major determinants of company profitability, this research indicates that alterations in macroeconomic variables could significantly impact the profitability of companies.

A detailed overview of the network structure, encompassing the input, hidden, and output layers is provided below. This summary provides essential insights into the network's configuration, covering the variables employed, the methods of rescaling, as well as the activation and error functions. To enhance clarity, this information is conveniently presented in a tabular format (see Table 2).

Table 2.
Network information

Input Layer	Covariates	1	GDP
		2	CPI
		3	PPI
		4	Investment (t)
		5	R&D (t)
		6	Innovation (t)
		7	Reference rate
		8	Investment (t-1)
		9	R&D (t-1)
		10	Innovation (t-1)
		11	Patents (t)
		12	Patents (t-1)
	Number of Units[a]		12
	Rescaling Method for Covariates		Normalized
Hidden Layer(s)	Number of Hidden Layers		1
	Number of Units in Hidden Layer 1a		8
	Activation Function		Sigmoid
Output Layer	Dependent Variables	1	ROS
		2	ROA
		3	ROE
		4	ROIC
	Number of Units		4
	Rescaling Method for Scale Dependents		Standardized
	Activation Function		Identity
	Error Function		Sum of Squares

a – excluding the bias unit.

Source: own development.

Next, an overview of the model is provided. The results obtained for the training, testing and holdout datasets align closely to one another. The criterion for concluding the network's learning process was based on observing a single consecutive step with no decrease in error. Consequently, the relative errors for the training set equalled 0.499, for the testing set it was 0.717 and for the holdout set it matched 0.561. For specific details, refer to Table 3 below, which shows that in the testing set, ROA exhibited the highest relative error, while ROE had the lowest. Comprehensive details of the estimated parameters can be found in the Appendix.

Table 3.
Model summary

Training	Average Overall Relative Error		.499
	Relative Error for Scale Dependents	ROS	.517
		ROA	.524
		ROE	.452
		ROIC	.502
	Stopping Rule Used		1 consecutive step(s) with no decrease in error[a]
	Training Time		0:00:00.16
Testing	Average Overall Relative Error		.717
	Relative Error for Scale Dependents	ROS	.512
		ROA	.773
		ROE	.511
		ROIC	.742
Holdout	Average Overall Relative Error		.561
	Relative Error for Scale Dependents	ROS	.537
		ROA	.734
		ROE	.528
		ROIC	.581

a – error computations are based on the testing sample.

Source: own development.

To evaluate the model's performance, both the mean absolute error (MAE) and the mean squared error (MSE) were employed. To prevent any potential bias, the conventional MSE formula was adjusted, incorporating a denominator in the form of N - 1 - p, where 'p' represents the count of input variables (Karłowska-Pik, 2022). It's worth noting that for each of the dependent variables, the smallest errors were observed for ROA. The specific outcomes for each of these dependent variables are presented in Table 4.

Table 4.
Mean absolute error and mean squared error

	ROS	**ROA**	**ROE**	**ROIC**
MAE	0.31	0.06	0.11	0.66
MSE	1.08	0.13	0.26	0.79

Source: own development.

The next section of the paper presents and discusses the specific results.

4. Results

The comprehensive outcome of the analysis is depicted in Figure 1. As previously mentioned, the network was composed of not only the input and output layers but also featured a solitary hidden layer with eight neurons. Additionally, both the input and hidden layers incorporated a bias unit. In the diagram provided below, the network structure is presented, with grey lines representing synaptic weights greater than zero, and blue lines signifying synaptic weights less than zero.

Because the results obtained do not directly reveal the connection between the input layer variables and the output layer variables, a sensitivity analysis was conducted. This analysis served to identify the significance of each individual variable within the input layer. The outcomes are detailed in Table 5 and will be discussed further below.

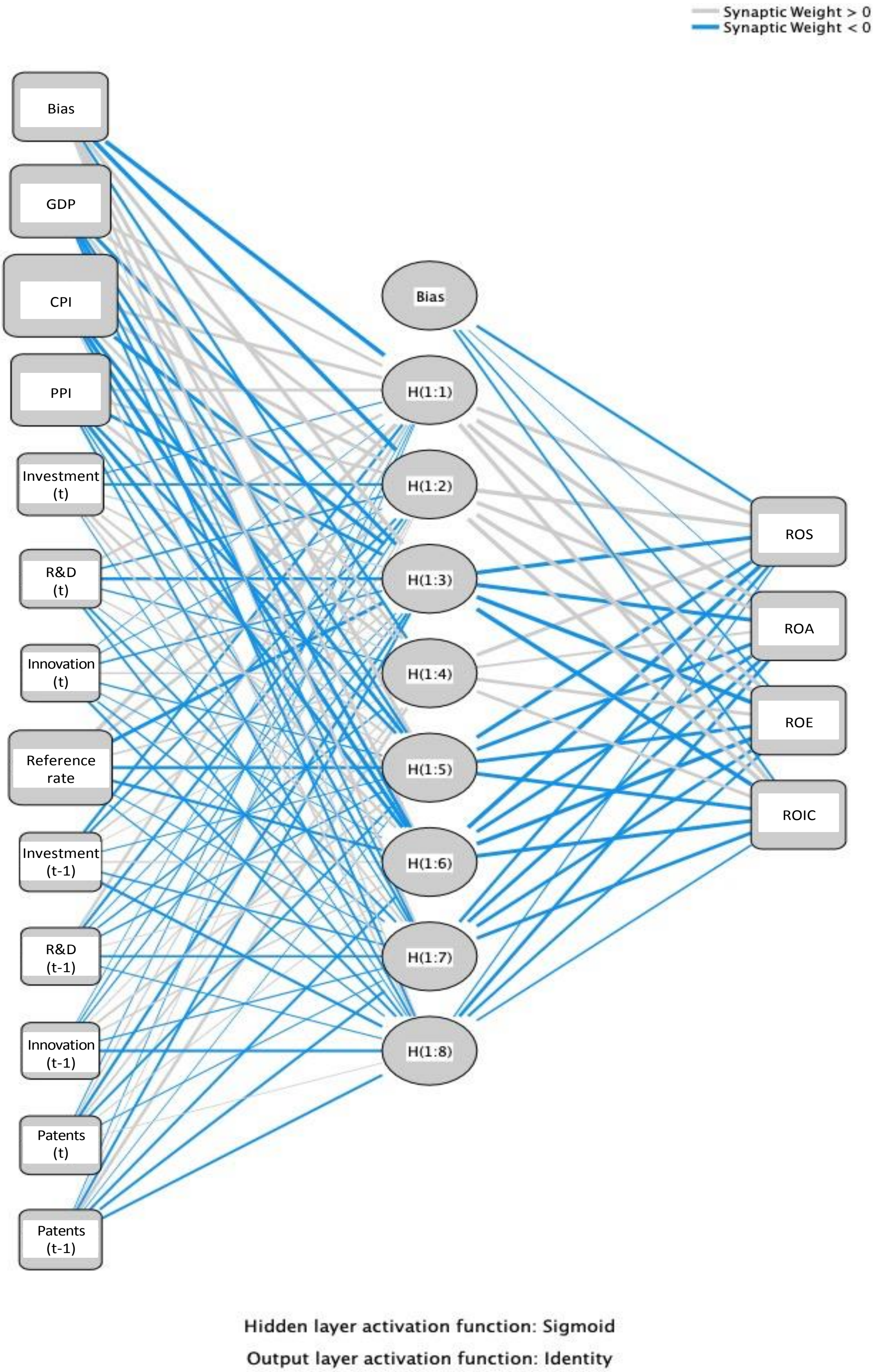

Figure 1. Synaptic weights.

Source: own development.

Table 5.
Independent variable importance

Variable	Importance	Normalized Importance
GDP	.159	64.5%
CPI	.247	100.0%
PPI	.151	61.2%
Investment (t)	.065	26.5%
R&D (t)	.033	13.2%
Innovation (t)	.018	7.5%
Reference rate	.177	71.9%
Investment (t-1)	.037	14.9%
R&D (t-1)	.022	8.8%
Innovation (t-1)	.014	5.5%
Patents (t)	.033	13.4%
Patents (t-1)	.044	17.8%

Source: own development.

To facilitate a more accessible understanding of the results pertaining to the importance of these sector-specific and macroeconomic variables, they will be visually represented in Figure 2.

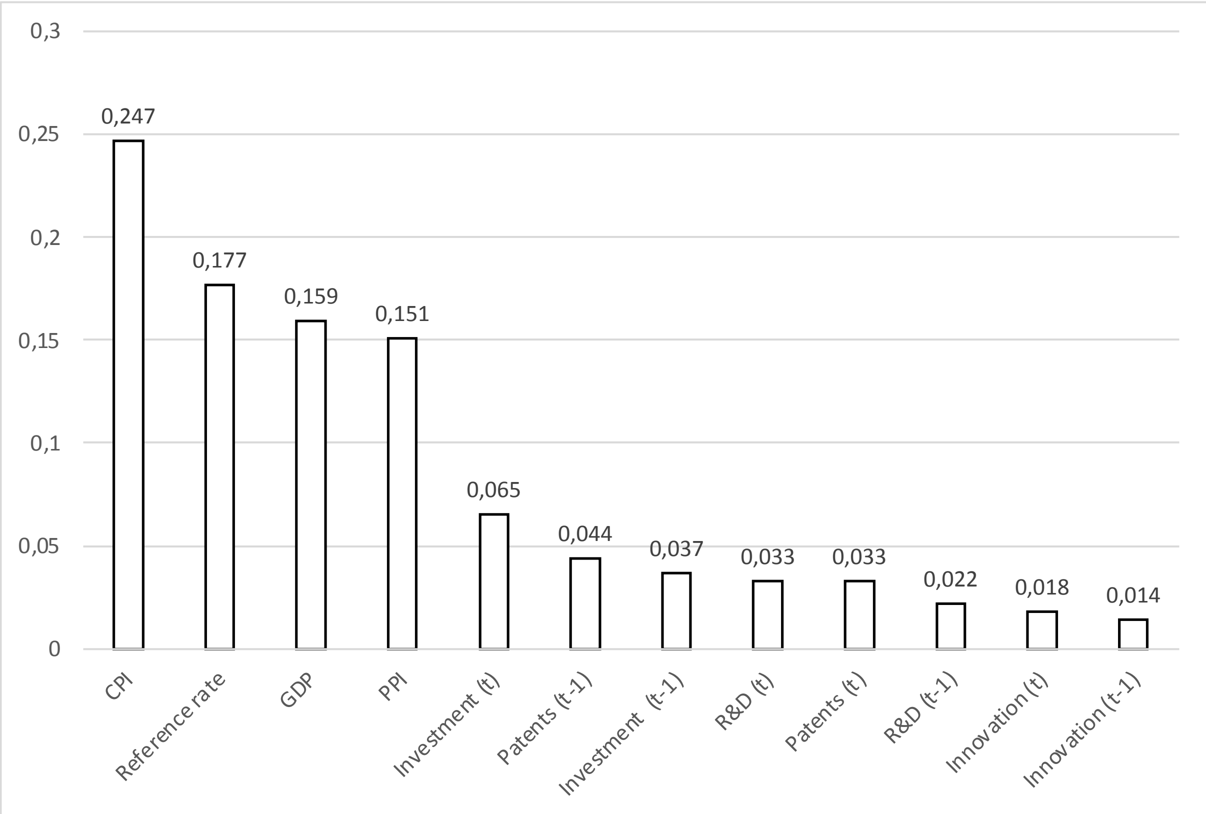

Figure 2. Importance of exogeneous variables.

Source: own development.

The analysis carried out revealed that, concerning the profitability of companies, the Consumer Price Index is the most significant macroeconomic variable. This outcome aligns with earlier research, which has consistently indicated a robust correlation between inflation and company profitability (Khrawish, 2011; Sufian, 2009; Sufian, Noor, 2012). It might be hypothesised here that demand-pull inflation might enhance profitability, while cost-push inflation may have the opposite effect, as discussed in Sangkyun's study in 2022.

The second most important factor was Reference rate. It is consistent with previous evidence suggesting significant impact of reference rates on the profitability of companies. One might hypothesise that the effect observed here derives from the fact that the reference rates influence the borrowing costs (Santsuosso, 2014). Also, as the reference rate undergone significant changes in the period of analysis, the credit availability differed from one period to another determining company ability to finance expansion, invest in new projects, or meet working capital needs, all of which affect company profitability (Muscettola, Naccarato, 2016). Moreover, as the sample studied here encompasses the companies of all the sectors of the economy, it also includes companies involved in international trade. Thus, the significance observed here may be partially explained by the fact that the fluctuations of the reference rate influenced the exchange rate of the PLN affecting the profitability of those companies.

Furthermore, alterations in the gross domestic product (GDP) ranked as the third most influential macroeconomic factor. This variable provides a broad indication of the overall economy's size and performance, making its connection to company profitability relatively straightforward. In accordance with previous empirical findings, consumer spending is closely linked to economic performance, and increased consumption (e.g. electricity) is correlated with higher GDP levels (Diacon, Maha, 2015; Stern, Burke, Burns, 2017). Adhering to fundamental economic principles, all else being equal, increased production levels result in changes primarily in variable costs. This effect, in the presence of fixed costs, enables companies to enhance their profitability.

The importance of the Producer Price Index (PPI) on moulding a company's profitability appears to be well-founded from a substantive perspective. It seems reasonable to hypothesise that the explanation provided for CPI holds true also here. Both the demand-pull inflation and the cost-push inflation may exert a significant effect on company profitability (Sangkyun, 2022). As the PPI variable signifies fluctuations in the fundamental prices within the industrial sector, which includes electricity, gas, steam, and hot water production and supply, changes in PPI transmit directly or indirectly into all of the sectors under investigation.

It appears that the above variables account for 0,734 of the total importance (0,159 + 0,247 + 0,151 + 0,177 = 0,734), which makes the remaining variables meaningfully less important. Investment (both t and t-1) and Patents (t-1) exerted some minor effect on profitability. However, when it comes to investment, previous research suggested already that there is no strong negative (or positive) impact of investment intensity on the future rates of ROA (Kotsina, Hazak, 2012). From the point of view of time lags, it might be worth noting that all the above-discussed variables conveyed the values in given period (t), while Patents (t-1) and Investment (t-1) were the most important lagged (t-1) variables in the set. This result seems partially consistent with earlier evidence concerning investment time lags. Previous studies suggested that when it comes to the length of investment projects, depending on the sector, it might be significant (Bar-Ilan, Strange 1996). It is therefore reasonable that the effects of investment outlays are only apparent after some time. In the case of patents, previous evidence also suggested that in some sectors their effects are only visible after some time (Ken, Tsai, Ou, 2008).

The remaining variables, i.e. R&D, Patents, R&D (t-1), Innovation and Innovation (t-1) demonstrated a relatively low importance. Therefore, the results of the study partially contradict the initially hypothesised importance of all the selected variables in shaping company profitability.

5. Conclusions

Due to the pivotal role of profitability in economic analysis and the varying empirical evidence on the influence of external factors on it, this study aimed to explore the major determinants of company profitability. While the study hypothesized the important impact of all selected variables on shaping company profitability, the findings offered partial support. Results indicated that changes in macroeconomic variables could exert a notable effect on the profitability of companies. Among the macroeconomic factors, the CPI emerged as the most influential, followed by Reference rate, GDP and PPI. The remaining factors exhibited relatively lower importance, particularly the Innovation (t) and Innovation (t-1).

These results hold practical relevance, as they emphasize the importance of incorporating external factors into profitability analysis, which is essential for various analytical works and expert opinions. This study underscores the need to consider the environment in which a company operates to draw reliable conclusions.

Notwithstanding this conclusion, the study identified promising avenues for further research. Firstly, some of the extensively studied factors related to innovation, R&D and patents demonstrate low importance, which contradicts most previous evidence in the field. Because of that, further investigation seems an important direction of future research. Second, this research did not address the inter-sectoral differences. While it was not its purpose, the following studies could focus on the characteristics of particular sectors and differentiate the results with consideration respect to them.

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Appendix

Table 6.
Parameter estimates

Predictor		Predicted											
		Hidden Layer 1								Output Layer			
		H(1:1)	**H(1:2)**	**H(1:3)**	**H(1:4)**	**H(1:5)**	**H(1:6)**	**H(1:7)**	**H(1:8)**	**ROS**	**ROA**	**ROE**	**ROIC**
Input Layer	(Bias)	-2.577	-2.399	1.921	-.652	1.679	.948	.800	.178				
	GDP	.806	1.248	-1.392	.996	-.764	-1.070	-.400	-.452				
	CPI	1.370	1.875	-1.873	.807	-1.403	-2.162	-.572	.353				
	PPI	.838	.929	-1.023	1.032	-.873	-1.417	-.185	-.416				
	Investment (t)	-.184	-.628	.245	.314	.471	.787	.414	-.105				
	R&D (t)	.737	-.383	-.946	-.250	.235	-.043	-.431	-.369				
	Innovation (t)	-.014	-.096	-.304	.251	-.236	-.060	-.267	-.457				
	Reference rate	1.969	1.001	-1.525	.359	-.942	-.787	-.158	-.222				
	Investment (t-1)	-.630	-.423	.285	.030	-.130	.235	-.302	-.700				
	R&D (t-1)	.770	-.546	-.092	-.272	-.269	.091	-.456	-.173				
	Innovation (t-1)	-.010	-.173	-.193	.110	.469	.267	-.198	-.696				
	Patents	-.093	.233	-.689	.366	-.438	.128	-.149	.050				
	Patents (t-1)	-.055	.087	-.528	.912	-.018	-.544	-.611	-.603				
Hidden Layer 1	(Bias)									-.740	-.029	-.344	-.419
	H(1:1)									2.143	3.042	2.323	2.587
	H(1:2)									3.171	2.251	3.042	2.981
	H(1:3)									-2.304	-2.284	-2.615	-2.503
	H(1:4)									1.685	.545	1.113	.969
	H(1:5)									-1.786	-1.596	-1.589	-1.763
	H(1:6)									-2.345	-1.302	-2.354	-2.003
	H(1:7)									-.801	-1.063	-1.055	-1.134
	H(1:8)									-.207	-1.015	-.637	-.348

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PERCEPTIONS OF ECO-RESPONSIBLE INITIATIVES OF THE BRAND AND THEIR IMPACT ON CONSUMER ENGAGEMENT OF GENERATION Z

Jolanta TARAPATA

Military University of Technology in Warsaw, Faculty of Security, Logistics and Management, Institute of Organization and Management; jolanta.tarapata@wat.edu.pl, ORCID: 0000-0002-0783-6295

Purpose: The aim of the study is to present the relationship between generation Z consumers' perception of sustainable brand initiatives in the area of environmental protection and the degree of their cognitive, emotional and behavioral involvement in the brand.
Design/methodology/approach: The study was conducted on a sample of 500 consumers in the period August-September 2023 throughout Poland (16 voivodeships). The sample selection was random. The research covered Generation Z consumers (aged 18 to 28), both sexes, and those from towns with different numbers of inhabitants who follow clothing brands on social media. The method used in the study was a diagnostic survey.
Findings: The research results prove that the perception of brand's ecologically responsible initiatives determines young consumers' involvement in all three spheres (cognitive, emotional and behavioral). In turn, the perception of these activities as ecologically irresponsible does not translate into their lack of involvement. Moreover, consumers who have no opinion on the activities undertaken by the brand that demonstrate their ecological responsibility declare their involvement in the brand to a similar extent as consumers who perceive these activities as responsible.
Research limitations/implications: The research results encourage a more in-depth analysis of consumers' involvement in the brand, considering extended scales proving their involvement, as well as covering a larger population of respondents.
Practical implications: Research results prove that a significant percentage of generation Z consumers do not have knowledge about ecologically responsible initiatives undertaken by their favorite brands. Hence, socially responsible brands that consider environmental protection in their activities should use more opportunities to communicate the activities to consumers, which are undertaken in this area, in order to create a more expressive image of a responsible brand, and thus strengthen their relationship with the brand, influencing their commitment.
Social implications: A better understanding of the impact of environmentally friendly practices undertaken by companies/brands on shaping relationships with stakeholders.
Originality/value: The article has primarily cognitive value, emphasizing the importance of the perception of ecologically responsible activities undertaken by brands in creating consumer involvement in the brand. Until now, little research has contributed to understanding the impact of brand activities perceived as sustainable on customer relationships from both cognitive, emotional and behavioral perspectives. The article therefore enriches the current theory of sustainable practices of brands and their relationships with consumers.

Keywords: perception, brand, ecological responsibility, consumer engagement.
Category of the paper: research paper.

1. Introduction

The article addresses the relationship between generation Z consumer involvement in the brand and Corporate Social Responsibility (CRS), particularly in the context of actions towards the environment. CSR is a concept, according to which the aspect of society, environmental protection, and respect for the demands of the broader stakeholders affect the shape of management strategies of business entities (Daszkiewicz, 2009, pp. 205-222). According to the above, a company/brand should be characterized by responsibility for the results of its business activities. More and more consumers are paying attention to the socially responsible aspects of companies/brands. Ethics and morality are increasingly entering the company/brand-consumer relationship and becoming its main glue. By being ethically, socially, and environmentally responsible entities, they build their positive image (Sobotko, Kozłowski, 2017, pp. 387-392), achieve competitive advantages in the long-term perspective (Furmańska-Maruszak, Sudolska, 2017, p. 253; Sudolska et al., 2020, pp. 14-19) and skillfully manage their relations with consumers (Bernatt, 2009, p. 26). For this reason, progressively more companies/brands are committed to increasing the perceived sustainability of the products and services offered to consumers in order to forge close relationships with them (Kim et al., 2015, pp. 182-193), build their loyalty and commitment.

The aim of this article is to examine the impact of generation Z consumers' perception of brand's sustainable activities in the area of environmental protection on their cognitive, emotional and behavioral involvement in the brand. The study assumed that the perception of brand's activities as pro-ecologically responsible, based on the idea of CSR contributes to the increase in consumer involvement in the brand. The perception of the social responsibility of brands in this article is considered from the point of view of a consumer who is increasingly interested in ensuring that the actions undertaken by companies/brands consider the good of society, consumer rights and environmentally friendly practices (Leonidou, Katsikeas, Morgan, 2013, pp. 151-170). The paper considers the environmental perspective of brands' social responsibility. It was defined as the consumer's perception of the practices undertaken by clothing brands in the spirit of ecological responsibility for the state of the environment in the process of producing the offer. To examine the impact of consumers' perceived ecological responsibility of brands on their engagement, reference was made to the customer engagement cycle model of C.M. Sashi's (Sashi, 2012, pp. 253-272). This process begins with the stage of consumers' perceived socially-responsible nature of the offering (Huang, Cheng, Chen, 2017, pp. 63-72), then goes through the stage of short-term consumer satisfaction and the stage of long-term transactional involvement (Chen, Sun, Yan, Wen, 2020) and finally ends with the stage of non-transactional involvement, when the consumer changes from a passive recipient of values into their active co-creator (Hollebeek, Srivastava, Chen, 2019, pp. 161-185), positively shares information related to the product/brand with others, provides feedback on their improvement, and helps other consumers.

2. The role of companies' ecological responsibility in brand creation

The concept of corporate social responsibility includes the ecological aspect, in addition to the economic and social aspects. The concept of ecological responsibility of companies/brands focuses on environmental protection (Dyllick, Rost, 2017, pp. 346-360). Due to the fact that every business activity pollutes the natural environment, ecological responsibility becomes particularly important. This means the need to take initiatives to reduce the negative impact of the company/brand on the natural environment. This process begins with production planning, through logistics, and ends with the collection and disposal of waste (Musiał, Kubacki, 2017, p. 86). It is directed at eliminating the negative effects of sourcing, packaging, transportation, as well as storage. At the production stage, the activities of a socially responsible company boil down to producing products that do not endanger the customer and the environment. The environmental activities of companies/brands related to production most often include: use of environmentally friendly production methods or technologies, natural reduction of energy, water, materials consumption, reduction of noise intensity, reduction of harmful odor emissions, use of safe chemicals, proper waste management, use of recycling of raw materials, eco-labeling, health and safety of production employees (Musiał, Kubacki, 2017, p. 86; Ratajczak, 2013, p. 152). Also, the area of transportation and warehousing provides an opportunity to introduce several environmentally friendly measures, e.g.: choosing means of transportation with reduced gas emissions into the atmosphere, optimizing storage space, eliminating losses and creating waste during storage (Paliwoda-Matiolańska, 2009, p. 153). A socially responsible company/brand takes appropriate actions to mitigate climate change and protect and restitute the environment (Borkowska-Niszczota, 2015, p. 373), exerts a positive impact on the environment also by monitoring the level of greenhouse gas emissions, supervising the level of emissions of pollutants that have a negative impact on the air, water or soil, and conducting environmental assessments or reports on environmental activities (Olejniczak, 2013, p. 2842).

The listed activities boil down to caring for the environment, to reducing the negative impact on it. A responsible company/brand, by minimizing the harmful effects of production and consumption on the state of the environment, contributes to achieving a balance between economic development and preservation of natural resources for future generations.

Through such actions, the company/brand creates a good reputation with the public, gains the image of a responsible company and thus builds consumer attachment, trust, and commitment.

In view of the above, socially responsible companies that take the environment into account can create a distinctive image of their brand, and thus strengthen their relationship with the brand, thus influencing their commitment. They have a variety of CSR instruments to choose from, which include: social campaigns, ethical programs for employees, employee volunteering, eco-labeling and green investments, corporate governance, social reports, socially responsible investments (Leoński, 2016, pp. 92-96), but also the introduction of transparent and effective management systems (*Quality Management System ISO 9000, Environmental Management System ISO 14000, Social Accountability SA 8000*), supply chain management - the application of the principles of social responsibility of business at every stage of supply (cf: Roztocka, 2018, pp. 225-226).

In conclusion, it should be added that companies should keep in mind that the socially responsible idea they support should match the brand image as closely as possible, so that there is full compatibility between them (Hajdas, 2009, pp. 59-60). This means that each organization can look for a different, previously unused tool and support an original idea (socially important) that has not been supported by any other company/brand before. Conscious consumers strongly prefer companies/brands that are able to demonstrate that they are supporting a given social idea out of pure intentions, not just a desire to raise sales.

3. Consumer involvement in the brand

The issue of engagement has received considerable attention in many academic disciplines, including marketing. The marketing literature identifies several concepts based on "engagement," including "consumer engagement." Analyzing the understanding of the concept of engagement in marketing theory, one can see that it is considered in narrow and broad terms. The narrow view treats engagement as a one-dimensional construction, as it focuses exclusively on consumer behavior (Wiechoczek, 2017, p. 205). In the broad view, "engagement" is a multidimensional concept consisting of cognitive, emotional and behavioral elements that characterize the customer in their interactions with a company or brand (Hollebeek 2011a, 2012; Brodie et al., 2013, p. 107). In this approach, commitment is understood as:

- a strong consumer reaction in response to a given impulse/object, e.g. a brand. This reaction may be situational (Celsi, Olson, 1988) or permanent;
- level of the consumer's diverse "presence" in his relationship with the company - this presence involves physical, emotional, and cognitive aspects. In this sense, consumer engagement consists of four elements, namely, vigor, post-sacrifice, absorption and interaction (more extensively: Patterson, Yu, de Ruyter, 2006);

- the level of consumer engagement triggered by the brand and the consumer's attitude formed as a result of interactions with it (Hollebeek, 2011b, p. 559);
- consumers' participation in shaping the company's market offer and other marketing activities as part of its activities (Vivek, 2009, p. 7; Vivek, Beatty, Morgan, 2012, pp. 128-131);
- a consumer's mental state of fluctuating intensity (dependent on the specific context) that determines the importance of an object to the consumer (Mittal, Lee, 1988). This state emerges due to the consumer's interactive, co-creative experience with the brand (Brodie et al., 2011, pp. 252-271; Hollebeek, 2011a, pp. 785-807; Brodie et al., 2013, p. 105), reflects the consumer's motivations (van Doorn et al., 2010, pp. 253-266), his interest in a particular brand product category in the purchase decision process (Shiffman, Kanuk, 2010, p. 229).

These definitions indicate the dynamism and complexity of the engagement concept and emphasize the focus on the interactions/relationships between consumers and the company/brand. Consumers' attitudes, their opinions, positive or negative, as well as the high or low level of importance of the brand, is determined by the nature of the customer's interaction with the various points of physical, possibly virtual, contact with the brand (Witczak, 2016, pp. 371-380). Thus, implementing the concept of engagement requires adopting a consumer perspective and orientation (Rupik, 2015, p. 341). Hence, consumer engagement with the brand, i.e. the opinions, attitudes and behaviors presented, are analyzed in several dimensions: cognitive (information about the brand); affective (emotions, feelings and moods associated with/caused by the brand); behavioral (behaviors towards the brand, e.g. recommendations); social (building a network of relationships within the framework of consumer membership in various groups interested in the brand, i.e. traditional and virtual communities, among others) (Witczak, 2017, pp. 249-258).

The cognitive dimension of consumer involvement is manifested in: extensive consumer knowledge about the brand based on access to many sources of information, obtained at any place and time; knowledge regarding the values and benefits provided by the brand. The emotional dimension is defined by a high level of enthusiasm and perceived pleasure, the joy of consumers from direct contacts with the brand; but also based on the consumer's activity in virtual communities (e.g., posts on a given brand's profile), as well as from comments received by other discussion participants regarding the content created by the consumer on the brand's profile. The behavioral dimension manifests itself in specific consumer behaviors towards the brand, i.e. actions proving the consumer's interest in the brand (e.g. observing the brand profile); actions indicating the consumer's enthusiasm and expectation towards specific brand content, the so-called "like"; tendency to redirect: the so-called "clickability" of links redirecting to content in other media; conducting a dialogue with the brand, among others asking questions on the brand profile and others (Hollebeek, Juric, Tang, 2017, pp. 204-217; Bowden, 2009, pp. 63-74).

In summary, "consumer engagement" is a multidimensional concept, including cognitive, emotional and behavioral elements relating to the consumer and his interaction with the brand.

4. The relationship between the perception of ecologically responsible initiatives undertaken by brands and generation Z consumer involvement – methodology and analysis of own study

Research on the attitudes and behaviors of consumers of generation Z towards clothing brands, undertaken within UGB research grant no. 853, was commissioned to the IPC Research Institute Sp. z o.o. in Wrocław and conducted on a sample of 500 consumers in August-September 2023 throughout Poland (16 voivodships). The method used in the study was a diagnostic survey, the technique was a questionnaire survey, and the tool was an online survey questionnaire. The selection of the research sample was random. Only people aged between 18 and 28 and who follow clothing brands on social media were recruited for the study. The quantitative structure of the respondents adopted in the study included three strata, i.e. gender, age and town of origin of the respondent[1]. The research covered several areas. One of these was the area of brand social responsibility and consumer engagement with the brand. The aim of the research undertaken in this area was, among other things, to determine Generation Z consumers' awareness of socially responsible practices undertaken by their favorites brands and to find out how their perception of the brand in this area of its activity determines their cognitive, emotional, and behavioral involvement in the brand.

For understanding both how young consumers perceive the brand's activities undertaken as part of ecological responsibility and determining their involvement in the brand, a seven-point scale was used: I definitely disagree, I disagree, I rather disagree, I have no opinion, I rather agree, I agree, I definitely agree.

The brand's sustainable activities in the area of ecology were reduced to six basic statements in the study (Figure 1). When responding to these statements, respondents were asked to refer to the clothing brands they most frequently purchased. Customer favorite brands, in all six areas, are perceived by the majority of customers as environmentally responsible. On average, 65% of those surveyed say this. Only 8% of respondents hold the opposite view. However, there are some respondents (27%) who do not have an opinion about ecologically responsible practices undertaken by brands. This may indicate a lack of generation Z consumers' interest in the socially responsible actions taken by brands during the production of clothing.

[1] The quantitative structure of the respondents in each stratum was as follows: gender: 50% female, 50% male; locality: rural area - 20%, city with less than 50,000 inhabitants - 20%, city with 50,000 to 100,000 inhabitants - 20%, city with 100,000 to 200,000 inhabitants - 20%, 20% city with more than 200,000 inhabitants - 20%; age: 18 to 22 years - 50% and 23 to 28 years - 50%.

As many as 38% of consumers do not know whether their favorite brand uses recycled plastic in the production of clothing, and 32% whether it offers clothing with ecological markings or certificates. It is encouraging that as many as 78% of consumers say that their brand cares about the quality and durability of manufactured products, and 71% that it limits the use of plastic in packaging (offers paper shopping bags or uses cardboard when shipping clothes).

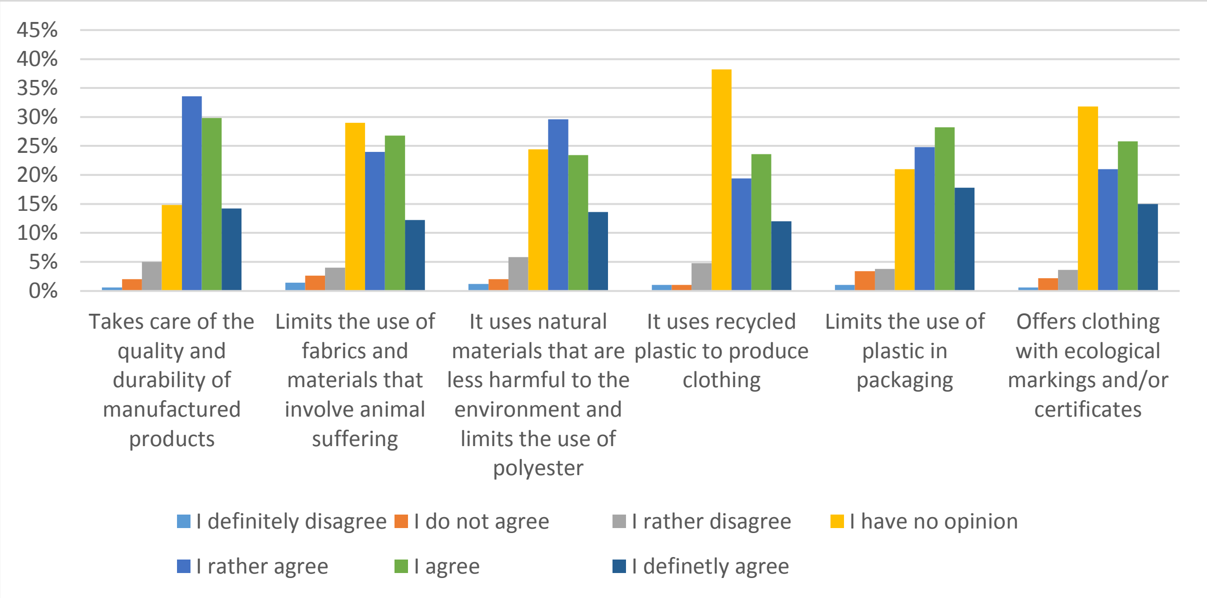

Figure 1. Perception of the brand's responsible activities in the area of care for the natural environment (N = 500).

Source: own research.

The issue of considerations regarding generation Z customer involvement in the brand has been reduced to three areas: cognitive, emotional, and behavioral involvement. In each of these three areas, several statements were identified indicating commitment to the brand (figure 2). These scales were adopted from existing literature (Hollebeek, Glynn, Brodie, 2014; Sarkar, Sreejesh, 2014), but adapted to the context of this research. Two scales were adopted to measure cognitive involvement and emotional involvement, and three scales were used to measure behavioral involvement. They are the following statements: for cognitive involvement - (1) "I am interested in information about my brand and its products", (2) "I am willing to expand my knowledge about my brand"; for emotional involvement - (3) "I would feel sorry if this brand disappeared", (4) "Using my brand evokes positive emotions in me"; for behavioral involvement - (5) "I pass on information about the brand to my friends", (6) "I recommend the brand's products to my friends", (7) "I pass on my complaints and ideas to the company in order to improve the brand".

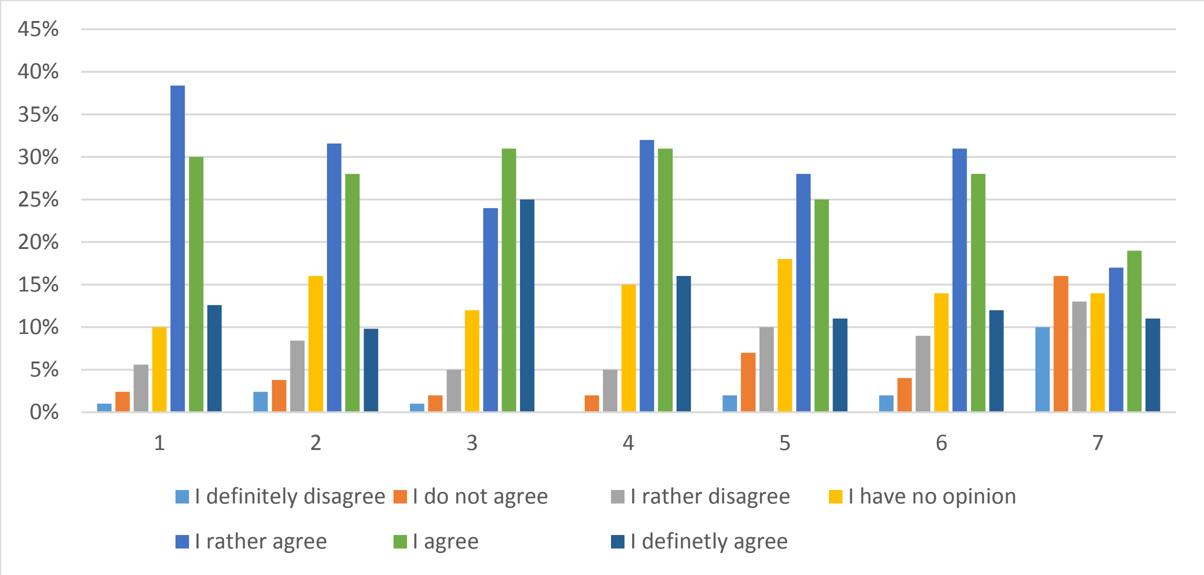

Figure 2. Generation Z consumers' cognitive, emotional, and behavioral involvement in the brand (N = 225).

Source: own research.

The general summary of the results shows that most generation Z consumers are committed to their favorite brand, both in the cognitive (76% of the total), emotional (80%) and behavioral (60%) areas. In the case of all types of involvement, a similar percentage of generation Z consumers (14%) have no opinion about their attitudes and behaviors that would indicate their involvement. The average percentages also show that the largest percentage of respondents (24%) are behaviorally disengaged. The percentages for lack of cognitive and emotional engagement are slightly lower (11% and 7.5% respectively). In the area of cognitive involvement, slight differences were found in relation to the two analyzed statements. 11% more surveyed consumers admitted that they were interested in information about the brand and its products (81%) than were willing to expand their knowledge about the brand (70%). 5% more consumers believe that they are not willing to expand their knowledge about the brand (14% of the total) than those who are not interested in information about the brand (9%). The situation is similar for people who had no opinion (16% and 10% respectively). In the case of emotional involvement, the percentages for the two analyzed statements are similar. This applies to both commitment and lack thereof. 80% of customers would feel sorry if their favorite brand disappeared, and 78% say that using the brand evokes positive emotions in them. 8% of consumers indicated a lack of emotional involvement, manifested by the lack of feeling regret if the brand disappears, and a lack of positive emotions when using the brand - 7%. In the case of behavioral involvement, significant differences are noted in relation to the analyzed statements. Consumers of generation Z largely recommend the brand's products to their friends (71% of the total) and provide them with information about the brand (63%). However, they try to enter relationships with the brand to a lesser extent, sharing their complaints and ideas with the company in order to improve the brand (only 47% of respondents). In this case, as many as 39% of consumers do not undertake such activity at all.

About 18% of respondents also have no opinion on whether they share information about the brand with their friends. In the case of behavioral involvement, activity in the three indicated areas is much lower than in the case of cognitive and emotional involvement. It can be assumed that the reason for this may be the lack of motivation among young people to put effort into specific behaviors aimed at communicating the brand to the environment.

In order to show the relationship between generation Z consumers' perception of the brand's ecologically responsible activities and their involvement in the brand, a three-level scale was adopted: involvement (responses: I rather agree, I agree, I definitely agree), no opinion on the display of specific attitudes and behaviors that indicate involvement (response: I have no opinion) and lack of involvement (responses: I definitely disagree, I disagree, I rather disagree) - table 1. The study confirmed that most young consumers who perceive the brand's activities as ecologically responsible also declare their involvement in the brand, both cognitive, emotional, and behavioral. Only in the case of behavioral involvement, these indicators are slightly lower than in the case of the other two types of involvement. The percentage of surveyed consumers who notice the brand's ecological initiatives and who also share their complaints and ideas with the company in order to improve the brand is on average 60%. For comparison, among consumers who perceive the brand as ecologically responsible, as many as 88% are interested in information about the brand and its products (cognitive involvement), and 86% claim that using the brand evokes positive emotions in them (emotional involvement). Therefore, the perception of a brand as ecologically responsible determines generation Z consumer involvement. According to previous considerations, it can be assumed that the lack of perception of a brand as ecologically responsible will result in lower engagement. This thesis, however, has not been confirmed by research. Even though the percentage of young consumers who do not notice environmentally responsible practices undertaken by their brands was relatively small, accounting for 8% of the total, a significant number of them declare their involvement. Consumers who believe that the brand does not offer clothing with markings and/or certificates also declare their emotional involvement, i.e., 78% of them claim that they would feel regret if the brand disappeared, and 69% that using the brand evokes positive emotions in them.

Table 1.

Generation Z consumers' perception of the brand's ecologically responsible activities and their cognitive, emotional, and behavioral involvement in the brand (markings: Y – yes, DK – I don't know, N – no) (N = 500)

Customers' perception of the brand's ecologically responsible activities		Customer cognitive engagement						Emotional involvement of customers						Customer behavioral engagement								
		I am interested in information about the brand and its products			I am willing to expand my knowledge about the brand			I would feel sorry if the brand disappeared			Using the brand evokes positive emotions in me			I pass on information about the brand to friends			I recommend the brand's products to my friends			I convey my complaints and ideas to the company to improve the brand		
		N	DK	Y	N	DK	Y	N	DK	Y	N	DK	Y	N	DK	Y	N	DK	Y	N	DK	Y
Takes care of the quality and durability of manufactured products	N	34%	13%	53%	47%	24%	29%	34%	13%	53%	24%	29%	47%	50%	21%	29%	45%	18%	37%	68%	8%	24%
	DK	16%	24%	59%	18%	36%	46%	8%	24%	68%	8%	31%	61%	24%	36%	39%	19%	28%	53%	43%	30%	27%
	Y	5%	7%	88%	11%	11%	78%	5%	10%	86%	4%	10%	85%	14%	14%	72%	11%	10%	79%	35%	11%	54%
Limits the use of fabrics and materials that cause animal suffering	N	35%	13%	53%	43%	23%	35%	18%	15%	68%	15%	33%	53%	43%	15%	43%	45%	13%	43%	55%	18%	28%
	DK	11%	15%	74%	19%	24%	57%	13%	16%	71%	8%	23%	68%	26%	23%	50%	19%	28%	54%	54%	14%	32%
	Y	5%	7%	88%	9%	11%	79%	3%	10%	86%	4%	9%	87%	12%	15%	73%	9%	7%	83%	30%	13%	57%
For production, it uses natural and environmentally friendly materials and limits the use of polyester	N	22%	16%	62%	27%	22%	51%	22%	9%	69%	20%	20%	60%	42%	20%	38%	44%	18%	38%	71%	4%	24%
	DK	16%	16%	68%	25%	24%	51%	11%	18%	71%	9%	21%	70%	22%	26%	52%	18%	27%	55%	47%	26%	27%
	Y	5%	7%	88%	9%	12%	79%	4%	11%	85%	4%	12%	85%	14%	14%	72%	10%	8%	82%	31%	11%	58%
It uses recycled plastic to produce clothing	N	29%	24%	47%	35%	24%	41%	15%	12%	74%	9%	35%	56%	47%	9%	44%	44%	12%	44%	71%	9%	21%
	DK	11%	12%	77%	21%	21%	58%	9%	16%	74%	10%	20%	70%	24%	25%	51%	19%	23%	58%	54%	21%	25%
	Y	5%	7%	88%	7%	12%	81%	5%	9%	85%	3%	9%	88%	11%	13%	76%	8%	7%	85%	24%	9%	67%
Reduces the use of plastic in packaging	N	24%	22%	54%	29%	29%	41%	17%	22%	61%	22%	20%	59%	34%	24%	41%	41%	15%	44%	54%	22%	24%
	DK	15%	17%	68%	23%	28%	50%	12%	20%	68%	12%	23%	65%	22%	28%	50%	19%	27%	54%	53%	24%	23%
	Y	5%	6%	88%	10%	11%	79%	5%	9%	86%	3%	12%	85%	16%	14%	71%	10%	10%	80%	32%	10%	58%
It offers clothing with markings and/or certificates	N	25%	13%	63%	31%	28%	41%	22%	0%	78%	13%	19%	69%	47%	13%	41%	47%	9%	44%	69%	13%	19%
	DK	13%	14%	73%	20%	24%	56%	9%	16%	74%	9%	22%	69%	26%	28%	45%	20%	25%	55%	57%	21%	22%
	Y	6%	7%	87%	10%	11%	79%	5%	11%	84%	4%	11%	85%	11%	13%	76%	9%	8%	83%	26%	10%	64%

Source: own research.

Respectively, 69% and 60% of young consumers declaring the above attitudes believe that the brand does not use natural materials for production (cotton, viscose) and that are less harmful to the environment (bamboo and cellulose fibers) and does not limit the use of polyester. Consumers who have a similar opinion on not using these materials in production also demonstrate cognitive involvement, i.e., 62% of them are interested in information about the brand and its products, and 51% are willing to expand their knowledge about the brand. Therefore, not in every case the perception of a brand as ecologically irresponsible translates into lower cognitive and emotional involvement. In the case of behavioral engagement, generation Z consumers are less engaged when they believe the brand is not responsible. On average, 42% of customers who perceive a brand as ecologically irresponsible recommend the brand's products to their friends, 39% provide them with information about the brand, and only 23% provide the company with their suggestions for brand improvements. Regarding behavioral involvement, young consumers who perceive the brand's lack of commitment to ecology are less committed to the brand than in the case of cognitive and emotional involvement. A much larger group consisted of young people who have no opinion on ecologically responsible initiatives undertaken by brands. They constituted 28% of the total. Among this group of consumers, as many as 61% declare cognitive involvement, 69% emotional involvement and slightly less, 43% behavioral involvement. The largest percentage of consumers who have no opinion on the ecologically responsible practices of their brand declare that they would feel sorry if their brand disappeared (71%) - emotional involvement, and 70% of them are interested in information about the brand and its products - cognitive involvement. The smallest percentage of respondents who have no opinion on the ecologically responsible practices of their brand (24%) claim that they share their complaints and ideas with the brand to improve it. Therefore, the lack of opinion on initiatives that consider the good of the natural environment determines young consumers' behavioral involvement in the brand to the least extent.

5. Summary

Changes taking place in the world influence the evolution of the approach to consumption, sales, and marketing. Thanks to brands, social responsibility practices are implemented, and companies that implement the CSR concept build long-term and positive relationships with consumers. These practices concern not only initiatives undertaken by companies/brands towards the social environment or consumer protection, but also initiatives aimed at limiting their negative impact on the natural environment.

The analysis of the perception of initiatives undertaken by brands as part of ecological responsibility gives positive results. About 2/3 of consumers of generation Z perceive their favorite brands as ecologically responsible in the activities specified in the study. This may indicate that young consumers are aware of socially responsible practices undertaken by their favorite brands. However, what may be disturbing is the fact that almost 1/3 of them have no opinion on the environmentally responsible activities undertaken by the brand. This, in turn, may indicate young consumers' lack of interest in socially responsible activities undertaken by the brand, their low level of awareness or the fact that these activities are insufficiently communicated to them by the brand.

Research has also shown that consumers of generation Z declare a high level of involvement in the brand. This particularly concerns cognitive involvement, which comes down to obtaining information about the brand and striving to get to know it better, as well as emotional involvement expressed in the emergence of emotions related to the brand. Consumers' cognitive involvement in a brand can be justified by the development of modern communication technologies and the ease of using them. Thanks to them, young consumers have no problems in obtaining information about the brand. To a slightly lesser extent, consumers declare behavioral involvement, which requires them to take appropriate actions and interact with others. This involvement is manifested to a greater extent in communicating the brand to friends, and to a lesser extent it comes down to consumers entering relationships with the brand. This may be related to communication barriers between them and the brand and the much greater effort that must be put into communicating their comments and suggestions to the company/brand.

The research results provide the basis for stating that the perception of a brand as socially responsible determines consumer involvement of generation Z. Young consumers who perceive the brand's activities as ecologically responsible also declare involvement in the brand, both cognitive and emotional, and to a slightly lesser extent behavioral. An interesting observation is that the perception of a brand as ecologically irresponsible does not translate into lower consumer involvement, mainly cognitive and emotional involvement. Moreover, a significant percentage of young consumers who have no opinion on ecologically responsible activities undertaken by brands declare their involvement in the brand, both cognitive, emotional and, to a slightly lesser extent, behavioral. Therefore, generation Z consumers' lack of knowledge regarding ecologically responsible initiatives undertaken by the brand does not determine their lack of involvement.

The cited results are part of a stream of studies presented previously by other researchers. As companies/brands increasingly provide sustainable products and services, numerous studies have discussed the impact of the products/services offered on customer relationships. These studies have mainly focused on customer identification and loyalty to sustainable companies/brands (Martínez, del Bosque, 2013, pp. 89-99; Huang, Cheng, Chen, 2017, pp. 63-72), customers' willingness to pay for sustainable products (van Doorn, Verhoef, 2011, pp. 167-180), customers' evaluation of environmentally friendly practices (Galbreath, Shum, 2012, pp. 211-229; Liu et al., 2014, pp. 181-194; Chung et al, 2015, pp. 542-547) or the impact of sustainable actions taken by companies/brands on customer attitudes and behaviors, both transactional (van Doorn, Verhoef, 2011, pp. 167-180; Galbreath, Shum, 2012, pp. 211-229; Liu et al., 2014, pp. 181-194; Chung et al, 2015, pp. 542-547) and on non-transactional behaviors, which is beyond purchase (Chen, Sun, Yan, Wen, 2020). However, these studies have paid little attention to young consumers. Therefore, the current study not only provides further insight into the understanding of the relationship between consumers' perceived sustainable actions taken by companies/brands and engagement, both cognitive and emotional, as well as behavioral, but also succeeds in looking more closely at generation Z consumers. The study conducted captured the different engagement orientations of young consumers and understood engagement from both rational (cognitive and behavioral) and emotional perspectives, as customers with different engagement orientations interact with the company/brand in different ways. Unlike most previous studies that have focused solely on emotional engagement (Chen, Dahlgaard-Park, Wen, 2019, pp. 141-15), this study took the next step to provide a holistic view of understanding engagement from both cognitive, behavioral, and emotional perspectives and to empirically test the relationship between the three engagement orientations and perceptions of the brand as eco-logically responsible.

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