ARTIFICIAL INTELLIGENCE IN TERRITORIAL MARKETING

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Purpose: The purpose of this paper is to present a modern approach to the optimization of territorial marketing through discussing selected possibilities of applying artificial intelligence in the marketing management of territorial units such as regions, cities, districts, or municipalities.

Design/methodology/approach: The paper is based on a review of the literature and online sources – 51 bibliographic items in total. The time scope of the conducted analysis covers the years 2014-2024. Additionally, in order to present a comprehensive picture of the current trends, the method of desk research was used to analyse existing empirical data and professional literature on the subject. The analysis made use of inductive reasoning, which makes it possible to draw conclusions from the observed processes.

Findings: Artificial intelligence has enormous potential, capable of revolutionizing marketing management. Also, its potential and actual implementation in place marketing offers the possibility of obtaining a competitive advantage and extraordinary development opportunities. Combining creative economic ideas with the latest IT technologies makes it possible to achieve a synergistic effect in such areas as, for example, creating effective promotional campaigns for cities and regions.

Research limitations/implications: In the future it would certainly seem worthwhile to conduct representative empirical studies among managers involved in the promotion of cities to diagnose the actual implementation of selected artificial intelligence tools by the local government units responsible for the creation and implementation of promotional campaigns addressed to residents, tourists and investors. The content of this article can be helpful in developing the methodology for such research.

Practical implications: Effective management of the development strategy and promotion of territorial units plays a major role in the competition between cities for limited resources; which include funds from investors, tourists and local communities. Local government units which are managed in a modern way are open to new, innovative and creative ideas in their promotional media campaigns. Undoubtedly, the range of tools offered by artificial intelligence makes it easier to generate and implement original solutions that promote interactions with stakeholders as well as enabling effective monitoring of ongoing advertising campaigns.

Originality/value: The findings have cognitive value. The article describes the role of artificial intelligence in territorial marketing and the instruments used in this area.

Keywords: artificial intelligence (AI), territorial marketing.

Category of the paper: General review.

1. Introduction

The contemporary world of business and marketing is characterized by dynamic changes, driven by the development of technology and the growing importance of artificial intelligence. This does not only apply to companies, but also to institutions and non-profit organizations. Changing consumer behaviour, the fast development of IT technology and the globalization of markets create new challenges and requirements for organisations. One of the key areas undergoing dynamic change is marketing management. Advanced technologies such as artificial intelligence are increasingly used to efficiently manage marketing activities and to adjust to changing customer preferences. The implementation of artificial intelligence tools can significantly increase the effectiveness of marketing activities, make them more attractive for stakeholders, as well as helping to better understand and fulfil the needs of customers, who include primarily residents, tourists and investors.

2. History of artificial intelligence

The origins of artificial intelligence date back much earlier than the era of computers, starting from Aristotle and ancient Greece and continuing to the present day. As technology progressed, artificial intelligence evolved significantly, gradually finding practical applications in various areas of social and economic life. The Greek philosopher Aristotle (384-322 BC) wrote in his book *Politics* that if machines could independently perform the tasks assigned to them, one day they could replace humans at work. Although modern science has long since departed from Aristotle's methodology, his ideas still influence many areas of logic, mathematics, and artificial intelligence (Pickover, 2019).

In 1637, the philosopher René Descartes stated that machines would one day take significant initiatives, make decisions, and act in an "intelligent" manner. Although his vision was controversial, it later became the foundation for adopting the term Artificial Intelligence (Miernik, 2023).

In 1921, a Czech playwright Karel Čapek published a science fiction play that explored the concept of a factory-produced synthetic human being, which he called a robot. Thus, the concept of a "robot" used in research, art, and exploration was adopted more than 100 years ago (Vanjare, 2022).

In 1950, the British scientist Alan Turing stated that computers would eventually learn to think like humans. Turing believed that a machine could be considered intelligent if its responses could not be distinguished from those of a human. Modern chatbots are capable of misleading humans, but due to their limitations, this deception is usually quickly exposed.

Nevertheless, Alan Turing predicted that in the future, artificial intelligence would become indistinguishable from human intelligence (Heaven, Alison, 2017).

In 1951, the first artificial neural network was built. It was designed by Marvin Minsky and Dean Edmonds and called SNARC (Stochastic Neural Analogue Reinforced Computer). Back then, there were no microprocessors or transistors so 3000 vacuum tubes were used. The network's task was to help virtual rats go through a maze. The rats were given instructions to help them go through the maze, and each time the effect of the activity was recorded by the system. The machine learnt from each experience and was later able to make better decisions. Currently, neural networks use similar principles to classify objects visible in photographs (Górski, 2019).

In 1956, the first scientific conference on artificial intelligence was organized in Dartmouth. Among the guests were John McCarthy, Marvin Minsky, Nathaniel Rochester and Claude Shannon, as well as a number of scientists from various disciplines such as psychology, philosophy, mathematics, physics and linguistics. The aim of the conference was to define and direct research on machines that think, learn and in the future will replace humans in some jobs. The participants of the conference were divided into different working groups dealing with different aspects of artificial intelligence. These included speech recognition, natural language processing, planning, machine learning and other areas (bitcoin.pl, 2023).

The next important step in the development of artificial intelligence was the creation of a computer program called ELIZA by computer scientist Joseph Weizenbaum in 1964. This program became one of the first and most convincing virtual interlocutors (conversation simulators). ELIZA was programmed to respond to key words and phrases, creating the illusion of real human empathy. Today, virtual interlocutors (chat-bots) are often used in technical support systems and act as consultants for customers (Pickover, 2019).

Comparing the clumsy attempts of early computer engineering to the impressive robots being created today, enormous progress is evident. Moore's law, which states that the computational power of computers doubles every 24 months, shows how fast technological progress is. Raymond Kurzweil, an American scientist, on the basis of Moore's law calculated that by 2029 computers will achieve the same processing power as the human brain (Jastrzębska, Jastrzębska, 2010).

In 1981, the Japanese Ministry of International Trade and Industry allocated USD 850 million for a fifth-generation computer project, the aim of which was to develop a computer capable of speech, language translation, image interpretation, and human-like reasoning (biuroreklama.pl, 2023).

Increasing technological advances led to the development of the Mercedes Dickmans van in 1986, which became the first autonomous vehicle. It took eight years to build and had a top speed of 96 km/h, limited only by engine power. The vehicle was equipped with sensors that allowed it to recognize objects, drive in a convoy and change lanes autonomously (Skuza, 2023). Today, autonomous vehicles are only legally allowed on the road in a few countries.

The next important date on the timeline was the year 1988, when IBM published a groundbreaking paper that introduced probability principles into the process of automatic translation from French to English. This approach was quickly replaced by a method based on calculating the probability of outcomes, which more closely resembled the cognitive processes of the human brain. This change became the foundation for modern machine learning technologies (Zalewska-Bochenko, 2024).

The development of artificial intelligence has been characterized by periods of ups and downs. The boom, which occurred between 1956 and 1974, was the result of fascination with the new possibilities the field offered. Intriguing assumptions that it was possible to create intelligent machines that would replace humans fascinated the scientific world. Various organizations, most notably the U.S. government, funded extremely expensive research. But then came the "lean years" of 1974-1993, as scientists struggled with the limited capabilities of computers, the vast amount of information that a rational machine must process, a lack of money, criticism from ethicists and philosophers, as well as a host of other problems that caused research to be curtailed and its results to be negligible.

The 1990s saw a new phase in the development of artificial intelligence with the transition from physical robots to digital programs. This decade saw the emergence of Sojourner, NASA's first autonomous robotic system, and the defeat of chess grandmaster Garry Kasparov by Deep Blue (Adamyan, 2023).

In the 21st century, artificial intelligence has undergone further intensive development, transforming from a research area into a driving force of innovation in many fields. Computing power and data storage capacity have increased significantly. Access to Big Data and the development of processors have enabled more sophisticated applications of artificial intelligence. A key event for AI was the development of machine learning. Neural networks, especially multi-layer ones (so-called deep neural networks), have enabled machines to learn with unprecedented efficiency. As a result, a period of commercial implementation of many applications has begun, from product recommendations in online stores to autonomous cars and personal assistants. The introduction of Midjourney and ChatGPT tools has made AI functions available to a wide range of users. In addition, global corporations, striving for a technological advantage, have begun to invest significant financial resources in the development of artificial intelligence and other innovations (cebrf.knf.gov.pl, 2024).

In June 2023, the European Parliament adopted the world's first comprehensive legislation on AI, the so-called Artificial Intelligence Act. As part of the adopted digital transformation strategy, an attempt was made to regulate activities connected with implementing artificial intelligence. A programme called "Europe's Digital Decade" was developed. It formulated goals for technological transformation by 2030 in areas such as secure and sustainable digital infrastructure, digital public services, digital transformation of businesses, and digital skills. The document was preceded by the signing of the Declaration of Digital Rights and Principles on 15 December 2022, which regulates the processes of safe and sustainable digital

transformation, as well as pointing out the need to protect human rights (Jaskuła, 2023). EU regulations on the misuse of artificial intelligence are also included (Greser, Dymitruk, 2022).

3. Applications, benefits and drawbacks of artificial intelligence

Artificial intelligence can be defined as a system that enables the performance of tasks that require a learning process as well as taking into account new circumstances when solving a given problem, and which can, to a varying extent depending on the configuration, act autonomously and interact with the environment (Zalewski, 2020). According to the OECD recommendations, artificial intelligence is a system based on machine concepts that can predict, recommend and make decisions affecting the real or virtual environment (Mrożek, 2023).

Stuart Russell and Peter Norvig, in their book *Artificial Intelligence: A Modern Approach*, which is one of the best-known textbooks in the field of artificial intelligence, defined artificial intelligence as "a field of computer science that deals with the creation of computer programs capable of performing tasks that, if performed by a human, would require intelligence. This field encompasses many different areas, such as machine learning, natural language processing, pattern recognition, planning or reasoning" (Russell, Norvig, 2021). This definition highlights the fact that artificial intelligence encompasses a variety of systemic approaches and operational techniques, and its goal is creating computer programs that are capable of imitating selected aspects of human intelligence.

Artificial intelligence-assisted work and work automation rely on high computing power, improved sensors, big data sets, the use of algorithms, output technologies such as 3D printers, robots and "cobots" – collaborative robots that work with humans, as well as interactive online platforms that act as intermediaries between job providers and job seekers (Kremer et al., 2021).

Artificial intelligence is an interdisciplinary field of science that draws not only on the exact sciences (mathematics, cybernetics, computer engineering) and natural sciences (neurobiology), but also social sciences (economics, psychology), and the humanities (philosophy, linguistics). Artificial intelligence is a term that takes on different meanings depending on the context, being a subject of research, debate and interpretation by many scholars. The definitions of AI are as diverse as its applications. Today, artificial intelligence can be found almost everywhere, from smartphone cameras to video games, e-commerce, education, healthcare, cybersecurity, product recommendations, search engines, and advertising (Portal Fintech, 2022). The authors of the report "Applications of Artificial Intelligence in the Economy. Overview of Selected Initiatives and Technologies with Recommendations for Entrepreneurs" list and describe the following main areas of AI implementation: healthy society, modern agriculture, sustainable (bio)products, (bio)processes and environment,

sustainable energy, zero-emission smart buildings, environmentally friendly transportation, closed-loop economy, advanced materials and nanotechnology, electronics and photonics, creative industries, and marine technologies (Rzeźnik et al., 2023; Davenport, 2023).

A selection of arbitrary examples of AI application fields are listed below:

1. Biometrics – a field in which data relating to the human body is collected, such as the appearance of the iris, fingerprints, face, ear shape, as well as a person's actions, such as making gestures with a finger on a touchscreen or with a gloved hand. This data is used to train the system to recognize users, for example for the purpose of authentication in a phone's operating system or in a bank, or in the judiciary in analysing evidence.

2. Material recognition using laser induced breakdown spectroscopy (LIBS) – machine learning in which data in the form of a recorded spectrum of light produced after a laser strike is used to train a system to recognize materials.

3. Speech recognition – this field includes applications that learn the sound of the voice, responding to a spoken name or keyword.

4. Radiology – a field in which CT scans, MRIs and X-rays are used to detect abnormalities caused by, for example, disease or degeneration.

5. Object detection – systems that learn the appearance of particular classes, such as specific shapes, animals or objects. A trained system can search for elements belonging to specific classes in other images. A good example of this is the Google search engine, which can classify images and which uses captcha data to create a training data set.

6. Cybersecurity – security systems (IPS – intrusion prevention system) and traffic analysis (NTA – network traffic analysis) that learn to recognize attacks (for example recognizing counterfeit credit cards, fighting terrorism) or direct traffic based on collected and tagged data. Spam detection email systems are also intelligent solutions that learn as they analyse new messages (Baran, 2022).

Artificial intelligence has found applications in many fields, including medicine, computer science, law, scientific research, the military, as well as the design and production of goods. As regards economics and management, it is applied in forecasting, such as estimating a country's economic cycle. Neural networks help model non-linear phenomena, simulate numerical series with respect to time and draw conclusions, formulate cyclical relationships, perform regression analysis, and approximate very complex functions. Genetic algorithms, in turn, are used to optimize managerial solutions.

Expert systems are used in management accounting, controlling, human resource management, production process engineering, stock market gaming, as well as corporate and household credit systems. The implementation of expert systems for decision making in an enterprise makes it possible to reduce personnel costs and improve the company's operations, for instance processing loan applications by a bank.

4. Artificial intelligence and marketing

As regards marketing, artificial intelligence helps to find solutions in line with the assumption that the highest priority for companies is to reduce the costs connected with customer acquisition and retention, as well as increasing the efficiency of sales activities (Rutkowski, 2020; Szpringer, 2024). Creative solutions and applications that serve this purpose include the following: customer identification and contact monitoring on websites; real-time content personalization; marketing automation; email marketing and newsletters as well as separation of spam from regular emails; mobile marketing automation; live chat; database search and mining (Big Data Marketing); automatic sales chat; inbound marketing; customer lifecycle management; customer recommendation systems; the creation and management of advertising campaigns; social media posts, and many others. The above activities and tools are used to intelligently automate processes, based on permanent interaction with the recipients of marketing activities and optimization of customer service. For example, Amazon uses AI to optimize inventory management and logistics, predicting product demand and automating warehouse management; Netflix uses an advanced movie recommendation system; and Spotify uses AI to provide personalized playlist suggestions for its users. Some of the most popular AI tools used in marketing include ChatGPT, Canva, Grammarly, NeuronWriter and Intercom (Podgórski, 2024). Interesting classifications and characterizations of the functionalities of AI instruments are also included in the study "Małe firmy w erze AI. Innowacyjne narzędzia marketingowe i sprzedażowe" [Small businesses in the age of AI. Innovative marketing and sales tools] (www.ifirma.pl, 2023) and in the book *Przewodnik po sztucznej inteligencji* [A guide to artificial intelligence] (Zdobylak, 2024). These include the following:

– creative text editing tools (ChatGPT, Google Bard, Copy AI, Jasper, Rytr),
– image generation tools (Midjourney, Stable diffusion, DALL·E2, ideogram.ai, Microsoft Designer),
– social media tools (Cortex, Buffer, Lately),
– AI video and audio generators (Colossyan, Synthesia, Creative Reality™ Studio, kaiber.ai, Adobe Podcast).

The main benefit of using AI is reducing human error and risk. Everyone makes mistakes. Using AI to perform tasks, especially repetitive tasks, can prevent damage to products and services due to human error. Using AI can help avoid health risks, for example by using robots instead of people in highly radioactive locations (tableau.com, 2024).

Another benefit is the 24/7 availability of AI. The average person works about 6 hours a day, and the human body is designed in such a way that it needs breaks to rest, prepare for new jobs, and maintain a work-life balance. Meanwhile, AI means that machines can work 24/7 without a break (Kumar, 2019).

Unlike machines, humans are guided by emotions when making decisions. Thus, the use of artificial intelligence can contribute to more pragmatic and rational decision-making. An example of this can be a recruitment system that uses objective artificial intelligence to verify job candidates based on their skills and qualifications, which helps eliminate subjective biases (Duggal, 2024). In addition, artificial intelligence can be used to effectively delegate monotonous tasks, allowing employees to focus on tasks that require more creativity. An example of this can be the use of robots on production lines, where repetitive tasks are performed with high precision and speed, significantly reducing labour costs and the failure rate of manufactured components.

Although AI has many advantages, its disadvantages also need be considered. The most important one is the fear of job losses and rising unemployment. According to a study conducted by the McKinsey Global Institute, automation and AI could replace 400 to 800 million jobs worldwide by 2030 (Nesirat, 2023). Although the fear of job losses is understandable, it is worth emphasizing that AI can create new jobs. According to the World Economic Forum, automation and AI could create 97 million new jobs in sectors such as data analysis, AI implementation, and content creation. According to a report by investment bank Goldman Sachs, although generative artificial intelligence could increase global GDP by 7% within 10 years, at the same time it poses a "threat" to about two-thirds of the jobs in Europe and the US, which could become automated. Analysts predict that AI could replace up to 300 million jobs (Matolicz, 2023).

Another challenge is the existential threat, as some fear that if AI becomes more intelligent than humans, it may decide to take action against them, trying to destroy humanity (analyticsvidhya.com, 2023). The controversial thing is that if a strong AI exists, humans will undoubtedly pass on to it their own weaknesses and flaws. It will be used to destroy humans, because this is what they do. Generally, conquering the world and subordinating others is an attribute of many humans, but an intelligent machine does not need such features.

The real threats are technical issues. AI systems are not perfect, and as with any advanced tool, failures can occur. Over reliance on AI creates long-term dependence on the technology (Avelino, 2023). In addition, concerns have been raised about the security of personal data that may be collected during interactions with AI systems and then used in an unauthorized manner. Processing personal data by AI algorithms may lead to the unintended disclosure or misuse of this information (Noss, 2023).

The use of AI systems by businesses towards consumers raises a number of ethical and legal concerns. These include growing information asymmetries between businesses and consumers; risks associated with exploiting consumer vulnerabilities through profiling and targeting; or risks associated with algorithmic decision-making due to the lack of transparency of automated decisions, which can lead to biased or discriminatory outcomes (Ebres, 2021). Also, the issues of liability for artificial intelligence errors are extremely significant. This issue is discussed in more detail in the report "Rozwiązania generatywnej sztucznej inteligencji –

zagrożenia i aspekty prawne" [Generative artificial intelligence solutions – risks and legal aspects"] (Lampart, 2023).

In summary, artificial intelligence is a dynamic interdisciplinary field, the importance of which is constantly growing. The development of AI brings with it new innovations, which leads to its economic expansion. Understanding the enormous impact of artificial intelligence on the global economy encourages many countries to invest money in the development of this field of science. The leaders are the USA and China, but other countries such as Canada, Japan, South Korea and European countries are also increasingly investing in the development of AI technology. According to the report "Unlocking Europe's AI Potential", the state of AI in Poland looks quite good compared to other European countries. The number of companies dealing with artificial intelligence is impressive, and 15,000 people employed in the AI sector in Poland constitute 40% of all AI specialists in the CEE region. In addition, over 300 Polish companies, of which 200 are start-ups, offer solutions based on artificial intelligence; and these companies operate in various sectors, from finance and healthcare to e-commerce and the energy industry. The benefits of implementing AI in Poland are significant: 94% of companies investing in artificial intelligence record an increase in revenue, 88% an increase in innovation, and 81% an improvement in business processes (aioai.pl, 2024).

5. Implications of artificial intelligence in place branding

Modern territorial marketing is based on the use of technological and communication tools. According to Andrzej Szromnik, the process of managing a settlement unit based on the marketing concept is characterized by progressive thinking about achieving successes, while at the same time treating the local government as a market (territorial) product, covered by the "philosophy of achieving set goals by spatial settlement units under conditions of competition for limited resources, which is based on the belief that the results are determined by the proper orientation towards customers-partners" (Widera, Widera, 2023).

However, the rapid and dynamic development of modern technologies raises many concerns in society. A number of opinions voiced in the media indicate that people are afraid of unemployment caused by automation and robotization, excessive surveillance, and loss of their personal data. Many threats are posed by the difficulty in recognizing false information on the Internet, so-called fake news, which can be misleading and encourage actions with dangerous consequences. The challenges related to counteracting disinformation are of primary importance. This issue is discussed in more detail in (Cymanow-Sosin, Tenerowicz, Cymanow, 2024).

It also seems important to point out that technologies whose operation we do not fully understand – such as autonomous cars – arouse the greatest anxiety (Rudnicka et al., 2020). This is a classic example of resistance to change, i.e. a subconscious reaction triggered in the human brain by a stimulus associated with threat and fear for safety.

Artificial intelligence is a technology that offers tremendous opportunities. However, its development is associated with ethical dilemmas, which will require additional legislation at some point. Its impact on our lives, economy and society is becoming increasingly apparent, and AI specialists are already in great demand on the job market. A number of legal aspects in the use of AI, for example the issue of what a robot is under European Union law and who bears responsibility for its work, are discussed in the monograph "Inteligentne miasta i sztuczna inteligencja" [Smart cities and artificial intelligence] by Jolanta Blicharz (Blicharz, 2023) and by Dominika Wcisło in a report entitled "Ebook o prawnych aspektach Gen AI" [Ebook on the legal aspects of Gen AI] (Wcisło, 2024). Interesting comments on legal provisions relating to the protection of consumers from unfair practices in the application of AI systems can also be found in the book "Prawne aspekty działalności marketingowej" [Legal aspects of marketing activities] (Blicharz, Szalonka, 2024).

Place branding has undergone a significant evolution over the past two decades, both in terms of understanding the essence of the process and its theoretical foundations, and the role of different stakeholder groups. This evolution has coincided with global transformations in the macro-environment, such as the global economic crisis; rapid technological development (social media, artificial intelligence, augmented reality); declining trust in political, economic and intellectual elites; the rise of populist movements and related changes in the sphere of axiology; the migration crisis; and many others (Hereźniak, 2020). These phenomena have affected the direction of both academic research and the actions of experts and managers of territorial brands.

The key AI functionalities in territorial marketing include the following:

1. Personalization of marketing content: analysis of recipient data for better ad matching, e.g. the use of AI algorithms in the process of selecting and displaying potentially interesting content in Meta Ads (www.markaterytorialna.pl). It is estimated that personalization can increase the effectiveness of marketing expenses by up to 30% and that 60% of customers whose shopping experience is personalized will repeat purchases from the same retailer (Jeleśniański, 2024).

2. Optimization of advertising campaigns: facilitating campaign management thanks to the predictive capabilities of artificial intelligence, e.g. predicting trends based on previous results, testing different variants of ad creation, using Meta Advantage products.

3. Customer service: chatbots help to quickly provide answers to typical consumer questions. They can be successfully used as virtual assistants to city residents on the websites of various institutions (e.g. a bot that presents the provisions of the landscape law). Currently, chatbots are often a source of frustration, but they will continue to

improve and provide effective customer support 24/7. They will not only answer simple questions, but also solve problems and even conduct transactions. In the near future we will also see a rise in the popularity of voice assistants such as Amazon Alexa and Google Assistant, which will have an impact on SEO and content marketing strategies.

4. Sentiment analysis: monitoring opinions about a brand based on mentions collected from various sources on the web. Tools such as SentiOne or Brand24 have a built-in function for the automatic recognition and assessment of the emotional tone of statements, which makes it much easier to monitor the moods of recipients.

5. Creating new content as part of content marketing: writing blog posts, creating descriptions for newsletters, preliminary verification of texts for substantive correctness (e.g. ChatGPT, Jasper). Artificial intelligence enables the creation of tailored content for customers by analysing large data sets and providing recommendations. AI analyses the history of purchases, behaviour on websites, interactions on social media and other data to identify customers' preferences and needs. On this basis, it automatically generates personalized recommendations for products and services (e.g. tourist destinations to visit) and adjusts marketing messages, which not only increases the effectiveness of advertising campaigns, but also significantly improves the shopping experience of the campaign's recipients (Kornaś, 2024). Additionally, two-way interaction can turn the tourist into a prosumer, that is a co-creator of the tourist offer (Chaber, 2023).

6. Generating graphics, presentations, videos, logos and processing text into specific visual creations (e.g. Craiyon, Canva AI, Midjourney).

An important role of artificial intelligence relates to the processes of communication with the local community. AI can collect and analyse data about the territorial unit, the behaviour of its residents as well as their preferences and needs. It can help segment them, which makes it easier to adjust the services provided, sometimes in real time. In turn, the residents, through the use of digital communication channels, can influence local government decisions through public consultation (Noworól, 2024). In addition, AI can support spatial policy as it can help with land-use planning and the implementation of optimal solutions, combining social, economic and spatial requirements. For example, on the basis of typological analyses of local buildings it can create functional and spatial models for the design of the urban fabric. However, it must be remembered that AI is not a substitute for strategic thinking but rather a tool that can support this thinking (Przegalińska, Jemielniak, 2023).

6. Conclusions

Territorial marketing that uses the potential of AI is not only the future – it already is a source of competitive advantage for many entities. Thanks to AI, city authorities are able to offer their customers better tailored products and services, and consequently experiences that translate into their commercial success. As AI technology continues to develop, place marketing specialists will be able to implement increasingly innovative and engaging promotional campaigns. Research conducted by Boston Consulting Group and Harvard shows that ChatGPT improves marketers' efficiency by 40% (Jeleśniański, 2024). The future of spatial marketing is associated not only with greater personalization of the offer and its promotion, but also with more interactive methods and tools of communicating with customers, who are primarily residents, tourists and investors.

The use of AI is pivotal to effectively promoting a city or region. Social media platforms such as Facebook, Instagram or Twitter make it possible to reach a wide audience in a very short time. What is more, the advanced analytical tools of these platforms enable precise targeting of recipient groups and measuring the effectiveness of conducted campaigns. As a result, it is possible to quickly adapt the promotional strategy of a municipality, city, county, region or country to changing market conditions and recipient preferences.

References

1. Adamyan, L. (2023). *The early history and future of artificial intelligence*. Retrieved from: https://www.ai-bees.io/post/artificial-intelligences-early-history-and-future, 14.12.2024.

2. Aioai.pl. (2024). *Polska liderem w Europie w zakresie sztucznej inteligencji*. Retrieved from: https://aioai.pl/polska-liderem-w-europie-w-zakresie-sztucznej-inteligencji/, 18.12.2024.

3. Analyticsvidhya.com (2024). *Top 7 Advantages and Disadvantages of Artificial Intelligence*. Available online: https://www.analyticsvidhya.com/blog/2023/05/advantages-and-disadvantages-of-ai/, 18.12. 2024.

4. Avelino, J. (2023). *The advantages and disadvantages of AI: A guide for trainers*. Retrieved from: https://training.safetyculture.com/blog/advantages-and-disadvantages-of-ai/,18.12.2024.

5. Baran, M. et al. (2022). Metody i zastosowania sztucznej inteligencji. *Nauka - Technika – Technologia, Tom 4*. Akademia Górniczo-Hutnicza w Krakowie, p. 91.

6. Bitcoin.pl (2023). *Krótka historia AI – od Turinga do IoT*. Available online: https://bitcoin.pl/historia-ai, 12.12.2024.

7. Biuroreklama.pl (2023). *Historia sztucznej inteligencji*. Available online: https://biuroreklama.pl/blog/ai/2023/historia-sztucznej-inteligencji/, 12.12.2024.

8. Blicharz, J. (2023). Inteligentne miasta i sztuczna inteligencja, Wybrane aspekty teoretycznoprawne. *Prace Naukowe Wydziału Prawa, Administracji i Ekonomii Uniwersytetu Wrocławskiego, Seria: e-Monografie, No. 211,* p. 80.

9. Blichtarz, M., Szalonka, K. (2024). Prawne aspekty działalności marketingowej. *Prace Naukowe Wydziału Prawa, Administracji i Ekonomii Uniwersytetu Wrocławskiego, seria: e-Monografie, No. 220*, p. 98 et seq.

10. Cebrf.knf.gov.pl (2024). *Wprowadzenie do sztucznej inteligencji*. Available online: https://cebrf.knf.gov.pl/komunikaty/artykuly-csirt-knf/362-ostrzezenia/887-wprowadzenie-do-sztucznej-inteligencji, 14.12.2024.

11. Chaber, P. (2023). *Nowe technologie w turystyce i marketingu terytorialnym.* https://cwd.info.pl/wp-content/uploads/2023/05/Nowe-technologie-w-turystyce_Pawel-Chaber-1.pdf, 17.12.2024.

12. Cymanow-Sosin, K., Tenerowicz, K., Cymanow, P. (2024). *Media przyszłości – wybrane aspekty komunikacyjne, ekonomiczne i edukacyjne*. Kraków: Homini, p. 129 et seq.

13. Davenport, T., Mittal, N. (2024). *Sztuczna inteligencja w biznesie. Jak zdobywać rynkową przewagę dzięki AI?* Warszawa: MT Biznes.

14. Duggal, N. (2024). *Advantages and Disadvantages of Artificial Intelligence*. Retrieved from: https://www.simplilearn.com/advantages-and-disadvantages-of-artificial-intelligence-article, 17.12.2024.

15. Ebers, M. (2021). Liability for Artificial Intelligence and EU Consumer Law. *Journal of Intellectual Property Law, Information Technology and Electronic Commerce, vol. 12, no. 2,* p. 204.

16. Górski, S. (2019). *Najważniejsze momenty w historii rozwoju SI. Od Turinga do pierwszej zimy*. Retrieved from: https://www.sztucznainteligencja.org.pl/najwazniejsze-momenty-w-historii-rozwoju-si-1-od-turinga-do-pierwszej-zimy/, 12.12.2024.

17. Greser, J., Dymitruk, M. (2022). Unijny projekt regulacji sztucznej inteligencji, a przeciwdziałanie próbom autorytarnego jej wykorzystywania przez władze publiczne. *Problemy współczesnego prawa międzynarodowego, europejskiego i porównawczego, vol. XX*. Uniwersytet Jagielloński w Krakowie, pp. 135-160.

18. Heaven, D., Alison, J. (2017). *Sztuczna inteligencja. Co warto wiedzieć o nadchodzącej epoce inteligentnych maszyn,* pp. 12-14.

19. Hereźniak, M. (2020). *Marka miasta – między teorią a praktyką*, w: *Strategie budowania marki i rozwoju handlu. Nowe trendy i wyzwania dla marketingu.* T. Domański (ed.). Łódź/Warszawa: Uniwersytet Łódzki/PWE, p. 59.

20. https://markaterytorialna.pl/blog/jak-wykorzystac-sztuczna-inteligencje-ai-w-marketingu-terytorialnym, 17.12.2024.

21. Jaskuła, S. (2023). Sztuczna inteligencja w edukacji we współczesnej rzeczywistości hybrydalnej. *Perspektywy Kultury, No. 42(3),* pp. 13-26.

22. Jastrzębska, W., Jastrzębska, A. (2010). *Nierówności społeczne a wzrost gospodarczy, Vol. 17,* p. 173.

23. Jeleśniański, M. (2024). *AI w marketingu, czyli nowa normalność.* Retrieved from: https://jelesnianski.pl/sztuczna-inteligencja/ai-w-marketingu-czyli-nowa-normalnosc/, 18.12.2024.

24. Kornaś, W. (2024). *Sztuczna inteligencja w marketing.* Retrieved from: https://www.wsb.net.pl/ marketing/sztuczna-inteligencja-w-marketingu/, 17.12.2024.

25. Kremer, M., Went, R., Engbersen, G. (2021). *Better Work: The Impact of Automation, Flexibilization and Intensification of Work.* Springer Nature, p. 204.

26. Kumar, S. (2019). *Advantages and Disadvantages of Artificial Intelligence.* Retrieved from: https://towardsdatascience.com/advantages-and-disadvantages-of-artificial-intelligence, 18.12.2024.

27. Lampart, M. (2023). *Rozwiązania generatywnej sztucznej inteligencji – zagrożenia i aspekty prawne.* Warszawa: Polska Agencja Rozwoju Przedsiębiorczości, pp. 39-45.

28. Matolicz, K. (2023). *Sztuczna inteligencja w komunikacji.* Warszawa: Raport Lighthouse, p. 5.

29. Miernik, A. (2023). *Sztuczna inteligencja – czym jest? Czy AI wpłynie na sytuację na rynku pracy w Polsce?* Retrieved from: https://www.ey.com/pl_pl/workforce/sztuczna-inteligencja-ai-i-rynek-pracy-w-polsce, 18.12.2024.

30. Mrożek, J. (2023). *Chat GPT i sztuczna inteligencja, a przepisy o ochronie danych osobowych.* Retrieved from: https://rodoradar.pl/chat-gpt-i-sztuczna-inteligencja-a-przepisy-o-ochronie-danych-osobowych/, 14.12.2024.

31. Nesirat, Y. (2023). *800 million jobs could be lost to AI and Automation by 2030.* Retrieved from: https://medium.com/leadership-by-design/800-million-jobs-could-be-lost-to-ai-and-automation-by-2030, 18.12.2024.

32. Noss, S. (2023). *Generative AI and Its Impact on Privacy Issues.* Retrieved from: https://www.datagrail.io/blog/data-privacy/generative-ai-privacy-issues/, 18.12.2024.

33. Noworól, A. (2024). Strategia rozwoju lokalnego w warunkach globalnej niepewności oraz zmian prawnych i technologicznych. In: *Rozwój regionalny i polityka regionalna* (p. 21). Uniwersytet Ekonomiczny w Krakowie.

34. Pickover, C. (2019). *Artificial Intelligence: An Illustrated History: From Medieval Robots to Neural Networks.* New York City: Sterling, pp. 23-24, 213-214.

35. Podgórski, D. (2024). *Pięć popularnych narzędzi AI wykorzystywanych w marketingu.* Retrieved from: https://www.talem.eu/blog/5-popularnych-narzedzi-ai-wykorzystywanych-w-marketingu, 17.12.2024.

36. Portal Fintech (2022). *Sztuczna inteligencja (AI). Zalety, wady i przyszłość.* Retrieved from: www.fintechportal.pl/sztuczna-inteligencja-zalety-wady-i-przyszlosc, 18.12.2024.

37. Przegalińska, A., Jemielniak, D. (2023). *AI w strategii marketingowej. Rewolucja sztucznej inteligencji w zarządzaniu*. Warszawa: MT Biznes, p. 81.

38. Rudnicka, A., Kaczorowska-Spychalska, D., Kulik, M., Reichel, J. (2020). *Digital ethics – polscy konsumenci wobec wyzwań etycznych związanych z rozwojem technologii*. I Ogólnopolski Raport. Łódź: Uniwersytet Łódzki.

39. Russell, S.J., Norvig, P. (2021). *Artificial Intelligence. A Modern Approach.* London: Pearson Education, p. 19.

40. Rutkowski, I. (2020). Inteligentne technologie w marketingu i sprzedaży — zastosowania, obszary i kierunki badań. *Marketing i Rynek, No. 6*, p. 6.

41. Rzeźnik, G. (2023). *Zastosowania sztucznej inteligencji w gospodarce. Przegląd wybranych inicjatyw i technologii z rekomendacjami dla przedsiębiorców*. Warszawa: Polska Agencja Rozwoju Przedsiębiorczości, pp. 14-37.

42. Skuza, A. (2023). *Tesla is not the first. Mercedes was the first autonomous car*. Retrieved from: https://arekskuza.com/the-innovation-blog/tesla-is-not-the-first/, 14.12.2024.

43. Szpringer, W. (2024). *Sztuczna inteligencja w zarządzaniu. Regulacja a konkurencja.* Warszawa: Poltex.

44. Tableau.com (2024). *What are the advantages and disadvantages of artificial intelligence (AI)*. Available online: https://www.tableau.com/data-insights/ai/advantages-disadvantages#advantages, 18.12.2024.

45. Vanjare, V. (2022). *Historical events in artificial intelligence*. Retrieved from: https://www.linkedin.com/pulse/historical-events-artificial-intelligence-vrunda-vanjare/, 12.12.2024.

46. Wcisło, D. (2024). *Ebook o prawnych aspektach Gen AI*. Warszawa: LAWMORE, pp. 1-80.

47. Widera, Z., Widera, W. (2023). Wykorzystanie technologii informacyjno-komunikacyjnych w partycypacyjnym zarządzaniu samorządami terytorialnymi w koncepcji smart city. *Zeszyty Naukowe Akademii Górnośląskiej, No. 10*, p. 94.

48. www.ifirma.pl (2023). *Małe firmy w erze AI Innowacyjne narzędzia marketingowe i sprzedażowe*. Available online: www.ifirma.pl/wp-content/uploads/2023/11/Male-firmy-w-erze-AI-ebook-ifirma.pdf, 17.12.2024.

49. Zalewska-Bochenko, A. (2024). Sztuczna inteligencja w procesie edukacji. *Optimum. Economic studies, no. 2(116)*. Uniwersytet w Białymstoku.

50. Zalewski, T. (2020). Definicja sztucznej inteligencji. In: L. Lai, M. Świerczyński (eds.), *Prawo sztucznej inteligencji* (p. 14). Warszawa: C.H. Beck.

51. Zdobylak, J. (2024). *Przewodnik po sztucznej inteligencji.* Retrieved from: https://www.iab.org.pl/baza-wiedzy/typ-dokumentu/poradniki/przewodnik-po-sztucznej-inteligencji-2024/, 17.12.2024.