

COMMERCIAL ATTRACTIVENESS OF INDUSTRY 4.0 TECHNOLOGY IN THE OPINION OF CUSTOMERS OF THE YOUNG GENERATION

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Purpose: The main objective of the article is to present the results of a study on the attitude of young generation customers to Industry 4.0 technologies used in manufacturing companies and the resulting conclusions.

Design/Methodology/Approach: The CAWI methodology was used in the study. The respondents were mainly students of the University of Gdańsk and the Pomeranian University in Słupsk (320) aged 18-35, as full-fledged clients of the young generation. As part of the survey, respondents explained what Industry 4.0 technology is all about.

Conclusions: As the basic results of the study turned out to be consistent with the hypotheses (younger generation customers are mostly ambivalent about the technologies used in manufacturing companies), an additional study was conducted on what is important to them. This part of the study yielded very interesting results from a marketing point of view.

Research limitations/implications: The main limitation is that the study was conducted on students majoring in management. Currently, the research is being continued, consisting in polling the opinions of students of humanities and engineering.

Practical implications: The results of the study can be used in the practice of marketing management of enterprises.

Societal implications: The results of the study will have no impact on society at large.

Originality/value: The publication is addressed to academics at management and marketing faculties and practitioners of the management of manufacturing enterprises. The main value of the article is the innovative (so far unprecedented) context of deliberations on technologies included in the Industry 4.0 concept.

Keywords: customers of the young generation, Industry 4.0 technologies, Industry 4.0, preferences, quality features of products.

Thesis category: research paper.

1. Introduction

After a short break, focused on dealing with the causes and effects of the COVID-19 pandemic (Walentynowicz, Szanter, 2021), the topic of transformation of economies towards a digital economy, with particular emphasis on the concept of Industry 4.0, has become attractive in the science and practice of business management. That concept has been known since 2011 (Klingenberg, until Vale Antunes, 2017), however, before 2020, in practice, the implementation of technological solutions included in the concept of Industry 4.0 was not as dynamic as science postulated (Wilkesmann, Wilkesmann, 2018; Friday, 2019; Pirug et al., 2021).

The concept of Industry 4.0 is currently promoted for various reasons (economic, ecological, social, political; increasing the competitiveness of enterprises, industries, economies; improving the efficiency of cities, regions, countries and on a global scale; solving environmental, social and demographic problems) and shown in various perspectives (business, technology, innovation, quality of ecology, client, industry and non-business). But all the time the main emphasis on the application of this concept is applied to enterprises. According to research by various authors (Mychlewicz, Piątek, 2017; PriceWaterhouseCoupers, 2017; Soldaty, 2017; Czupryna-Nowak, 2020; Michna, Kazmierczak, 2020; Babu et al., 2023), the comprehensive application of industry 4.0 solutions in enterprises is to lead to benefits such as:

- 1) increase in revenues,
- 2) reduction of operating costs (as a result of elimination of various types of losses, material savings or the number of employees),
- 3) increase in productivity,
- 4) increase in the efficiency of the use of machinery and equipment,
- 5) increase in the efficiency of management of various types of areas of the company as a result of greater access to data,
- 6) increase in the flexibility of the company,
- 7) increasing the level of innovation of the company,
- 8) increasing the speed of response to customer expectations and shortening their service times,
- 9) closer relationships with customers,
- 10) shortening the time of designing and placing the product on the market,
- 11) increase in the level of satisfying customer needs,
- 12) increase in profitability and return on investment,
- 13) increasing the competitiveness of the company,
- 14) increasing the attractiveness of the company as a business partner,
- 15) increase in the market value of the enterprise.

However, in order for the situation not to look potentially so colorful (so attractive), individual authors also raise the issues of threats related to the development of this concept (limitations in the supply of various types of IT specialists; increase in investment outlays and capital needed for this, increase in operating costs of this type of enterprises; threats to the security of key data; stress of employees in connection with the implementation of new technologies; qualification exclusion of some employees; polarization of society's earnings; AI threats) (Ersoy, 2022; Walentynowicz, 2020). In this way, after balancing the various costs and benefits of implementing Industry 4.0 solutions in organizations, we get a true picture of this concept, but it is unquestionable that progress cannot be escaped and in the future new technologies will dominate our lives and the functioning of organizations (Kelly, 2017).

However, how are the customers looking at the implementation and application of technology of Industry 4.0? So far, this research thread has been poorly explored in emerging publications (e.g. Alexander, 2020). However, since the company's activity is strictly dependent on how customers perceive it (Cohen, 1994), it seems important to know what value for customers has the use of various types of Industry 4.0 technologies by modern enterprises. Potentially, it seems small, because customers are primarily interested in the results of the company's activities that directly affect them (quality of products and services, their price, brand or level of service) and do not care too much about how companies achieve it, but the author decided to check this assumption empirically. The following research hypotheses were formulated:

1. Customers of manufacturing companies have very little interest in what modern technologies that are included in the concept of Industry 4.0 the company uses.
2. First of all, they are interested in the parameters of the product they buy on the market (quality, price, brand, warranty conditions, etc.).
3. If customers of manufacturing companies are interested in any modern technologies used by the company, it is primarily those that have a direct impact on the final effects of the products they purchase.

Therefore, in 2022, he conducted a research on students of the University of Gdańsk and the University of Pomerania in Słupsk as full-fledged participants in the commercial products market. The focus was on the customers of the young generation (18-35 years old), because for most companies they are the main target group of customers today and will continue to be so in the future.

The results of this study may be some hints for marketing managers about whether it is worth and how to promote the use of a given technology by the company among customers. Therefore, the main purpose of this article is to present the results of the study and the main conclusions resulting from it.

2. The essence of Industry 4.0

The emergence of the concept of Industry 4.0 is associated with the development and large-scale introduction of new information technologies (IT), mobile technologies (MT), machine learning (ML), artificial intelligence (AI) and the development of technology and data transfer speed (Internet 4G, 5G) (Sehlin et al., 2019). These technologies have led to the development and large-scale industrial application of solutions such as (Alcacer, Cruz-Machado, 2019; Iwański, Gracel, 2016; Mychlewicz, Friday, 2017; PriceWaterhouseCoupers, 2017; Pirug et al., 2021):

- 1) collection, storage, processing and use of a huge amount of internal and external data of the company (Big Data, cloud computing) for production management, for demand analysis and adaptation of the assortment offer to the market, for monitoring the state of wear and tear of machinery and equipment, in quality management and logistics,
- 2) large-scale use of e-communication and online information in the integration of supply chains (value creation chains) between business partners,
- 3) use of new technologies in manufacturing – additive technologies (3D printing), new materials and new technologies of their processing, automation and robotization of new generation manufacturing (cobots), cyberphysical (mechatronic) elements of production systems,
- 4) use of new technologies in logistics – digitally controlled warehouses, manipulators and autonomous transport devices (AGV), mobile, voice and visual systems supporting the completion of parts, geolocation, RFID (Radio-Frequency Identification), autonomous vehicles and drones,
- 5) direct communication of machines within the enterprise (M2M - Machine to Machine) and between enterprises (IoT - Internet of Things),
- 6) customization of production – more personalized, custom-made products and services, intelligent products,
- 7) use of mobile technologies in production systems management and logistics,
- 8) use of virtual reality and digital simulations in product design (Digital twin), production system design, production management, human resources management and logistics,
- 9) large-scale use of artificial intelligence in the activities and management of enterprises (e.g. bots in customer service or expert systems in decision-making),
- 10) extensive use of the Internet in communication between people and machines,
- 11) wide use of IT systems – practically for every field of functioning and management of enterprises,
- 12) new business models (virtual and networked),
- 13) cybersecurity,
- 14) new systems of settlements between enterprises in Blockchain technology.

The comprehensive goal of introducing the above solutions is to obtain Smart Factories – smart factories with minimal use of physical labor of people and maximum automation and autonomy of their functioning based on digital technologies (Stadnicka et al., 2017). The area of using human work in these systems is to change from physical and managerial work into conceptual, supervisory, development and maintenance work (Santarek, 2017). However, unlike the concept of Computer Integrated Manufacturing (CIM), which aimed to create fully automated factories without people, Industry 4.0 aims to effectively apply technology to help and collaborate with workers (Rauch et al., 2019).

In addition, the generation and logistics systems in the individual Smart Factories are to cooperate automatically (along the value chain), including internal and external transport systems (Aysenur, 2023). The essence of industry 4.0 is therefore the comprehensive use of the above-mentioned technologies to build a sustainable competitive advantage of enterprises (industrial and hard services) and economies (Balasingham, 2016).

Additional areas of use of new technologies (included in the concept of Industry 4.0) will be: soft services (Smart Services), buildings (Smart Buildings), cities (Smart Cities), trade (Smart Commerce), entertainment (Smart Entertainment) and health care (Smart Helthcare). These technologies, as already mentioned, have a chance to strongly contribute to the sustainable development and ecology of the above-mentioned areas of their application. It is estimated that this is an opportunity to create new markets, develop classic products towards "smart" and customized products, meet customer needs higher and solve the problem of employees of "ageing" societies (Dmowski et al., 2016; Babu et al., 2023). It is forecasted that such systems will be the basis for the functioning of economies in highly developed countries in the twenty-first century (Gerbert et al., 2015; Kagermann et al., 2013).

3. Methodology of the study

In order to verify the research hypotheses and obtain answers to the formulated research problems, in the first half of 2022 a CAWI study was conducted on 320 students of the University of Gdańsk and the University of Pomerania in Słupsk, who are clients of the young generation of various types of manufacturing companies. The study was conducted on full-time and part-time students of management, because in the opinion of the authors of the study, as students understanding the issues of marketing, business management and the role of modern digital technologies for modern enterprises, as well as as active participants of the commercial market, often already working and maintaining themselves, in a more conscious and thoughtful way, they could answer often difficult questions. In order to make the answers more reliable, in the first part of each question, the essence of a given technology or issue was first explained, and only then it was asked about the importance of a given issue for the respondent within the

Likert scale. Responses were given by 242 women and 78 men, aged 18 to 25 (297 people) and 26 to 35 years (23 people).

The first part of the study concerned the importance of various types of marketing and quality properties of products offered by enterprises for customers of the young generation. In connection with this research problem, respondents were asked the following questions (Table 1):

Table 1.

A list of questions asked to respondents in relation to the importance for them of various types of marketing and quality properties of products offered by enterprises

Question number	Content of the question (regardless of whether we buy in a stationary or online store)
1.	How important is the product/company brand for you when choosing a product in the purchase process?
2.	How important is the overall quality of the product to you when choosing a product in the purchase process?
3.	How important is the reliability/durability of the product for you when choosing a product in the purchase process?
4.	How important are the materials used in production when choosing a product in the purchase process?
5.	How important is product design for you when choosing a product in the purchase process?
6.	How important is the modernity of the product (innovative solutions contained in it) for you when choosing a product in the purchase process?
7.	How important is the price to you when choosing a product in the purchase process?
8.	How important are the delivery terms for you when choosing a product in the purchase process?
9.	How important is the level of customer service for you when choosing a product in the purchase process?
10.	How important are the warranty conditions for you when choosing a product in the purchase process?
11.	How important is the quality and availability of after-sales service for you when choosing a product in the purchasing process?
12.	How important are the opinions of other customers when choosing a product in the purchase process?
13.	How important are professional reviews (in the press or on the Internet) for you when choosing a product in the purchase process?
14.	How important is the physical purchasing environment for you when choosing a product in the purchase process (aesthetics and good organization of the stationary store space; attractiveness and ease of use of the website)?

Source: Own elaboration.

The second part of the study probed the attitude of these customers to various types of modern solutions used by manufacturing companies. In connection with this research problem, respondents were asked the following questions (Table 2):

Table 2.

List of questions asked to respondents in relation to the importance for them of various types of Industry 4.0 technologies used by manufacturing companies

Question number	Content of the question (regardless of whether we buy in a stationary or online store)
15.	How important is it to you whether the company whose product you buy uses cloud computing (CC) in its business?
16.	How important is it to you whether the company whose product you buy uses Big Data analysis in its business?
17.	How important is it to you whether the company whose product you buy uses virtual reality (VR) and digital simulations in its activities?
18.	How important is it for you whether the company whose product you buy uses digital solutions supporting vertical integration (VI - Vertical Integration) (on the supplier-company-customer line) and horizontal integration (HI - Horizontal Integration) (within individual cells of the company)?
19.	How important is it to you whether the company whose product you buy uses Augmented Reality (AR) in its business?
20.	How important to you is whether the company whose product you are buying uses the Industrial Internet of Things in its activities?
21.	How important is it to you whether the company whose product you buy uses additive technologies (e.g. 3D printing, rapid prototyping) in its operations?
22.	How important is it for you whether the company whose product you buy uses autonomous robots (e.g. co-bots, AVG, robots supported by artificial intelligence)?
23.	How important is it to you whether the company whose product you buy uses a high level of cybersecurity in its operations?
24.	How important is it for you whether the company whose product you buy uses identification and sensor technologies (e.g. RFID, QR codes) in its activities?
25.	How important is it for you whether the company whose product you buy uses mobile technologies (e.g. smartphones, tablets) in its business?
26.	How important is it to you whether the company whose product you buy uses direct communication between machines and industrial devices (M2M) and machine learning in its activities?
27.	How important is it to you whether the company whose product you buy uses artificial intelligence (AI - Artificial Intelligence) in its activities?
28.	How important is it for you whether the company whose product you buy uses modern technologies in the company's internal logistics (automatic warehouses, self-propelled transport trolleys - AGV, robots and logistics manipulators)?
29.	How important is it for you whether the company whose product you buy uses modern technologies in external logistics (parcel lockers, drones, autonomous vehicles, GPS geolocation systems, electric cars)?
30.	How important is it to you whether the company whose product you are buying uses Blockchain in its activities?
31.	How important is it for you whether the company whose product you buy uses modern technologies in its activities that facilitate the customization of products?
32.	How important is it to you whether the company whose product you buy is widely present on the web (on the Internet)?

Source: Own elaboration.

On the basis of answers to the above questions, the respondents' preferences were evaluated using statistical methods and final conclusions were drawn regarding the research hypotheses.

In the third part of the survey, respondents were asked about the importance for them of the issue of applying various new management concepts in manufacturing companies, but in this article the answers to these questions will not be presented.

4. The attitude of customers of the young generation to the Industries 4.0 technologies used by manufacturing companies

Table 3 presents the respondents' responses. It is clear how whether companies use different types of technologies included in the concept of Industry 4.0 is of little value to respondents (technologies 15, 16, 17, 18, 19, 20, 21, 22, 23, 26, 27, 28, 30). Technologies 25 and 31 (mobile and customization technologies) enjoy a medium level of interest. Of all 18 types of technology, the most important for respondents is whether the company is widely present on the Internet (i.e. information about products, communication with the company via the Internet, promotion of the company on the Internet or, for example, the possibility of buying products online). In the opinion of customers of the young generation, this conclusion seems very logical. Next, they value various types of innovations in the area of external logistics (e.g. parcel lockers, drones or e.g. ecological vehicles). So they also appreciate the mobile way of communication or settling accounts with the company (mobile technology – position 4 in the study). And in third place, of course, cybersecurity. In their opinion, this is a very important issue, but it seems that from the point of view of protecting customer data, not internal company data. Only those aspects included in the concept of Industry 4.0 turned out to be important for customers of the young generation (according to the results of the survey), so if a company focuses on these technologies in its activities, it can successfully use information on this subject in its market promotion. Thus, research hypothesis No. 1 was fully confirmed.

Table 3.

Distribution of respondents' answers to questions related to the importance for them of individual technologies included in Industry 4.0

Question number	Question about:	Never mind at all (N)	Unimportant (U)	Medium important	Important (I)	Very important (VI)	Sum of I and VI	% I and VI	The importance of technology for customers
15.	Cloud Computing	76	87	94	55	8	63	19,7	-
16.	Big Data	78	107	81	49	5	54	16,9	-
17.	Virtual Reality	76	111	72	56	5	61	19,1	-
18.	Vertical and Horizontal Integration	89	110	80	38	3	41	12,8	-
19.	Augmented Reality	83	107	84	44	2	46	14,4	-
20.	Industrial Internet of Things	76	100	84	52	8	60	18,8	-
21.	3D printing	76	113	94	29	8	37	11,6	-
22.	Robots	99	103	76	35	7	42	13,1	-
23.	Cybersecurity	21	49	59	112	79	191	59,7	3
24.	RFID	49	96	93	69	13	82	25,6	-
25.	Mobile Technology	31	55	93	93	48	141	44,1	5
26.	M2M and Machine Learning	69	107	95	44	5	49	15,3	-

Cont. table 3.

27.	Artificial Intelligence	50	99	101	59	11	70	21,9	-
28.	New technologies in internal logistics	67	114	77	53	9	62	19,4	-
29.	New technologies in external logistics	14	32	67	135	72	207	64,7	2
30.	Blockchain	59	90	98	56	17	73	22,8	-
31.	Customization	16	51	83	126	44	170	53,1	4
32.	Internet presence	4	15	56	124	121	245	76,6	1

Source: Own elaboration based on the results of the study.

In the study, it may be important to determine whether the gender of young customers significantly differentiates their attitude to the Industry 4.0 technologies used by enterprises. Do women and men have a similar attitude to these technologies? For this purpose, the statistical significance of differences in the responses of respondents of both sexes was examined. For this purpose, the Pearson chi-square independence test was used. A null hypothesis about the absence of gender influence on respondents' responses (lack of dependence) and an alternative hypothesis about the occurrence of such an influence (the occurrence of dependencies) were put forward. Due to the changing number of neutral answers ("I have no opinion"), the existence of such a relationship for the group of answers "unimportant and less important" and "important and very important" was examined separately. The critical value with the assumed significance of inference at the level of 0.05 and 17 degrees of freedom is the value of 27.584. Based on the answers obtained by respondents in the items "unimportant and less important", the value of the test statistic is $\chi^2 = 17,815$ and is less than the critical value, which does not allow to reject the null hypothesis. Gender does not differentiate the answers in the "unimportant and less important" group. Similarly for respondents' answers in the items "important and very important". The value of the test statistic is $\chi^2 = 19,072$ and is less than the critical value. There is therefore no basis for rejecting the null hypothesis. Gender does not differentiate the answers in the "important and very important" group. On the basis of the above, it can be concluded that the attitude of customers of the young generation to Industry 4.0 technologies used by manufacturing companies is similar in women and men, and the observed differences in respondents' suggestions should be considered accidental.

The distribution of respondents' answers by gender is presented in Table 4.

Table 4.

Distribution of respondents' answers to questions related to the importance for them of individual technologies included in Industry 4.0 divided into men and women

Question	Women's responses (n = 241)					Men's responses (n = 79)				
	Sum of N and U	% of sum of N and U	Sum of I and VI	% of sum I and VI	Rank Women	Sum of N and U	% of sum of N and U	Sum of I and VI	% of sum I and VI	Men's rank
15.	115	47,7	51	21,2	-	48	60,8	12	15,2	-
16.	130	53,9	46	19,1	-	55	69,6	8	10,1	-
17.	134	55,6	54	22,4	-	53	67,1	7	8,9	-
18.	140	58,1	33	13,7	-	59	74,7	8	10,1	-
19.	132	54,8	36	14,9	-	58	73,4	10	12,7	-
20.	127	52,7	49	20,3	-	49	62,0	11	13,9	-
21.	143	59,3	27	11,2	-	46	58,2	10	12,7	-
22.	151	62,7	28	11,6	-	51	64,6	14	17,7	-
23.	53	22,0	140	58,1	3	17	21,5	51	64,6	1
24.	103	42,7	64	26,6	-	42	53,2	18	22,8	-
25.	59	24,5	111	46,1	5	27	34,2	30	38,0	5
26.	128	53,1	34	14,1	-	48	60,8	15	19,0	-
27.	111	46,1	51	21,2	-	38	48,1	19	24,1	-
28.	132	54,8	46	19,1	-	49	62,0	16	20,3	-
29.	30	12,4	161	66,8	2	16	20,3	46	58,2	2
30.	108	44,8	59	24,5	-	41	51,9	14	17,7	-
31.	46	19,1	133	55,2	4	21	26,6	37	46,8	4
32.	7	2,9	200	83,0	1	12	15,6	44	57,1	3

Source: Own elaboration based on the results of the study.

At the same time, the results of this fragment of the study clearly confirm hypothesis No. 3.

Since such answers to questions related to the main research problem were expected, respondents were asked additional questions about the market effects of enterprises that are important to them. The answers to these questions were again not a disappointment for the researcher, which confirms hypothesis No. 2, but as part of their result, information very important for marketing promotion or market activity of the company was identified, namely about the strength and importance of these preferences for respondents. A detailed distribution of answers to questions about the preferred characteristics of the effects of market activity of manufacturing companies is presented in Table 5.

Table 5.

Preferences of customers of the young generation regarding the quality characteristics of products and the conditions of their sale

Question number	Feature	Never mind at all	Unimportant	Medium important	Important	Very important	Sum of I and VI	% I and VI	Validity for customers
2.	Quality	0	1	6	115	198	313	97,8	1
3.	Robust/Durable	1	5	15	161	138	299	93,4	2
7.	Price	1	9	37	116	157	273	85,3	3
12.	Reviews	3	9	71	149	88	237	74,1	4

Cont. table 5.

5.	Design	1	16	78	150	75	225	70,3	5
9.	Level of customer service	5	23	95	122	75	197	61,6	6
4.	Material	1	29	96	141	53	194	60,6	6
13.	Reviews	5	35	87	147	46	193	60,3	6
8.	Terms of delivery	6	32	94	127	61	188	58,8	7
1.	Brand	0	12	121	162	25	187	58,4	7
6.	Innovativeness	2	27	123	135	33	168	52,5	8
14.	Purchasing environment	6	39	111	131	33	164	51,3	8
10.	Warranty conditions	2	46	109	112	51	163	50,9	9
11.	Service availability	13	58	104	107	38	145	45,3	10

Source: Own elaboration based on the results of the study.

A similar analysis as above (broken down by gender) was carried out for respondents' preferences regarding the value of products and conditions of their sale. The critical value with the assumed significance of inference at the level of 0.05 and 13 degrees of freedom is the value of 22.362. Based on the answers obtained by respondents in the items "unimportant and less important", the value of the test statistic $\chi^2 = 18,338$ is and is less than the critical value, which does not allow to reject the null hypothesis. Gender does not differentiate the answers in the "unimportant and less important" group. Similarly for respondents' answers in the items "important and very important". The value of the test statistic is $\chi^2 = 10,025$ and is less than the critical value. Therefore, there are no grounds for rejecting the null hypothesis either. Gender does not differentiate the answers in the "important and very important" group. Based on the above, it can be concluded that the value of product attributes and the conditions of their sale is similarly perceived by both women and men.

The distribution of respondents' answers to questions about the value for them of individual effects of commercial activity of production companies broken down into women and men is presented in Table 6.

Table 6.

Distribution of respondents' responses about their preferences regarding the quality characteristics of products and the conditions of their sale broken down by gender

Question	Women's responses (n = 241)					Men's responses (n = 79)				
	Sum of N and U	% of sum of N and U	Sum of I and VI	% of sum I and VI	Rank Women	Sum of N and U	% of sum of N and U	Sum of I and VI	% of sum I and VI	Rank Men
1.	9	3,7	138	57,3	8	3	2,4	49	62,0	5
2.	0	0,0	236	97,9	1	1	0,8	77	97,5	1
3.	5	2,1	225	93,4	2	1	0,8	74	93,7	2
4.	20	8,3	141	58,5	7	10	7,9	52	65,8	4
5.	14	5,8	172	71,4	5	3	2,4	53	67,1	4
6.	21	8,7	130	53,9	9	8	6,3	38	48,1	8
7.	5	2,1	212	88,0	3	5	4,0	61	77,2	3
8.	22	9,1	154	63,9	6	16	12,6	34	43,0	10
9.	18	7,5	153	63,5	6	10	7,9	44	55,7	7
10.	32	13,3	127	52,7	9	16	12,6	36	45,6	9

Cont. table 6.

11.	51	21,2	111	46,1	10	20	15,8	34	43,0	10
12.	6	2,5	191	79,3	4	6	4,7	46	58,2	6
13.	33	13,7	144	59,8	7	6	4,7	49	62,0	5
14.	36	14,9	132	54,8	9	9	7,1	32	40,5	11

Source: Own elaboration based on the results of the study.

The effects of this part of the study are not very revealing, but they lead to very important conclusions from the point of view of the possibility of their use in the marketing activities of enterprises. Namely, customers of the young generation most as the effects of market activity of manufacturing companies appreciate: the general quality of products, and especially their solidity/durability, understood as low susceptibility to damage or loss of usability of products over time. (This gives food for thought about the problem of planned obsolescence, so popular recently among manufacturers in the automotive industry!). However, the fact that for customers of the young generation a very important factor in the market competitiveness of the company is the price of its products is not a big discovery. What turns out to be revealing, however, is the fact that opinions about the company or its products of other customers are a very valuable factor for the respondents. First of all, in the network, it is worth for manufacturers to pay strong attention to this aspect (which, unfortunately, in practice does not always happen). Important for customers of the young generation is the design of products and the materials from which the product is made. However, the level of customer service and professional reviews about products (e.g. on YT) are more important to them than the brand (company/product) (!). Similarly, the terms of delivery. Customers of the young generation have probably become accustomed to the high level of innovation of the products offered to them, because in the conducted research this factor was ranked 11th (out of 14), but despite everything, the author of the study on the place of managers in practice would not underestimate this factor. The results of various types of marketing research or case studies from practice confirm that it is still a very important factor in the market competitiveness of the company. The least important for the customers of the young generation (according to the results of the study) turned out to be: the purchase environment, warranty conditions or availability of the service, while according to the conclusions presented above in practice, the author of the study would also not underestimate these factors, trying to build the most attractive and competitive bundle of market effects of the production company's operations. At the same time, the results of the study clearly show what modern enterprises should devote their strength and resources to in the first place in order to obtain a high level of market attractiveness of the effects of their activities for the main group of customers, and thus their market competitiveness.

If companies target a group of men or women in their jobs, they can use the information presented in Table 6. For the overall results of the study, individual differences in their preferences turned out to be statistically insignificant.

5. Summary

This article addresses the issue of the importance for customers of the young generation ("Y"+"Z") of the use of technologies included in the concept of Industry 4.0 by manufacturing companies. After a brief explanation of what characterizes this concept, the results of research conducted on a sample of 320 respondents were presented. Based on the results of the study, the research hypotheses put forward at the beginning were verified:

Hypothesis 1 – fully verified.

Hypothesis 2 – fully confirmed.

Hypothesis 3 – positively verified.

At the same time, as a result of the research, additional and very interesting information was obtained, namely about the detailed preferences of customers of the young generation in terms of new manufacturing technologies used by enterprises and in terms of the features of the products they offer and the methods of their marketing promotion. The differences in the responses of men and women to the questions turned out to be statistically insignificant.

On the occasion of the study, it was identified that currently there are not many scientific publications on this subject in the literature (e.g. Velvet et al., 2022), and the presented results may bring important information useful for use in the practice of modern manufacturing enterprises.

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