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PERCEPTION OF THE INTERNET OF THINGS IN CONSUMER APPLICATIONS IN THE CONTEXT OF INTERGENERATIONAL DIFFERENCES

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Abstract: The article attempts to determine how members of different generations perceive the Internet of Things (IoT) in consumer applications, and whether despite its growing popularity, intergenerational differences in terms of the perception of IoT technology are significant. An intergenerational comparative analysis was conducted based on CAWI study results. The data for the analysis came from a sample of 241 respondents. In light of the obtained results, the hypothesis assuming that members of individual generations differ significantly in terms of the perceived utility of the IoT devices in consumer applications was not confirmed. The influence of age as a variable differentiating the perception of possibilities of application of the Internet of Things in various economic sectors was also not confirmed.

Keywords: Internet of Things, IoT, generations, intergenerational differences.

1. Introduction

In recent years numerous publications devoted to vision, industrial applications and research challenges related to the Internet of Things have been published, both in foreign and domestic literature (cf. Ghaffari, Lagzian, Kazemi, and Malekzadeh,

2020; Kwiatkowska, 2014; Patel, Patel, Scholar, and Salazar, 2016; Sułkowski and Kaczorowska-Spychalska, 2018). Studies concerning the social perspective of new technology acceptance are published less frequently, and research undertaken in the area of IoT absorption are mostly focused on younger generations that certainly occupy an important place in economic life (Mącik, 2016, 2017, 2018). However, there is a gap in the area of research on the acceptance of IoT technology by older consumers. Older generations who often struggle with keeping pace with changes in the area of information and communication technologies are rarely the subject of studies regarding the implementation of IoT technologies. Age creates a mental barrier to the use of new technologies (Morbitzer, 2013, p. 22), and digital exclusion resulting from the lack of ability to deal with information tools concerns especially the generation of Baby Boomers (Wiktorowicz, Warwas, Kuba, Staszewska, Woszczyk, Stankiewicz, and Kliombka-Jarzyna, 2016). However, it can be observed that in the segment of elderly people, the use of the new technologies is systematically growing. The currently growing popularity of the Internet of Things technology and subsequent applications of these technologies in the consumer-close environment, require research on the perception of the Internet of Things technology and devices both by younger and older consumers.

The aim of the paper is an attempt to determine how members of different generations perceive the Internet of Things in consumer applications, and whether in spite of the growing popularity of the IoT applications, intergenerational differences in terms of the perception of the Internet of Things technology and devices are significant. The paper presents the literature review on the IoT application areas and the concept of generational differences in the context of applications of the Internet and new technologies. The research section presents the results of the intergenerational comparative analysis on the Internet of Things in consumer applications. The final part contains the conclusions.

2. Literature review

The Internet of Things (IoT) are products connected to the Internet that consist of physical and mechanical elements, intelligent ones (sensors, operating system) as well as enabling communication (ports, antennas, communication systems) (Porter and Hepplemann, 2015). The concept of the *Internet of Things* was formulated in 1999 by a British businessman and an originator of start-ups, K. Ashton (2009), in order to describe a system in which the material world communicates with computers (they exchange data) by means of omnipresent sensors. The turn of 2008 and 2009, when the number of web connected devices exceeded the number of the world's population, is considered the moment of the birth of the *Internet of Everything* that is not only created by objects, but also by processes, data, people, and even animals and weather phenomena (Kokot and Kolenda, 2015, p. 8).

The Internet of Things, in which objects with sensors communicate with one another and with computers and mobile devices, often without the need for human interaction, is an ecosystem that uses existing and developing communication technologies (Kiełtyka and Zygoń, 2018, p. 24). The potential created by data transferred freely between interconnected devices opens a number of possibilities, both in terms of creating new products and services, as well as the transformation of business processes. The dynamic development of Internet connected devices has resulted in creating new solutions and new standards in obtaining, storing and analysing data, which represent a value for an enterprise (Mazurek-Łopacińska and Sobocińska, 2016; Seetharaman, Patwa, Saravanan, and Sharma, 2019). Hence multitude of companies recognize in IoT solutions an opportunity to increase a company's competitive position, including strengthening relations with consumers (Kowalska, 2017, p. 183). The IoT solutions become an integral part of new, enhanced products, increasing significantly consumer involvement and added value for them (IAB Polska, 2015, p. 3).

The scale of the IoT solutions is huge – from devices for individual consumers (this category obviously includes smartphones as well as advanced devices and systems used at home whose purpose is to improve the consumer's quality of life, security management and the more economical usage of resources), through smart cities, health care, education, agriculture, water management and defence systems (IAB Polska, 2015; Michałowski, Przegalińska, and Poniewierski, 2018). Cognitive systems, learning on their own on the basis of transferred data, are increasingly common in technological sectors, media and telecommunications, yet according to data concerning the global market, leaders in terms of expenditure on the IoT include the consumer market, logistics and transport as well as industry (Ministerstwo Cyfryzacji, 2019, pp. 18-19). Particular development potential is found in the consumer applications sector in which area one can distinguish the following categories: smart home (building automation), wearables (personal items, clothes and IoT accessories) as well as smart household appliances, including traditional electronics that can function in the IoT eco-system (e.g. printer, scanner, digital camera and audio equipment), home electronic equipment and domestic appliances (e.g. smart fridge, vacuum-cleaner, oven and coffee machine) (Kolenda, 2015, pp. 12-13). These categories are the most typical consumer solutions in which there are huge challenges facing the producers and service providers in the prospect of increasing competitiveness and creating an added value for consumers.

The instant and almost unlimited access to the Internet and new technologies has had a profound impact on consumer behaviour (Tkaczyk, 2018, p. 53). Taking into account the level and scope of the use of digital technologies, it is possible to trace a specific consumer evolution, from the client of the analogue era towards the digital client. It should be noted that individual generations (Baby Boomers, X, Y, Z) show a different tendency to move to a higher level of consumer development scale, which is largely determined by their age (social rather than biological), and the associated digital needs and skills (Gregor and Kaczorowska-Spychalska, 2018, p. 61).

Belonging to a specific generation has been the subject of numerous analyses conducted from the perspective of various scientific disciplines, including the theory and practice of management. The notion of *generation* is usually used to describe a segment of people who belong to the same age group and experience similar circumstances shaping their life (Hung, Gu and Yim, 2008). A generation is a group of individuals born and living at the same time, sharing mutual experiences shaped by a specific population (Giddens and Sutton, 2012, p. 1084). People living at the same time, so sharing the same historical-social, economic and cultural conditions, are influenced by one another. This means that people born, growing and brought up in the same or close periods show similar qualities, attitudes, motivations, expectations, attitudes to the world and systems of values (Berkup, 2014, p. 218). The generation sets a mutual social, cultural, economic and political context, which means that there might be slightly different generation classes defined by experts in various countries and parts of the world. For the needs of this paper, the following division was adopted: Baby Boomers 1946-1964, Generation X 1965-1979, Generation Y 1980-1994, Generation Z since 1995 (cf. Berkup, 2014, p. 219).

Contemporary generations change even every 10 years, much faster than in the past when a new identification occurred every 25-30 years. This means that for the first time in our history there are members of five, or even six generations that have different characteristics (Williams and Page, 2010) and function within the social divisions into two groups – those who have skills and can afford to use the technical facilities, and those who, for various reasons, do not benefit from new technologies (Berkup, 2014, p. 219). The digital divide, which is one of the main negative effects posed by the information society, has a global reach. Each technology both combines, in the sense of facilitating communication, and divides (or rather differentiates), in the sense of competence and ability to use it (Morbitzer, 2013, p. 21).

The generation of Baby Boomers (BB) are people born during the post-war baby boom, who always had to be competitive due to the fact that at the same time after the end of the Second World War there were about one billion children born (Berkup, 2014, pp. 220-221). They are characterized by independence, involvement, optimism and a global look at problems, and often have difficulties with changing standards in the field of information and communication technologies (ICT). Social and state institutions implement means stimulating older people to use the Internet and new technologies, thus digital competence exclusion (resulting from a lack of skills in using IT tools) is systematically decreasing (Waśko, 2016, p. 136). However, differences are still observed particularly in comparison with the Y and Z generations. The scale of the digital exclusion of the elderly decreases as the level of education increases – about 90% BB with higher education and about 60% with secondary education use the computer and the Internet compared to only 10% of those with lower, secondary or primary education, and approximately 25% with the basic vocational skills (Wiktorowicz et al., 2016, p. 25).

Generation X is considered to be the transitional generation between two distinctive generations – the old one that is loyal to tradition and the new one – the generation of technology. Generation X was influenced by globalization processes, i.e. abolition of geographical borders, thanks to which that generation was the first that could regard every place in the world as available. The Xs were born when technology had started to develop, this is why, as opposed to previous generations, they are well-acquainted with technology, use smartphones and computers at work and in social life (Berkup, 2014, pp. 221-222). The Xs are more educated than their parents, they value acquiring new skills and experience, and often show better communication skills than the younger generation Y (Wiktorowicz et al., 2016, p. 29).

Generation Y is the first generation of people who grew up in the era of globalization, the fast development of information and communication technologies as well as common access to the Internet. The most characteristic feature of that generation, which distinguishes them from other generations is that they live together with technology – almost 90% of people use the computer and the Internet (Wiktorowicz et al., 2016, p. 25). They are more conscious of their values and better educated than previous generations. They become involved in an interesting job, are open to new challenges and show a multipurpose approach. The Ys are open to changes, professionally mobile and adaptable (Berkup, 2014, p. 223).

Generation Z comprises people approaching now their high-school final exams, studying or entering the labour market. That generation is also referred to as generation C from the English words: *connect, communicate, change, computerized, community-oriented, always clicking*, related to the Internet, communication and readiness for changes (Wiktorowicz et al. 2016, p. 32). An important part of Zs' life are the increasingly advanced products introduced to the market by Apple, Facebook, Twitter, Instagram, Pinterest and other social media, used by millions of users (Berkup, 2014, p. 223). Generation Z is socially-oriented and more skillful than generation Y. They communicate by social media and thus are surrounded by many people, but generally live separately while combining the real world with the virtual one. A characteristic feature of the Zs is 'Internet connection' 24 hours a day, 7 days a week. They do not know a world without computers, telephone and electronic gadgets, and their life is focused around new technologies (Berkup, 2014, p. 218).

The most important 'consumers of tomorrow' are, above all, very young people representing the generation that is growing up in the era of the Internet, where being connected is an everyday reality and an integral part of their lives in its various spheres. Researchers called this generation Generation M (*mobile generation*) (Rohm, Gao, Sultan, and Pagani, 2012, p. 487) are those born after 2000 who can be called innovative consumers of mobile applications. Nowadays they are the main target groups for brands that communicate with mobile internet users through applications (Jasiulewicz, 2015, p. 319).

3. Research methodology

Based on conducted literature studies concerning intergenerational differences, it was assumed that age can be a variable differentiating perception of the usefulness of the Internet of Things devices in consumer applications, similar to the perception of the possibilities of the IoT implementations in individual sectors of the economy. That assumption was the basis for the conducted introductory study.

The main objective of the study was to determine the perception of smart consumer solutions by respondents from various generational groups, as well as check whether they differ significantly in their attitudes. For the needs of the study the authors adopted the following division of consumer applications of the Internet of Things, comprising three major categories: wearables, smart home and smart household items (including electronic and domestic appliances). Other consumer devices operating in IoT networks, including personal health devices as well as 'connected' cars, remain outside the scope of the authors' interest due to the different specificity of their use.

The specific objectives of the study also involved the determination of which consumer solutions are perceived as the most valuable, providing comfort and safety, and also in which sectors of the economy, in the respondents' opinion, some solutions based on the concept of the Internet of Things can be applied. An additional objective was to identify the degree of intensity of using the Internet among the respondents from various generations.

In light of conducted literature studies and assumed research objectives, the following hypotheses were formulated:

(H1) Individual generations differ considerably in terms of the perceived utility of the Internet of Things devices in consumer applications.

(H2) Age is a variable differentiating the perception of the possibilities of using the Internet of Things in specific sectors of the economy.

The study was conducted by means of an online questionnaire (CAWI) on a sample of 241 respondents. Due to the lack of a sampling frame, the snowball sampling method (Goodman, 1961) was used. The first participants chosen who were matching the participant profile (had to meet one condition which was declared as Internet usage) were people known to or who had done business with the researchers. The advantages of this technique were: obtaining a fairly large sample in a short time and its low costs. The main disadvantage was the possibility of the incorrect classification of subsequent participants, while identifying respondents similar in many respects. There is also the disadvantage of an unrepresentative sample, which does not allow for generalization of the results.

Nearly half of the respondents were members of generation Z (born after 1994), just over one quarter – generation Y (born between 1980-1994), almost one-fifth – generation X (1965-1979), and one tenth – generation BB (1946-1964). The structure of the sample according to basic demographic variables and intensity of Internet usage is presented in Table 1.

Table 1. Characteristics of the research sample

Demographic features		Structure in %
Sex	Women	65.6
	Men	34.4
Generation	BB	10.0
	X	18.3
	Y	25.7
	Z	46.1
Size of place of residence	Country	37.8
	town up to 50 thousand residents	17.8
	town between 50-200 thousand residents	14.9
	town between 200-500 thousand residents	5.8
	town of above 500 thousand residents	23.7
Education	Primary	7.5
	basic vocational	5.4
	Secondary	29.0
	B.A.	20.7
	M.A.	37.3
Household's financial situation	very bad	0.0
	Bad	2.1
	Average	23.2
	Good	53.5
	very good	21.2
Intensity of Internet usage	less than once a week	1.7
	at least once a week	5.0
	every day	93.4

Source: own elaboration based on the research results (2020).

In order to verify the hypotheses, the non-parametric Kruskal-Wallis test was used because the obtained distributions of dependent variable values deviate from a normal distribution (verification by the Kolmogorov-Smirnov test) and also due to the differences in sizes of the examined groups. The statistical significance of the correlation between the variables was determined based on the chi-square test of independence, whereas correlation power was measured by means of Cramer's (V) coefficient (Malarska, 2005). During the conducted analyses all the necessary calculations were performed by means of SPSS for Windows software (version 25.0) and Statistica (version 13.3).

When interpreting the presented results one must take into account the limitations of the study, including the non-random selection of the sample, the relatively low

sample size as well as the overrepresentation of younger respondents (members of generations Y and Z).

4. Results and discussion

In the examined group, 93.4% admitted that they use the Internet every day, where the highest percentage of such people was noted among younger respondents (100% in the case of generation Y and 98.2% from generation Z), less in the case of generation X (88.6%), and lowest in the group of Baby Boomers (62.5%). The indicated correlation proved statistically significant $\chi 2$ (3, N = 241) = 47.06; $p < 0.001$ of the mean correlation power (Cramer's V coefficient = 0.442). Additionally, in the case of education of the respondents and frequency of using the Internet, the statistically significant correlation was noted $\chi 2$ (2, N = 241) = 10.241; $p < 0.01$ of weak correlation power (Kramer's V coefficient = 0.206), where the higher percentage of people using the Internet every day was observed for the respondents with higher education (96.4%), and lower for those without secondary education (80.6%). The intensity of using the Internet was neither connected with the respondents' financial situation nor with their place of residence or sex – these correlations were not statistically significant.

The preliminary cognitive aim of the study was to determine in which areas, in the respondents' opinion, the solutions based on the concept of the Internet of Things are applied. In this context additionally generational differences were analysed. The most important sectors of the economy, in which one can take advantage of the IoT solutions, in light of the responses (on a scale from 1 – "I strongly disagree" to 5 – "I totally agree") are: media and entertainment (M = 4.60; SD = 0.72), trade (M = 4.42; SD = 0.86), financial services (M = 4.32; SD = 0.89), education (M = 4.28; SD = 0.99), home (M = 4.26; SD = 1.00), consumer solutions (M = 4.05; SD = 1,03), transport (M = 4.13; SD = 1.02), automotive industry (M = 4.05; SD = 1.03), smart cities (M = 4.05; SD = 1.15) and industry (M = 4.04; SD = 0.98). In the remaining areas, i.e. health care (M = 3.95; SD = 1.18), energy (M = 3.81; SD = 1.09), army and defence (M = 3.64; SD = 1.31), and agriculture (M = 3.28; SD = 1.29) – the average respondents' opinions were visibly lower.

The differences among the studied generation groups for the possibilities of using the IoT in the abovementioned economy sectors were statistically significant only in four out of the twelve examined areas: trade H (3, N = 241) = 12.19; $p < 0.01$, transport H (3, N = 241) = 10.02; $p < 0.05$, consumer solutions H (3, N = 241) = 10.40; $p < 0.05$, and media and entertainment H (3, N = 241) = 17.03; $p < 0.001$. Multiple comparisons indicated that in terms of the IoT applications in trade, more positive opinions were expressed by the Ys than BB ($p < 0.05$) and Zs than BB ($p < 0.01$), whereas in the case of transport, consumer solutions and the media, significant differences were observed for members of generations Y and BB ($p < 0.05$), where older respondents expressed less positive opinions. In other

analysed areas the respondents did not differ significantly about the possibilities of using the Internet of Things.

The primary cognitive objective of the study was to determine whether members of individual generation groups differ significantly when it comes to the perception of smart household appliances, smart home and wearables as valued consumer solutions providing comfort and safety for their owners. Table 2 presents an overview of the most valued appliances that received a high percentage of positive marks in the respondents' opinions for every analysed category (in smart household appliances and building automation there were devices or systems where more than 50% of respondents expressed the opinion "I totally agree", and in the wearables category, where marks were definitely lower, the indicated devices received the opinions of "I agree" or „"I totally agree" from more than half of the respondents).

In the area of smart household appliances the most valued were, in the respondents' opinion, fairly obvious electronic devices such as smartphone (M = 4.71; SD = 0.58), tablet, laptop or computer (M = 4.49; SD = 0.81), and printer (scanner) (M = 4.39; SD = 0.93). Highly ranked smart household devices included: smart TV (M = 4.26; SD = 0.90), fridge (M = 4.22; SD = 1.07), washing machine (M = 4.20; SD = 1,10), vacuum cleaner (M = 4.19; SD = 1.12), oven (M = 4.16; SD = 1.07), audio equipment (M = 4.12; SD = 1.01) and camera (M = 4.06; SD = 0.99). The slightly less important devices were coffee machine (M = 3.84; SD = 1.15) and bathroom scales (M = 3.68; SD = 1.20). In none of the twelve analysed types of appliances in the area of smart household goods were any statistically significant differences noted, however, there were some growing tendencies in the responses. The Zs expressed more positive opinions about consumer electronics such as smartphone, tablet/laptop/computer, printer, scanner and audio equipment, compared to other examined groups. In turn, the Ys gave the highest marks to 'connected' television set and digital camera (these products were relatively positively assessed also by Baby Boomers). The Xs expressed higher assessments for household appliances such as fridge, washing machine, vacuum cleaner, oven and coffee machine.

In the area of smart building automation (smart home) the most valuable consumer solutions, according to respondents, were multi-functional systems (e.g. smoke, carbon monoxide, air humidity sensors) (M = 4.74; SD = 0.61), monitoring systems (M = 4.55; SD = 0.73), gate/garage door control systems (M = 4.42; SD = 0.81), heating/air conditioning control systems (M = 4.39; SD = 0.80), and energy consumption control systems (M = 4.39; SD = 0.86). As slightly less important appliances respondents mentioned systems of closing doors/windows (M = 4.17; SD = 0.99) and lighting control systems (M = 4.16; SD = 0.95). In none of the seven analysed smart home systems the respondents differed significantly in their perception, although it can be observed that the highest assessments were expressed by Generation Y. The opinions of all the respondents, in light of the average ratings of the given responses were comparable and very positive (above 4), and the exception here were the lower ratings concerning heating/air conditioning control systems (given by BBs) as well as systems of closing doors/windows (according to Xs and BBs).

Table 2. Perception of the Internet of Things devices in consumer applications

Group of devices	Type of devices	Generation Z *N* = 111		Generation Y *N* = 62		Generation X *N* = 44		Generation BB *N* = 24		Kruskal-Wallis test	
		M	SD	M	SD	M	SD	M	SD	H	*p*
Smart household appliances	smartphone	4.77	0.53	4.69	0.62	4.68	0.56	4.50	0.66	6.432	0.092
	tablet/ laptop/PC	4.55	0.76	4.52	0.74	4.48	0.85	4.17	1. 09	2.611	0.456
	printer	4.50	0.81	4.40	0.82	4.23	1.16	4.13	1.23	2.938	0.401
	smart TV	4.24	0.88	4.40	0.84	4.14	1.03	4.21	0.98	2.401	0.493
	fridge	4.29	1.12	4.15	1.04	4.32	0.96	3.92	1.14	5.492	0.139
	washing machine	4.21	1.18	4.15	1.04	4.36	0.97	3.96	1.16	3.317	0.345
Smart home appliances	multi- -functional systems	4.80	0.57	4.76	0.53	4.66	0.75	4.58	0.72	3.812	0.282
	monitoring systems	4.52	0.76	4.66	0.60	4.55	0.73	4.38	0.88	2.286	0.515
	gate control systems	4.46	0.70	4.55	0.76	4.27	1.00	4.17	1.01	3.694	0.296
	heating/ aircondition systems	4.44	0.67	4.48	0.74	4.34	0.96	3.96	1.04	6.910	0.075
	energy control systems	4.46	0.78	4.50	0.70	4.23	1.14	4.04	0.95	5.782	0.123
Wearables	smartwatch	4.17	0.94	4.16	0.87	3.84	1.12	3.63	1.10	7.833*	0.050
	headphones	4.28	0.90	4.06	0.92	3.70	0.98	3.38	1.13	22.094*	0.000
	smart band	4.15	0.97	3.94	0.87	3.77	0.80	3.29	1.12	18.653*	0.000
	smart eyewear	3.56	1.08	3.63	0.89	3.39	0.99	3.33	1.34	1.478	0.687

* Differences statistically significant.

Source: own elaboration based on the research results (2020).

In the area of wearables. the most valued consumer solutions were smartwatches (*M*= 4.05; *SD* = 0.99) and headphones (*M* = 4.03; *SD* = 0.98). Slightly lower ratings were given to smart bands (fitness bands) (*M* = 3.94; *SD* = 0.96) and smart eyewear (intelligent glasses) (*M* = 3.52; *SD* = 1.05), intelligent contact lenses (*M* = 3.43; *SD* = 1.13), and significantly lower opinions were given about implants/chips implanted under the skin (*M* = 3.29; *SD* = 1.25), intelligent clothes (*M* = 3.12; *SD* = 1.11) and intelligent jewellery (*M* = 3.02; *SD* = 1.16). The conducted analysis showed statistically significant differences in distributions of responses given by members

of specific generation groups in the case of three out of the eight examined devices: smartwatch H (3, N = 241) = 7.83; p = 0.05, headphones H (3, N = 241) = 22.09; $p < 0.001$ and smart band H (3, N = 241) = 18.65; $p < 0.001$. Multiple comparisons indicated that the Zs expressed more positive opinions about smartwatches than Baby Boomers ($p < 0.05$). Headphones, as well as smart fitness bands, are perceived as valued consumer solutions to a greater extent by the Zs than the Xs ($p < 0.01$) and BBs ($p < 0.01$). For other wearables, the respondents did not differ significantly in their opinions, however it can be observed that Generation Y expressed slightly higher opinions about implants, intelligent clothes and jewellery compared to other groups, and intelligent lenses were assessed most positively by Baby Boomers.

Based on the literature review, it can be assumed that in the segment of older people the use of the new technologies is systematically growing, however there are still differences in the digital skills among different generations (Spiru, Paul, Velciu, Voicu, and Marzan, 2019). The essence of the concept of intergenerational differences is the assumption that events that members of a given group experienced in a specific period of history and circumstances, in which the generation grows, form common features, attitudes and behaviour of that generation's members in their later life (Goota, Rozendaalb, Opreec, Ketelaarb, and Smita, 2018, p. 291). Younger generations with better developed technical skills and daily digital routines, i.e. using the Internet and mobile devices more than older generations, show differences in terms of the virtualization of specific aspects of their life (Bennett, Maton, and Kervin, 2008). These differences concern both behaviour and attitudes towards new technologies, so they can be translated into the perception of the concept of the Internet of Things. However, in light of the results of the conducted studies, the hypothesis stating that individual generations differ significantly in terms of the perception of the usefulness of the Internet of Things devices in consumer applications, was not confirmed. When analysing the opinions expressed by members of specific generation groups on the usefulness of consumer applications, there were no statistically significant differences for the twelve examined types of devices in the area of smart household appliances, as well as the seven analysed smart home systems. The analysis showed statistically significant differences only for three out of the eight studied devices from the category of wearables (smart watch, headphones and smart band). The influence of age as a variable differentiating the perception of the Internet of Things applications in various sectors of economy, was also not confirmed. The conducted analysis showed statistically significant differences only for four out of the twelve examined areas of application of the IoT solutions – in trade, consumer solutions, media and entertainment.

5. Conclusion

The assumption that was accepted initially concerned the differences in the perception of usefulness and the possibilities of the implementation of the Internet of Things in consumer applications, and the preliminary analyses of the results of the study on the

intensity of Internet usage seemed to support it. A higher percentage of Internet users was noted among younger respondents (Generations Y and Z), lower in Generation X, and lowest in the group of Baby Boomers (statistically significant correlation). Yet, in the course of further analyses the assumed research hypotheses were not confirmed.

The obtained results showed that members of individual generations expressed surprisingly similar opinions. It should be noted that an increasing percentage of the older generation is making an effort to become acquainted with new technologies, and the largest increase in the number of Internet users is currently recorded in the category of people aged over 50. At a time when access to the network has become an indispensable tool of work, age-related differences resulting from difficulties in adapting older generations to new technologies are decreasing rapidly (Morbitzer, 2013, p. 22; Leszczyńska, 2019, p. 37). Contemporary society is at a pivotal moment of socio-cultural stratification, i.e. the division into digital natives and digital immigrants, however older people are increasingly learning to use new technologies, which brings the gradual blurring of the technological intergenerational distance (Morbitzer, 2013, p. 30).

The limitations of the study, including the relatively small, non-random selection of the sample, as well as the disproportions in sizes of the individual age groups, require approaching the interpretations of the results with a certain caution. The presented conclusions can become the basis for further studies, both qualitative and quantitative, as well as in-depth analyses of intergenerational differences in terms of consumer applications of the concept of the Internet of Things.

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POSTRZEGANIE INTERNETU RZECZY W ZASTOSOWANIACH KONSUMENCKICH W KONTEKŚCIE RÓŻNIC MIĘDZYPOKOLENIOWYCH

Streszczenie: Celem artykułu była próba ustalenia, jak przedstawiciele różnych pokoleń postrzegają Internet Rzeczy (IoT) w zastosowaniach konsumenckich oraz czy pomimo wzrostu popularności aplikacji IoT różnice międzypokoleniowe w zakresie percepcji technologii i urządzeń Internetu Rzeczy są istotne. Międzypokoleniową analizę komparatywną przeprowadzono na podstawie własnego badania, zrealizowanego za pomocą ankiety internetowej (CAWI), na próbie 241 respondentów. W świetle uzyskanych wyników nie potwierdzono hipotezy zakładającej, iż przedstawiciele poszczególnych generacji różnią się istotnie w zakresie postrzegania użyteczności urządzeń Internetu Rzeczy w zastosowaniach konsumenckich. Nie potwierdzono także wpływu wieku jako zmiennej różnicującej postrzeganie możliwości zastosowania Internetu Rzeczy w różnych sektorach gospodarki.

Słowa kluczowe: internet rzeczy, IoT, pokolenia, różnice międzypokoleniowe.