
Education as the Factor of Digital Inclusion of Elder Persons: A Study Case in Poland

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Abstract:

Purpose: The objective of the presented research is to verify with the example of Polish elder persons the conviction about the decisive role of the age factor in the emergence of the digital divide. The text refers to the World Decade of Active Aging 2020-2030 program announced by the WHO in response to challenges of aging societies. The authors highlight the role of IT as the factor of active aging and social inclusion of elder persons.

Design/Methodology/Approach: The theoretical framework of the research had adopted an interdisciplinary approach, placing the undertaken analyses in the context of the theory of aging, motivation, and the use of new media. To verify the examined thesis the method of Aggregated Analysis had been adopted. The analyzed data have been drawn from the governmental research dealing with activities of elder persons in the cyberspace. The analyzed statistical material was collected and elaborated according to the Eurostat methodology.

Findings: The collected data deny the conviction of the age-related digital divide in Poland and highlight the role of educational and motivational factors.

Practical Implications: The research findings can be utilized to design the IT programs adequate to the needs and abilities of elder participants of various educational background and motivation to support their digital inclusion and participation. They are useful for governmental and non-governmental institutions involved in programs addressed to the elder participants. They are also essential for the research on the social inclusion of the elders.

Originality/Value: Previously undertaken analyzes didn't concern the role of education and motivation as variables mediating the phenomenon of digital exclusion in elder age.

JEL classification: I0.

Keywords: Digital divide, aging, education.

Paper Type: Research article.

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1. Introduction

The processes of aging constitute challenges of the contemporary times. In the past they were related to the natural succession of generations, which was characterized with the withdrawal of the elderly from active social life as well as their marginalization in the process of providing them with the family care. This situation has been undergoing radical change in connection with demographic processes (length of life extension, lower birth rates), as well as transformation of social and family life patterns (participation of women in the labor force, decline of multi-generation families), migrations (separation of families and the growth of aspirations of individuals and communities). As a result of the above there are growing numbers of elderly people of differentiated health and needs requirements.

Those processes became one of the essential challenges which contemporary societies and governments face (The 2018 Aging Report, 2018). The effect of Baby Boomer Generation's transition from work force to retirement has posed a threat to the economic growth by the shortage of qualified employees. Increasing pressures on social care systems have become concerns of the finance sectors in the state budgets. The need to secure effective medical and nursing care to seniors has become the primary social concern. Aging itself and the old age have been raised to the level of political debates.

Meeting the challenges of the time, WHO proclaimed the Decade of Active Aging 2020-2030 indicating directions of activities needed to amend the quality of life for seniors. The ones deemed most important are the activities taken at different levels aiming at preventing ageism, social exclusion, and marginalization of the elderly by enhancing their presence in social life, increasing their potential for self-advocacy as well as improving the offer of care services for this age group. The new media constitute an essential element of the proposed system. (Decade, 2019).

Implementation of the aforementioned goals requires changes in the paradigm of care about the aged, stressing their social and professional reactivation, and increasing their subjectivity and responsibility for their lives. It also implies more intensive use of the new media and network society. However, active readiness of the elders to use modern technologies is questioned. The origin of such doubts can be seen both in the past perception of the aged as well as strategies adopted by the seniors to deal with the aging process.

The assumption of the digital exclusion of seniors results both from the historic phenomenon of their social marginalization, the relations in the cyberspace (Bleszyńska, 2018) as well as doubts relating the learning abilities of the elders. In the post-communist countries, such as Poland, their economic condition as well as delay in contacts with IT may also contribute to such a fact (Orłowska, 2016). Considering the above it seems to be important to embark on the analyses of forms and

determinants of application of the new media by the seniors. And the need to avoid generalizations ignoring the context of national specificity directs us to focus on the analysis of a chosen population, which is a Polish one.

2. Theoretical Framework

Contemporary programs dealing with challenges of aging societies with their rapidly growing populations of people of retirement postulate the active aging paradigm of social work. The basic assumption is reintegration of elder, retired persons into society as active contributors to social development (Active Ageing, 2002). Besides the longest period of maintaining good physical condition and ability to stay independent the basic pillars of 'active aging' also include the category of 'participation' covering various social activities of the elders (professional, educational, and cultural activity, shopping, family and social contacts, political participation, hobbies).

The possibilities of their engaging into by the seniors of varied health conditions are offered by contemporary technologies, especially IT. For a long time, those technologies have been perceived as a dominion of younger generations. The older generations were identified with the 'human gap' phenomenon (Botkin, 2014). Aging processes was an important factor of the digital divide and exclusion.

According to van Dijk (2013) digital inequality is related to social marginalization resulting from the system of stratification within the given community. As the research of Scheerder *et al.* (2017) indicates, education level of the person is its essential determinant. People with higher education use the new media more frequently and competently than less educated ones (Scheerder *et al.*, 2017). They also more often include Internet activities into their daily routines. To a certain degree it is associated with a more competent presence in the cyberspace and a longer training period. Motivational factors can also play a major role in this context (van Dijk, 2013).

The attempts to explain the specificity and role of individual motivations associated with the IT use have been advanced in the numerous theories rooted both in sociological as well as psychological perspectives (Expectation-Confirmation Theory ECT, Social Cognitive Theory SCT, Theory of Reasoned Action TRA, Theory of Planned Behavior TPB or Innovation Diffusion Theory IDT), by creating models focused on selected aspects of human behaviors (Technology Adoption Model TAM, Motivational Model MM, Model of Adoption of Technology in Households MATH).

It seems that the Unified Theory of Acceptance and Use of Technology UTAUT2 is probably the most applicable theory of complex explanation of the elderly attitudes towards the use of IT. The UTAUT2 authors have proposed a multi-dimensional model considering the complexity of the factors motivating (or de-motivating) individuals to use the new media and technologies. It includes the influence of the social environment, comparison of the expected costs and effort with the possible

benefits and effects, the cost of the investment, hedonistic attitude of the subject, the habits established in their life cycle. as well as socio-psychological changes accompanying the aging process (Niehaves *et al.*, 2014; Venkatesh *et al.*, 2016).

For instance, human needs of personal comfort increase with aging. The research on the relationship between age and risk preferences shows neurobiological changes occurring while aging limits our tendencies to take impulsive and risky behavior, increasing tendencies for carefulness (Grubb *et al.*, 2016; Tymula *et al.*, 2013). In reference to digital activities this regularity has been identified in respect to the attitudes of seniors towards internet banking, perceived by many as a risky form of managing one's financial assets. Even people using Internet willingly and without difficulty mostly showed aversion to the aforementioned form of activity, in favor of the face-to-face contact (Hill *et al.*, 2008; Asmi *et al.*, 2012).

Aging processes generally enhance the role of the environmental factors (limiting or favoring the considered activities) as well as the power of a social influence (especially the influence of the younger family members). According to Mead (1970) in post-figurative cultures, that Western civilization belongs to, knowledge and skills are transmitted from children to parents and from grandchildren to grandparents. Due to their mediations the elderly enters the world of modern technologies.

Thus, the guides of the contemporary seniors to the digital world are most frequently found in the representatives of the Millennial Digital Generation, i.e., persons born into the world and times of proliferation of the digital media (the eighties of the XXth century), who use them skillfully and do not shun technology. By instigating the interest of the Baby Boomers in IT they are effective teachers shaping the BB competencies in the new media use (Strauss *et al.*, 1991; Roberts, 2010).

Developing of digital competencies demands however a background acquired at the earlier stages of education. These competencies, as Klecun (2008) points out consist of a hybrid containing multiple literacies such as traditional writing/reading/spelling literacy, computer literacy, information literacy, and media literacy.

They allow the IT users to practice reading with understanding and correct expression in a written form, the use of multimedia equipment, effective information search, retrieval, and application, plus the comprehension of the principles of the media functioning and critical evaluation of the received information. The complexity of that hybrid is expressed by the term 'transliteracy' indicating a new quality emerged from interactions of the aforementioned traditional elements (Thomas *et al.*, 2007).

Alongside with the lack of transliteracy also deficits in digital competencies (like a lack of knowledge, low physical accessibility of ICT, lack of assistive technologies allowing people with disabilities access to ICT services, insufficient motivation, poverty, poor psycho-physical conditions, lack of social support or insufficiently

facilitating environment) may contribute to the digital exclusion of the subject (Georgiu, 2004; Jedlińska, 2018). That notion, following Cushman and Klecun, (2006), and McLean (2008), defines a situation, in which a given person is deprived of access, the possibility of use and/or free decision making on the use (or abandoning the use) ICT resources.

The mentioned limitation is strictly associated however with the phenomena of marginalization and social exclusion (Orłowska, 2016). Despite those objections, it is still valid to appreciate the inclusive potential of the initiatives aiming at eliminating digital inequalities of the elderly. Particularly valuable seem to be activities aim at identifying and supporting of the senior generation leaders (Active Aging, 2002).

3. Research Methodology

The objective of the analysis was to investigate the forms and selected determinants of the Polish seniors' activities in the cyberspace. The questions have been asked:

- What is the level of digital exclusion within the population of Polish elders?
- What is the impact of the education level on digital activities of elder persons?
- What is the impact of age on the forms of elder persons' activities in the cyberspace?

The analysis covered data from general sample surveys, contrasting seniors aged 65 - 74 with younger groups. It was assumed after Heaton (2008) that secondary analyzes can be carried out using data from repositories of governmental agencies (the Main Statistical Office in Poland, the Polish Ministry of Digitalization, and the Center of Social Opinion Research (CBOS). The analyzed data covered period 2016 -2017.

Referring to the method of collecting, analyzing, and interpreting the research material (Creswell, 2009; Johnston 2014), the analysis adopted the strategy following Turner (1997), aggregated analysis, i.e., the analysis and synthesis of the results of various studies. We assume that compiling and analysis of the collected data allows for providing answers to the research questions. Thus, the conclusions resulting from them may be used for the needs of planned activities programs at the Decade of Active Aging (the examples have been presented at the last section of this article).

4. Results

4.1 Digital Exclusion of Elder Persons in Poland

CBOS reports a fast-growing number of Internet users in Poland, from 17% in 2012 to 67% in 2017 (Korzystanie, 2017). The undertaken analysis identifies, however, the age-related gap in comparison with younger Internet users only 23% of the seniors' population (65+) participated in digital activities. The use of the Internet in other age

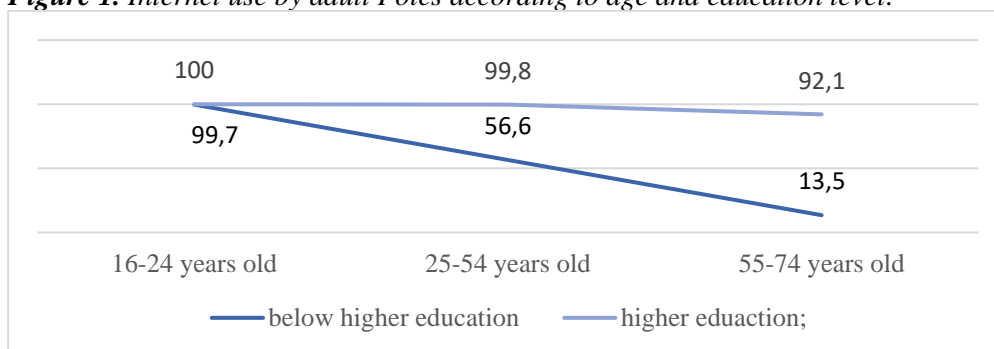
groups is as follows: 18-24 years old 100%, 25-34 years old 96%, 35-44 years old 87%, 45-54 years old 70%, 55-64 years old 47% (Korzyszanie, 2017).

Digital exclusion of seniors seems to be confirmed by the data collected by the Main Statistical Office of Poland. Their research conducted on the general population indicated that 63.6% of the seniors have never used the Internet (Wykorzystanie Technologii, 2018). But the analysis also concerning the education factor suggests the higher impact of education level.

4.2 Age, Education, and Internet

As Figure 1 suggests age is not the basic factor determining the Internet use. The higher meaning should be ascribed to the education factor. Education does not differentiate the immersion in Internet only in the youngest group (16-24 years old). But its impact on the elder groups (55-74 years old) is high. The degree to which people with higher education get engaged in digital activities is similar in all age groups and comprises over 90% of their representatives. Age-related digital inequalities occur however in the group with the lower education. In the elder age they begin to lag the better educated once by less frequent use of the Internet. And, over the age of 64 education is the major factor differentiating seniors' participation in the Internet activities.

Figure 1. Internet use by adult Poles according to age and education level.



Source: *Wykorzystanie technologii... Part 2, table 10B, Communication and Information Technologies' Using at Polish Homes in 2018 - part 2.*

4.3 Age and the Type of Activities at the Internet

Internet offers various kinds of activities (information search, learning, entertainment, shopping, social contacts, expression, and civic participation, e-banking and so on). In general, data of the Main Statistical Office suggest that age does not differentiate the preferences of the goals that Poles choose while using the opportunities offered by the Internet. But, when we look at the goals of the Internet use through the lens of education, then we see a different picture (Table 1, Table 2).

Table 1. Goals in Internet use by people of the lower education level (in %)

Goal type	Pre-production age (18-24)	Production age (25-54)	Post-production age (55-74)
Communication (e-mail, Skype, Zoom)	100,0	95.4	74.7
Creativity (blogging, memes, creative writing, visual arts)	60.5	8.4	0.6
Information and news access	85.4	39.6	7.4
E-health (access to medical services)	24.9	4.2	2.0
Social participation (photos, Facebook, Instagram, sharing information, forums, dating services, on-line cultural activities)	14.0	1.6	0.4
Online services (shopping, e-government services)	12.3	2.8	0.4

Source: Self-created after *Wykorzystanie technologii... part 2, table 15B.*

People of the lower education level are characterized by a gradual and generally high level of withdrawal from Internet activities as they age (Table 1). Only in youth (up to 25 years of age) they show intensive activities associated with communication, information access and creativeness. Other activities are not followed actively even by very young people. Almost in all areas (even those most preferred in youth) alongside with the decline of professional activities we can notice a significant decline in the interest in Internet activities (especially in the communication one). Activities of the Poles of the higher education level show a different picture (Table 2).

Table 2. Goals in Internet use by people of the higher education level (in %)

Goal type	Pre-production age (18-24)	Production age (25-54)	Post-production age (55-74)
Communication	100,0	95.4	74.7
Creativity	45.7	34.3	12.6
Information access	96.4	95.3	79.3
E-health	72.7	74.2	61.9
Social participation	17.7	20.0	13.6
Online services	49.3	51.9	34.5

Source: Self-created after *Wykorzystanie technologii... part 2, table 15B.*

People of higher education level are prone to more intensive and diversified forms of Internet activities. Better educated persons to a greater degree than those less educated use the Internet to get information on health care and more often use online services. The exception is in the forms associated with social participation, which are not very popular in all studied groups regardless of their age or education.

Attempting to explain those regularities we may assume that they result from generally higher competencies and intellectual skills of the better educated Internet users (the linkage of education and the above mentioned competencies has been

remarked upon in the characteristics of the theoretical framework of this study), different life style of the two groups (lower education level is conducive to limiting one's activities to family and professional life), as well as a higher concern of those better educated of their and their families' health.

4.4 Limitations of Internet Use in the Elders

The undertaking of various forms of Internet activities is perceived as one of the indicators of digital competencies of individuals. On the other hand, the level of digital competencies acquired by the given person can encourage him/her to such behaviors. However, as Figure 3 presents, the applications of such competencies are rather selective what is reflected in the low Internet use as the intermediary medium in contacts with administration offices (the investigated persons used it mainly as a source of information or facilitation in the retrieval and placing of the official forms).

General analysis of Figure 3 indicates that Internet mediated contacts with offices are not the most preferred once, and only 1/5 of the Poles in the study use that opportunity. This conclusion changes however, when we consider the education background of the respondents. The situation of the respondents with lower education level can be described in categories of digital exclusion (slightly higher increase in Internet use concerns only information retrieval as to the address, telephone number or office hours), while persons of a higher education background demonstrate much higher level of digital competencies, which is reflected by twice as common, than in the general population, and tenfold more frequent, than in the lower educated group, taking avail of both the information retrieval as well as filling-up and placing of the forms online.

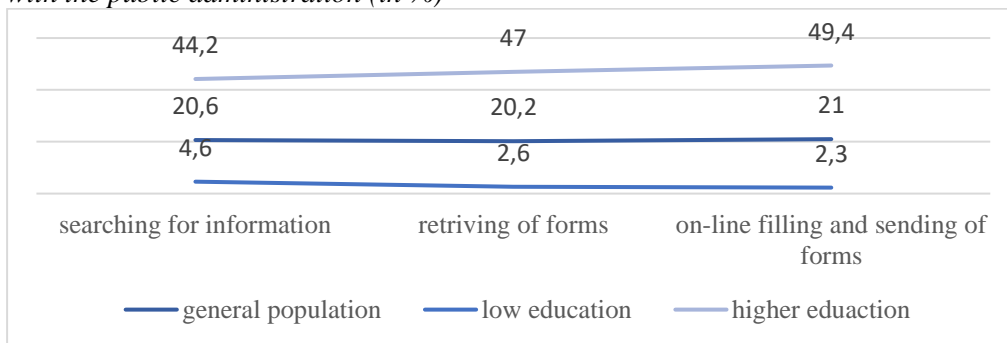
That positive influence of education declines however with aging of the respondents. Persons with the higher education background use Internet in contacts with public administration for: information searching (16.4% group of 16-24 years old, 5.6% 65+ years old; retrieving of forms 13.5% and 5.7%, online filing and sending of forms (11.4% and 5.3%) (Wykorzystanie technologii).

Relatively the highest level of the engagement in the Internet mediated contacts with offices has been identified in people in full professional capacity (aged 25-54). They are also the main users of the Internet services offering information retrieval as well as obtaining and placing forms online (Hawrysz, 2021). Digital inequalities increase with age of the respondents. In the group of younger seniors (55-64) that form is less favored (three-fold decline of popularity).

Seniors 65+ represent the digital exclusion category. Unfortunately, there is lack of data showing how many of them are really excluded and how many of them are voluntary Internet emigrants or refugees preferring face-to-face contacts. The

increasing pressure on Internet mediated forms of activities can be perceived as the form of social oppression violating individual rights to a choice.

Figure 3. Education levels versus declared reasons for the Internet use in contacts with the public administration (in %)



Source: Self-created design after *Wykorzystanie technologii...Part 2, tab.18B.*

5. Summary and Concluding Comments

Summing up, we can state, that the undertaken analyses allow us to formulate the following answers to the research questions posed beforehand:

- The Polish society can be described in the category of age-related digital divide. Those differences are particularly evident first to the comparisons between the eldest seniors (65+) and the younger generations.
- The digital divide is moderated by the education background of a person. Despite of their age the higher educated individuals are citizens of the digital society, while the person with a lower education is excluded from that society.
- The situation of Polish seniors cannot be generally described by the digital exclusion category. That collectivity is differentiated relatively to their competencies, forms, and degrees of Internet use.
- Digital inequalities in Poland are related to the age of the respondents particularly at the late old age. And the education background plays a more significant role in the group of the younger seniors.
- The elder persons manage their activities on the Internet in the way similar to the younger once, considering their needs, interests and competence levels.
- The research findings presented above have significant implications for programs of governmental and nongovernmental agencies aiming to support the processes of active aging and social participation of the elders. They show the specificity of needs and areas of interest of seniors in Internet as well as the limitations of their Internet activities and question the popular beliefs to digital exclusion of this social category. The knowledge of them can improve the areas of social practice:

- the practice of educational centers (by contributing to training programs offered to seniors),
- the social work programs addressed to the elders (by highlighting the meaning of Internet activities to preserve their social activities and independent life)
- the design and implementation of programs "Decade of Active Aging 2021 - 2030" promoted by WHO to encourage governments of global community to support all kind of activities aiming to prevent social exclusion and disenchantment of seniors.

It can also contribute to further research by pointing the following areas which need to be explored:

- the IT literacy and illiteracy areas and problems in seniors of various age and education,
- the role of particular social settings and social capital of seniors in developing of their IT competencies and forms of activities,
- the IT supported social networks of the elders,
- the role of IT for independent life of seniors and their inclusion into labor market.

References:

- Active Ageing. A Policy Framework. 2002. Geneva, WHO.
- Asmi, F., Ishaya, T. 2015. Understanding the behavior of the elderly towards Internet Banking in the UK. The 2nd International Conference on Social Eco-Informatics, 100-106.
- Bleszyńska, K. 2018. Wolność i władza w sieci. In: L. Zacher (Ed.) Potencjały relacji sił w cyfrowym społeczeństwie wiedzy. Warszawa, Poltext, 55-73.
- Botkin, J.W. 2014. No Limits to Learning: Bridging the Human Gap: The Report to the Club of Rome. Oxford, Pergamon Press.
- Cushman, M.E., Klecun, E. 2006. How (can) non-users engage with technology: bringing in the digitally excluded. In: E. Trauth, D. Howcroft, T. Butler, B. Fitzgerald, J.D. Gross (Eds.) Social Inclusion: Societal and Organisational Implications for Information Systems. Boston, MA, Springer, 347-364.
- Creswell, J. 2009. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. 3rd Edition. Los Angeles: Sage Publications, Inc
- Decade of Healthy Ageing (2020-2030), 2019. WHO.
- Grubb, M.A., Tymula, A., Gilaie-Dotan, S., Glimcher, P., Levy, I. 2016. Neuroanatomy accounts for age-related changes in risk preferences. Nature Communications, 7.
- Heaton, J. 2008. Reworking Qualitative Data. London: Sage Publications.
- Hill, R., Beynon-Davies, P., Williams, M.D. 2008. Older people and internet engagement. Acknowledging social moderators of internet adoption, access, and use. Information Technology & People, 21(3), 244-266.
- Jedlińska, R. 2018. Wykluczenie cyfrowe w Polsce na tle Unii Europejskiej. Ekonomiczne Problemy Usług, 2(131), 225-236.
- Johnston, M.P. 2014. Secondary Data Analysis: A Method of which the Time Has Come. Qualitative and Quantitative Methods in Libraries, 3, 619- 626.

- Klecun, E. 2008. Bringing lost sheep into the fold: questioning the discourse of the digital divide. *Information Technology & People*, 2(3), 267-282.
- Korzystanie z Internetu (The Internet Using). 2017. Warszawa, CBOS.
- McLean, R. 2008. Pixel chic and digit guys: exploring the experiences of the digital citizen. *International Journal of Technology and Human Interaction*, 42(2), 1-21.
- Mead, M. 1970. *Culture and Commitment: A Study of the Generation Gap*. New York, Doubleday, Natural History Press.
- Niehaves, B.R., Plattfaut, M. 2014. Internet adoption by the elderly: employing IS technology acceptance theories for understanding the age-related digital divide. *European Journal of Information Systems*, 23(6), 708-726.
- Orłowska, M. 2016. Co czwarty Polak nie korzysta z Internetu – społeczny kontekst wykluczenia–wybrane problemy. *Edukacja-Technika-Informatyka*, 7(1), 118-123.
- Roberts, R.M. 2010. The Digital Generation and Web 2.0: E-Learning Concern or Media Myth? In: H. Hao, Yang, S. Chi-Yin Yuen, (Eds.), *Handbook of Research on Practices and Outcomes in E-Learning: Issues and Trends*. Hershey, PA, Information Science Reference, IGI Global, 93-113.
- Strauss, W., Neil, H. 1991. *Generations: The History of America's Future*. New York, William Morrow and Company, Inc. 1584-2069.
- The 2018 Ageing Report: Underlying Assumptions and Projection Methodologies. Brussels, Directorate-General for Economic and Financial Affairs, E.C.
- Thomas, S., Joseph, C., Laccetti, J., Mason, B., Mills, S., Perril, S., Pullinger, K. 2007. Transliteracy: crossing divides. *First Monday*, 12(12).
- Turner, P.D. 1997. *Secondary Analysis of Qualitative Data*. Paper presented at the Annual Meeting of the American Educational Research Assoc. Chicago, IL.
- Tymula, A., Rosenberg, A., Belmaker, L.A., Ruderman, L., Glimcher, P.W., Levy, I. 2013. Like cognitive function, decision making across the life span shows profound age-related changes. In: M.S. Gazzaniga (Ed.), *The Proceedings of the National Academy of Sciences (PNAS)*, PNAS, 110(42), 17143-17148.
- Van Dijk, J.A. 2013. A theory of the digital divide. In: M. Regnedda, G.W. Muschert, (Eds.) *The Digital Divide. The Internet and social inequalities in international perspective*. New York, NY, Routledge, 29-53.
- Venkatesh, V., Thong, J.Y.L., Xu, X. 2016. Unified Theory of Acceptance and Use of Technology. A Synthesis and the Road Ahead. *Journal of the Association for Information Systems*, 17(5), 328-376.
- Wykorzystanie technologii informacyjno-komunikacyjnych w gospodarstwach domowych w 2018 roku - 2 (Communication and Information Technologies' Using At Polish Homes in 2018/2). http://www.ict_gospodarstwa_domowe_2017_cz_2.