

Digital Exclusion of Seniors in Polish Rural Areas in the Context of Well-Being

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Abstract

Aim: The aim of the article is to show the level of digital exclusion of seniors in Polish rural areas in the context of assessing the level of well-being.

Methodology: The article is based on both theoretical and empirical research concerning the issue of digital exclusion among older adults. Theoretical research allowed the authors to determine the level of academic interest in the topic, assess the extent of digital exclusion, and identify its main causes. Methods included content analysis of selected academic publications, governmental reports, and EU documents. The empirical part presents the results of quantitative research conducted in 2017 and 2022 in the Lower Silesian Voivodeship, aimed at assessing the degree of digital exclusion among Polish seniors living in rural areas.

Results: The literature analysis revealed that the topic of digital exclusion among rural seniors is underrepresented in Polish academic discourse, despite growing global attention. The empirical findings confirmed a high level of digital exclusion among seniors in rural areas of Lower Silesia.

Implications and recommendations: The results highlight the urgent need for action to reduce this gap. Digital technology use is fundamental to functioning in modern society, and lack of access

significantly impacts the quality of life and well-being of older people. Given the projected demographic trends indicating a growing population aged 60 and over, increased scholarly and social focus on the needs of this group – particularly in the context of digital integration – is essential.

Originality/value: The scientific considerations presented in the article are intended to contrast the point of view presented in the literature in relation to the real state of digital exclusion of seniors.

Keywords: digital exclusion, rural areas, seniors, well-being

1. Introduction

In most developed countries, there is an increasing trend of population aging. This tendency is also identified in Poland. According to research published by the Central Statistical Office (GUS 2022), this trend is growing and the share of older people in the population of Polish residents is systematically increasing.

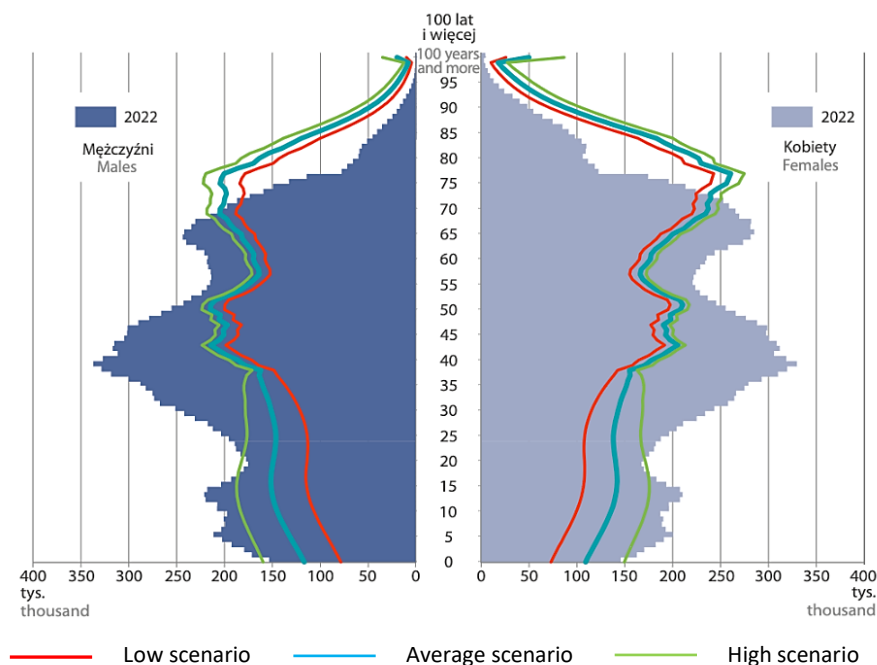


Figure 1. Population age pyramid (in thousands) in 2022 (empirical) and in 2060 according to forecasts,

Source: (Gus, 2022b, p. 31).

The latest forecast of Poland's population prepared by the Central Statistical Office (GUS, 2022b) assumes three scenarios of demographic changes: pessimistic, optimistic and optimal. All three scenarios predict a significant increase in the share of people aged 60 and over and a decline in the overall population. In 2021, the number of people aged 60 and over was 9.7 million, while it is forecast that in 2030 it will be approximately 10.8 million and in 2050 this number may reach 13.7 million, which will constitute approximately 40% of the total population of Poland. The aging of society has many consequences in various social and economic dimensions. The increase in the share of people at the post-working age, who cause the phenomenon of demographic burden, contributes to the need for changes in aspects, such as social systems, health care, consumption models and the way household finances are managed. Forecasts by the Central Statistical Office indicating that 40% of society in 2050 will be seniors aged 60+ mean that more and more attention should be focused on the needs of this social group. This means that more and more market research and analyses focus on the needs of seniors, because this group will have a very large purchasing potential that can contribute to

maintaining economic development in our country. At the same time, the deepening process of population aging and the related consequences for Poland's socio-economic development make it necessary to analyse this phenomenon, not only from the point of view of its advancement and dynamics, but above all from the point of view of spatial urban-rural differentiation. Consumption preferences among the population of cities and villages differ from each other, because they have their source in many factors, such as: tradition, customs and preferences of the population, the way of spending free time, which are determined to a significant extent by living conditions, available infrastructure and climatic and nature. This differentiation is particularly important for the availability of new technologies in the rural environment. The development of information and telecommunications technologies and their impact, on the one hand, on the development of online trade, and, on the other hand, the increased importance of communication using modern technologies and the growing share of e-services, such as medical care, have changed the possibilities of meeting consumer needs. Full participation in society today seems impossible without access to the Internet and without the skills to freely use ICT programs and equipment. Having digital skills is important both for individual development and social integration, as well as for social development in general (Frackiewicz & Bąk, 2023, p. 231). They will increasingly determine opportunities in every sphere of modern man's life. It is extremely important to diagnose the conditions and level of digital exclusion, especially for people at risk of exclusion, including older people living in the countryside.

In statistical research, attention is most often focused on three areas of functioning of the 60+ social group, i.e.:

1. The economic situation – including, above all, the housing and financial situation and the subjective assessment of the financial situation of seniors.
2. Health status and protection – where, first of all, outpatient health care, available and used spa care and expenditure on public health care and social assistance are analysed.
3. Activity of older people – manifested by participation in sports and physical recreation, cultural events and tourist recreation, and assessment of the scope of Internet use.

The research presented in the Central Statistical Office's studies is only a small fragment illustrating the living condition, expectations and needs of the 60+ group. In addition, a significant lack of these studies is the lack of analysis of the diagnosed parameters of seniors' life from the perspective of urban and rural residents. Because the disproportions in individual categories are significant. The above observations contributed to posing research questions:

RQ 1: What are the needs of older people living in Polish rural areas?

RQ 2: What is the standard of living of older people living in Polish rural areas?

RQ 3: What are the main factors of exclusion of older people living in Polish rural areas?

As a result of the asked research questions, research was undertaken by the co-author of this article, aimed at determining the situation of households of people aged 60+ in a rural environment.

This article will present research results regarding the level of digital divide that was diagnosed as a result of the literature and the empirical research. Therefore, the article answers the following detailed research questions:

RQ 4: What is the level of availability of digital services, and especially the Internet, for older people living in Polish rural areas?

RQ 5: Does the lack of access to new technologies affect the subjective assessment of life satisfaction of seniors living in rural areas.

The research methods used to prepare this publication include extended literature research and quantitative research in the form of direct interviews conducted among rural residents aged 60+ in the Lower Silesian Voivodeship (*województwo dolnośląskie*).

1.1. Problems of Seniors Living in Rural Areas

According to data from the Central Statistical Office, at the end of 2022, the number of people aged 60 and over in Poland was approximately 9.8 million and 4.1 million of this age group lived in rural areas (41.8% of this population). Over the last 20 years, the Polish countryside has undergone significant changes that have influenced socio-economic life and the rural landscape. These changes are the result of both globalization processes and specific political and economic activities in Poland.

One of the most important factors influencing the countryside is Poland's integration with the European Union in 2004, which brought new financing opportunities for farmers and the development of rural infrastructure. These changes led to the modernization of agriculture and an increase in its efficiency.

EU funds contributed to improving living conditions in rural areas and to the modernization of farms (Wilkin & Hałasiewicz, 2023). Despite significant EU funds allocated to eliminating development differences, there is still a strong differentiation in living conditions and lifestyles between the inhabitants of rural areas, especially those located on the periphery of regions, and dynamically developing cities. Urbanization and the migration of young people to cities in search of better career prospects lead to the depopulation of rural areas and the aging of the rural population. Older rural residents experience exclusion (i.e. financial, transport, health and digital) more often than their urban peers. These exclusions are a complex problem, influenced by many factors, both those related to local authorities and central policy, as well as those resulting from the individual attitudes and motivations of seniors. The author of the article "Autumn of senior life in the countryside. Are you sure it's gold?" (Radziejowska, 2023) draws attention to the fact that rural areas are becoming depopulated and aging. As a consequence of the lower demand for services, the network of health, care and transport services will become poorer. It is not profitable to invest in infrastructure where there are few inhabitants. The situation is made worse by the fact that Poland is characterized by low population density and scattered buildings, which makes an effective network of services not only expensive, but also difficult to organize.

Taking into account the specific needs related to aging and the growing importance of new technologies in human life, especially in the context of the well-being of seniors, health and digital exclusion are important issues that will determine the well-being of an increasing group of older rural residents in the near future.

1.2. Health Exclusion of Older Rural Residents

The problem with the availability of medical services was noticed by the World Health Organization (WHO), which, based on the conducted research, indicated that there are significant differences between urban areas in access to health care (WHO, 2010). The diagnosed problems related to the provision of health care in rural areas include: lack of qualified health care workers, distance from main medical centers, limited access to specialized health services, prevention and health promotion, poorer equipment of health care units with diagnostic equipment, smaller number of pharmacies and financial barriers related to lower income and additional transport costs resulting from the peripheral location. The authors of the statistical analysis entitled "Rural areas in Poland in 2020" draw attention to the problem of the availability of medical specialists, noting that the spatial distribution of medical staff working directly with patients is one of the most important challenges of health policy, the aim of which is, among others, ensuring that residents have optimal access to medical services (GUS, 2022a).

In the light of the existing, inefficient public health care system, there is more and more discussion about solutions based on new technologies that can ensure greater autonomy and participation of patients and make medical care more accessible, even in areas remote from cities, which is even more important in the face of rising costs and social inequalities. In times of problems in the functioning of

the health sector in Poland and the lack of access to some specialists, the fact of reducing the costs of patient service thanks to effective interactive communication possible using ICT tools, e.g. smartphone applications, cannot be overestimated (Jopkiewicz, 2021). On the one hand, the provision of medical services using remote technologies as an alternative to the stationary form appears to be, on the one hand, a solution to the problem of limited availability of doctors in rural areas, increasing the availability of medical advice, and on the other hand, the question should be asked about the real possibilities of using such services by elder people. The authors of the article with the telling title “E-health in the care of the elderly in Poland – a chance for equality in health or double exclusion?”, cite the recommendation of the Supreme Audit Office, stating that the development and dissemination of telemedicine is the desired direction of changes in the Polish health care system resulting from limited resources of medical staff and the phenomenon of multi-morbidity occurring in elderly patients (Dudkowski-Sadowska, 2022). At the same time, they point out that the growing demand for outpatient medical services with age, especially specialist ones, combined with the low availability of specialist doctors, reveal inequalities in access to medical services for older people living in rural areas. Telemetry care is therefore a potential opportunity to provide older people with the opportunity to benefit from the advice from doctors of various specializations without having to leave home and travel the distance to a facility providing specialized care, i.e. cardiology, diabetology or rehabilitation. An example of a comprehensive solution is the so-called geriatric teleconsultation, which includes a remote form of: interview, analysis of ECG tests, diagnostic tests, pharmacological treatment and the so-called treatment optimization (NIK, 2019). The role of new technologies in maintaining the mental health of seniors cannot be overestimated, as they can maintain constant contacts with their loved ones and peers using technology. In the last stage of life, the feeling of loneliness increases. Undoubtedly, technology can be a powerful tool in the fight against loneliness and isolation among seniors (Kowalski, 2021), especially in rural areas where movement is difficult due to the lack of public transport.

1.3. Availability of Digital Services for Seniors

The digital exclusion of older rural residents is an extremely important problem, especially in the context of changes taking place in society and the European Union’s cohesion policies. The document “The road to a digital decade” (European Commission, 2023) sets out the directions of the EU’s digital transformation and sets a number of digitalization goals by 2030. One of them assumes that by then 80% of EU citizens aged 16-74 will have at least basic digital skills. Technological progress has made it impossible to fully participate in society without the use of digital technologies.

In 2019, it was estimated that 40% of people in rural areas still did not have access to high-speed broadband. Connectivity is one of the key issues where EU rural areas still show insufficient progress in the digital transformation process.

According to Eurostat, in 2019, the overall level of digital skills in the EU was 48% among adults in rural areas(basic or above basic digital skills) compared to 62% of adults in large cities. Digital skills are considered essential for global competitiveness, the lack of e-skills in rural areas reflects socio-economic inequalities between rural and urban areas and widens the digital divide between them. M. Stanny (Euroactive, 2022) during the “Smart village” webinar pointed to rural infrastructure as a challenge, stating that “It is through this infrastructure that we are connected to others – roads provide access to work, telecommunications and the Internet similarly”. But there is also social infrastructure that is very important for older people living in rural areas. This includes, for example, access to services. In the discussion, Ł. Komorowski drew attention to the concept of smart village, which is a consequence of the noticed technical and competence gap when it comes to information and communication infrastructure. It was then realized that steps needed to be taken to bridge this gap. In 2017-2018, only 30% of households had access to high-speed Internet (30 megabits per second), while in urban areas this percentage was nearly 60% of households.

The extremely important economic and social aspect is emphasized by the Association of Entrepreneurs and Employers, writing: "The Internet has become a key technology for economic development, constituting the most important building block of the fourth industrial revolution. A barrier to development and a specific pain point in many Polish villages was (and often still is) communication and digital exclusion" (ZPP, 2021). Digital exclusion will therefore not only be associated with the risk of economic degeneration of specific regions of the country or social groups, but also with a drastic limitation of access to basic public services, cultural goods and opportunities for external interactions. The Consumer Federation appeals that "Digital exclusion in Poland has a senior face. 3.63 million people aged 55-74 have never used the Internet" (Federacja Konsumentów, 2022). They constitute 80.4% of all non-users. 3.74 million people aged 55-74 have never used a computer. They constitute 78.1% of all non-users. Moreover, according to a report prepared by the fiber optic network operator Fiberhost, exclusion is influenced by the financial situation, and one of the groups most exposed to digital exclusion is rural residents, constituting 55% (2.5 million) of those excluded (Zagańczyk, 2023). K. Ciesiołkiewicz, president of the Orange Foundation, also drew attention to the problem during the European Economic Congress, stating: "the further from urbanized and large-city areas, the worse the access to the network. If we take into account that almost 40% of Poles live in the countryside and 20% of them do not have access to the Internet, especially fixed-line Internet, the COVID-19 pandemic has shown how great the social stratification is in Poland and that the division into Poland is still valid. A and B" (Widera-Ciochoń, 2020). The cost of Internet access, purchase and servicing of equipment may constitute a serious barrier for pensioners. Another cause of digital exclusion is indicated by the authors of the report "Socio-digital exclusion in Poland. State, phenomena, trends, recommendations", which is the motivation to using the Internet, according to the conducted research, nearly 66% of people who do not use the Internet justify it by the lack of need, which may be a consequence of lack of knowledge, skills and low awareness of the needs that can be met via the Internet (Fundacja Stocznia, 2022).

Zielińska (2015) also writes about the motivational exclusion of seniors, explaining the essence of motivational exclusion referring to mental barriers, which are the lack of motivation and willingness to become familiar with modern technologies. This lack of faith in one's own abilities may result from fear of new things, but also from threats related to the use of new technologies. The problem of insufficient competences and digital exclusion has been highlighted by the COVID-19 pandemic. The report "Digital exclusion during the pandemic", prepared by the Consumer Federation, shows that in Poland 4.5 million people have never used the Internet, and another 1.82 million use it occasionally (Federacja Konsumentów, 2022). The vast majority, over 80%, of those who do not use the Internet are people over 55 years of age. Data included in the report "Socio-digital exclusion in Poland. The state of the phenomenon, trends, recommendations" (Fundacja Stocznia, 2022) indicate that 40% of older people did not use the Internet and more than half of the people who did not use the Internet lived in the countryside. The authors of the report emphasize that inequalities in access to the Internet, different digital skills and differences in the level of motivation to use digital services lead to differences in life chances and living standards. The conclusions from the conducted research show that currently exclusion is more related to attitudes towards new technologies, skills and knowledge than to physical access to the network. Experts and researchers on the issue of digital exclusion of seniors in rural areas warn that without intervention and support, these exclusions will deepen. The essence of the intervention is illustrated by the work of the EU Thematic Group on Smart Villages (European Network for Rural Development, 2018), which, based on in-depth analysis, developed the document "Smart villages – how to ensure that rural communities benefit from digital strategies. Guidance for policy-makers and contractors". The document contains three key elements to ensure that digital strategies will benefit rural communities and create conditions for smart villages, they must include all three components of the so-called "digital divide", including: providing broadband infrastructure in rural areas, promoting the use of digital services and education – spreading knowledge and developing digital skills. M. Rudnicka, President of the National Institute of Senior Economy, drew attention to the need to create permanent and cyclical educational programs for seniors, emphasizing "programs are

needed – permanent, not incidental – because these people often do not have anyone in their environment who would introduce them to digital world. These people are then excluded on the basis of age – digitally excluded, consumer excluded, knowledge excluded and civic excluded. We should work to include them so they have similar opportunities to young people” (Widera-Ciochoń, 2020).

2. Methodology and Results

The collected and processed research results were specified in a research procedure that was carried out in two stages. The first stage was completed in 2017. At this stage, 62 direct interviews were conducted, and the research tool was an original research questionnaire. The interviews were conducted directly by the researcher so that if the respondent had any doubts, the questions could be deepened or explained. In 2022, the second stage of the research was carried out, the aim of which was to obtain answers to the same thematic areas from respondents so that it could assess the degree and direction of changes taking place in the researched area. In 2022, 50 respondents participated in the survey. Similarly to the first stage, here the researcher conducted direct interviews with all respondents. The research procedure carried out is presented in Figure 2.

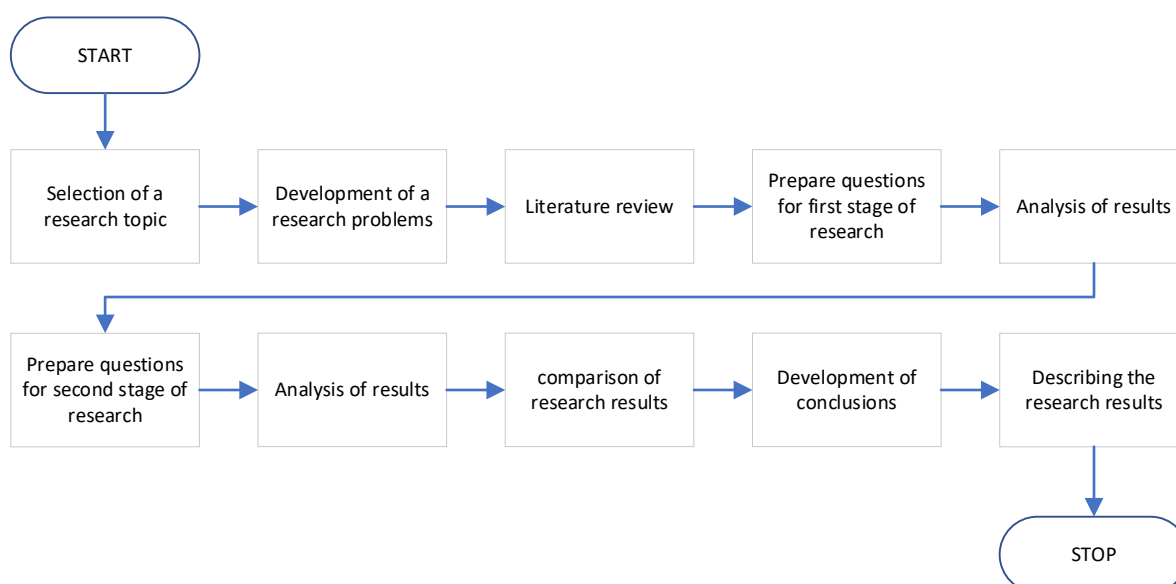


Figure 2. Research procedure

Source: own elaboration.

The research was carried out with the help of people who knew the environment, such as employees of municipal social welfare centers, village heads, neighbors, priests, and local organizations. The choice of such ways of reaching respondents was caused by the distrust of seniors in individual contacts, while the support from those who know members of local communities made it possible to conduct both qualitative and quantitative research. An attempt to obtain information online was unsuccessful, and only five people completed the survey within two months.

The study was conducted using the direct interview technique based on a survey questionnaire. The first step before empirical diagnosis was the development of a questionnaire. The structure of the questionnaire in both years of the study was identical, which allows for comparative analysis, and included questions about the need to limit the consumption of various groups of products, services and resignation from social life, as well as the subjective assessment of the quality of life of seniors.

In 2022, the questionnaire was revised based on the experience from the 2017 research, and the questionnaire was expanded to include questions about the impact of the pandemic and inflation on

consumption shortages. The details of the respondents included the following characteristics: gender, age (over 60), marital status, education, place and independence of residence.

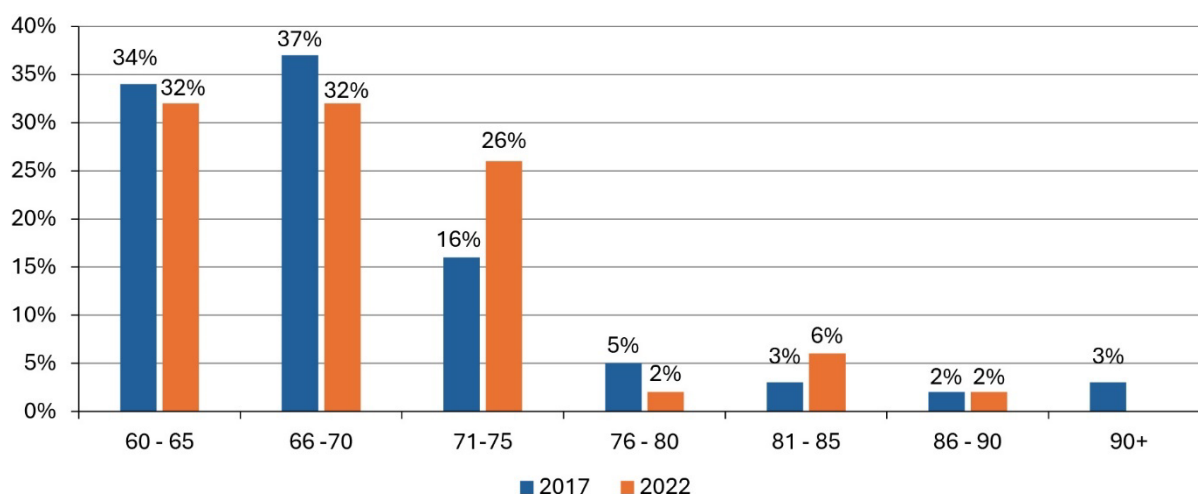


Figure 3. Age structure of the research sample in 2017 and 2022

Source: own study.

In both years and towns studied, the largest number of participants in the study were people aged 60-75, constituting nearly 70% of the research sample, while the smallest number were people aged 76 and over. In 2022, there were no respondents over 90 years old. In the groups of rural residents surveyed, in total in 2017, people with primary education with a small number of completed years definitely predominated, while in 2022 the number of completed years included in primary education increased. In the block of questions regarding limited consumption, questions were asked about modern technologies, in particular giving up, for financial reasons, having a stationary or mobile computer (laptop) and access to the Internet. The questions were aimed at identifying the scale of limiting the use of new technologies by seniors living in rural areas, and thus determining the level of digital exclusion.

In both years of the study, there was a high percentage of people who did not have a desktop computer or laptop; in 2017, this percentage was 84%, in 2022 it was lower and amounted to 75%. The seniors participating in the study did not have a computer and also declared no access to the Internet.

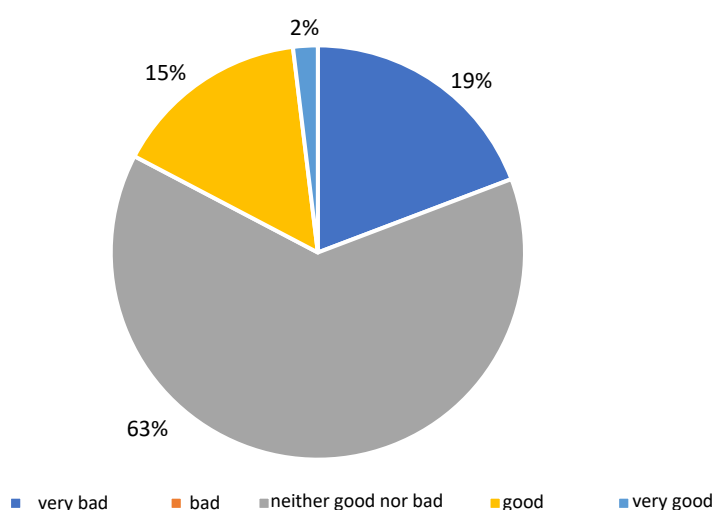


Figure 4. Assessment of the standard of living and happiness of seniors who do not have a computer (2017)

Source: own research.

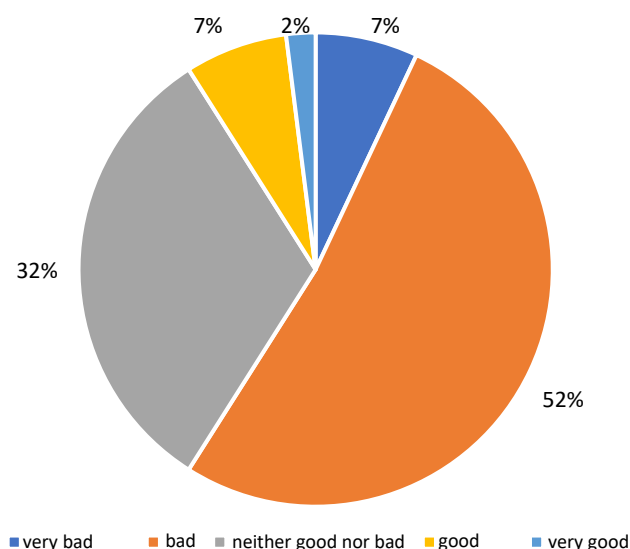


Figure 5. Assessment of the standard of living and happiness of seniors who do not have a computer (2022)

Source: own research.

In 2017, in the group of seniors who did not have computer equipment: 19% rated their standard of living and happiness as very bad, while in 2022, 7% of the seniors chose this assessment (compare Figure 4 and 5). As many as 63% of the surveyed people from the group without a computer in 2017 considered that their standard of living and happiness was neither good nor bad, compared to 32% in 2022. In 2017, 15% of the respondents, assessing their standard of living and happiness, chose the answer good and 2% answered very good. However, in 2022 – when assessing their level of happiness, only 7% of seniors chose the answer good and 2% the answer very good.

To conclude, it can be said that in 2022 the assessment of life and the level of happiness among rural seniors who do not have a desktop computer or laptop deteriorated. Five years earlier, the prevailing ratings were neither good nor bad. There was also a larger group of older village residents who assessed their lives positively. This may be evidence of the dynamically changing approach of seniors to the importance of using new technologies in their lives. It is worth noting that over the last five years, many projects dedicated to seniors have been carried out under the ASOS government program, aimed at improving digital skills among rural seniors. This may undoubtedly be a consequence of the changes we are observing on the consumer market in terms of increasing awareness of the usefulness of computer equipment and Internet access in the context of meeting needs, not only shopping, but also in terms of using medical advice or, which is particularly important in relation to seniors, maintaining relationships with loved ones via remote communication. The impact of pandemic restrictions, which forced many groups to use new technologies in everyday life, is also important.

3. Discussion and Conclusions

Digital transformation carries the risk of deepening exclusion in social groups that do not have access to new technologies or do not have digital skills. Seniors living in rural areas seem to be a particularly vulnerable group. Lower pensions for farmers compared to their peers from cities, lack of IT infrastructure, lack of facilities, such as the University of the Third Age that provides free use of computer equipment. Finally, difficulties in acquiring skills in using new technologies resulting from the limited availability of course offers in rural areas and a rural lifestyle that does not support lifelong learning mean that the problem of exclusion of seniors living in the countryside will deepen in the near future. It should be emphasized that not only is the sale of goods and services increasingly available only via the Internet, but also a significant portion of public services cannot be provided without the ability to use the Internet.

The 2017 Berlin Declaration on a Digital Society and Value-Based Government, on Europe's digital transformation, states that all European citizens should be able to participate in and fully benefit from digital opportunities unconditionally and without discrimination. Moreover, every citizen and every entrepreneur in Europe should be able to navigate the digital world confidently and independently. A system enabling the acquisition of appropriate digital skills should serve this purpose. However, it should be remembered that. As Kwiatkowska (2023) writes, digital education for seniors should be adapted to their specific needs and abilities in order to be effective and bring measurable benefits (Kwiatkowska, 2023).

In the EU program adopted in 2022 entitled "The Road to the Digital Decade" by 2030 has set the following two targets for the European Union: at least 80% of people aged 16-74 will have at least basic digital skills.

The Digital Competence Development Program implemented in Poland aims to constantly increase the level of digital competences by ensuring that everyone in Poland has the opportunity to develop them according to their needs.

The main goal of the multi-annual Program for Older People "Aktywni+" for 2021-2025 is to increase the participation of older people in all areas of social life. PLN 200 million (40 million per year) will be allocated to the "Aktywni+" Program. Priority 3 envisages "digital inclusion, including activities to increase the ability of older people to use modern technologies and use new media, as well as the dissemination and implementation of technological solutions supporting social inclusion and safe functioning of older people" (Ministerstwo Rodziny, Pracy i Polityki Społecznej, 2023).

The scale of exclusion of seniors in the process of digital transformation is evidenced by the fact that in the document on inclusiveness in the context of using the digital world, which is "The Road to the Digital Decade", referring to digital skills, the upper age limit is given as 74 years old. Therefore, people above this age limit were deprived of the opportunity to participate in the forms of support provided under the program. The importance of digital skills in older groups of seniors is perfectly illustrated by the statement of a 76-year-old senior woman: "due to the sickness of my husband, I have to take care of bank services and other issues." This means that, according to Eurostat data, nearly 32 million inhabitants of the European Union aged 75 and over will not receive support in reducing digital divide, and what is more, in the omitted group, according to the forecast, in 2030 there will be approximately 44 million Europeans (Eurostat, 2023).

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Wykluczenie cyfrowe seniorów na obszarach wiejskich w Polsce – analiza teoretyczna i empiryczna

Streszczenie

Cel: Celem artykułu jest diagnoza skali i przyczyn wykluczenia cyfrowego wśród osób starszych mieszkających na obszarach wiejskich w Polsce. Autorki podejmują próbę skonfrontowania stanu wiedzy przedstawionego w literaturze naukowej z wynikami badań empirycznych, co ma na celu wskazanie realnych potrzeb tej grupy społecznej.

Metodyka: Publikacja opiera się na badaniach teoretycznych i empirycznych. W części teoretycznej przeprowadzono analizę treści wybranych publikacji naukowych, raportów rządowych i dokumentów unijnych. Część empiryczna obejmuje wyniki badań przeprowadzonych w województwie dolnośląskim w latach 2017 i 2022. Badania te miały na celu ocenę poziomu wykluczenia cyfrowego wśród seniorów na wsi.

Wyniki: Analiza literatury wykazała ograniczone zainteresowanie tematyką wykluczenia cyfrowego seniorów na obszarach wiejskich w polskich badaniach naukowych. Z kolei badania empiryczne ujawniły wysoki poziom wykluczenia cyfrowego tej grupy, co wskazuje na potrzebę pilnych działań zmniejszających tę barierę społeczną.

Implikacje i rekomendacje: Technologie cyfrowe są nieodzownym elementem funkcjonowania w nowoczesnym społeczeństwie. Brak dostępu do nich pogłębia nierówności społeczne i ogranicza dobrostan osób starszych. W związku z prognozowanym wzrostem liczby osób w wieku 60+ konieczne jest uwzględnienie ich potrzeb w działaniach publicznych oraz w badaniach naukowych dotyczących jakości życia.

Oryginalność/wartość: Artykuł wnosi oryginalną wartość poprzez zestawienie danych teoretycznych z wynikami badań terenowych, ukazując rzeczywistą skalę wykluczenia cyfrowego wśród seniorów na wsi. Wskazuje również na potrzebę dalszych, pogłębionych badań w tej dziedzinie oraz konieczność wdrożenia rozwiązań wspierających integrację cyfrową osób starszych.

Słowa kluczowe: wykluczenie cyfrowe, seniorzy, obszary wiejskie, dobrostan
