ISSN 1644-0757
eISSN 2450-047X

ACTA SCIENTIARUM POLONORUM

Oeconomia

22 (4) 2023

ISSN 1644-0757
eISSN 2450-047X

ACTA SCIENTIARUM POLONORUM

Czasopismo naukowe założone w 2001 roku przez polskie uczelnie rolnicze
Scientific Journal established in 2001 by Polish Life Sciences Universities

Oeconomia

Economics

Ekonomia

22 (4) 2023

October–December

Bydgoszcz Kraków Lublin Olsztyn
Poznań Siedlce Szczecin Warszawa Wrocław

The printed version of Acta Scientiarum Polonorum Oeconomia is an initial version of the journal

Editorial staff
Dominika Cichocka, Lena Maminajszwili

ISSN 1644-0757
eISSN 2450-047X

Warsaw University of Life Sciences Press, Nowoursynowska 161, 02-787 Warsaw
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www.wydawnictwosggw.pl

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Acta Sci. Pol.
Oeconomia 22 (4) 2023, 5–13

acta_oeconomia.sggw.pl ISSN 1644-0757 eISSN 2450-047X DOI: 10.22630/ASPE.2023.22.4.21

ORIGINAL PAPER

Received: 14.10.2023
Accepted: 27.12.2023

CROSS-BORDER ACTIVITY OF RESIDENTS OF BORDER REGIONS IN THE EUROPEAN UNION (A CASE STUDY OF LITHUANIANS IN THE POLISH BORDER MARKET)

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ABSTRACT

Aim: The study analyzes the cross-border activity of Lithuanians in the Polish border market and the socio-demographic factors determining such activity. **Methods**: A total of 328 respondents participated in interviews conducted from December 2022 to January 2023. Non-parametric tests were used to analyze the data. The research questions included in this study are as follows – Q_1: What are the preferred areas of cross-border activity of Lithuanian residents in the Polish border market?; Q_2: What socio-demographic factors determine the cross-border activity of Lithuanian residents in the Polish border market? **Results:** The results show that the respondents were most active in border trade, tourism, and social relations between regional residents. Age, place of residence, and household size had no significant effect on any of the analyzed areas of cross-border activity of Lithuanians in the Polish border market. Education, professional status, and monthly income had a statistically significant effect on cross-border trade activity, while tourism was significantly statistically affected by gender and education. **Conclusions:** Cross-border activity fosters the development of border trade and tourism, as well as the creation of links between local communities living in border areas that strengthen neighborly relations. Border trade should encourage entrepreneurs to seek innovative and socially responsible practices that support the sustainable economic development of a country or region. The study provides evidence in the context of realizing cross-border activity that supports residents of border regions in adapting to dynamically changing geopolitical conditions.

Keywords: cross-border activity, border market, border trade, tourism

JEL codes: E31, F14, F20

INTRODUCTION

The transformation of the political system that took place in the Eastern Bloc countries made it possible to introduce changes and new levels of cooperation. Cross-border activities transcend the borders of sovereign states, which implies the need to overcome multiple barriers. Barriers can be understood in historical, legal, economic, commercial, or social terms. They can and often do include mental barriers. Cross-border cooperation leads to the obliteration of mutual animosities and builds trust in many areas of economic and social life. Cross-border cooperation depends on many factors, which include, among others, the unstable geopolitical situation in the world, political decisions of individual countries, legal and non-legal regulations,

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price differences, dynamic exchange rate fluctuations, and many others.

Over the years, the principles, forms, and directions of development of Polish-Lithuanian cross-border cooperation have undergone significant changes. In the initial phase of the establishment of partnership relations between neighboring countries, it was implemented mainly in the political and social dimensions. In subsequent phases, its other benefits were recognized, in particular, economic benefits. However, regardless of the organizational form, the most important arguments for the development of cross-border cooperation include historical, political, economic, and social reasons. The development of good neighborly relations and the strengthening of European integration processes are fostered by the mutual relations of Polish and Lithuanian border regions. These regions are a key partner not only for EU and European institutions, but also offer opportunities for the development of cross-border activities of border region residents in various spheres of economic and social life.

Border regions are areas of individual specificity and unique areas due to their proximity to the state border [Hardi 2010]. Despite their proximity and similar historical and social structures, Poland and Lithuania differ significantly in many areas of economic and social life. This rationale implies changes in cross-border activity in all areas of economic and social life. Therefore, this article contributes to the previous achievements of other researchers and provides knowledge about the areas of cross-border activity of Lithuanian residents in the Polish border market.

In view of the membership of Poland and Lithuania in the European Union and the lack of formal borders between the countries, it was hypothesized that the cross-border activity of Lithuanian residents in the Polish border market is dependent on economic factors and, to the greatest extent, is realized in border trade. Taking this into account, the purpose of the study is to determine the cross-border activity of residents of border regions, using the example of the activity of Lithuanians in the Polish border market and the socio-demographic factors determining such activity.

MATERIAL AND METHODS

The survey was conducted in Lithuania and Poland from September to December 2022. The survey sample consisted of 328 respondents. Interviews were conducted in four Lithuanian border cities (Kaunas, Vilnius, Alytus, Druskininkai) and four Polish border cities (Augustow, Bialystok, Suwalki, Elk). The criteria for selecting cities for the study were: distance to the Lithuanian-Polish border (a distance of less than 200 kilometers), population (more than 30,000 inhabitants), and attractiveness of the tourist offer of the studied areas. Probabilistic selection was used, using the methodology of geographical area sampling in selected cities.

The interview questionnaire was in Lithuanian. The research questions included in this study are as follows:

Q_1: What are the preferred areas of cross-border activity of Lithuanian residents in the Polish border market?

Q_2: What socio-demographic factors determine the cross-border activity of Lithuanian residents in the Polish border market?

To eliminate any possible confusion in the questions, pilot testing was conducted on a sample of 17 Lithuanians. After the piloting, a research tool – an interview questionnaire – was created. The measuring scale in the questionnaire was a Likert scale from 1 to 5. The result was further analyzed using descriptive analysis to measure respondents' characteristics and the cross--border activity of Lithuanian residents in the Polish border market. Socio-demographic factors include 7 characteristics: gender, age, education level, place of residence, number of family members, occupational status, and monthly income per household member.

The study used non-parametric tests, mainly due to nominal and ordinal measurements. In particular, the Mann-Whitney U test was used for dichotomous categorical variables as independent variables (e.g., gender, female = 1 or male = 0), and the Kruskal-Wallis test was used for multiple-choice responses as independent variables (e.g., education, occupational status, and others). The non-parametric χ^2 Pearson test was used to examine the statistical significance of differences. In addition, statistical significance was set at a *p*-value of 0.05 and a very significant *p*-value of 0.01.

RESULTS AND DISCUSSION

Respondent characteristics

Respondent characteristics include 7 characteristics: gender, age, education, labor force participation, place of residence, family size, and average monthly income per household member. Socio-demographic characteristics are shown in Table 1.

Most of the respondents were women (60.1%), young people aged 18 to 24 (49.4%), declaring higher education (49.7%), and residents of cities with more than 50,000 residents (62.5%). Most respondents had three to four family members (53.4%). The survey had the highest number of students (38.4%) and business employees (32%). Most respondents declared a monthly income of the average monthly salary (47.9%).

Table 1. Respondent characteristics

Characteristics		Frequency	Percent
Gender	Men	131	39.9
	Women	197	60.1
Age	18–24	162	49.4
	25–34	50	15.2
	35–44	41	12.5
	45–54	52	15.9
	55–64	15	4.6
	65 and more	8	2.4
Level of education	Basic education	30	9.1
	Secondary education	116	35.4
	Vocational education	19	5.8
	Higher education	163	49.7
Professional activity	Administration employee	36	11.0
	Company employee	105	32.0
	Teacher	17	5.2
	Own business	25	7.6
	Student	126	38.4
	Unemployed	12	3.7
	Retired	7	2.1
Place of residence	Village	48	14.6
	A city with up to 50,000 inhabitants	75	22.9
	A city with more than 50,000 inhabitants	205	62.5
Number of family members	1–2 family members	103	31.4
	3–4 family members	175	53.4
	5 and more family members	50	15.2
Monthly income	Definitely above the national average *	32	9.8
	Slightly above the national average	42	12.8
	National average	157	47.9
	Slightly below the national average	70	21.3
	Definitely below the national average	27	8.2

Note: *the average monthly salary in Lithuania in 2022 was EUR 1,844 before tax (EUR 1,153 after tax) [Forms of Statistical Reports 2022].

Source: Author's own research.

Table 2. Areas of cross-border activity of Lithuanians on the Polish border market

Activity areas	Cross-border activities carried out [%]				
	none	very rarely	rarely	often	very often
Border trade	7.6	12.2	18.3	32.6	29.3
Tourism	3.7	19.8	22.9	28.0	25.6
Socio-cultural activities	10.5	27.4	33.8	20.4	7.9
Scientific cooperation	15.2	31.1	29.6	16.8	7.3
Social relations between inhabitants of regions	7.7	15.5	25.9	25.3	25.6

Source: Author's own research.

Cross-border activity of Lithuanians in the Polish border market

The variables observed when analyzing the areas of cross-border activity of Lithuanians on the Polish border market are: border trade, tourism, socio--cultural activities, scientific cooperation, and social relations between residents of border regions (Table 2).

The results of the survey indicate that the most frequently implemented cross-border activity among the respondents was border trade, tourism, and social relations. The least popular were scientific cooperation and socio-cultural activities. The findings confirm the convenience of shopping and tourism in borderless regions [Bajo-Rubio and Gómez-Plana 2005, Zhang et al. 2022].

Border trade, tourism, and social relations within the framework of cross-border activities of residents of border regions have evolved quite differently in Poland and Lithuania over the past decade [Dmitrovic and Vida 2007]. Analyzing cross-border travel in the European Union, Spierings and van der Velde (2008) point out that there are quite large differences between EU-25 Member States in the volume of border traffic and the purpose of Lithuanians' trips to Poland. They pointed out that in 2006, less than 5 percent of Lithuanians crossed the country's borders with the intention of shopping. However, the situation has changed significantly in recent years. In 2022, 2773,000 foreigners crossed the Polish-Lithuanian border, an increase of 26.8% compared to 2021. 55.2% of foreigners crossed the Polish-Lithuanian border several times a month, and the main purpose of coming to Poland was shopping. Among foreigners crossing the border with Lithuania, 13.0% declared that a business/professional purpose was the priority of their trip [Statistics Poland 2023].

An important motive for the development of border trade in the Polish-Lithuanian borderland was the introduction of the euro currency in Lithuania in 2015. The effect of the currency change was, and still is, very large price differences between Lithuania and Poland. The prices of goods in Poland are much lower than in Lithuania, causing Polish stores to be stormed by foreign customers. This confirms Powęska [2022] opinion that the development of border trade is influenced by differences in the level of prices of goods and the amount of income of residents of border towns.

The second very important factor influencing lower food prices in Poland is the zero VAT rate, which is in effect until the end of 2023. Prices of goods on the Polish side of the border are even 40–50% lower than in Lithuania [Bednarz 2023]. However, reducing the VAT rate on food products will not help Lithuania, because in the structure of expenditures in border trade with Poland, food products account for only about 25% of total expenditures. The remaining amount is spent by Lithuanians on non-food goods, which are subject to the standard VAT rate, which is even higher in Poland than in Lithuania: 23% vs. 21%.

Today, Poland can be considered a "Supermarket of Europe", where shoppers from neighboring countries come in search of cheaper goods and services. The highly competitive prices of products and services in Poland are determined by the extremely competitive domestic market and the exchange rate of the Polish zloty (PLN). The difference in price levels between Poland and Lithuania has grown to 20% over the past year, meaning that consumer goods and services in Poland are, on average, 20% cheaper than in Lithuania [Forms of Statistical Reports 2022].

Even if Lithuanians do not personally buy from our country, goods from Poland still reach them through imports. Lithuania's foreign trade deficit with Poland reached a record high of EUR 1.7 billion in 2019, and was three times higher than that with China, at EUR 570 million [Forms of Statistical Reports 2022]. In 2022, Lithuanians spent PLN 1.38 billion in Poland, and the majority of their expenditures in Poland went to non-food goods – 68.4%, on food and non-alcoholic beverages, they spent 22.9%, while on services they spent 6.3% [Statistics Poland 2023].

Data from the Lithuanian Department of Statistics show that Lithuanians spend most of their money abroad on building materials, car parts, clothes, shoes, electrical appliances, household goods, furniture, and food. In 2021, Poland received PLN 18 billion from cross-border trade, with Germans, Czechs, Slovaks, and Lithuanians leaving PLN 13 billion here [Forms of Statistical Reports 2022].

During a single trip, Lithuanians spend more money than their neighbors to the north, Latvians and Estonians. More than half of Latvians and Estonians (52%) spend less than EUR 50 on purchases abroad. Only 38% of Lithuanians spend such small amounts, while 24% of them declared spending EUR 50–100. Exactly the same proportion (24%) indicated EUR 100–200, and 13% said they spend EUR 200–500. In comparison, only 4% of Latvians and Estonians declared spending abroad in amounts of EUR 200–500 [Bagdonas 2018].

As an explanation for this situation, Bagdonas (2018) quotes George Straatmeijer, a representative of the Regioplan Institute and author of the cross-border study: "Lithuanians are distinguished by the amount they spend. If Estonians and Latvians spend tens of euros abroad, Lithuanians spend hundreds. This situation is determined by the tax policies of Lithuania's neighbors: in Poland, due to lower excise and value-added tax, the prices of many goods are lower. Latvia has a lower excise tax on alcohol. The data allows us to say that the country maintains perhaps the most favorable position among the Baltic states – lower excises attract buyers from Estonia and Lithuania".

Lithuanians have knowledge of prices in Poland and assess them as much lower than in Lithuania. In addition, they are informed about the features and quality of goods in Poland. This information has a positive effect on purchasing decisions. The results of the conducted research confirm the thesis of other authors [Bygvrå 2019] that cross-border purchases of Lithuanians in the Polish border market are motivated by price. Similarly, the financial factor [Dmitrovic and Vida 2007] had a significant influence on the decision of Serbs to cross the border for shopping purposes. Lithuanians are guided by the same motives as Hungarians, for whom economic factors are the main reason for shopping abroad [Michalko and Ratz 2006].

At the same time, the Lithuanian Department of Statistics reports that annual inflation was 19.7% in 2022. Prices of consumer goods increased by 27.9% over the year, and services by 13.1%. Lithuania's main import partner for services was Poland. Imports from this country increased by 75.4%, with the largest shares in transportation and tourism services – 77.6% and 8.5%, respectively [Forms of Statistical Reports 2022].

Considering regional and situational factors, it is important to mention the commuting distances and good transportation infrastructure, as well as the extensive and attractive trade and service infrastructure. The length of the border between the countries is 104 kilometers. There are two major highways (and several smaller ones) for travel between the countries. Therefore, it can be said that getting to Poland from Lithuania's major cities is easy. The short distances from the border and the speed and comfort of travel (good quality roads, no borders) serve to develop tourism and maintain neighborly relations.

Cross-border shopping or tourist activities can be considered a source of investment and jobs for border regions [Zirgulis 2023]. Lithuanian residents are becoming an important segment of the service

Table 3. The impact of socio-demographic factors on the cross-border activity of Lithuanians in selected areas

Activity areas	Gender	Age	Level of Education	Place of residence	Number of family members	Professional activity	Monthly Income
	Mann-Whitney U	Kruskal-Wallis					
Border trade	4753.50	7.22	11.11*	5.98	5.22	15.38**	17.26**
Tourism	7807.50*	7.47	11.32*	3.81	6.74	6.66	2.43
Socio-cultural activities	8588.00	7.65	9.10	1.61	7.84	7.13	7.56
Scientific cooperation	8381.50	1.59	1.48	1.76	8.80	0.62	3.20
Social relations	7193.00	1.43	3.11	4.08	3.45	1.57	3.04

Note: **p*-value<0.05, ***p*-value <0.01

Source: Author’s own research.

market for Polish border companies, as well as an important neighbor for residents of Polish border regions [Makkonen 2016]. Therefore, studying and understanding the determinants of cross-border activity is important, both from the perspective of achieving economic benefits from border trade, as well as strengthening common social relations and raising the standard of living of residents of border regions.

Influence of socio-demographic characteristics on the cross-border activity of Lithuanians in the Polish border market

The study considered 7 socio-demographic factors: gender, age, education, professional activity, place of residence, household size, and average monthly income per household member.

The results of the Mann-Whitney test showed that gender aspects significantly influenced the respondents’ activity in the area of tourism (Table 3). A highly significant difference between male and female respondents could be seen ($U = 7807.5$, $p < 0.05$). The majority of female respondents declared participation in tourism initiatives in Poland, and they were more likely to specify tourism as their destination, which at the same time did not exclude cross-border shopping.

The results of the Kruskal-Wallis test showed that cross-border shopping activity was statistically significantly influenced by education (11.11, $p < 0.05$), professional activity (15.38, $p < 0.01$), and average monthly income (17.26, $p < 0.01$).

The results confirm the study by Batyk et al. [2023] that material status and professional activity were important for Lithuanian consumers shopping in Poland. Since consumers spend a significant portion of their budget on FMCG products [Grigaliūnaitė et al. 2023], those declaring their income to be below the national average and at the national average level were characterized by very high cross-border trade activity. One can imagine a contradiction with the assumption that rational behavior occurs mainly in people with at least middle income, young and better educated, for whom shopping is a pleasure [Szlachciuk et al. 2022]; moreover, during the pandemic, utilitarian shopping motivations strengthened [Tömöri and Staniscia 2023]. The situation in the currency market, the very large differences in exchange rates, as well as the economic crisis and very high inflation, are also not insignificant.

Three of the analyzed characteristics: age, place of residence, and household size, had no significant impact on any of the analyzed areas of cross-border activity of Lithuanians in the Polish border market. The results of the study confirm those obtained among Mexican tourists, which showed that age and marital status were not significant factors influencing cross-border shopping [Bojanic 2011].

Sleuwaegen and Smith [2022] argue that consumers’ personal or socio-demographic characteristics (i.e., age, gender, occupation, education, location, and trust in foreign suppliers) influence their decision to shop across borders. Dmitrovic and Vida [2007] point to several associations regarding cross-border shopping behavior: positive associations with consumer income and education, negative associations with the respondents' age, and mixed evidence regarding family life cycle stages, age of children, and household size.

However, Siringoringo and Kowanda [2009] stress that demographic characteristics only describe what consumers are like, but do not indicate their needs or interests. From a cultural standpoint, cross-border shopping allows people to adopt consumption patterns that residents of neighboring countries have. Therefore, differences between countries may even favor cross-border shopping [Spierings and van der Velde 2013]. In addition, shopping as a cross-border activity allows one to experience the distinctiveness and unique culture of the visited country [Choi et al. 2016].

The results of the Kruskal-Wallis test showed that cross-border tourism activity was significantly statistically influenced by education (11.32, p <0.05). This may indicate that better-educated people are more curious about the world and express more interest in traveling to Poland for tourism.

CONCLUSIONS

Cross-border activity in the Polish-Lithuanian borderland promotes the development of border trade and tourism, as well as the creation of links and dependencies between local communities living in border areas that strengthen mutual neighborly relations. The results of the study provide a basis for confirming the hypothesis that the cross-border activity of Lithuanian residents in the Polish border market is dependent on economic factors and is realized to the greatest extent in border trade. Identification of areas of cross-border activity makes it possible to stimulate their intensity and consequently can lead to the development of cross-border regions. Cross-border trade should encourage entrepreneurs to seek innovative and socially responsible practices that support the sustainable economic development of the country or region. Polish entrepreneurs wishing to encourage Lithuanians to use their services should take into account both price differences and individual socio-demographic characteristics. Cross-border entrepreneurship should be treated as an attribute of border areas; it is an important factor in the development of the borderland and promotes the achievement of a higher standard of living by the residents. The social relations that develop within the framework of cross-border activity in the Polish-Lithuanian borderland can support a number of institutions and enterprises that carry out tasks aimed at, among other things, promoting internal economic, social, and territorial cohesion, as well as supporting social and cultural activities or building trust and good neighborly relations.

A limitation of this study is the different conditions of the markets in Lithuania and Poland. The differences are mainly in terms of currency: the euro in Lithuania and the Polish zloty in Poland, as well as different VAT rates on food. This means that in border markets with similar characteristics (same currency and taxes), the research may have different results. A huge limiting factor for the study was the difficulty of accessing respondents, reluctant participation in interviews, and uncomfortable conditions for conducting interviews (e.g., in shopping malls). Hence, the findings and conclusions of this study should be attributed solely to the Polish-Lithuanian border market, pending a comparative study in other markets. The number of observations does not authorize the formulation of representative conclusions. In addition, several very important determinants of the functioning of border markets converged during the period of the study: the global economic crisis, the geopolitical situation, and the war in Ukraine, as well as a dynamic increase in inflation and large fluctuations in the exchange rate. These factors have increased the cross-border activity of Lithuanians in the Polish border market.

The author is aware of the limitations of the study, but thus expresses a desire to develop research on other border markets, both inside and outside the EU. This is especially important in view of the planned expansion of EU structures to include other countries, such as Ukraine.

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AKTYWNOŚĆ TRANSGRANICZNA MIESZKAŃCÓW REGIONÓW PRZYGRANICZNYCH UNII EUROPEJSKIEJ (STUDIUM PRZYPADKU LITWINÓW NA POLSKIM RYNKU PRZYGRANICZNYM)

STRESZCZENIE

Cel: Celem pracy było określenie aktywności transgranicznej mieszkańców Litwy na polskim rynku przygranicznym oraz czynników socjodemograficznych determinujących taką aktywność. **Metoda:** W wywiadach wzięło udział 328 respondentów w okresie od grudnia 2022 do stycznia 2023 roku. Do analizy danych wykorzystano testy nieparametryczne. Pytania badawcze zawarte w badaniu są następujące – Q_1: Jakie są obszary aktywności transgranicznej mieszkańców Litwy na polskim rynku przygranicznym?; Q_2: Jakie czynniki socjodemograficzne determinują aktywność transgraniczną mieszkańców Litwy na polskim rynku przygranicznym? **Wyniki:** Wyniki pokazują, że respondenci wykazywali największą aktywność w handlu przygranicznym, turystyce oraz relacjach społecznych między mieszkańcami regionów. Wiek, miejsce zamieszkania, wielkość gospodarstwa domowego, nie miały istotnego wpływu na żaden z analizowanych obszarów aktywności transgranicznej Litwinów na polskim rynku przygranicznym. Wykształcenie, aktywność zawodowa oraz miesięczne dochody miały istotnie statystycznie wpływ na aktywność w handlu przygranicznym, natomiast na turystykę istotnie statystyczny wpływ miały płeć i wykształcenie. **Wnioski:** Aktywność transgraniczna sprzyja rozwojowi handlu przygranicznego i turystyki oraz tworzeniu powiązań między społecznościami lokalnymi zamieszkującymi obszary przygraniczne, które wzmacniają wzajemne relacje sąsiedzkie. Handel przygraniczny powinien zachęcać przedsiębiorców do poszukiwania innowacyjnych i społecznie odpowiedzialnych praktyk wspierających zrównoważony rozwój gospodarczy kraju lub regionu. Badanie dostarcza dowodów w kontekście realizowania aktywności transgranicznej, która wspiera mieszkańców regionów przygranicznych w dostosowaniu się do dynamicznie zmieniających się warunków geopolitycznych.

Słowa kluczowe: aktywność transgraniczna, rynek przygraniczny, handel przygraniczny, turystyka

ACTA SCIENTIARUM POLONORUM
acta_oeconomia.sggw.pl

Acta Sci. Pol.
Oeconomia 22 (4) 2023, 15–30

ISSN 1644-0757 eISSN 2450-047X DOI: 10.22630/ASPE.2023.22.4.22

ORIGINAL PAPER

Received: 20.07.2023
Accepted: 27.12.2023

SIMILARITIES AND DIFFERENCES IN THE GREEN ATTITUDES OF CONSUMERS FROM DIFFERENT AGE GENERATIONS – INTERNATIONAL COMPARISONS

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ABSTRACT

Aim: To aim of this paper is to identify similarities and differences in the pro-environmental attitudes of consumers from different countries, as well as being representatives of different age cohorts. **Methods:** The analyses are based on the results of surveys conducted in four European countries (Germany, Italy, the Czech Republic, and Poland). An international quantitative survey using the author's survey questionnaire was conducted using the CAWI technique on a sample of a total of 2,566 respondents. Association rules, which are among the data mining tools used to build descriptive models, were used in the data analysis. **Results:** The results presented in this study allow us to distinguish patterns of behavior in terms of pro-environmental attitudes and actions, as well as similarities and differences by age and place of residence in this respect. Respondents from older age groups (i.e., 'Baby Boomers' and 'Generation X') are significantly more likely to declare taking pro-environmental actions than respondents from younger age groups (i.e., 'Generation Y' and 'Generation Z'). The opposite situation can be observed in the case of negative answers regarding taking pro-environmental actions. **Conclusions:** The authors of the study believe that the study should be repeated to check whether the declared attitudes and behaviors are the result of a specific situation that differs from other periods (the study was carried out during a pandemic) or whether they are of a constant nature, allowing us to see differences in consumer behavior between age groups and countries. Another possible direction under consideration for further research is to analyze the undecided group in more detail in order to determine the reasons for this.

Keywords: organic consumption, consumer behavior, international comparisons, associations
JEL codes: D11, D12

INTRODUCTION

Greening issues have recently received a lot of attention from academics, researchers, businesses, and politicians, primarily because of the increasing threats to the environment, planet, and climate. Therefore, research into consumers' greening behavior is growing in importance. It is true that there are noticeable differences between the declarations and behavior of young and old people towards climate change. The former expose their positive attitude to ecology in its various aspects, but do not confirm the expressed beliefs in attitudes.

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The latter exposes their opinions less, but the decisions they make are based on their individual experiences, expressed in attitudes and motives. They are also the result of their ability to satisfy their needs, the changes they have experienced in access to products, their freedom of choice in the face of market offerings, and their personalities. Empirical studies can only identify similarities and differences in the pro-environmental attitudes of consumers of different age generations, taking into account the country of residence. On the basis of such identification, and in an international context, it is possible to determine the extent to which it is possible to speak of certain regularities.

The purpose of the article is to identify and evaluate the pro-environmental behavior of consumers belonging to different cohorts (generations). With this in mind, the following research question was formulated: What are the differences in the environmental basics of buyers from different age groups (cohorts)?

The authors posed the following hypotheses:

H_1: Taking pro-environmental actions by respondents results in taking further/other actions in this area regardless of the age group.

H_2: Respondents from older age groups (i.e., Baby Boomers, Generation X) are more likely to report taking pro-environmental actions than those from younger age groups (i.e., Generation Y and Generation Z).

H_3: There are differences in the pro-environmental actions taken by age groups in the countries studied.

The article is structured as follows. After a brief introduction and literature review, the focus is on the characteristics of the highlighted cohorts. This is followed by a conceptualization of the study and a description of the research sample and its characteristics, which is subsequently supplemented by an analysis of patterns of green consumer behavior and green consumer behavior in different age generations. The article concludes with the main conclusions.

LITERATURE REVIEW

According to many futurologists, the 21st century will be an ecological age, although this does not mean that this is a generally shared opinion. Despite the ongoing discourses, the shift towards sustainable consumption, also in ecological terms, can undoubtedly be considered one of the leading megatrends of today. There is growing concern for the state of the environment, and awareness of climate risks and health risks, if only because of the COVID-19 pandemic, which calls for a new approach to consumption towards its greening and, therefore, green consumer attitudes towards meeting needs with the use of consumer goods and services.

Green consumption, most generally, has been defined as the tendency to express the value of protecting the environment through one's consumption behavior [Haws et al. 2014]. As consumers become environmentally conscious, they place more importance on environmentally friendly purchases [Gleima et al. 2013]. Research on eco-consumption, also known as green consumption, is gaining prominence in studies by international and Polish authors [Alfredsson 2004, Gilg et al. 2005, Grønhøj 2006, Reattie 2010, Peattie 2010, Haws et al. 2013, Gleima et al. 2013, Pagiaslis et al. 2014, Sobczyk 2014, Zhao et al. 2014, Moser 2015, Neale 2015, Antonetti and Maklan 2016, Wilczak 2016, Yadava and Pathak 2017, White 2019, Patrzałek 2019, Dąbrowska and Janoś-Kresło 2022, Maheswari and Sujatha 2023].

A review of research on green consumption [Semprebon et al. 2018] is noteworthy. Among other things, it has been pointed out that in consumer research, while one strand of research focuses on individual characteristics, expertise, and environmental concern as antecedents of consumers' propensity to engage in green behavior [Brough et al. 2016], another strand of research focuses attention on how social norms operate in this process [Goldstein et al. 2008].

An important context in view of the growing research interest in green consumption is the demonstrated lack of reference in the literature to the green gap and the lack of research on the methodologies and paradigms used in the available studies [ElHaffar et al. 2021]. At the same time, it is highlighted that despite the variety of methods employed, there is still room for improvement in terms of methodology, paradigm, and theory. Qualitative research and experimental projects were considered important, and the rational paradigm cannot be replaced, but it should complement the current trend favoring behavioral economics.

However, it seems that the research method chosen must be adapted to the research problem and the research assumptions made.

Based on an analysis of articles from 2000–2018, the literature identifies seven categories of green consumption drivers: behavioral factors, socio-demographic variables, intrapersonal values-environment, intrapersonal values-not-environment, personal opportunities, product and producer factors, and contextual factors [Kryk 2011, Roose 2014, Testa et al. 2021].

Referring to socio-demographic variables, as noted by Brochado et al. [2017], the age variable in the context of green consumption has been the focus of several researchers [Roberts 1996, Straughan and Roberts 1999, Akehurst et al. 2012], with mixed results. According to some, green consumers are older people [Roberts 1996], while others believe that younger people are more receptive to green marketing issues [Straughan and Roberts 1999 Akehurst et al. 2012]. Straughan and Roberts [1999] explain this phenomenon as a link between environmental concern (EC) and the time in which individuals were born. If a person grows up in a period where environmental issues are publicized, that person will be more sensitive to environmental and ecological issues. Gonçalves and Viegas [2015], on the other hand, argue that older consumers may be more aware, have more knowledge and experience, and hence are more receptive to sustainable goods and services.

Jain and Kaur [2006] rightly point out that not all consumers are equally green. Univariate and multivariate analyses indicate the presence of statistically significant associations between socio-demographic characteristics and various constructs of environmental awareness. This is important for building effective marketing strategies and environmental campaigns and influencing the behavior of selected segments of green consumers.

In addition to conscious consumer choices, four main sources of the greening of consumption can be distinguished. These are the spread of new lifestyles, the increase in energy and raw material prices, the impact of state policy and social organizations (consumer activation), marketing, and infrastructure factors [Dabrowska et al. 2015].

It can, therefore, be said that the greening of consumption is a conscious act of the consumer who, perceiving the effects of excessive consumption (consumerism), aims to reduce the purchase of goods and services and their consumption, thereby influencing the reduction of production factors and transport costs, including the reduction of greenhouse gas emissions, as well as contributing to the reduction of post-production and post-consumption waste production.

At the same time, the alarm is sounding that people have purchased more goods and services in the last five decades than all previous generations combined [Rosse 2014].

The changes in the market and consumer behavior, and the shift from 'homo economicus' to 'homo ecologicus', are a manifestation of changes in consumer attitudes, which require awareness and competence-based building of green attitudes. As Barack Obama said, 'We are the first generation to realize that they are destroying their planet and the last generation that can still do something about it' [Confronting… 2018]. The processes of greening consumption and de-consumption require adequate consumer competence, which should be understood as 'theoretical knowledge and practical skills that distinguish a person from others in the efficient, effective, quality-oriented fulfillment of lower and higher-order needs while maintaining responsibility for the choices and decisions made' [Dabrowska et al. 2015].

Consumer knowledge and soft skills largely determine green attitudes in consumer market behavior. Companies operating internationally, nationally, and locally should take into account changes in consumer attitudes and value systems in their production, sales, and marketing activities. Only then will we be able to refer to green activities as a general tendency for consumers and companies to take social responsibility for the greening of consumption.

Green consumption challenges consumers to replace perishable goods with goods with a longer life cycle, not to accept planned obsolescence of products, to consume goods and services more sparingly, and not to accept unethical behavior of companies towards their employees; therefore, it can be said that green attitudes are an integral part of social responsibility. It also challenges companies, whose production should be rational in their use of non-renewable natural resources and the reduction or elimination of toxic waste, the use of recyclable packaging, and the introduction of 'clean production' principles aimed at obtaining consumer products using more cost-effective and healthier methods.

One of the key elements of green consumption is buying green products, boycotting non-organic products, and gaining knowledge about the activities and behaviors of companies in order to make conscious decisions about the purchase or consumption of the products they offer on the market.

In other words, the drive to make consumption greener increasingly requires the cooperation of market participants, both consumers and businesses. Consumers need to make the right choices of goods available on the market, choosing those goods that are not harmful to the environment, for example, by choosing products that have not been tested on animals or those that are packaged in biodegradable packaging. In this way, they can influence the offerings of companies. In turn, businesses play an important role in the process of shaping baskets in which there will be an increasing number of organic products. These activities should be supported by the dissemination of relevant information about such products, which in turn influences the level of environmental awareness of consumers [Dąbrowska and Janoś-Kresło 2022].

The analyses will be based on the results of surveys conducted in four European countries (Germany, Italy, the Czech Republic, and Poland). To analyze the data, association rules, among other data mining tools used to build descriptive models, were used.

CHARACTERISTICS OF THE AGE GENERATION

The concept of a generation (generations) should be understood as a group of people born in the same time interval who, due to their similar age, experienced similar events, and grew up in similar conditions and times. Yusoff and Kian [2013] emphasize that a generation groups

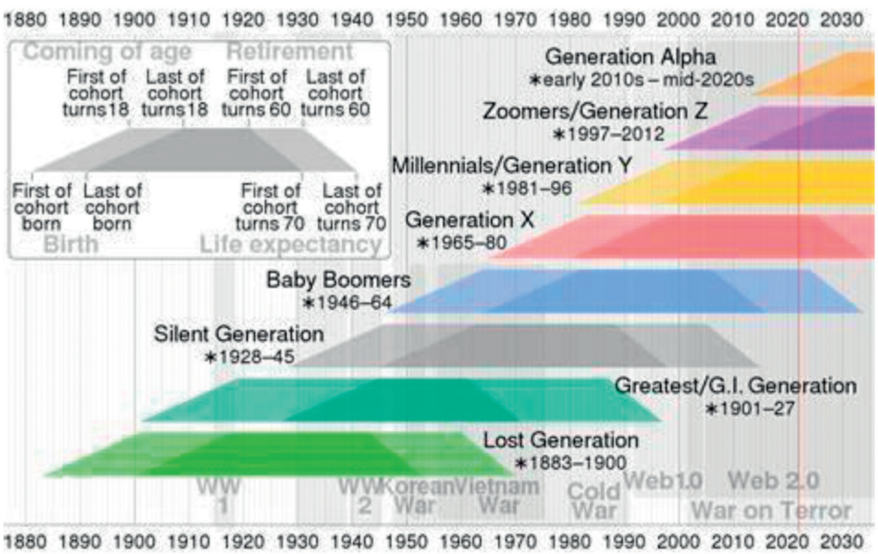

Fig. 1. Generation timeline

Source: https://en.m.wikipedia.org/wiki/File:Generation_timeline.svg [accessed: 16.12.2023] together people of a certain age range, shaped by similar conditions, technologies, and life events that they experienced at critical stages of development. In the literature, the division into generations is not clear-cut, hence we may encounter different date ranges (Fig. 1).

In general, it can be said that each of these generations has been shaped by different socio-cultural, economic, or political events.

To better understand the environmental attitudes of each generation, MIT AgeLab conducted a nationwide survey asking Millennials (born between 1980 and 2000) how they perceive their green attitudes and behaviors compared to older generations. Baby Boomers and Generation X (1965–1979) were also asked to compare their attitudes and behaviors with those of their younger counterparts.

The results of the survey indicate that the majority of Millennials believe they are more concerned about environmental protection than older generations. At the same time, the majority of adults who make up these older generations (Baby Boomers and Generation X) saw themselves as more environmentally minded than in their twenties. Even if the opinion of the Baby Boomers and the environment is bad, they do not see it this way. However, research shows that simply believing in the importance of protecting the environment does not translate into green actions – at any age. Yossi Sheffi, director of MIT's Center for Transportation and Logistics and author of 'Balancing Green: When to Embrace Sustainability in a Business (and When Not To)', points out that no matter what age we are, we tend not to put our money where our green priorities are and writes: 'While many studies show that the majority of consumers say they want sustainable products, sales figures show that only a small percentage are actually willing to pay more to buy them'.

However, there are other places where mature adults may be more likely to show their green passion, such as when investing: the AgeLab findings may help explain the rapidly growing level of interest in ESG investments, which have increased by more than 97% over the past 20 years. ESG investments are those that take into account the environmental and social impact of companies.

Baby Boomers and Generation X people entering retirement have one more way to make an impact on the environment beyond their wallets – volunteering. According to the Bureau of Labor Statistics, older representatives of Generation X and Baby Boomers do a significant amount of volunteer work, which means that environmental activities – cleaning riverbanks, cleaning bird feathers, saving sea turtles – are often in the hands of these individuals. As Baby Boomers will have a lot more time on their hands in the coming decades, they will have the opportunity to show their commitment and leave a very personal mark on the environment.

Earth Day, celebrated annually, is a reminder of the importance of caring for the environment. The campaigns promote active action for the planet, as well as education on risks and correct habits in society.

In the minds of today's younger environmental activists, Americans aged 45 and older may be seen as having committed unforgivable environmental sins over the past decades. But, if the data tell the truth, the environment may be less a theater of generational warfare and more an opportunity to find common ground. In today's longevity economy, the immense power of older people as voters, consumers, investors, and volunteers may be the catalyst and the best hope we have for a more sustainable society in the coming century [Greener… 2018]. This does not only apply to US citizens.

METHODS

An international quantitative survey with the use of the author's survey questionnaire was conducted by means of the CAWI technique on a total of 2,566 respondents, with the following sample distribution: § Poland: n = 1001 respondents, § Czech Republic: n=` = 500 respondents, § Germany: n = 528 respondents, § Italy: n = 537 respondents. The sample structure ensured representativeness by age, gender, size of locality of residence, and region in line with the structure of the population in each country for those in the 18-65 age group. The survey was conducted in August-September 2020. Sampling was carried out from the following operators: § Poland: epanel.pl – a panel owned by the research company ARC Rynek i Opinia, the other countries: panels available on Cint.

The organizers of the study assumed that an attitude is a fairly constant tendency to value someone or something (the object of the attitude) positively or negatively,

Table 1. Characteristics of different age generations by country and gender (in %)

Variables		Generation Z	Generation Y	Generation X	Baby Boomers
	All four countries	14.42	36.83	34.45	14.30
Country	Poland	50.81	38.31	36.20	35.69
	Germany	14.86	19.37	23.08	23.43
	Czech Republic	17.57	21.59	17.08	21.80
	Italy	16.76	20.74	23.64	19.07
Gender	Female	54.05	46.67	49.43	59.40
	Male	45.95	53.33	50.57	40.60

Source: own compilation based on the results of the survey.

within which the affective, cognitive, and behavioral components can be distinguished. An environmental attitude, on the other hand, is a consumer attitude manifested towards selected green or non-green behavior.

Both elements of the behavioral and cognitive components of behavior were used in the research conducted. These are:

- purchase of well-labeled organic products,
- checking the recyclability of packaging and products,
- checking that cosmetic products are not tested on animals,
- controlling water, energy, and gas consumption,
- consciously avoiding products that cause damage to the environment,
- paying attention to environmental issues when comparing two similar products,
- the belief that people would be better off if they consumed less.

When describing the results of the study, a breakdown into cohorts (age generations) was used. The breakdowns for each age generation were as follows: the Builders (1925–1945), Baby Boomers (1946–1964), Generation X (1965–1979), Generation Y (1980–1994) and Generation Z (1995–2010) (Generations Defined: 50 Years of Change over 5 Generations). Table 1 shows the characteristics of each cohort by the demographic variables adopted for the study.

Association rules were used for data analysis [Agrawal et al. 1993]. Association rules are one of the methods of mining large data sets. They allow the discovery of new, potentially useful knowledge in the form of patterns or rules on various issues such as economic, market, or social, among others.

Association rules are categorized among the data mining tools used to build descriptive models (descriptive, built without a teacher). The aim of the association discovery process is to extract regularities with corresponding probabilities in large data sets. Association rules are represented in the form of the relation X → Y, where X and Y are disconnected sets of elements selected from some universe of elements [Larose 2006]. The former measure is defined as the probability of the conjunction of events P (A ∩ B) and the latter (rule confidence) is the conditional probability P(A|B).

$$\text{support}_{AB} = P(A \cap B) \qquad (1)$$

$$\text{confidence}_{AB} = \frac{P(A \cap B)}{P(A)} \qquad (2)$$

When analyzing large databases, it is important to remember that the number of possible association rules increases as the number of attributes increases. In this case, not all found rules can be considered interesting and valid. One of the more commonly used methods to evaluate the quality of association rules is the lift/interest ratio. It is the quotient of the probability of the conjunction of events A and B and the product of the probability of event A and the probability of event B [Brin et al. 1997].

$$\text{LIFT} = \frac{P(A \cap B)}{P(A)P(B)} \qquad (3)$$

High values of the certainty coefficient aiming at + ∞ indicate very strong associations. Values equal to 1.0 indicate no association, while a value of 0 indicates that no such rule can be found that would increase the probability of a successor [Brin et al. 1997, Łapczynski 2014]. To analyze the collected data, binary, one-dimensional, and one-level association rules were used[1].

RESULTS

Taking pro-environmental measures by respondents

Analyzing the combined responses of respondents from the four countries in terms of attitudes toward pro-environmental behavior during the pandemic, it can be noted that only for some of them, there is a clear predominance of positive answers ("yes") over negative ones ("no"). Such is the case with declarations of conscious avoidance of products that cause damage to the environment (62% yes and 22% no); the use of ecological aspects when comparing purchased products (51% yes and 30% no); and the view that humanity needs to reduce the amount of consumption (61% yes and 20% no).

A much smaller preponderance of positive responses can be observed in the case of declarations of increased attention to issues of recyclability of packaging and products. Increased attention in this regard is declared by 47% of respondents. Negative answers to the above issue were given by 41%, while no opinion in this area was indicated by 12% of respondents.

In the case of subsequent attitudes toward pro-environmental behavior, the distribution of affirmative and negative answers is comparable (buying properly labeled eco-friendly products: 43% yes and 41% no; controlling water, energy, and gas consumption: 47% yes and 45% no) or there is a clear preponderance of negative answers (checking whether cosmetic products are tested on animals: 39% yes and 47% no). Further analysis of the data shows that among those declaring positive attitudes toward environmentally friendly behavior, only 6% indicate only one, 21% indicate two or three, and 54% indicate four or more.

The basic insights presented above provide a basis for searching the dataset using association rules. From the set of rules obtained (min. support = 10%, min. trust = = 5%), it is possible to extract subsets of rules showing associations between positive declarations in the field of pro-environmental behavior, as well as associations between declarations denying taking the indicated actions.

Positive declarations regarding the purchase of properly labeled organic products are linked to positive declarations regarding paying more attention to cosmetic products not tested on animals. Nearly 27% of respondents answered the indicated questions affirmatively (support = 27.01%, see Table 2 item 1). Positive declarations in terms of acquiring well-labeled organic products also correlate with other positive responses to subsequent questions in this area. The successors in such rules are:

- increased attention to whether products and packaging can be recycled. Nearly a third of respondents answered affirmatively to such questions (support = 32.19%); (Table 2 item 2).
- paying attention to environmental aspects when evaluating two comparable products. Such actions are declared so by 33.48% of respondents (Table 2 item 3)
- consciously avoiding products that cause environmental damage (Table 2 item 4). In this case, both actions are declared by 37% of respondents.
- controlling the consumption of utilities, i.e., gas, water, electricity) (Table 2 item 5). In this case, nearly 30% of respondents declare such actions.
- the belief that less consumption of products and services will make people better off (Table 2 item 6). One-third of respondents answered in the affirmative to such questions.

[1] A binary or Boolean association rule is a rule in which there are data that can take only two values: 1 (true, yes) or 0 (false, no). Binary rules show the co-occurrence of data. Single-dimensional association rules are those in which there is data representing the same value domain. Single-dimensional association rules are those in which the data represent the same level of abstraction.

An in-depth analysis of the generated rules reveals that qualitatively similar rules can be seen when swapping the indicated variables between predecessors and successors of rules[2]. In the same set of rules, more complex rules are possible, i.e., having more than 1 item in the predecessor or successor, and they concern different stages of the purchase decision. For example, it can be stated that paying attention to ecological issues when comparing products and purchasing well-labeled ecological products is accompanied by actions to avoid products that cause damage to the environment, checking the possibility of recycling packaging, and belief in the positive effects of reducing human consumption (Table 2 item 7).

In the case of negative answers, similar relationships can be observed, i.e., a negative declaration to one question coexists with negative answers to other questions about attitudes toward pro-environmental behavior (Table 3).

Table 2. Examples of generated association rules containing in the predecessor or successor an affirmative answer ("yes") to selected survey questions

Rule number in the table	Antecedent	==>	Consequent	Support (%)	Confi-dence (%)	LIFT
1	Purchase of well-labeled organic products (answer yes)	==>	Checking that cosmetic products are not tested on animals (answer yes)	27.01	61.88	1.58
2	Purchase of well-labeled organic products (answer yes)	==>	Checking the recyclability of packaging and products (answer yes)	32.19	73.75	1.56
3	Purchase of well-labeled organic products (answer yes)	==>	Paying attention to environmental issues when comparing two similar products (answer yes)	33.48	76.70	1.49
4	Purchase of well-labeled organic products (answer yes)	==>	Consciously avoid products that cause environmental damage (answer yes)	37.00	84.00	1.36
5	Purchase of well-labeled organic products (answer yes)	==>	Controlling water, energy, and gas consumption (answer yes)	28.00	64.00	1.36
6	Purchase of well-labeled organic products (answer yes)	==>	The belief that people would be better off if they consumed less (answer yes)	33.00	75.00	1.23
7	Paying attention to environmental issues when comparing two similar products (answer yes); Purchasing well-labeled organic products (answer yes)	==>	Consciously avoiding products that cause environmental damage (answer yes); Believing that people would be better off if they consumed less (answer yes); Checking the recyclability of packaging and products (answer yes)	20.97	62.63	2.07

Note: Support determines the percentage of responses containing the predecessor and successor of the rule in the set of all responses analyzed. Confidence determines the percentage of responses containing the predecessor and successor of the rule in the set of responses containing the predecessor of the rule. Rules for which LIFT is greater than 1 were selected for analysis.

Source: own elaboration based on the survey.

[2] The confidence coefficient is a unidirectional measure. This means that the value of the confidence coefficient for rule A→ B can be different from that of the confidence coefficient for rule B→A.

Table 3. Examples of generated association rules containing in the predecessor or successor a negative answer ("no") to selected survey questions

Rule number in the table	Antecedent	==>	Consequent	Support (%)	Confidence (%)	LIFT
1.	Checking the recyclability of packaging and products (answer no)	==>	Paying attention to environmental issues when comparing two similar products (answer no)	21.90	53.88	1.81
2.	Purchase of well-labeled organic products (answer no)	==>	Paying attention to environmental issues when comparing two similar products (answer no)	21.59	52.91	1.78
3.	Paying attention to environmental issues when comparing two similar products (answer no)	==>	Checking the recyclability of packaging and products (answer no)	27.98	68.58	1.69
4.	Checking that cosmetic products are not tested on animals (answer no)	==>	Checking the recyclability of packaging and products (answer no)	30.83	65.75	1.62
5.	Checking the recyclability of packaging and products (answer no)	==>	Controlling water, energy, and gas consumption (answer no)	27.59	67.88	1.52
6.	Controlling water, energy, and gas consumption (answer no)	==>	Paying attention to environmental issues when comparing two similar products (answer no)	26.34	59.09	1.45

Notes: same as in Table 2.

Source: own compilation based on the survey.

The above-generated rules indicate that taking some pro-environmental actions should result in taking other pro-environmental actions, and conversely, shying away from one action will most likely result in not taking others.

Pro-environmental behavior of consumers in different age generations

The behavioral patterns identified above can be taken as a starting point for testing the existence of similarities and differences in the pro-environmental behavior of the different age generations.

The first noticeable similarity concerns the element included in the cognitive component, i.e., the belief that people would be better off if they consumed less. In each age generation, about 60% of respondents from each cohort respond positively to such a statement. It can also be seen that the level of skepticism towards such a statement varies in each group (higher in younger generations, lower in older ones), as well as a high level against other analyzed elements of lack of opinion in this regard (Table 4).

Analyzing individual items included in the behavioral component, one can see a higher level of positive statements in older age generations (Baby Boomers, Generation X) than younger ones (Generation Y, Generation Z). The opposite is evident in the case of negative responses – a higher level of such responses for younger generations than for older ones (Table 5).

It is also noticeable that the share of different age groups varies when declaring no opinion (answer "difficult

Table 4. Distribution of respondents' responses toward the belief that people would be better off if they consumed less by cohort (in %)

Cohort name	Yes	No	Hard to say
Baby Boomers	63.22	14.71	22.07
Generation X	61.88	17.87	20.52
Generation Y	59.68	23.17	17.14
Generation Z	61.89	21.08	17.03

Source: own compilation based on the survey.

Table 5. Distribution of affirmative and negative responses in each element of the behavioral component (% from row)

	Generation Z		Generation Y		Generation X		Baby Boomers	
	Yes	No	Yes	No	Yes	No	Yes	No
Acquisition of well-labeled organic products	42.16	45.41	40.42	45.71	45.81	35.41	48.23	36.51
Checking the recyclability of packaging and products	46.22	42.16	42.96	45.61	50.11	36.76	53.41	35.69
Checking that cosmetic products are not tested on animals	35.95	50.81	37.88	50.26	40.50	43.10	41.69	43.32
Controlling water, energy, and gas consumption	42.43	47.30	44.76	47.41	49.43	41.63	51.77	41.69
Consciously avoid products that cause environmental damage	58.65	26.76	58.41	27.62	63.80	18.55	70.84	13.90
Paying attention to environmental issues when comparing two similar products	49.46	34.59	48.68	34.07	54.52	25.11	52.59	24.52
The belief that people would be better off if they consumed less	61.89	21.08	59.68	23.17	61.88	17.87	63.22	14.71

Source: own compilation based on the survey.

to say") in relation to a specific pro-environmental behavior. The lowest level of indecision can be seen in the case of the issue of controlling water, energy, and gas consumption. It is at a similar level across generations, i.e., about 10%. A slightly higher level is noticeable in the case of checking the recyclability of packaging and products. In this case, the percentage in each generation varies from 11% to 13%. A greater disparity can be seen when declaring well-labeled organic products. In younger generations, the percentage of undecided is lower than in older generations (Generation Z – 12%, Generation X – 19%). Similar disparities can be seen when checking whether cosmetic products are not tested on animals. The highest percentage of undecided across cohorts is found when paying attention to environmental issues when comparing two similar products. There are significantly fewer undecideds in this area among respondents from younger cohorts (Generation Z – 16%, Generation Y – 17%) than among older ones (Generation X – 20%, Baby Boomers – 23%).

Differences in environmental measures taken by cohorts in the countries studied

Subsequently, responses to the aforementioned questions were extracted from the database and divided into individual cohorts, taking into account the country of the respondent. Analyzing the results obtained, one can notice a high percentage of positive responses (at least 50%) from Italian respondents regarding behavioral as well as cognitive components. The second observation made can be seen in the relatively low proportion (with certain exceptions) of undecided respondents who have no opinion. Their share, depending on the issue raised, does not exceed 20% (however, it should be remembered that the pandemic experience period was not very long). With each issue raised, in addition to the two groups of respondents indicated, groups of opponents of taking such measures have formed. The size of such groups did not vary by country and age generation. Below are the conclusions and observations for each age generation.

In the case of Generation Z, as mentioned above, the strong pro-environmental attitude of Italian respondents is noticeable. Each question analyzed is answered affirmatively by between 50% and 70% of respondents. A lower level of affirmative responses can be seen among respondents from Germany. Here, the level of affirmative answers ranges from 40% to 55%. The last two countries, i.e., the Czech Republic and Poland, are characterized by variation in the level of affirmative responses. For example, the level of declarations regarding the purchase of well-labeled organic products is higher in the Czech Republic (42%) than in Poland (35%). A comparable level is noticeable when checking the recyclability of packaging and products. On the other hand, it is different (i.e., higher in Poland than in the Czech Republic) when checking whether cosmetic products are tested on animals or controlling water, energy, and gas consumption.

In the case of Generation Z, the size of the undecided group is relatively small, ranging from 8 to 15% of responses to individual questions. Such a situation results in a preponderance of negative responses over affirmative responses in some situations, e.g., when declaring that cosmetic products are not tested on animals for respondents from the Czech Republic and Poland.

The second cohort analyzed is Generation Y. Here, one can repeat the observations made when analyzing Generation Z regarding Italy and Germany. As for respondents from this generation from the next two countries, i.e., the Czech Republic and Poland, one can see a higher level of affirmative for the latter. The exceptions to this rule are the issues of conscious avoidance of products that cause environmental damage and the belief that people would be better off if they consumed less (similar levels of affirmative responses for Germany, the Czech Republic, and Poland). In some cases, there is a preponderance of negative answers over affirmative ones, thus indicating the existence of a sizable group of opponents of such measures. This is particularly true of respondents from the Czech Republic and Poland. Details are presented in Fig. 2.

The next cohort, Generation X, also replicates the patterns identified in the previous two age generations, i.e., high levels of positive declarations by respondents from Italy and Germany versus lower levels by respondents from the Czech Republic and Poland. Noteworthy is the high level of declarations that respondents from Poland (54%) control the use of water and other utilities more often compared to respondents from Germany (45%) or the Czech Republic (29%). Compared to previous generations, the group of undecided is growing, while the highest percentage can be observed among respondents from Poland.

On the other hand, among respondents from the Czech Republic, one can observe a large group of those who deny taking certain pro-environmental actions (manifested by the predominance of negative answers over positive ones). This includes: buying well-labeled eco-friendly products, checking the recyclability of packaging and products, checking that cosmetic products are not tested on animals, and controlling water, energy, and gas consumption. Worth noting for this age generation is the similar percentage of affirmative and negative responses from German respondents regarding checking that cosmetic products are not tested on animals and controlling water, energy, and gas consumption.

The last age group is the Baby Boomers, and one can notice a higher level of affirmative responses relative to earlier generations. At the same time, there are groups

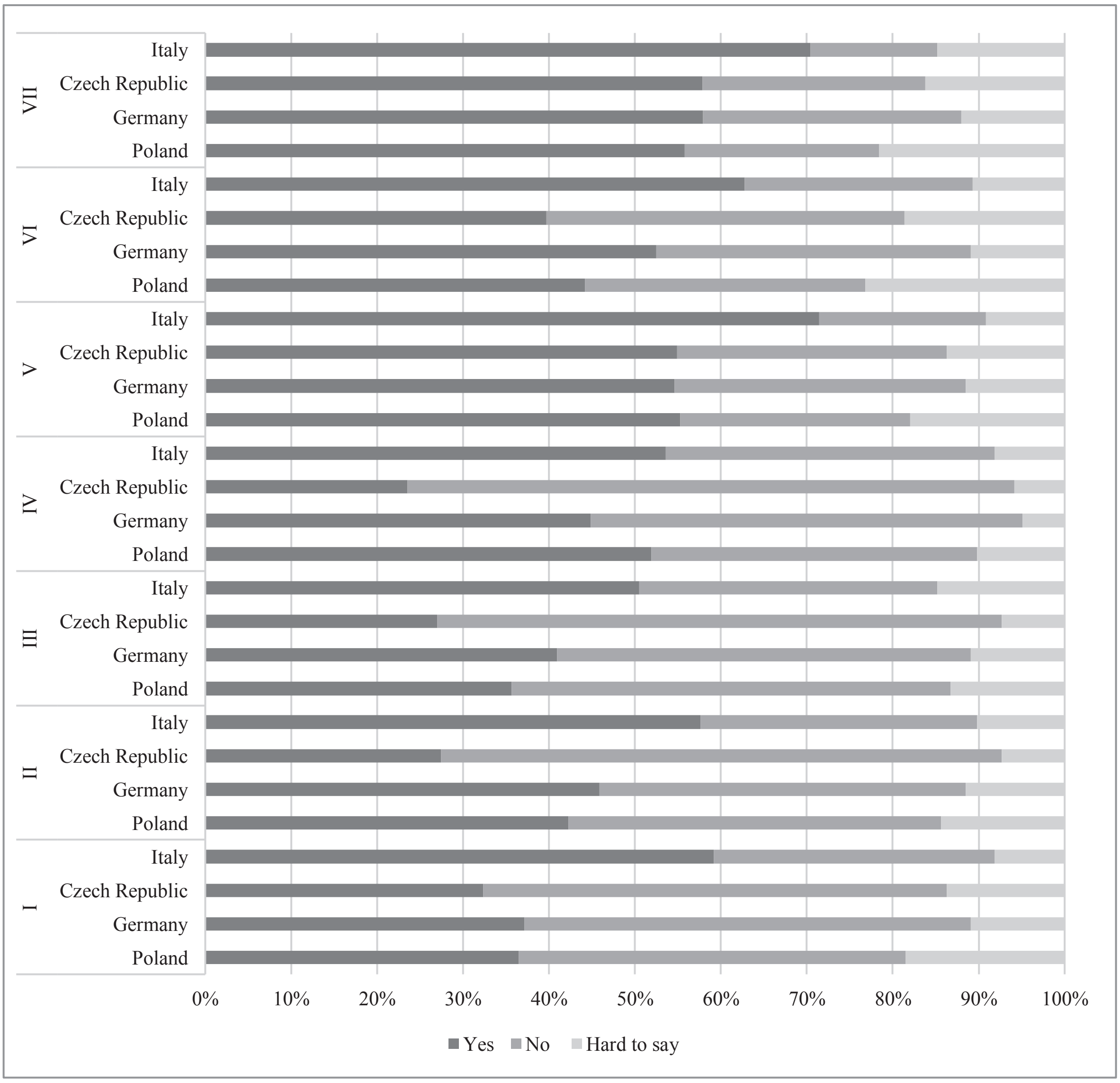

Fig. 2. Attitudes toward the behavioral and cognitive components of the pro-environmental behavior of Generation Y respondents by country.

Note: I –- purchasing well-labeled organic products; II –- checking the recyclability of packaging and products; III –- checking that cosmetic products are not tested on animals; IV –- controlling water, energy, and gas consumption; V –- consciously avoiding products that cause environmental damage; VI –- paying attention to environmental issues when comparing two similar products; VII –- believing that people would be better off if they consumed less.
Source: own compilation based on the survey.

that do not take pro-environmental measures and larger groups of undecided respondents than other cohorts.

Greater indecision can be seen primarily among respondents from Poland and the Czech Republic relative to respondents from the other two countries. It concerns buying well-labeled organic products, checking the recyclability of packaging and products, checking the fact that cosmetic products are not tested on animals, or paying attention to environmental issues when comparing two similar products. The level of indecision in these cases varies, ranging from 18 to 39% of the generation size of Baby Boomers from a given country.

The second significant issue in this age group is the high level of declarations of not taking certain actions by respondents from the Czech Republic. The lack of taking action relates to buying well-labeled organic products, being able to recycle packaging and products, checking that cosmetic products are not tested on animals, and controlling the use of water and other utilities.

DISCUSSION AND CONCLUSIONS

The results of the research presented here make it possible to distinguish patterns of behavior in terms of green attitudes and activities, as well as similarities and differences by age and place of residence in this respect.

In the case of behavioral patterns during a pandemic, it can be observed that the fact of taking green actions should result in other, subsequent actions being taken in this field. At the same time, the opposite behavioral patterns can be observed, i.e., the fact that refraining from taking action will result in other green actions not being taken.

Respondents from older age groups (i.e., 'Baby Boomers' and 'Generation X') are significantly more likely to declare that they take green actions than respondents from younger age groups (i.e., 'Generation Y' and 'Generation Z'). The opposite situation can be observed in the case of negative answers regarding taking green actions.

Considering another variable within the cohorts (country of residence of the respondent), a high percentage of affirmative responses can be seen in each age group in terms of respondents from Italy taking green actions. A lower level of affirmative responses can be seen among respondents from Germany. The last two countries, i.e., the Czech Republic and Poland, are characterized by variable levels of affirmative responses but lower than the previous two countries. This may be explained by the traumatic experience of Italians during the pandemic (given the survey period) relative to the other countries surveyed.

Relating the results obtained regarding the attitudes of the cohorts towards ecological issues to the results of other studies, it can be said that they are confirmed by the results and conclusions of other researchers, e.g., Roberts [1996] or Gonçalves and Viegas [2015]. It can also be seen in this regard that they are consistent with the threads of other studies, e.g., the issue of attitudes towards ecology of young people in Poland [Listowski et al. 2022], where ecology finds a higher place in relation to other values (it is in 25th place out of a possible 29).

The results obtained also correspond with the findings of other authors. For example, according to Peluso et al. [2021], who conducted a study in 2020 in Italy with a sample of 817 respondents from Italy, older consumers are more likely to increase their purchases of environmentally sustainable products. They also point out that consumers in this age category increased their spending on sustainable products during the pandemic as a result of the response to the COVID-19 health crisis.

The current study has three key limitations that present opportunities for future research. The first is that the research is focused only on selected European countries (two countries classified as major European economies and two countries classified as developing economies). In order to confirm the observed relationships, it would be necessary to conduct research on this topic in other countries on the European continent. The research results presented here focus on the actions taken in connection with the purchase of products. Therefore, the findings made cannot be generalized to other pro-environmental behaviors (such as recommerce). Future research could examine other behaviors to see if the situation in which the research took place inspires pro-environmental attitudes and paves the way for more sustainable consumption. In addition, future research could provide an answer regarding the sustainability of the observed effects, i.e., examine whether the effects that were observed during the outbreak will persist in subsequent periods.

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PODOBIEŃSTWA I RÓŻNICE W POSTAWACH PROEKOLOGICZNYCH KONSUMENTÓW Z RÓŻNYCH GENERACJI WIEKU – PORÓWNANIA MIĘDZYNARODOWE

STRESZCZENIE

Cel: Celem artykułu jest wskazanie podobieństw i różnic w postawach proekologicznych konsumentów z różnych krajów, ale też będących przedstawicielami różnych kohort wiekowych. **Metody:** Podstawą analiz są wyniki badań przeprowadzonych w czterech krajach europejskich (Niemcy, Włochy, Czechy i Polska). Międzynarodowe badanie ilościowe przy wykorzystaniu autorskiego kwestionariusza ankiety przeprowadzono techniką CAWI na próbie liczącej łącznie 2566 respondentów. W analizie danych wykorzystano reguły asocjacyjne, zaliczane do narzędzi *data mining* stosowanych do budowania modeli opisowych. **Wyniki:** Przedstawione wyniki badań pozwalają na wyodrębnienie wzorców zachowań w zakresie postaw i działań proekologicznych, a także podobieństw i różnic ze względu na wiek i miejsce zamieszkania w tym zakresie. Respondenci ze starszych grup wiekowych (tj. „Baby Boomers" i „pokolenie X") istotnie częściej deklarują podejmowanie działań proekologicznych niż respondenci z młodszych grup wiekowych (tj. „pokolenie Y" i „pokolenie Z"). Odwrotną sytuację można zaobserwować w przypadku negatywnych odpowiedzi dotyczących podejmowania działań proekologicznych. **Wnioski:** Autorzy badania uważają że należy powtórzyć badanie sprawdzając czy deklarowane postawy i zachowania są wynikiem specyficznej, odbiegającej od innych okresów sytuacji (badanie było przeprowadzone w okresie pandemii) czy mają charakter stały pozwalający dostrzegać różnice w zachowaniach konsumenckich między poszczególnymi grupami wieku i krajami. Innym możliwym, rozważanym kierunkiem w dalszych badaniach jest dokładniejsza analizy grupy niezdecydowanych w celu ustalenia przyczyn takiego stanu rzeczy.

Słowa kluczowe: konsumpcja ekologiczna, zachowania konsumentów, porównania międzynarodowe, asocjacje

ACTA SCIENTIARUM POLONORUM
acta_oeconomia.sggw.pl

Acta Sci. Pol.
Oeconomia 22 (4) 2023, 31–39

ISSN 1644-0757 eISSN 2450-047X DOI: 10.22630/ASPE.2023.22.4.23

ORIGINAL PAPER

Received: 11.10.2023
Accepted: 27.12.2023

A STUDY ON THE SPATIAL DIFFERENTIATION OF THE SOCIO-ECONOMIC AND TOURIST SITUATION OF SELECTED MUNICIPALITIES OF THE WEST POMERANIAN VOIVODESHIP

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ABSTRACT

Aim: The aim of the article was to develop an original classification of municipalities in the West Pomeranian Voivodeship, Poland, with particular emphasis on measuring local development, taking into account the development of health tourism. **Methods:** The research procedure consisted of the following stages: collection of data and assessment of their completeness for the West Pomeranian region, calculating the values of the indicators, constructing rankings of municipalities in a one-dimensional space of characteristics-indicators and distinguishing typological groups of municipalities similar in terms of the degree of development of the socio-economic and tourist situation. The classification of sub-regions was carried out using discriminant analysis. For this purpose, the indicators characterizing the socio-economic and tourist situation in the selected West Pomeranian Voivodeship municipalities were used, taking into account the division into municipalities: urban (1), rural (2), and urban-rural (3). The preliminary classification of the objects into groups, and thus the selection of the grouping variable, was carried out using the k-means method. The study used secondary data from the Local Data Base – GUS. **Results:** As a result of the survey, the analyzed local government units were divided into three groups. However, the presented results of the classification do not indicate the dependence of the improvement of socio-economic characteristics on the provision of tourism services in the municipality (including health tourism). **Conclusions:** Empirical studies show that the placement of municipalities in the West Pomeranian Voivodeship reveals clear relationships between the territorial distribution of health tourism units and the territorial distribution of natural assets and access to the Baltic Sea.

Keywords: local development, tourism, municipality
JEL codes: Z32, R10

INTRODUCTION

The tourism sector is at the epicenter of local economic development, promoting job creation and investment in the region, as well as optimizing transport and strengthening local cultural heritage. At the state level, tourism is one of the main sources of income in the balance of payments [Panasiuk, 2011, Szopa and Szczerbowski 2013]. Health tourism is a relatively new phenomenon that has developed over the past two decades [García-Altés 2005, Szromek 2012, Bąk-Filipek et al. 2019]. Previous research on health tourism has been limited to a small range of medical tourism topics. Nowadays, the concept of health tourism has become a broader one, as medical care has changed from being 'sickness-focused' to 'health-centric' [Religioni and Religioni 2015, Lei et

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al. 2022]. Given the dynamics of change in the consumer market, it seems that we are increasingly attaching importance to being healthy and fit, both physically and mentally, and that this trend will continue for decades to come. This trend is the result of the aging of the population and simultaneously increasing numbers of the elderly, rising income levels, and the extension of leisure time [Nowakowska 1999]. In light of the above, the authors of the study considered the purpose of the study to be the preparation of an original classification of the West Pomeranian Voivodeship municipalities, paying particular emphasis to the measurement of local development, taking into account the development of health tourism. The authors set themselves a difficult task, as tourism is a phenomenon that is difficult to quantify due to its complex nature, which is connected with a wide range of tourist activities and other pursuits. The measurements in this area are carried out in relation to the number of tourists, the number of establishments with spa & wellness facilities, the number of accommodations or overnight stays, and the infrastructure of the study areas. There is a need to refer individual variables related to tourism to variables characterizing the area, among which there are total municipal income/expenditure per capita, unemployment rate, and population density [Sharpley and Telfer 2002, Kachniewska et al. 2012, Saarinen 2013, Balińska 2022]. Taking into account the selected values (see Table 1), indicators were created to measure the level of socio-economic and tourism development in selected municipalities of the West Pomeranian Voivodeship, Poland.

RESEARCH METHODOLOGY

The paper is based on the k-means method, which has been used in the past to solve research problems [Stanny and Strzelczyk 2015, Brelik 2016, Sobolewski and Sokołowski 2017, Perdał 2018, Pomianek 2022]. The choice of research technique was based on the fact that it is one of the non-hierarchical methods used to optimize the classification of objects (in this case, municipalities) and is based on cluster analysis [Gatnar 1995, Jauhari et al. 2022, Tiwari and Tripathi 2023]. It was used to develop the original classification of municipalities in the West Pomeranian Voivodeship, taking into account the measurement of local development and health tourism.

In the case of optimization-iteration methods, the procedure refers to actions aimed at improving a given classification from the point of view of a suitably specified optimality criterion. The objects were assigned to the classes in which the center of gravity was located at the closest position of the Euclidean distance. The criterion for grouping was to minimize variation within groups, i.e., between sites that were part of a given cluster, and to maximize variation between all groups [Mazur 2004, Ikotun et al. 2023]. The sequence of operations in the classification followed a three-step process:

- first, an initial function value was determined as a criterion for clustering quality and maximum number of iterations;
- next, the distances of each object from the centroids (i.e., the vectors of the arithmetic means) of the existing groups were determined;
- 3. the final step was to change the assignment to the group with the closest centroid or to the group that gave the greatest improvement in classification quality. The k-means clustering process is considered complete if, after checking, no displacement of objects has occurred, but if this situation occurs, it is necessary to repeat the whole procedure and determine a new function criterion. However, it is important not to exceed the preset number of iterations [Grabiński 1992, Rochman and Rachmad 2019].

The *k*-means method provides a way to group a set of objects into *k* subgroups that are as different as possible from each other. Many variations of the k-means algorithm have been discussed in the literature, differing in, among other things, the way the criterion function is defined, the decision rules for the classification process, and the methods for determining the initial partitioning of objects. A method that has gained popularity in the research community is the one developed by Hartigan [1975]. The flow of this method can be illustrated using a number of key steps [Grabiński 1992, Pietrzykowski and Kobus 2006]:

1) The first step was to determine the maximum number of iterations and classes (k) to divide the n-element set of objects into:

$$k \in (2, k - 1) \quad (1)$$

2) The next step was to create an initial matrix of the centers of gravity of the classification groups:

$$B = [\overline{x}_{ij}](1 = 1, \ldots, p; \mathrm{j} = 1, \ldots, m) \quad (2)$$

where: m – the number of variables.

Individual objects belonging to the set were assigned to the classes with the smallest Euclidean distance.

2) Next, the initial value of the distribution error of the units between k groups was determined:

$$e = \sum_{i=1}^{n} d_{il}^2$$

where: d_{il} – the Euclidean distance between the i-th object and the nearest l-th centroid:

$$d_{il}^2 = \Sigma_{j=1}^{m} (x_{ij} - \overline{x}_{lj})^2$$

3) The final step in the process was to determine the change in the split error for the first object caused by sequentially assigning this object to all existing classes:

$$\Delta e_l^{(1)} = \frac{n_k d_{1k}^2}{n_k + 1} - \frac{n_{k_1} d_{1k_1}^2}{n_{k_1} - 1}$$

Where: n_k – the frequency of the k-th class, d_{1k} – the distance of the first object from the centroids of the k-th class, n_{k_l} – the frequency of the class containing the first object, d_{1k_1} – the distance of the first unit from the nearest centroid.

If $min\,\Delta e_l^{(1)}$ is negative for all $l \neq l_1$, the first object is assigned to a classification group for which $\Delta e_l^{(1)}$ = min. After accounting for the changes, the group centroids are recalculated, and the present value of the split error is determined. If $\Delta e_l^{(1)}$ is positive or zero, no changes are made.

The presented action process was repeated for each analyzed object – the municipality. The first iteration of the process was completed. The process was terminated after checking whether 22 objects had been moved from class to class. If not, a new iteration had to be started. The whole action cycle was repeated until the number of iterations did not exceed the target size.

RESULTS

For the purposes of achieving the adopted research objective, an original classification of the municipalities of the West Pomeranian Voivodeship was carried out. Special attention was given to the measurement of local development, taking into account the development of health tourism, and the research was carried out for the years 2017 and 2020. The analysis of the West Pomeranian Voivodeship municipalities in the specified years has enabled an objective assessment of the changes taking place in the studied local government units, as well as the differences or lack of them in the functioning of the economy. So far, the analysis of the socio-economic characteristics has been used by many authors, not only in relation to the development of tourism [Bartkowiak-Bakun 2017, Zawadzka and Strzelecka 2020, Bąk et al. 2021]. The classification study was carried out for three sets of diagnostic characteristics expressed as indicators. The first set contained features characterizing the socio-economic situation, the second set contained features describing the situation in the tourism market, and the third set consisted of variables characterizing the socio-economic situation and the situation in the tourism market (Table 1).

The survey covered 48 municipalities with a tourism function in the West Pomeranian Voivodeship. As a result of the analyses carried out in 2017 and 2020, slight shifts in the three-stage scale defining the type of municipality ("Type I" – best municipalities, "Type II" – average municipalities, "Type III" – weak municipalities) were visible. Based on the literature review and data analysis, it can be assumed that the municipalities defined as "Type I" were characterized by the best socio-economic situation, recording the highest total income per capita, which exceeded the value of total expenditure per capita. In addition, "Type I" municipalities had the lowest unemployment rate and the highest number of enterprises registered in the REGON register per 10,000 inhabitants. In contrast, municipalities belonging to "Type III" municipalities had, among other things, the highest unemployment rate and the lowest total income per capita. When making the classification

Table 1. Sets of characteristics of the socio-economic situation and the health tourism market in the analyzed municipalities

Designation Features	A set of characteristics describing the socio-economic situation	Designation Features	A set of characteristics describing the tourist market
X_1	Total municipal income/inhabitant [PLN/person]	X_1	Number of facilities with spa & wellness facilities/km² [facilities/km²]
X_2	Total municipality expenses/inhabitant [PLN/person]	X_2	Number of facilities providing rehabilitation services/km² [facilities/km²]
X_3	Unemployment rate [%]	X_3	Total number of beds in tourist facilities/km² [beds/km²]
X_4	Number of people receiving social assistance benefits/1,000 residents [person/1,000 population]	X_4	Number of nights provided in the total tourist accommodation facilities/km² [nights provided/km²]
X_5	Number of companies registered in the REGON register [companies/10,000 residents]	X_5	Number of beds in spa hospitals and spa sanatoriums/km² [beds/km²]
X_6	Number of beneficiaries of community social assistance/ 10,000 population [beneficiaries/10,000 population]	X_6	Share of the area of walking and recreation parks in the total area [%]
X_7	Population density [person/km²]	X_7	Share of area of protected areas in the total area [%]

Source: own study based on Local Data Bank, Statistics Poland.

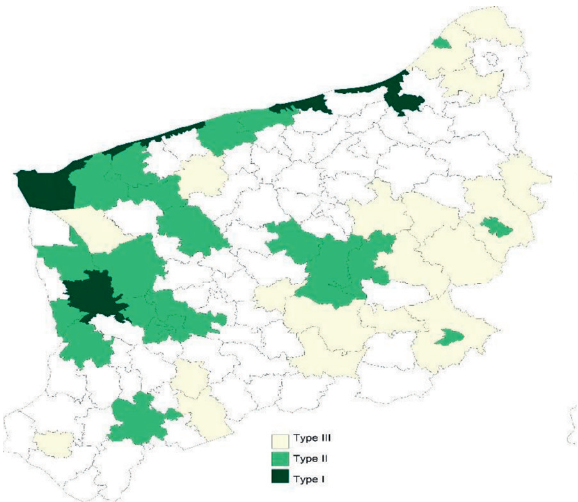

Fig. 1. K-means classification on the basis of socio-economic characteristics in 2017

Source: own study.

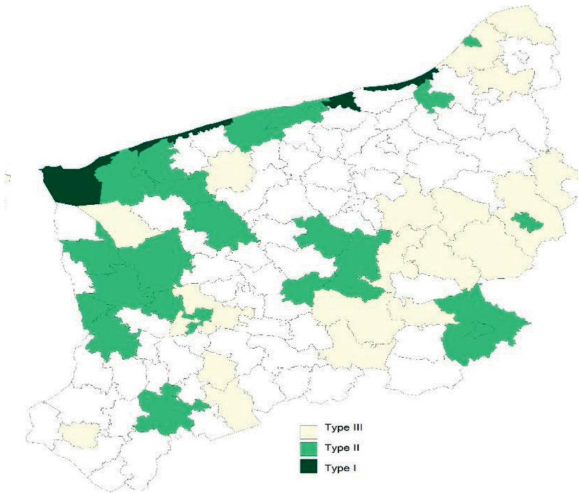

Fig. 2. K-means classification on the basis of socio-economic characteristics in 2020

Source: own study.

on the basis of socio-economic characteristics (Table 1), no significant relationship between tourism (especially health tourism) and local development in the selected municipalities was confirmed, as one of the municipalities in which health tourism is cultivated (with health tourism) was identified as a "Type III" (the weakest) territorial unit, while Kołobrzeg, the capital of health tourism in the West Pomeranian Voivodeship, and Kamień Pomorski were identified as "Type II", characterized by an average level of socio-economic development.

Based on the results of the classification of municipalities (Fig. 2) according to socio-economic characteristics in 2020, it can be noted that the municipalities with the best characteristics for local development were, among others: Rewal, Świnoujście, and Mielno – where forms of health tourism are implemented, i.e., both therapeutic and rehabilitation activities, but also spa & wellness.

Based on the analysis of municipalities in the West Pomeranian Voivodeship, slight changes in the results of the typology of municipalities in 2020 (Fig. 2) are noticeable in comparison with 2017 (Fig. 1). The changes in the last study year (2020) mainly concerned the improvement of the position of the municipality in the typology according to the three-level division.

Subsequently, an analysis of the municipalities of the West Pomeranian Voivodeship was carried out on the basis of a set of characteristics of the tourism market (Table 3). The classification was carried out using the k-means method for the same group of municipalities and showed that the best ("Type I") was the municipality of Kołobrzeg; another spa municipality – Połczyn Zdrój – was classified as "Type II"; the remaining spa units studied were in the last collection of communities (of the studied spa units assigned to the last group of municipalities) – "Type III", which was identified as the worst due to the lowest values of the indicators used for the study.

Changes between the municipalities classified as "Type III" and "Type II" are also clearly visible due

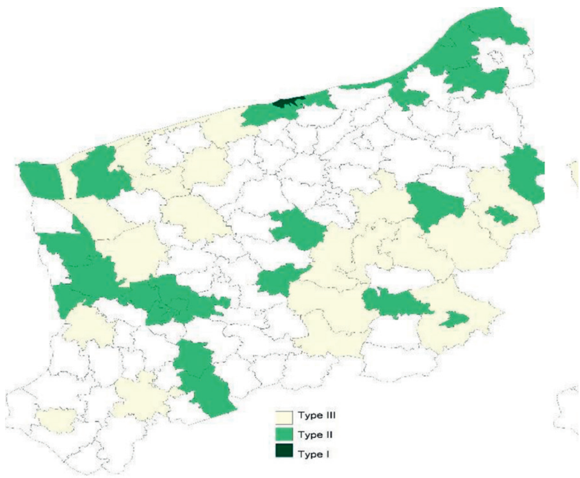

Fig. 3. Classification of municipalities by the k-means method on the basis of characteristics of the tourism market in 2017

Source: own study.

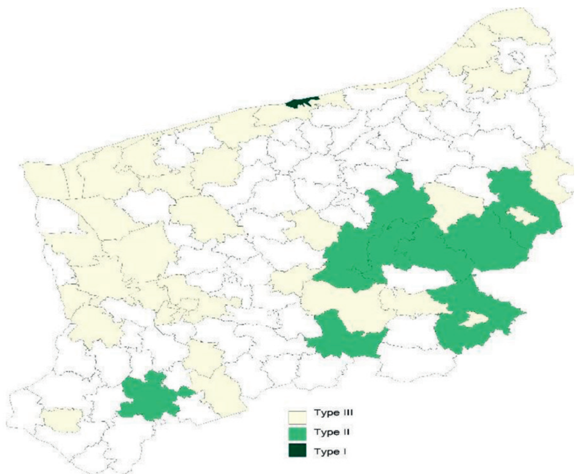

Fig. 4. Classification of municipalities by the k-means method on the basis of characteristics of the tourism market in 2020

Source: own study

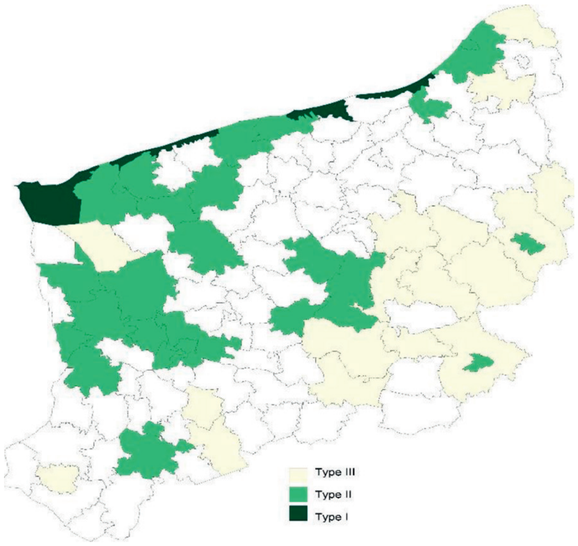

Fig. 5. Classification of municipalities by the k-means method on the basis of characteristics of the socio-economic situation and the tourism market in 2017
Source: own study.

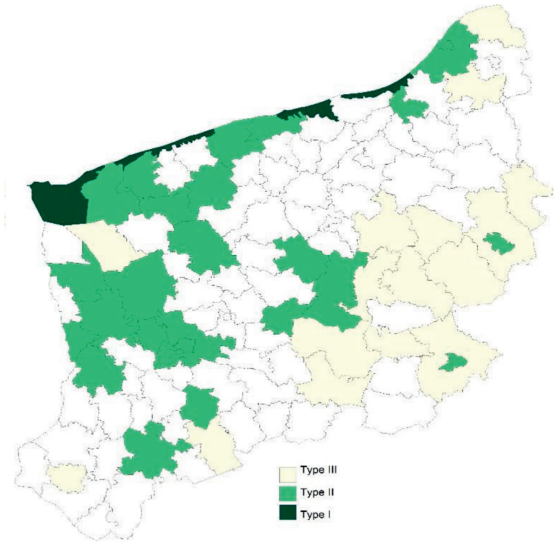

Fig. 6. Classification of municipalities by the k-means method on the basis of characteristics of the socio-economic situation and the tourism market in 2020
Source: own study.

to the ongoing changes in the functioning of tourism entities. The majority of municipalities classified as an average group found themselves in the latter group in 2020, which is particularly evident in Fig. 3, where the typologies of municipalities for 2017 are presented, and in Fig. 4, where the result of the classification of TSUs in 2020 is included.

When analyzing the results of the classification presented in Figures 1–4, it can be noted that among the units classified, for example, as "Type I" in the case of both lists (based on the characteristics of the socio-economic situation and the tourism market), the list of municipalities is not the same, which indicates that there is no link between a high level of socio-economic development and the operation of health tourism facilities in the area.

Figure 5 shows the results of the classification of municipalities on the basis of socio-economic features and the tourism market for 2017, and Figure 6 shows the results for 2020. Despite the diversity in access to the Baltic Sea and other natural assets, not all municipalities where health tourism is practiced were identified as "Type I". The classification carried out on the basis of socio-economic and tourism characteristics showed that the first group – rated as the best – were coastal municipalities (including Rewal, Świnoujście, and Kołobrzeg), but not exclusively specializing in health tourism. However, no dependency on the improvement of socio-economic characteristics on the provision of tourism services in the municipality (including health tourism) was found.

CONCLUSIONS

The presence and arrangement of natural resources is uneven, which affects the distribution of health tourism facilities. Empirical studies show that the placement of municipalities in the West Pomeranian Voivodeship reveals a clear relationship between the territorial distribution of health tourism entities and the territorial distribution of natural assets and access to the Baltic Sea. The area is characterized by favorable climatic conditions due to the presence of deep water springs and deposits of medicinal raw materials.

West Pomerania has deposits of mud and brine and is characterized by a mild climate, which makes the West Pomeranian spas, for example: Kołobrzeg, Świnoujście, Kamień Pomorski, or Połczyn Zdrój, places that attract tourists and patients, as well as those willing to use – especially in the coastal strip – the dense network of wellness and spa centers. The aforementioned advantages are conducive to the development of sanatorium and spa facilities, as well as the practice of recreational and leisure tourism and various forms of active tourism. However, after making the classification on the basis of selected socio-economic parameters, the significant impact of health tourism on local development in selected municipalities of the West Pomeranian region was not confirmed.

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ACKNOWLEDGMENTS

This research was funded by the project within the framework of the Faculty of Economics, West Pomeranian University of Technology in Szczecin, Poland, under the title "GreenLab. Re-search and Innovations".

BADANIE PRZESTRZENNEGO ZRÓŻNICOWANIA SYTUACJI SPOŁECZNO--GOSPODARCZEJ I TURYSTYCZNEJ WYBRANYCH GMIN WOJEWÓDZTWA ZACHODNIOPOMORSKIEGO

STRESZCZENIE

Cel: Celem artykułu było opracowanie autorskiej klasyfikacji gmin województwa zachodniopomorskiego, na podstawie pomiaru rozwoju lokalnego uwzględniając rozwój turystyki zdrowotnej. **Metody:** Postępowanie badawcze składało się z następujących etapów: zebranie danych i ocena ich kompletności dla województwa zachodniopomorskiego, obliczenie wartości wskaźników, budowa rankingów gmin w jednowymiarowej przestrzeni cech-wskaźników oraz wyodrębnienie grup typologicznych gmin zbliżonych pod względem stopnia rozwoju sytuacji społeczno-gospodarczej i turystycznej. Klasyfikacji podregionów dokonano za pomocą analizy dyskryminacyjnej. Do tego celu wykorzystano wskaźniki charakteryzujące sytuację społeczno-gospodarczą i turystyczną w wybranych gminach województwa zachodniopomorskiego, z uwzględnieniem podziału na gminy: miejskie (1), wiejskie (2) i miejsko-wiejskie (3). Wstępnej klasyfikacji obiektów na grupy, a tym samym wyboru zmiennej grupującej, dokonano stosując metodę k-średnich. W badaniu wykorzystano dane wtórne pochodzące z Banku Danych Lokalnych – GUS. **Wyniki:** Efektem przeprowadzonego badania był podział analizowanych jednostek samorządu terytorialnego na trzy grupy. Przedstawione wyniki klasyfikacji nie wskazują jednak na zależność poprawy cech społeczno-ekonomicznych od świadczenia usług turystycznych w gminie (w tym turystyki zdrowotnej). **Wnioski:** Badania empiryczne wskazują, że rozmieszczenie gmin w województwie zachodniopomorskim ujawnia wyraźne zależności między terytorialnym rozmieszczeniem jednostek turystyki zdrowotnej a terytorialnym rozmieszczeniem walorów przyrodniczych i dostępem do Morza Bałtyckiego.

Słowa kluczowe: rozwój regionalny, turystyka, gmina

ACTA SCIENTIARUM POLONORUM
acta_oeconomia.sggw.pl
Acta Sci. Pol.
Oeconomia 22 (4) 2023, 41–53
ISSN 1644-0757 eISSN 2450-047X DOI: 10.22630/ASPE.2023.22.4.24

ORIGINAL PAPER

Received: 31.10.2023
Accepted: 27.12.2023

RELATIONS BETWEEN AGRICULTURAL BUDGET POLICY AND FISCAL POLICY IN POLAND AFTER ACCESSION TO THE EUROPEAN UNION (2004–2022)

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ABSTRACT

Aim: The paper evaluates Poland's budget policy towards agriculture through the prism of agricultural budget expenditure under the conditions of Poland's membership in the European Union (EU). The volume and real dynamics of agricultural budget expenditure in relation to state budget expenditure were analyzed. An answer was sought to the question of whether the active or passive nature of budget policy toward agriculture is consistent with the state fiscal policy option (expansive or restrictive). **Methods:** The relatively long period of analysis (covering 19 years, 2004–2022) allows us to see trends in the formation of the level and structure of agricultural budget expenditure and state budget expenditure, as well as to determine their mutual relations. Simple statistical methods – structure and dynamic analysis – were used. **Results:** It is shown that the budget policy towards agriculture is characterized by a peculiar difference and independence from the state fiscal policy, which is mainly due to the great importance of the funds of the Common Agricultural Policy for the level and structure of agricultural budget expenditure. **Conclusions:** It was found that the level of support for agriculture in Poland from public funds (domestic and EU) in 2004–2022 was not directly dependent on the state budget situation. During the period, there were numerous changes in the state's fiscal policy options and changes in the budget policy options towards agriculture, with these changes going in different directions quite often.

Keywords: agricultural budget expenditure, state budget, fiscal policy, CAP

JEL codes: E62, H60, Q18

INTRODUCTION

In the literature, we can find many studies analyzing and explaining the rationale for supporting agriculture with public funds, which on theoretical grounds refer to political economy theory (state interventionism), public choice theory, and interest group theory, or refer to the concept of sustainable development of agriculture and rural areas [Swinnen et al. 2000, Wilkin 2012, Kułyk 2013, Matuszczak, 2020]. In general, the justification for state intervention in agriculture and, thus, for public expenditure in this sector is the allocative and redistributive dysfunctions of the market mechanism and the need to correct them. The governments of developed countries do not accept the deep disparity of farmers' incomes relative to other socioeconomic groups, the instability of agricultural income, the low profitability of assets involved in agricultural produc-

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tion, and also the unstable and rising prices of food for consumers [Stiglitz 1987, Hopkins and Taylor 2001, Matuszczak 2020, Czyżewski et al. 2022]. There is also a growing emphasis on the multiple functions of agriculture in the economy and the need for society to appreciate functions other than food production. This involves the provision of environmental (ecological), social, and cultural public goods, for which society should – at least in part – pay, since they are not subject to valuation by the market mechanism and are usually not exchanged on the market [Van Huylenbroeck and Durand 2003, Woś and Zegar 2004, Buckwell 2009, Czyżewski 2017, Grzelak et al. 2019].

Fiscal policy, according to Fedorowicz [1998], is "the selection of sources and methods of collecting public revenues, as well as the directions and methods of implementing public expenditure to achieve social and economic goals, as determined by the competent public authorities". The subject of fiscal policy implementation is the government and local governments at the regional and local levels. The instrument for implementing fiscal policy is the state budget at the central level (general government budget) and local government budgets. In the case of a European Union (EU) member state, public revenues and expenditure come not only from domestic sources, but also from European funds, i.e., the EU budget. In Poland, these funds, since 2010, are institutionally included in the budget of European funds (WBE).

Fiscal policy has an economy-wide character, but also a sectoral dimension if its goals and instruments are directed to a specific sector of the economy. In the national budget, revenues and expenditures pertaining to the agricultural sector are generally included in Division 10, parts: 32 – Agriculture, 33 – Rural Development, and 35 – Agricultural Markets. Expenditure on agriculture also includes subsidies to the Agricultural Social Insurance Fund (ASIF). Specific allocations for agriculture, rural development, and agricultural markets – mainly on the expenditure side – are also included in the budgets of the voivodes, special purpose reserves, and other budget categories [Czyżewski 2022]. In addition, as mentioned above, revenues and expenditures from the EU budget, within the framework of CAP instruments, are included in the European funds budget. With regard to public expenditure, budget funds are directed straight to the agricultural sector (to agricultural producers), but also support rural development and agricultural markets.

Every fiscal policy consists of a revenue policy (including taxation and customs) and an expenditure policy. It should be noted, however, that the modern system of fiscal policy includes such tools of intervention that are difficult to clearly categorize as revenue or expenditure policy. An example is tax exemptions and allowances, referred to in the literature as tax expenditure [Dziemianowicz 2013]. However, the problem is precisely determining the level of this type of expenditure.

With regard to agriculture, in this article, we will deal with only one side of fiscal policy, i.e., budget expenditure. We realize that this is a certain simplification because the budget is an institution that consists (in the most general sense) of both revenues and expenses. However, in our article, we ignore the income side of the agricultural budget. This is due to the fact that, not counting the European funds included in the WBE, the state budget revenues in Division 10 cover the expenses implemented in this section at a level of no more than 2–3% [Czyzewski 2023]. Thus, the revenues collected from the agricultural sector are not significant, neither for the state fiscal policy, representing the peril of state budget revenues (in 2023 – 0.08%), nor do they influence the shape of fiscal policy towards agriculture.

In this article, by state budget expenditure, we mean state budget expenditure, including the budgets of voivodes. In turn, Poland's agricultural budget expenditure, also referred to as the total agricultural budget, consists of:

- expenditure from the state budget directed to agriculture, rural development, and agricultural markets, which, together with the subsidy to the ASIF, we will refer to as the state agricultural budget;
- expenditure from European funds directed to agriculture and rural areas under Pillar I and Pillar II instruments of the CAP (captured in the WBE).

The purpose of fiscal (budget) policy towards agriculture is to ensure food security, support stable and decent incomes for farmers (guaranteeing an adequate standard of living), increase the competitiveness of agriculture, and improve the position of farmers in the food chain. In addition to strictly economic goals, the policy also pursues objectives arising from the social and environmental aspects of sustainable development. These include protection of the natural environment and biodiversity, combating climate change, protection of food quality and health, support for generational exchange, preservation of rural cultural heritage, and development of rural areas. Nowadays, such goals as facing high and growing risks in agriculture and promoting knowledge transfer and innovation in agriculture and rural areas are also becoming increasingly important. The aforementioned goals are embedded in the CAP's strategic objectives for 2023–2027 [European Commission 2021, 2023], but most of them have also been present in the European Union's Common Agricultural Policy since its establishment in 1962, and in particular since its reform in 1992 [Winters 1990, Kułyk 2013, Severini et al. 2019, Czyżewski et al. 2022].

Achieving the above-mentioned goals requires the long-term commitment of significant public capital resources, which in the case of EU member states is made possible by involving not only national budgetary resources, but also funds from the EU budget under CAP instruments. However, this linking of the budget policy towards agriculture with the Common Agricultural Policy, in terms of objectives and financial resources, does not change the fact that budget expenditure directed to agriculture and rural development is part of the state's overall fiscal policy. Their level, dynamics, and structure should, therefore, be analyzed in close connection with the state of public finances and the character of the state's fiscal policy [Kulawik 2009].

PURPOSE AND METHODS OF THE STUDY

The purpose of the study is to assess the shape of fiscal policy towards agriculture through the prism of Poland's agricultural budget expenditure in 2004–2022. In this context, the following were analyzed: the size and real dynamics of agricultural budget expenditure in relation to state budget expenditure. An answer was sought to the question of whether the nature of the budget policy towards agriculture (an option) is consistent with the state fiscal policy options, with attention focused on changes in the above-mentioned policies during the period under study.

The fiscal (budget) policy towards agriculture was evaluated in the following aspects:

- its character (options), in terms of active versus passive policies;
- the relationship of the fiscal policy options toward agriculture to the direction (options) of the state's overall fiscal policy, analyzed by the dynamics of state budget expenditure.

The research opens with the year 2004, i.e., Poland's accession to the EU and the inclusion of agriculture in CAP instruments, which significantly changed the level and structure of budget expenditure (from EU and domestic funds) directed to agriculture. The research period closes with the year 2022. The relatively long period of analysis (covering 19 years) allows us to see trends in the formation of the level and structure of agricultural budget expenditure and state budget expenditure, as well as to determine their mutual relations.

The source of empirical material on Poland's agricultural budget expenditure was data from the Ministry of Agriculture and Rural Development (MARD) in the form of annual information on the draft state budget and the budget of European funds for agriculture, rural development, and agricultural markets. This information was the basis of reports (opinions) by A. Czyzewski on the budget law in the section concerning agriculture, rural development, and agricultural markets (...) prepared in 1998-2023, published by the Office of Parliamentary Analyses and the Chancellery of the Senate of the Republic of Poland (until 2016) and the Polish periodical "Village of Tomorrow". In addition, the sources of materials were the CSO's (Statistics Poland) macroeconomic data on GDP and inflation, statistical yearbooks on agriculture, and Ministry of Finance data on the implementation of the state budget.

The quantities covered by the study were recorded in nominal values (at current prices) and real values (at constant prices). The Consumer Price Index (CPI) was used as a deflator.

THE LEVEL AND STRUCTURE OF EXPENDITURE IN THE AGRICULTURAL BUDGETS OF POLAND DURING THE PERIOD OF MEMBERSHIP IN THE EUROPEAN UNION

Poland's nominal agricultural budget expenditure (including domestic and European funds) noted a dynamic growth from PLN 26.7 billion to PLN 57.2 billion in the first years of Poland's EU membership (2004–2008). In the later post-accession years, the amount of this expenditure was at the level of about PLN 50.5 billion (2009–2021 average); however, with quite significant annual fluctuations downward (2011, 2017–2019) or upward from this amount (2013–2016). It was not until 2022 that there was a significant increase in these expenses to PLN 60.6 billion (Fig. 1). Expenditure of the agricultural budget, but excluding subsidies to the Agricultural Social Insurance Fund (ASIF), showed a similar trend to those of the total agricultural budget (Fig. 1). A significant part of these expenditures was accounted for by European Union funds, whose share in the total agricultural budget increased from 20% in 2004 to 51.3% in 2011 (Fig. 1). In 2012–2016, the EU's contribution to Poland's agricultural budget ranged from 44.8% to 51.7%, after which it successively decreased to around 40–43% in subsequent years (Fig. 1).

The share of subsidies to the ASIF in the total agricultural budget averaged 35.5%, but showed a declining trend in the first decade of EU membership (from 58.4% in 2004 to 30.1% in 2014), after which it increased again, reaching an average level of 36.4% in 2017–2022. The above data shows that the share of the national budget, excluding subsidies to the ASIF in public expenditure on agriculture, is relatively low. Over the entire period under review, it amounted to 24.8%, while in recent years (2016–2022), it amounted to about one-fifth of agricultural budget expenditure. Only in 2007–2010 did this share exceed 1/3 of total agricultural budget expenditure (it was 34.7–56.3%). On the other hand, it was particularly low in 2011 and in 2015–2016, when it was only about 1/6 of Poland's agricultural budget expenditure.

Assessment of the shape of fiscal (budget) policy towards agriculture is not possible in isolation from the direction and nature of changes in the fiscal policy of the

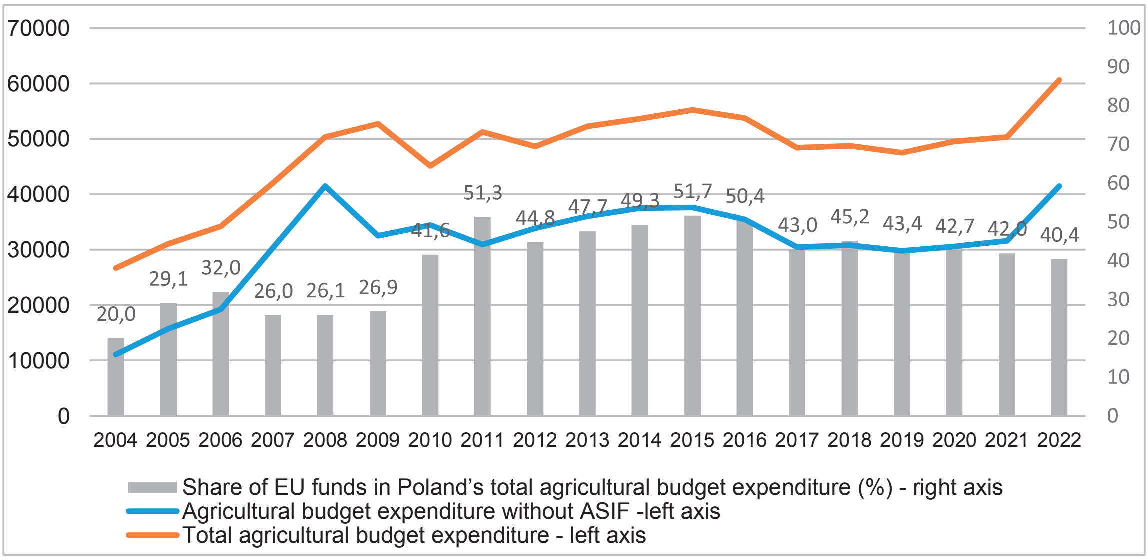

Fig. 1. Nominal expenditure of Poland's agricultural budget in total and without subsidies to the Agricultural Social Insurance Fund (in million PLN) and the share of European Union funds in total agricultural budget expenditure in 2004–2022 (in %)

Source: own compilation based on the data of the Ministry of Agriculture and Rural Development on projects and implementation of the state budget and the budget of European funds for agriculture, rural development, and agricultural markets from 2004–2022.

state in general. The instrument for the implementation of fiscal policy is the state budget. The dynamics of total agricultural budget expenditure in real terms against the dynamics of state budget expenditure, as well as the share of agricultural expenditure (domestic including EU funds) in total state budget expenditure, indicates the importance of the agricultural sector in fiscal policy.

If we look at the ratio of the total agricultural budget to state budget expenditure, we can see that in 2004–2008, it showed an upward trend from 13.5 to 20.6%, after which it fell to an average of about 16.5% in 2009–2015. In 2016–2021, the ratio showed a steady, strong downward trend, reaching only 9.7% in 2021 (Fig. 2). This trend was stopped only in 2022 (Fig. 2), which was due to a surge in agricultural expenditure, including planned expenditure on the Agricultural Guarantee Fund in the amount of PLN 3 billion, from which guarantees to agricultural loans can be provided. At the same time, as a result of the armed conflict in Ukraine and the drastic increase in energy prices, farmers in Poland were subjected to additional public expenditure support for the purchase of mineral fertilizers. The cost of this state intervention in 2022 was PLN 2.61 billion. The general downward trend in the share of public expenditure on agriculture in state budget expenditure, observed (except for some fluctuations, e.g., in 2014) since 2009, indicates the "depreciation" of agriculture in state fiscal policy. This is also evidenced by the shrinking share of the state budget for agriculture (excluding subsidies to the Agricultural Social Insurance Fund – ASIF) in the structure of state budget expenditure (Fig. 2), which, after a strong increase in 2004–2008 (from 2.9 to 9.54%), was subject to a steady downward trend to a level of only 1.84% in 2020, to reach 3.13% in 2022.

The real growth rate of agricultural budget expenditure was very high in 2004–2008, also far exceeding the positive growth rate of state budget expenditure (Fig. 3). This means that in 2004–2008, the benefits to agriculture from the inclusion of the sector in CAP instruments exceeded the economy-wide benefits the country received from EU membership. In later years, the situation for agriculture was no longer so favorable. Undoubtedly, the sector received above-average – relative to other sectors – benefits from Poland's membership in the EU. Nevertheless, in subsequent years, the rate of growth of total agricultural budget expenditure (including WBE funds)

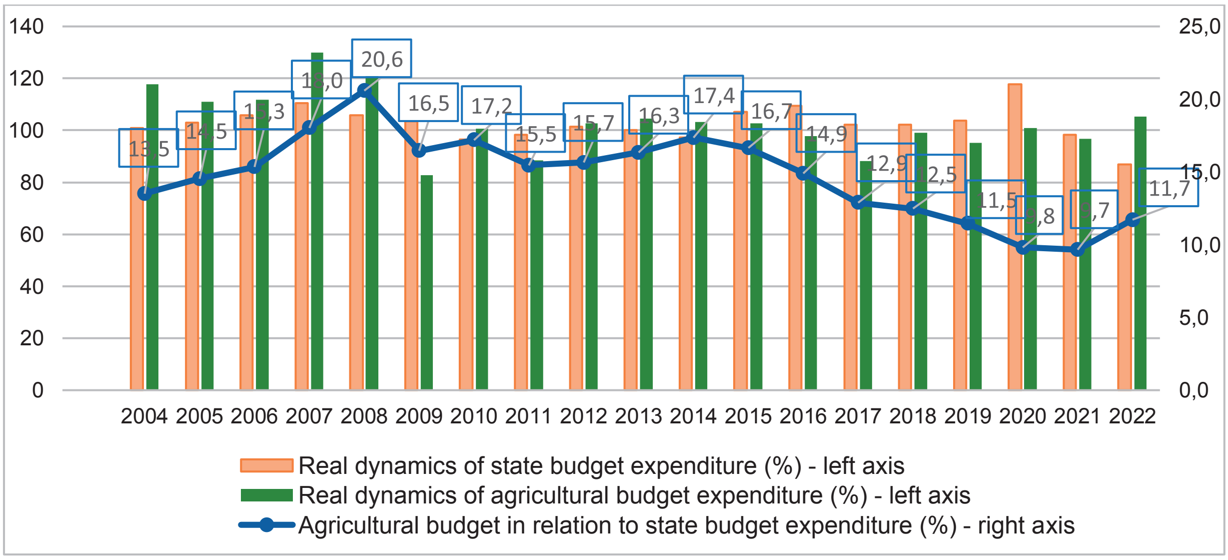

Fig. 2. Total agricultural budget expenditure and agricultural budget expenditure without subsidies to the Agricultural Social Insurance Fund in relation to state budget expenditure in 2004–2022 (%)

Source: as Fig. 1.

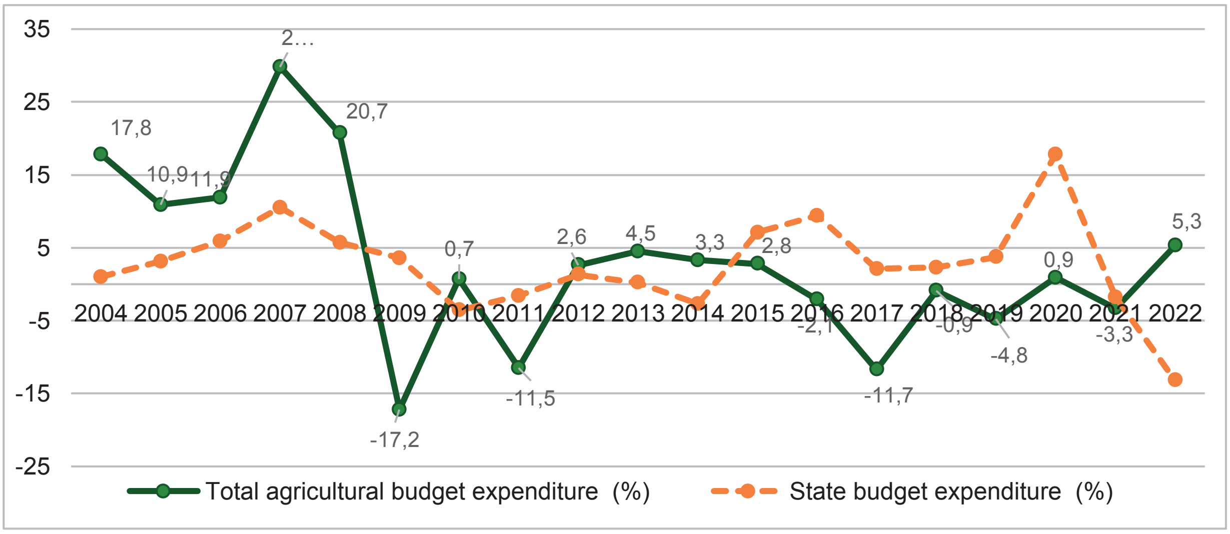

Fig. 3. Real rate of change (year-on-year) of total agricultural budget expenditure and state budget expenditure from 2004 to 2022 (%)
Source: as Fig. 1.

only in 2010, 2012–2014, and 2022 was higher than the rate of change in state budget expenditure (Fig. 3).

The high positive dynamics of the total agricultural budget in 2004–2008 was the result of a jump – compared to 2003 – in budget expenditures on agriculture as a result of the inclusion of agriculture in the support of EU Common Agricultural Policy funds. Certain activities under Pillar I of the CAP were already launched in 2004, while others under Pillar II of the CAP were successively introduced. As a result, agricultural expenditures constituting the national contribution to the various agricultural support instruments were also increasing, among others, to direct payments. This resulted in a high nominal and real growth rate of total agricultural budget expenditures year-on-year (Fig. 3). In subsequent years, the real growth rate of agricultural budget expenditures showed considerable volatility (Fig. 3), the reasons for which mainly had two sources, namely:

- resulted from changes in national budget expenditures, in particular, not including subsidies to the Agricultural Social Insurance Fund. As shown earlier, the share of these expenditures in total agricultural budget expenditures showed significant volatility in 2009–2022, while their nominal amount varied in this period from PLN 8.4 billion (2016) to PLN 19.3 billion (2009);
- the occurrence of transition periods between EU financial perspectives, when activities and expenditures under the second pillar of the CAP (included in the RDP) from an earlier period ended, and activities and funds under the next RDP have not yet been launched. Such a situation concerned, among others, expenditures financed with EU funds in 2009 and 2017.

BUDGETARY POLICY OPTIONS FOR AGRICULTURE IN THE CONTEXT OF STATE FISCAL POLICY FROM 2004 TO 2022

In the context of the real dynamics of agricultural budget expenditure and state budget expenditure in 2004–2022, the question arises as to whether fiscal policy toward agriculture was consistent with the overall direction of state fiscal policy or whether there were periods when it showed its dissimilarity.

The alternation of fiscal policy options is due to the existence of the business cycle and its impact on this policy in various aspects (among others: counter-cyclical policy, political business cycle). The most common distinction in the literature is between two opposing fiscal policy options:

- expansionary policy – involving an increase in government expenditure or a decrease in the level of taxation (in relation to the previous year), while accepting a higher budget deficit, usually related to GDP;
- restrictive policy – which involves reducing public expenditure in relation to the previous year (or limiting their growth to a certain threshold, e.g., 1%) or increasing the tax burden, leading to a balanced budget, or reducing the budget deficit to a certain low level (e.g., below 3% of GDP) [Czyzewski and Kułyk 2007, Kulawik 2009, Wieliczko, 2011].

The division of fiscal policy options into expansionary and restrictive largely relates to its role in easing the business cycle and derives from its broader division into active fiscal policy and passive fiscal policy, determined by the fiscal arrangements implemented [Ciborowski 2003]. For the sake of argument, it should be added that fiscal policy can also be neutral, i.e., maintaining the deficit at a more or less equal but low level. Even more favorable, e.g., from the point of view of low inflation, is the situation when a budget surplus manages to be generated on a sustainable basis [Kulawik 2009].

For the purposes of this study, the fiscal policy options in Poland were divided into expansionary and restrictive, with the classification criterion being:

- as a primary criterion – the real rate of change in budget expenditure year-on-year, with the assumption that an increase in expenditure above 1% means the expansionary option (E), while a decrease in expenditure or their increase below 1% means the restrictive option (R);
- as a complementary criterion – the budget deficit in terms of the budget fiscal gap, i.e., the ratio of the amount of the deficit to the amount of budget expenditure (in %). It was assumed that if a small real increase in budget expenditure between 1 and 2% is accompanied by a decrease in the fiscal gap, it means the restrictive option (the case of 2012, see Table 1).

As a result of applying the aforementioned criteria, it was found that fiscal policy in Poland was characterized by volatility and cyclicality, which were largely dependent on the macroeconomic situation (GDP dynamics) and the political cycle. The first phase of expansionary fiscal policy took place in 2004–2009. At that time, fiscal expansion was associated with a good economic situation in the first years of Poland's membership in the EU (2004–2007). At that time, the average economic growth rate was 5.4%. In contrast, GDP dynamics slowed down in 2008–2009 as a result of the global financial crisis, but in an effort to mitigate the effects of the crisis, the government maintained the fiscal easing option, as state budget expenditure still showed a positive real growth rate, respectively: 5.7% and 3.6% year-on-year. The years 2010–2014, on the other hand, were a phase of restrictive fiscal policy (Table 1). During this period, state budget expenditure declined in real terms (2010–2011 and 2014), or their growth rate was low, and the fiscal gap was tightened. In addition, starting in 2011, the tax burden was increased by raising the standard VAT rate from 22 to 23%. GDP dynamics in 2010–2014 was lower than in previous years, reaching an average growth rate of 2.9%. In 2015–2020, state fiscal policy was again expansionary. State budget expenditure grew in real terms during this period from 2.1% (2017) to as much as 17.8% in the pandemic year of 2020.

The average year-on-year growth rate of budget expenditure was 6.9%. Rising fiscal expenditure in 2016–2019 was linked to good economic conditions, as the average GDP growth rate in this period reached 4.6%. On the other hand, the high dynamics of fiscal expenditure in 2020 was the authorities' response to the crisis caused by the COVID-19 pandemic. In turn, the years 2021–2022 can be considered a return to the option of fiscal tightening, despite the good economic situation (economic growth: 6.9 and 5.1%, respectively). However, the assessment of fiscal policy during this period, and especially in 2022, is difficult due to the impact of high inflation on real budget revenues and expenditure and the government's shifting of some public expenditure off-budget to the Bank Gospodarstwa Krajowego and the Polish Development Fund.

To determine whether agricultural budget expenditures were linked – followed, as it were – to changes in

Table 1. State fiscal policy options and budget policy towards agriculture in terms of real dynamics (year-on-year) of Poland's agricultural budget expenditure (national and EU funds) and state budget expenditure from 2004 to 2022

Year	Real dynamics of the agricultural budget expenditure: total (ABE) (y/y in %)	Real dynamics of the agricultural budget expenditure: national (excluding subsidies for ASIF) (y/y in %):	Real dynamics of state budget expenditure (SBE) (y/y in %)	Difference in real dynamics of ABE and SBE (%)	Relation of the state budget deficit to GDP (%)	Fiscal gap in the state budget (%)	Policy option: of the state's fiscal budget (E/R)*	Policy option: of the budget towards agriculture (A/P)**
2004	117.8	88.4	101.0	16.8	–3.97	–18.7	E	A
2005	**110.9**	**117.6**	103.1	7.8	–4.18	–19.9	E	A
2006	111.9	118.8	105.9	5.9	–2.65	–12.7	E	A
2007	**129.8**	**218.3**	110.5	19.3	–2.11	–9.9	E	A
2008	120.7	137.5	105.7	15.0	–1.24	–5.7	E	A
2009	82.8	70.3	103.6	–20.8	–1.77	–8.2	E	P
2010	100.7	67.7	96.4	4.3	–1.65	–8.1	R	P
2011	**88.5**	**90.6**	98.4	–9.9	–2.85	–14.7	R	P
2012	102.6	88.1	101.3	1.3	–1.55	–7.9	R	A
2013	104.5	94.1	100.2	4.4	–1.85	–9.5	R	A
2014	103.3	98.5	97.3	6.0	–2.47	–13.5	R	A
2015	**102.8**	**85.1**	107.1	–4.3	–1.61	–8.7	E	A
2016	97.9	92.7	109.4	–11.5	–2.29	–11.8	E	P
2017	88.3	113.0	102.1	–13.8	–2.32	–12.3	E	P
2018	99.1	89.4	102.3	–3.2	–1.20	–6.5	E	P
2019	**95.2**	**102.0**	103.7	–8.5	–0.45	–2.5	E	P
2020	100.9	98.1	117.8	–16.9	–0.59	–2.7	E	P
2021	96.7	111.3	98.2	–1.6	–3.23	–16.3	R	P
2022	105.3	129.7	86.8	18.5	–0.86	–5.1	R	A

Note: years in bold font are years in which parliamentary elections were held; *E – expansive; R – restrictive, **A – active; P – passive.

Source: as Fig. 1 and [Statistics Poland macroeconomic data].

the state's fiscal policy options, an attempt was made to determine the nature of public expenditure support for agriculture that took place between 2004 and 2022. To this end, fiscal (budget) policy toward agriculture was also framed in two options. It was assumed that:
- active policy (A) occurs when real agricultural expenditure increases by at least 1% compared to the previous year;
- passive policy (P) occurs when real agricultural budget expenditure shows a year-on-year decrease or increase at a low level, i.e., less than 1%.

The proposed division into active versus passive fiscal policy towards agriculture is not based on an analysis of the fiscal (intervention) solutions that were applied to the agricultural sector, but on an analysis of the volume of funds that were transferred to the sector. Such an assumption is justified insofar as the catalog of fiscal instruments applied to agriculture was relatively stable during the period under review, not least because it was part of the CAP. In principle, therefore, the tools of intervention did not change, while the amount of funds that were directed under the various tools to support the agricultural sector changed significantly. As a result, the structure of budget expenditure was also evolving, determining the structure (hierarchy) of the objectives of fiscal policy towards agriculture. The determination of fiscal policy options towards agriculture, like fiscal policy options in general, is therefore determined mainly by the direction of the year-on-year change in budget expenditure, also taking into account the level of this change. Active budget policy towards agriculture was characterized by a real increase in agricultural expenditure by at least 1% compared to the previous year. If the agricultural budget expenditure actually decreased or achieved a slight increase, i.e., below 1% year to year, then the budget policy towards agriculture took on a passive nature.

During the period under review, active fiscal policy toward agriculture took place in 2004–2008, then in 2012–2015, and in 2022. It can be seen that policy toward agriculture, like fiscal policy as a whole, was cyclical in nature. The phase of active policy towards agriculture was followed by periods when budget expenditure directed to the sector showed a tendency, if not to a nominal, then to a real decline. This was particularly true for the years 2009–2011 and 2016––2021 (Table 1). In general, during the period studied, 10 years of active fiscal policy towards agriculture and 9 years of passive policy can be distinguished.

As shown in Table 1, the relationship between state fiscal policy and fiscal policy toward agriculture could have taken one of four variants during the period studied, viz:

- expansionary fiscal policy – active budget policy in agriculture (E/A);
- expansionary fiscal policy – passive budget policy in agriculture (E/P);
- restrictive fiscal policy – active budget policy in agriculture (R/A);
- restrictive fiscal policy – passive budget policy in agriculture (R/P).

The convergence of expansionary fiscal policy with active budget policy toward agriculture occurred only in 2004–2008 and in 2015 (Table 1). In contrast, restrictive fiscal policy was accompanied by passive budget policy toward agriculture only in 201–02011 and in 2021 (Table 1). In the remaining years, it was possible to observe the co-occurrence of different options in the state's fiscal policy in general and in its sectoral edition aimed at agriculture. Active fiscal policy toward agriculture, in the presence of restrictive fiscal policy, took place only in 2012–2014 and in 2022. In contrast, particularly unfavorable for agriculture, in light of the dominant trend of state fiscal policy, were the years 2016–2021, when expansionary fiscal policy was accompanied by passive fiscal policy toward agriculture.

Based on the observation of the entire period under study, i.e., 2004–2022, it can be concluded that, except for the period of 4 years immediately following Poland's accession to the EU, in the remaining years, the system of public expenditure support for agriculture was not directly influenced by the budget situation and, in particular, by fiscal policy options. In general, agriculture was losing ground in fiscal policy. If we can consider farmers as "winners" in the post-accession period, it is because significantly more funds went to the sector through CAP instruments than in the pre-accession period. Had it not been for the European funds and the associated mandatory national contribution, then the further depreciation of agriculture within the framework of state fiscal policy would probably have continued.

The subject of our analysis was also an attempt to answer the question of whether budget expenditure on agriculture in Poland, both in total and from the national budget, was somehow linked to the electoral (political) cycle. According to political cycle theory, those in power are guided by opportunistic considerations and seek to maintain power through, among other things, the use of available fiscal policy instruments [Nordhaus 1975]. Such behavior of government within the political business cycle depends, according to Alesina [1987], on the polarization of the political scene, which is also observed in Poland during the period under study. Farmers are a relatively large and influential social group whose electoral votes the rulers want to win and keep. Farmers' support is especially valuable before elections. Therefore, according to the logic of the theory, in election years, budget expenditure on agriculture should be relatively higher than in previous years. In Poland, during the period under analysis, parliamentary elections took place in 2005, 2007, 2011, 2015, and 2019. An analysis of the real dynamics of total agricultural budget expenditure and national agricultural expenditure in Poland (Table 1) shows that the theory cannot be fully confirmed, but neither can it be rejected. Total agricultural budget expenditure, as well as national expenditure directed to agriculture, showed high real growth in 2005 and 2007, but this growth was largely "dragged" by the dynamically growing expenditure under CAP instruments. In 2011, there was a real decline in budget expenditure on agriculture both in total and in domestic expenditure (excluding subsidies to the ASIF). In the following election year, 2015, an increase in total agricultural budget expenditure could be observed, with a decrease in domestic agricultural expenditure (Table 1). The opposite relationship took place in 2019 when a decrease in the total agricultural budget was accompanied by an increase in expenditure from the national budget (Table 1). The data presented leads to a cautious conclusion that the political cycle should be considered as one of the factors influencing the budget policy option toward agriculture. It should also be added that if policymakers are to succeed in directing public expenditures, they must clarify management structures so that program managers have the right incentives to control costs and maximize program efficiency [Burns and Goglio 2004]. Other factors besides the political cycle are also important. Various factors, such as the heterogeneity of agricultural systems, different policy objectives, and the expenditure management capacity of regional administrations, affect the use of public resources, thus determining different allocations and uses [Briamonte et al. 2023].

CONCLUSIONS

The level of support for agriculture in Poland from public funds in 2004–2022 was not directly dependent on the state budget situation. In part, this was due to the decoupling of the volume of expenditure on the agricultural sector from national budgets and the financing of agricultural policy from the EU budget. The ratio of total agricultural budget expenditure to state budget expenditure, as well as the structure of the agricultural budget, i.e., the ratio of national expenditure to expenditure financed by European funds, indicated the importance of agriculture in Poland's fiscal policy. It was found that after the increase in the importance of agriculture in the fiscal policy in the first years of EU membership (2004–2008), in subsequent years, the rank of agriculture in the state fiscal policy successively decreased, and the importance of EU funds in the implementation of the objectives of fiscal policy towards agriculture increased. In 2012–2016, almost half of the funds directed to agriculture, rural development, and agricultural markets (included together with the subsidy to the ASIF) came from the budget of European funds. In 2017–2022, the contribution of EU funds to the expenditure of the agricultural budget slightly decreased, but was still very significant, i.e., between 40 and 43%. The volume of EU funds allocated within the framework of CAP instruments was, therefore, of key importance for the shape and dynamics of Poland's agricultural budget in 2004–2022.

From 2004 to 2022, there were changes in the state's fiscal policy options and budget policy options toward agriculture. In 2004–2008 and 2015, expansionary fiscal policy was accompanied by an active budget policy towards agriculture. In contrast, for several years of the period under study (2009, 2015–2020), despite the expansionary state fiscal policy, budget expenditure on agriculture showed a regression. The regression of this expenditure also occurred in 2010–2011 and in 2021, in the presence of restrictive fiscal policy. The often-observed dissimilarity of state fiscal policy options and agricultural budget expenditure indicates that fiscal policy toward agriculture is characterized by a kind of distinctiveness and independence, which are due to the heavy dependence of agricultural budget expenditure on the Common Agricultural Policy funds. Undoubtedly, the financial instruments and resources of the CAP stabilize the expenditure of the agricultural budget. An even more stable element of the agricultural budget is the expenditure to support the social insurance system in agriculture (ASIF). However, the rest of the agricultural budget is highly variable and dependent on, among other things, the will of economic policymakers, as well as the need to mitigate the effects of natural disasters in agriculture or price and supply shocks in the agricultural market.

The realization of agricultural policy goals relating to ensuring decent incomes for farmers, increasing the competitiveness of farms, and the sector's resilience to various types of crises, as well as the sector's ability to reproduce, extend, and absorb technological advances, requires an active fiscal policy towards agriculture. Also of increasing importance are the agricultural policy goals of protecting the natural environment and biodiversity, combating climate change, and protecting food quality and health. Without public expenditure support, these goals will not be fully realized, not least because they are largely in competition with strictly economic goals. In this light, budget expenditure on agriculture should not decline in real terms. In addition to the size of budget funds directed to agriculture and rural development, it is also important to properly address them so as to support the sustainable development of agriculture and rural areas effectively. At present, it seems particularly important in terms of budget policy towards agriculture to support the sector's innovation and adaptation processes to climate and energy, as well as environmental and social challenges. In view of the many negative environmental, macroeconomic, and geopolitical phenomena and processes, there is also a need for active state intervention aimed at stabilizing the income of food producers. These challenges should be addressed in the drafts of the next agricultural budget.

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RELACJE POMIĘDZY POLITYKĄ BUDŻETOWĄ WOBEC ROLNICTWA A POLITYKĄ FISKALNĄ W POLSCE PO AKCESJI DO UNII EUROPEJSKIEJ (2004–2022)

STRESZCZENIE

Cel: W artykule dokonano oceny polityki budżetowej wobec rolnictwa w Polsce przez pryzmat wydatków budżetowych na rolnictwo w warunkach członkostwa Polski w Unii Europejskiej (UE). Analizie poddano wielkość i realną dynamikę wydatków budżetowych na rolnictwo w relacji do wydatków budżetu państwa. Poszukiwano odpowiedzi na pytanie, czy aktywny lub pasywny charakter polityki budżetowej wobec rolnictwa jest spójny z wariantem polityki fiskalnej państwa (ekspansywnym lub restrykcyjnym). **Metody:** Stosunkowo długi okres analizy (obejmujący 19 lat, 2004–2022 rok) pozwala zaobserwować tendencje w kształtowaniu się poziomu i struktury wydatków budżetowych na rolnictwo oraz wydatków budżetu państwa, a także określić ich wzajemne relacje. Wykorzystano proste metody statystyczne – analizę struktury i analizę dynamiki. **Wyniki:** Wykazano, że polityka budżetowa wobec rolnictwa charakteryzuje się swoistą odmiennością i niezależnością od polityki fiskalnej państwa, co wynika przede wszystkim z dużego znaczenia środków Wspólnej Polityki Rolnej dla poziomu i struktury wydatków budżetu rolnego. **Wnioski:** Stwierdzono, że poziom wsparcia rolnictwa w Polsce ze środków publicznych (krajowych i unijnych) w latach 2004–2022 nie był bezpośrednio uzależniony od sytuacji budżetu państwa. W okresie tym następowały liczne zmiany w opcjach polityki fiskalnej państwa oraz zmiany w opcjach polityki budżetowej wobec rolnictwa, przy czym dość często zmiany te szły w różnych kierunkach.

Słowa kluczowe: wydatki budżetu rolnego, budżet państwa, polityka fiskalna, WPR

Acta Sci. Pol.
Oeconomia 22 (4) 2023, 55–68
acta_oeconomia.sggw.pl ISSN 1644-0757 eISSN 2450-047X DOI: 10.22630/ASPE.2023.22.4.25

ORIGINAL PAPER

Received: 07.10.2023
Accepted: 27.12.2023

ENTREPRENEURSHIP AND SMALL BUSINESS PERFORMANCE DURING COVID-19: THE MEDIATING EFFECT OF DYNAMIC CAPABILITIES

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ABSTRACT

Aim: The aim of the study is to explore the role of dynamic capabilities as a factor mediating the impact of owner-manager entrepreneurial characteristics on small business performance during the COVID-19 pandemic. Based on the literature review, 3 hypotheses were formulated, and a research model was built. **Methods:** To achieve the aim of the study, survey research was conducted on a random sample of 564 micro-, small-, and medium-sized enterprises from Poland and the Czech Republic. **Results:** The results indicate that the entrepreneurial characteristics of owner-managers have a significant and positive impact on small business performance during the COVID-19 pandemic. This impact is also mediated by the development of dynamic capabilities of the surveyed SMEs. Within these characteristics, strategic thinking expressed in a coherent vision of business development and a strong motivation to achieve business success played a special role. Also important was courage and effectiveness in dealing with challenges and unforeseen market situations, as well as open-mindedness and creativity in developing and implementing new projects and ways of doing things. The results also provide in-depth insights for understanding the formation of a resource-based approach in small businesses. It significantly determines the strategic success, internationalization, and innovation of this category of businesses in dynamic and uncertain business environments. **Conclusions:** The conclusions from this study enrich the theory of entrepreneurship by explaining the complex role of entrepreneurs in small business resilience under crisis situations. They also provide important conclusions for understanding the development of the resource approach of SME sector companies in dynamic and uncertain business environments, as well as for the development of prospective entrepreneurial education programs.

Keywords: entrepreneurship, small business, entrepreneurial competences, business performance, COVID-19, dynamic capabilities

JEL codes: L10, L25, L26, M10

INTRODUCTION

Small business companies (micro, small, and medium-sized enterprises – SMEs) are the most numerous category of entities of the modern market economy, distinguished on the basis of certain criteria [Berisha and Pula 2015]. The qualitative specificity of a small business is expressed in the leading role of the entrepreneur (owner-manager) in the organizational system and market success of the company [Cromie

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1994, Sudjiman and Sudjiman 2016]. However, this role is not sufficiently studied in crisis situations, as exemplified by the COVID-19 pandemic. This, therefore, represents a research gap that justifies addressing the impact of entrepreneurship on small business performance in this context.

The COVID-19 pandemic has become a significant challenge for small businesses (micro, small, and medium-sized enterprises – SMEs) around the world [Belitski et al. 2022]. It has identified the vital importance of dynamic capabilities for a firm's resilience and crisis response. These capabilities also play an important role in SME sector companies [Woldesenbet et al. 2012, Beltran and Ramesh 2017], and their implementation depends on the commitment and self-efficacy of owner-managers [Kevill et al. 2017].

Taking this into account, an exploration of the role of dynamic capabilities as a mediating factor in the impact of owner-manager entrepreneurial characteristics on small business performance during the COVID-19 pandemic was set as the goal of the article. Based on the literature review, 3 hypotheses were formulated, and a research model was built. The realization of the purpose of the study was devoted to survey research conducted on a random sample of 564 SME sector companies from Poland and the Czech Republic.

THEORETICAL FRAMEWORK AND RESEARCH MODEL

The theory of qualitative specificity of SMEs clearly indicates the leading role of the entrepreneur (owner-manager) in the company's organizational system. In this situation, the emergence, functioning, and development of a small business is directly determined by the entrepreneurship of the owner-manager, understood as the pursuit of opportunity without regard to resources currently controlled [Stevenson and Jarillo 1990] in order to create something new of value while taking into account a certain level of risk and with an orientation towards financial gain, personal satisfaction, and independence [Hisrich et al. 2017]. In practice, this entrepreneurship is operationalized in the form of certain characteristics: personality traits, intentions, competencies, and entrepreneurial behaviors that directly significantly influence small business market success [Strielkowski 2012, Runst and Thomä 2022]. These characteristics are based on the personal traits of the entrepreneur, but are further developed in the processes of education, experience, cultural interaction, and socialization, among others. They significantly shape the actions taken in the entrepreneurial process [Gieure et al. 2020], as well as enable the role of entrepreneurial leadership in the development processes of SME companies [Hejazi et al. 2012]. There is no single, detailed list of these characteristics, but based on the results of many studies, key ones include [Odia and Odia 2013, Thoyib et al. 2016, Ng and Kee 2018, Huarng and Yu 2021]:

- a strategic approach to business development based on vision and seizing opportunities,
- transformational leadership directed at inspiring colleagues to action,
- courage and effectiveness in dealing with problems and unforeseen situations,
- flexibility and creativity in developing and implementing new projects and ways of doing things,
- the ability to inspire confidence and convince partners of your ideas,
- strong motivation to succeed in business,
- an attitude to building long-term partnerships with the environment.

Owner-manager entrepreneurship is a key component of a company's market identity. The results of numerous studies indicate that it significantly and positively influences small business performance [Oghuvwu and Okuwhere 2018, Ahmad and Ahmad 2021, Akande et al. 2021, Sarwoko and Nurfarida 2021]. Business performance here expresses a company's ability to achieve its goals and build a competitive advantage in terms of profitability, sales growth, and execution of core strategic objectives [Hult et al. 2004]. Due to the complexity of this construct, it is generally analyzed along financial dimensions, including, for example, a company's revenue, liquidity, or return on investment, as well as qualitative dimensions, including, for example, product/service quality, innovation, customer loyalty, or a company's responsible community [Aragón-Sánchez and Sánchez-Marín 2005, Abbas et al. 2019].

The impact of entrepreneurial characteristics on small business performance should also be evident under crisis conditions, where entrepreneurship is recommended as an important factor in adapting to new conditions and responding to environmental uncertainty [Giones et al. 2020, Ratten 2021]. This, therefore, leads to the formulation of the hypothesis:

H_1: Entrepreneurial characteristics of owner-managers significantly and positively impact small business performance during COVID-19.

The COVID-19 pandemic as an emergency and black swan event [Phillips et al. 2023] has become a significant challenge for businesses, leading to significant disruptions in businesses, mass layoffs, and closures. These threats particularly affected small businesses, supply chains, and specific industries, such as HoReCa, tourism, malls/supermarkets, manufacturing, marketing, and logistics [Liguori and Pittz 2020, Meahjohn and Persad 2020, García-Madurga et al. 2021, Sunarmin et al. 2021]. Under these conditions, proper management of corporate resources implemented in the resource-based view has become important, which has been particularly advocated for the limited resources of small businesses [Giunipero et al. 2022, Haan-Cao 2023].

One of the proposals embedded in this trend is the concept of dynamic capabilities, which implies the creation of competitive advantage as the foundation of business performance [Banerjee et al. 2018] through strengthening, combining, and reconfiguring the company's resources [Teece 2007] and the dynamic allocation of resources and skills in development ventures [Kor et al. 2007]. In general, three categories of dynamic capabilities can be distinguished, including [Teece 2014, Li and Liu 2014, Wohlgemuth et al. 2019]:

- sensing: detecting and interpreting stimuli, changes, and/or information from the company's environment,
- seizing: capturing and exploiting opportunities by mobilizing resources and making timely decisions to adapt to changes in the environment,
- reconfiguring: transforming the resource base through managerial and organizational decisions tailored to the purpose and nature of specific development challenges.

The specifics of this concept indicate that both external and internal factors contribute to its successful implementation [Ringov 2017]. For example, Nguyen, Pham, and Freeman [2023] show that dynamic capabilities are, among other things, positively shaped by human capital, within which creativity and the ability to develop new ideas play an important role. Among internal factors, entrepreneurial characteristics such as flexibility, collaboration, project capability, the ability to arouse enthusiasm for work among employees [Eriksson 2014], a focus on seizing opportunities in the business [Tondolo and Bitencourt 2014], strategic sensitivity, leadership, communication, and building trust within an organization also play an important role [Nyamrunda and Freeman 2021]. This, therefore, leads to the formulation of the hypothesis:

H_2: Entrepreneurial characteristics of owner-managers significantly and positively impact the development of dynamic capabilities in small businesses.

The results of previous studies confirm that dynamic capabilities significantly and positively affect business performance, including the financial performance of enterprises [Protogerou et al., 2012, Lin and Wu 2014, Karna et al., 2016]. However, these analyses were mostly conducted in the period before the COVID-19 pandemic. During that crisis, however, it was observed that dynamic capabilities could be effective in improving business resilience, agility, value creation, capture, facilitating production changeovers, and fostering innovation, particularly for small businesses [Batra 2020, Ai and Peng 2021, Dyduch et al. 2021, Clampit et al. 2022, Putritamara et al. 2023]. This, therefore, leads to the formulation of the research hypothesis:

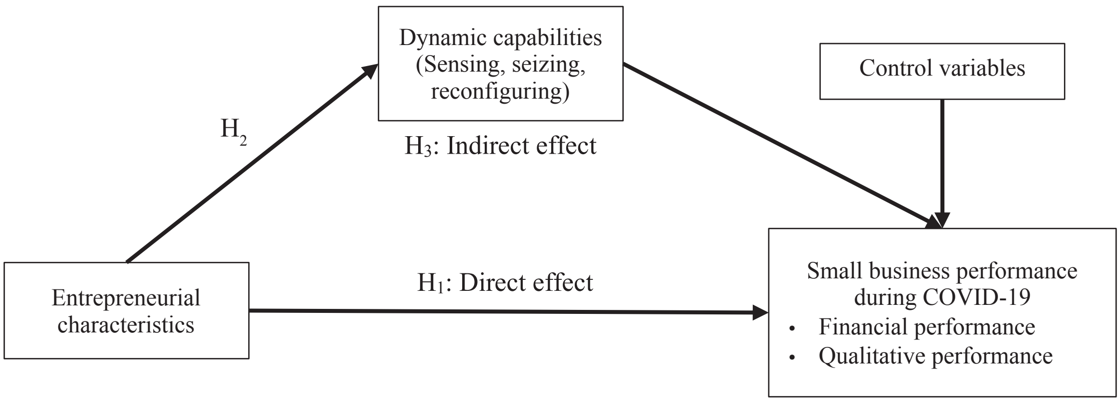

Fig. 1. Research model
Source: own work.

H_3: Dynamic capabilities mediate the effects of owner-manager entrepreneurial characteristics on small business performance during COVID-19.

The above research assumptions are presented in an integrated form as a research model (Fig. 1).

RESEARCH METHODS

The realization of the purpose of the paper and the verification of the research model was devoted to the empirical research conducted by the survey method on a random sample of 564 micro, small, and medium-sized enterprises from Poland and the Czech Republic. The geographical area of the research was chosen deliberately, taking into account the historical similarities in the development of political-economic systems [Holubec and Rae 2010, Baran 2013] and the sociocultural conditions of entrepreneurship and business in both countries [Bilan et al. 2019, Hamplová et al. 2021].

The Computerized Self-Administered Questionnaire [Callegaro et al. 2015] was used as a research technique, and the research tool was an electronic survey questionnaire made available to respondents in the www.questionpro.com system. The size of the surveyed enterprises was determined based on the respondents' declarations based on the criteria of the uniform formal definition of micro, small, and medium-sized enterprises formulated by the European Commission [2015]. The average annual level of FTE employment, level of turnover, and balance sheet total were taken into account. On this basis, 352 (62%) micro, 153 (27%) small, and 59 (11%) medium-sized enterprises were identified in the sample.

Most of the surveyed enterprises operate as limited liability companies (53%) or as private sole proprietorships run by individual owners (33%). These are enterprises operating primarily in the service sector (56%), less frequently in manufacturing (23%), or trade (21%). Most of the surveyed companies (75%) are active in a market of at least a national scope. The sample mainly included entities with a period of market activity of more than 20 years (52%), operating most often in traditional industries with elements of advanced technology (41%).

The 17% of companies were subject to severe restrictions on operations due to the COVID-19 pandemic, including, for example, closing premises or not being able to conduct business. For 48% of companies, the restrictions were partial and related to, for example, limiting the number of customers served or the length of time they could operate. In contrast, 35% of respondents said that the pandemic restrictions did not affect their entities and the companies were able to conduct the same business activity as before the crisis.

Respondents were primarily owners (65%), less frequently senior managers (27%), or employees authorized and empowered by management to par-

Table 1. Scales and descriptive statistics of the main research variables

Variable	Scale	Items	Source	αCr	Min-max	Descriptive interpretation "Higher value means…"	Mean	SD
Small business performance during COVID-19	interval	8	[Aragón-Sánchez and Sánchez-Marín, 2005, Abbas et al. 2019]	0.841	1–5	better small business performance during COVID-19	3.41	0.54
financial performance during COVID-19	interval	3		0.826	1–5	better financial performance during COVID-19	3.19	0.67
qualitative performance during COVID-19	interval	5		0.783	1–5	better qualitative performance during COVID-19	3.54	0.58
Entrepreneurial characteristics	interval	6	[Odia and Odia, 2013, Gieure et al. 2020]	0.865	1–5	more entrepreneurial nature of the main owner-manager	4.10	0.64
Dynamic capabilities	interval	9	[Wohlgemuth et al. 2019, Kump et al., 2019]	0.850	1–5	more developed dynamic capabilities of the company	3.76	0.57

Source: own work based on survey results.

ticipate in the survey (8%). Questions were answered mainly by men (76%), people between the ages of 40 and 60 (60%), with a university degree (76%), in a technical (40%) or economic/managerial field of study (32%).

VARIABLES AND MEASURES

A synthetic measures approach was used to analyze the main variables, where respondents rated the manifestations of each theoretical construct expressed in terms of specific items [Eisend and Kuss 2019]. Measurement

Table 2. Scales and descriptive statistics of the control variables

Variable	Scale	Min-max	Descriptive interpretation "Higher value means…"	Median	Mode
COVID-19 lockdown restrictions	ordinal	1–3	greater business restrictions due to COVID-19	2	2
Company size	ordinal	1–4	larger company size according to European Commission (2015) SMEs definition	1	1
Market range	ordinal	1–5	larger market range of the company	3	3
Company age	ordinal	1–5	higher age of the company	5	5
Technological advancement	ordinal	1–3	higher technological advancement of the company	2	2
Respondent's position	ordinal	1–3	higher position of the respondent in the company	3	3
Respondent's gender	nominal	1–2	1 – female; 2 – male	2	2
Respondent's age	ordinal	1–5	higher age of respondent	3	3
Respondent's education level	ordinal	1–3	higher level of respondent's education	2	2

Source: own work based on survey results.

Table 3. Control models

Variables		Regression models: 1a	1b	1c
Dependent variable		SB Performance during COVID-19	Financial performance during COVID-19	Qualitative performance during COVID-19
Control variables	COVID-19 lockdown restrictions	–0.10*	–0.15**	–0.05
	company size	0.11*	0.12*	0.09
	market range	0.06	0.05	0.05
	company age	0.02	0.04	0.00
	tech. adv.	0.04	–0.03	0.07
	res. position	0.08	0.03	0.10*
	res. gender	–0.05	0.00	–0.07
	res. age	–0.09	–0.10*	–0.06
	res. edu. level	0.06	0.07	0.05
Model statistics	observations	564	564	564.
	R^2	0.05	0.06	0.03
	R^2 corrected	0.03	0.04	0.02
	F-stat	2.93**	3.90**	2.07**

Note: Multiple linear regression analysis. Standardized coefficients presented. * significant at 0.05; ** significant at 0.01.

Source: own work based on survey results.

scales were developed based on previous literature sources. In the case of business performance, respondents rated the market performance of their company during the COVID-19 pandemic compared to their main competitors by financial and qualitative performance. Items of all variables were rated on an R. Likert scale ranging from 1–5. Cronbach's Alpha coefficient was used to measure internal consistency by taking its minimum acceptable value, $\alpha Cr > 0.7$ [Taber 2018]. Synthetic values were expressed as the arithmetic mean of the ratings of individual items. Scales and descriptive statistics of main research variables are presented in Table 1.

The model also includes control variables regarding the context of the research conducted, as well as the characteristics of the analyzed enterprises and respondents. The context was included by assessing lockdown restrictions for surveyed small business companies during the COVID-19 pandemic.

Most control variables were measured on the basis of *R*. Likert ordinal scales expressing the intensity of a given trait. A nominal scale was used only in the case of gender. Scales and descriptive statistics of the control variables are presented in Table 2.

RESEARCH RESULTS AND DISCUSSION

First, control models were evaluated, in which the effect of control variables on small business performance was analyzed (Table 3).

Although all the analyzed models were found to be significant, the impact of the control variables marginally (about 2–3%) explains the variation in small business performance (including financial and qualitative performance). The results further indicate a significant negative impact of COVID-19 pandemic restrictions on small business financial performance. This is consistent with the results of many previous studies. For example, Bartik et al. [2020] found that COVID-19 restrictions led to mass layoffs and closures due to the financial fragility of many small businesses. This was

Table 4. Impact of owner-manager entrepreneurial characteristics on small business performance

Variables:		**Regression models:**		
		2a	**2b**	**2c**
Dependent variable:		**SB Performance during COVID-19**	**Financial performance during COVID-19**	**Qualitative performance during COVID-19**
Independent variable:	Entrepreneurial characteristics	0.34**	0.21**	0.36**
Control variables:	COVID-19 lockdown restrictions	–0.12**	–0.15**	–0.07
	company size	0.08	0.09*	0.05
	market range	0.02	0.03	0.02
	company age	0.03	0.05	0.01
	tech. adv.	0.02	–0.04	0.05
	res. position	0.02	0.01	0.04
	res. gender	–0.01	0.03	–0.03
	res. age	–0.09*	–0.10*	–0.06
	res. edu. level	0.06	0.06	0.04
Model statistics:	observations	564	564	564
	R^2	0.16	0.10	0.16
	R^2 corrected	0.14	0.09	0.14
	F-stat	10.17**	6.34**	10.27**

Note: Multiple linear regression analysis. Standardized coefficients presented. * significant at 0.05; ** significant at 0.01.

Source: own work based on survey results.

further exacerbated by the limited risk management capacity of SMEs, making them even more vulnerable to the impact of COVID-19 lockdowns [Assrfa and Rao 2020]. H. Shen et al. [2020], found that the negative impact of COVID-19 on a firm's performance is more pronounced when a firm's investment scale or sales revenue is smaller. This, therefore, explains the significant impact of the size of the companies studied on financial performance during the COVID-19 pandemic.

This was followed by an analysis of the mediation of dynamic capabilities in the impact of owner-manager entrepreneurial characteristics on small business performance during COVID-19. This used Baron and Kenny's approach [Sidhu et al., 2021] involving 3 analytical steps:

- step 1: demonstrating that the predictor statistically significantly determines the level of the dependent variable (direct effect),
- step 2: demonstrating that the predictor statistically significantly determines the variability of the mediator,
- step 3: demonstrating that the mediator is a significant predictor of the dependent variable, with additional consideration of the influence of the independent variable of the model. At the same time, the previously significant effect of the independent variable of the model on the dependent variable should become insignificant, or its significance should be clearly reduced (indirect effect).

Thus, in the first step, the impact of the entrepreneurial characteristics of the owner-manager on small business performance was evaluated (Table 4).

The obtained results indicate that the entrepreneurial characteristics of the owner-managers of the surveyed enterprises have a significant and positive impact on the performance of small businesses during COVID-19, including their financial and qualitative dimensions. This, therefore, positively verifies hypothesis H_1. This also fits in with the results of previous studies. For example, D. Sari et al. [2023] found that such entrepreneurial skills as an opportunity-driven nature, proactiveness, building relationships with customers, risk-taking, and innovativeness have a significant effect on small business performance during COVID-19. In this period, moreover, characteristics related to organizational agility, e.g., flexibility and responsiveness [Wanasida et al. 2021] and entrepreneurial resilience, e.g., creativity, resourcefulness, and strategic thinking [Purnomo et al. 2021], had a significant effect on small business performance.

In the second step of the mediation analysis, the impact of owner-manager entrepreneurial characteristics on the development of the dynamic capabilities of the surveyed enterprises was assessed (Table 5).

Table 5. Impact of entrepreneurial characteristics of owner-managers on the development of dynamic capabilities

Variables		Regression model 3
Dependent variable		Dynamic capabilities
Independent variable:	Entrepreneurial characteristics	0.65**
Control variables:	COV-19 lockdown restrictions	–0.01
	company size	0.06
	market range	–0.02
	company age	–0.03
	tech. adv.	0.08*
	res. position	0.00
	res. gender	–0.03
	res. age	0.07
	res. edu. level	0.02
Model statistics:	observations	564
	R^2	0.45
	R^2 corrected	0.44
	F-stat	44.56**

Note: Multiple linear regression analysis. Standardized coefficients presented. * significant at 0.05; ** significant at 0.01.

Source: own work based on survey results.

The results indicate that the entrepreneurial characteristics of owner-managers have a significant and positive impact on the development of the dynamic capabilities of the studied enterprises. Therefore, this positively verifies hypothesis H_2. At the same time, the regression model under consideration explains about 44% of the variation in the development of dynamic capabilities, making the entrepreneurial characteristics of owner-managers one of the main determinants of the dependent variable. These results stand in line with previous analyses in which entrepreneurial skills play a crucial role in the development of dynamic capabilities. For example, Dias et al. [2020] demonstrated the essential role of entrepreneurship understood as activities leading to the recognition and the exploitation of opportunities in the marketplace in the development of dynamic capabilities as a complex set of capacities conjugated in sensing, seizing, and reconfiguring processes. Madsen [2012] further notes that the development of dynamic capabilities of a small business is fostered by dimensions of entrepreneurial orientation, such as risk-taking, creativity, innovativeness, proactiveness, and autonomy.

The results of previous studies also indicate the important role of dynamic capabilities in the innovation output of high-tech firms, improving their ability to sense external stimuli and develop innovation-related operational capabilities [Ellonen et al. 2011, Aniruddha and Mital 2016]. Thus, this explains the significant and positive impact of technological advancement on the development of the dynamic capabilities of the SMEs under study.

In the third step of mediation analysis, the impact of both owner-manager entrepreneurial characteristics (independent variable) and dynamic capabilities (mediator) on small business performance during the COVID-19 pandemic was evaluated (Table 6).

The results indicate a significant and positive impact of the development of dynamic capabilities of the studied companies on their business performance, with the impact being stronger for qualitative rather than financial performance during COVID-19. At the same time, the previously significant impact of entrepreneurial characteristics of owner-managers became

Table. 6. Impact of owner-manager entrepreneurial characteristics and dynamic capabilities on small business performance during COVID-19

Variables		**Regression models:**		
		2a	**2b**	**2c**
Dependent variable:		**SB Performance during COVID-19**	**Financial performance during COVID-19**	**Qualitative performance during COVID-19**
Independent variables:	entrepreneurial characteristics	0.02	–0.04	0.05
	dynamic capabilities	0.50**	0.39**	0.48**
Control variables:	Covid-19 lockdown restrictions	–0.11**	–0.15**	–0.07
	company size	0.05	0.07	0.02
	market range	0.03	0.03	0.02
	company age	0.04	0.06	0.03
	tech. adv.	–0.02	–0.07	0.02
	res. position	0.02	0.01	0.04
	res. gender	0.01	0.04	–0.01
	res. age	–0.12**	–0.13**	–0.09*
	res. edu. level	0.05	0.06	0.03
Model statistics:	observations	564	564	564
	R^2	0.30	0.19	0.29
	R^2 corrected	0.28	0.17	0.27
	F-stat	20.84**	11.41**	19.97**

Note: Multiple linear regression analysis. Standardized coefficients presented. * significant at 0.05; ** significant at 0.01.

Source: own work based on survey results.

statistically insignificant, indicating the presence of a mediating effect within the considered regression models. This, therefore, positively verifies hypothesis H_3. The adopted set of predictors simultaneously explains about 27% of the variation in qualitative and 17% in financial small business performance during the COVID-19 pandemic.

CONCLUSIONS

The research carried out showed a significant and positive direct impact of owner-manager entrepreneurial characteristics on the financial and qualitative performance of small businesses during the COVID-19 pandemic. Within these characteristics, strategic thinking expressed in a coherent vision of business development and a strong motivation to achieve business success played a special role. Also important was courage and effectiveness in dealing with challenges and unforeseen market situations, as well as open-mindedness and creativity in developing and implementing new projects and ways of doing things. Leadership competencies related to the ability to inspire trust and convince partners of one's ideas, as well as to build long-term partnerships with the environment, also played an important role.

The above impact is simultaneously mediated by the development of dynamic capabilities of the surveyed SMEs. Thus, in this context, managerial activities directed at identifying and assessing opportunities outside a company (sensing), mobilizing resources to capture value from those opportunities (seizing), and reconfiguring these opportunities into value and competitive advantage in a dynamic environment become important. The results indicate that the courage and creativity of the owners of the surveyed companies are transformed into the ability to anticipatively explore the market situation and spot promising opportunities in the company's environment. They also influence timely strategic decision-making and enable reactions in response to external stimuli faster than competitors. Leadership and social competence, on the other hand, allow the company to implement change quickly and effectively through collaboration with stakeholders, which becomes particularly important in crisis conditions, such as the COVID-19 pandemic.

The findings of this study enrich entrepreneurship theory by explaining the complex role of entrepreneurs in building small business success and market performance [Omri et al. 2015, Utomo et al. 2020]. In particular, they are important for understanding small business resilience under the COVID-19 pandemic [Gianiodis et al. 2022, Hadjielias et al. 2022], which may be useful for building SME crisis resilience in the future. The results also provide in-depth insights for understanding the formation of resource-based approaches in small businesses. It significantly determines the strategic success, internationalization, and innovation of this category of businesses in dynamic and uncertain business environments [Campbell and Park 2017, Handoyo et al. 2021, Lukovszki et al. 2021]. The lessons presented can further enrich entrepreneurial and management education programs by adapting them to the requirements of post-covid business challenges [Meyer et al. 2021, Ratten and Jones 2021, Ratten 2023].

When analyzing the results obtained, it is also necessary to take into account the limitations of the research conducted [Greener 2018]. These mainly include the limited reliability of responses and the subjectivity of respondents' assessments. However, an attempt was made to eliminate the negative impact of these factors through the use of measurement scales validated in previous studies and the analysis of the internal consistency of synthetic scales. In addition, the research was carried out in a limited geographic area, but taking into account the similarities of the socio-economic conditions prevailing in the two countries. At the same time, the results obtained open perspectives for further research work. Promising research directions include assessing the impact of other stakeholder groups on SME performance, as well as a deeper exploration of the resource approach through case studies of good and bad examples of using dynamic capabilities for small business resilience under crisis.

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PRZEDSIĘBIORCZOŚĆ I WYDAJNOŚĆ MAŁYCH FIRM W CZASIE COVID-19: POŚREDNI EFEKT ZDOLNOŚCI DYNAMICZNYCH

STRESZCZENIE

Cel: Celem opracowania jest eksploracja roli zdolności dynamicznych jako czynnika pośredniczącego w oddziaływaniu charakterystyk przedsiębiorczych właściciela-menedżera na wyniki małych przedsiębiorstw podczas pandemii COVID-19. Na podstawie przeglądu literatury postawiono trzy hipotezy i zbudowano model badawczy. **Metody:** Realizacji celu pracy poświęcono badania ankietowe przeprowadzone na losowej próbie 564 mikro-, małych i średnich przedsiębiorstw z Polski i Czech. **Wyniki:** Wyniki wskazują, iż charakterystyka przedsiębiorcza właścicieli-menedżerów wpływa istotnie i pozytywnie na wyniki małych przedsiębiorstw podczas pandemii COVID-19. Oddziaływanie to jest jednocześnie powiązane z rozwojem zdolności dynamicznych badanych MŚP. W ramach tych cech szczególną rolę odegrało myślenie strategiczne wyrażające się w spójnej wizji rozwoju biznesu i silnej motywacji do osiągnięcia sukcesu biznesowego. Ważna była także odwaga i skuteczność w radzeniu sobie z wyzwaniami i nieprzewidzianymi sytuacjami rynkowymi, a także otwartość i kreatywność w opracowywaniu i wdrażaniu nowych projektów i sposobów działania. Wyniki dostarczają również szczegółowych informacji pozwalających zrozumieć kształtowanie się podejścia opartego na zasobach w małych firmach. W istotny sposób decyduje ono o sukcesie strategicznym, internacjonalizacji i innowacyjności tej kategorii przedsiębiorstw w dynamicznym i niepewnym otoczeniu biznesowym. **Wnioski:** Wnioski z tego badania wzbogacają teorię przedsiębiorczości wyjaśniając złożoną rolę przedsiębiorców w prowadzeniu małego biznesu z uwzględnieniem sytuacji kryzysowych. Dostarczają także istotnych wniosków dla zrozumienia kształtowania się podejścia zasobowego w sektorze MSP, uwzględniając dynamiczne i nieprzewidywalne środowisko gospodarcze, a także dla rozwoju perspektywicznych programów edukacji przedsiębiorczej.

Słowa kluczowe: przedsiębiorczość, mały biznes, kompetencje przedsiębiorcze, wyniki biznesowe, COVID-19, możliwości dynamiczne

Acta Sci. Pol.
Oeconomia 22 (4) 2023, 69–79
acta_oeconomia.sggw.pl ISSN 1644-0757 eISSN 2450-047X DOI: 10.22630/ASPE.2023.22.4.26

ORIGINAL PAPER

Received: 13.09.2023
Accepted: 27.12.2023

FINANCIAL AND MATERIAL EFFECTS OF SME INVESTMENTS UNDER OPERATIONAL PROGRAMS IN 2014–2020 IN POLAND

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ABSTRACT

Aim: The importance of SMEs for the Polish economy, their financial condition, and the rules of allocating EU funds to beneficiaries raise the question of the effects of SMEs' participation in the EU regional policy support. As the matter has not been investigated from the financial perspective of 2014–2020 so far, the study aims to fill this gap. **Method:** The database included 5679 investments carried out by SMEs located in Mazovian Voivodeship, Poland. The qualitative data included inter alia, information on the main beneficiary type, the exact location and title of the project, the name of the operational program, and its priority and action. Quantitative data included the total value of the investment as well as the value of qualified costs and EU funding. Standard qualitative data analysis (QDA) was applied to analyze the textual information of the entries, while descriptive statistics and comparative analysis were used to make conclusions based on the quantitative data. **Results:** SMEs in Mazovian Voivodeship (Poland) were very active beneficiaries of operational programs in 2014–2020, which is confirmed by the main financial and quantitative effects of their investment activity. As of March 31, 2023, the total value generated in projects by micro, small, and medium-sized enterprises equaled 10.5 billion PLN. The SMEs' investments covered a wide range of topics, supporting both the development of enterprises themselves and, at the same time, the social, economic, and environmental development at the local and regional levels. However, some of the actions under operational programs supported this sector during COVID-19 to enable its survival and further functioning. **Conclusions:** All three subcategories of SMEs, i.e., micro, small, and medium-sized enterprises in Mazovian Voivodeship, benefitted from the EU support, carrying out projects of different values, scopes and thematic profiles, irrespective of their legal form.

Keywords: small and medium-sized enterprises, EU funds, Poland
JEL codes: G32, R58

INTRODUCTION

Micro, small, and medium-sized enterprises (SMEs) make up 99% of businesses in the EU. They provide two out of three jobs in the private sector and account for more than half of the total added value generated by companies in the EU. They employ approximately 100 million people. This is an important source of entrepreneurship and innovation and is crucial for the competitiveness of EU businesses [Cordina 2023]. SMEs are characterized by great regional diversity, as they are usually located near large cities. The development of these entities is positively influenced by the proximity of relevant sales markets, well-developed

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technical and social infrastructure, and access to specialized services and financial resources. Therefore, they develop very poorly in rural and marginalized areas, encountering a number of barriers. SMEs usually have a local and regional dimension and are closely related to the area in which they operate. For them, the local market is the basic source of supply of labor resources, materials, etc., and – for many enterprises – the basic sales market [Lisowska 2008, Gilmore 2013, Ahmedova 2015].

SMEs have a direct impact on the development of marginalized regions through the diffusion of innovations in the form of introducing new or improved production techniques, goods or services, or a new form of work organization to the market. However, in underdeveloped regions, the basic problems include the lack of capital and qualified labor as well as insufficient entrepreneurship (activity) and innovativeness of the local population, which significantly limits the possibility of developing existing and establishing new small and medium-sized enterprises [Lisowska 2007]. Therefore, small and medium-sized enterprises are concentrated in economically developed regions, especially within large urban agglomerations, which is mainly due to better-developed technical and social infrastructure, a large sales market, a more mobile labor market, and better-educated employees. Moreover, the processing industry is located in urban agglomerations, and there is a large population, which creates demand for products manufactured by SMEs [Hybel 2001, Ahmedova 2015]. SMEs are characterized by great dynamics and a high degree of flexibility [Sawicka and Kurek 2003, Alpkan et al. 2007, Romanescu 2016, Krezymon 2018, Hajihassaniasl 2023]. They are able to respond faster than large enterprises to any changes in market demand, changing their business profile, location, or merging with another enterprise. SMEs usually operate in industries that are not very complicated and do not require large initial investments. The basic economic benefits of SMEs include the growth of entrepreneurship, innovation, and job creation. However, they face a number of barriers. Apart from "the lack of skilled labor" (28%), the two other serious business constraints to the EU SMEs in 2022 were "access to finance" (13%) and "administrative regulations" (12%). The smaller the enterprise, the more often "access to finance" was perceived as the major constraint, while firms with 10 to 49 employees mentioned "administrative regulations" as the major constraint more often than micro and medium-sized enterprises [Observatory… 2002]. These barriers may be a significant threat to the survival of enterprises on the market. Research by the Polish Agency for Enterprise Development (PARP) confirms that it is most difficult for an enterprise to survive the first year of its operation. On average, approximately 40% of companies closed their operations during this period [Pyciński and Żołnierski 2007]. In turn, research by Kamiński [2004] shows that less than 10% of deregistered entities operated for more than three years. The specificity of the type of activity means that, for example, in the case of companies providing business services, survival of the first critical three years is much higher than in the case of companies in the processing industry [Littunen 2000]. In areas where high capital expenditure, significant expenditure on research and development, and the scale of operations play a significant role, the company's chances of survival are lower [Audretsch et al. 1998]. On the other hand, access to medium and high technology sectors may improve the probability of survival to some extent [Mata and Portugal 1994]. Moreover, craft enterprises have a greater chance of survival than those from other sectors of the economy [Observatory… 2002]. This confirms the fact that the first three years are the most difficult for an entrepreneur, and this is when specialist support is most needed.

However, entrepreneurs need different types of support at different stages of business development. Matejun [2013] defined eight phases of enterprise development. Each of these phases requires a different type and scope of support for enterprises (Table 1).

The aim of the EU's SME policy is to ensure that EU policies and actions are friendly to small businesses and make Europe a more attractive place to start a company and do business. The European Parliament declared 1983 the Year of Small and Medium-sized Enterprises and Crafts. Since then, a number of initiatives have been provided to develop SMEs [Cordina 2023].

As SMEs play such an important role in the EU and, at the same time, the Polish economy, they were included

Table 1. SME's demand for support depending on the development phase

Phase		Characteristics of the period	Support demanded
name	**type**		
Pre-establishment	static	an entrepreneur considers making a decision to set up a business	access to support enabling the growth of knowledge, skills, and managerial competencies, as well as shaping entrepreneurial attitudes
Emergence	dynamic	necessary activities related to the establishment of the entity	advisory, training, information, and financial support addressed to newly established business entities
Survival	static	ensuring the required level of profitability and financial liquidity	advisory support aimed at taking advantage of market opportunities and optimizing business costs
Dynamic growth	dynamic	dynamic increase in quantitative growth rates – the company already has a market reputation and credit history, which makes it easier to absorb financial support	different forms of support, especially pro-investment support and support aimed at maintaining favorable conditions for dynamic growth
Separation and expansion	dynamic	an entrepreneur's creativity and skills are no longer sufficient to independently manage a developed market entity	capital support from new investors interested in the further growth of the company
Stabilization	static	the limited dynamics of the company's operations results in limited demand for financial and non-financial support	minimal or none
Revitalization	dynamic	further development based on the implementation of significant structural changes	financial support and providing access to knowledge
Decline	static	permanently reduced operational efficiency, unfavorable financial indicators, and limited development prospects	starting a new business venture

Source: own elaboration based on [Matejun 2013]

in the list of potential beneficiaries of the European Union financial support under regional policy [Rakowska 2014, Dubel 2018, Gouveia 2021]. This support has been available in all EU member states' eligible regions by the end of the third year after their allocation (known as the n+3 rule) under operational programs in 2014–2020. Poland has been the biggest beneficiary of EU regional policy funding from this perspective, and all Polish regions met the criteria to be included in EU regional policy support. Beneficiaries from Mazovian Voivodeship, the biggest administrative unit of this type, comprising both the best-developed subregion of the country – Warsaw and its functional area, and some of the poorest subregions in the country – could apply for EU funding from the national operational programs and from the regional operational program. However, to obtain this support, they had to meet certain requirements. Their EU-supported investments had to be in line with regional policy aims and priorities. Although the EU finding is non-refundable, the potential beneficiaries needed to contribute financially to the projects with domestic funding. The funds were granted to beneficiaries mostly based on the results of contests, under priorities and actions addressed to different groups of potential beneficiaries. As there were no strict financial assignments to any of them, the results depended on the readiness and capability of SMEs to apply for EU co-funding.

The importance of SMEs for the Polish economy, their financial condition, and the rules of allocating EU funds to beneficiaries raise the question of the effects of SMEs' participation in the EU regional policy support. As the matter has not been investigated from the financial perspective of 2014–2020 so far, the study aims to fill this gap. It will contribute to the general and professional knowledge by answering the following research questions:

Q_1: What are the main financial and quantitative effects of SME investments co-financed by EU funds under operational programs in Mazovian Voivodeship in 2014–2020?

Q_2: What kind of investments were carried out by the SMEs with the support of EU funds in the Mazovian Voivodeship?

Q_3: What was the difference, if any, between the investments under operational programs in 2014–2020 carried out by SMEs?

METHOD

The definition of micro, small, and medium-sized enterprises was derived from the Commission Recommendation of 6 May 2003 concerning the definition of micro, small, and medium-sized enterprises [EC 2023]. Entities applying for the EU funding addressed to SMEs under operational programs need to meet the criteria categorizing them as either micro, small, or medium-sized (Table 2).

The qualitative and quantitative data on the projects carried out by SMEs in Mazovian Voivodeship under operational programs in 2014–2020 were retrieved from the Central Teleinformatic System, SL 2014 (further referred to as CTS 2014) and presented the state as of March 30, 2023. The database included 226 673 entries describing 102361 investments co-financed by the EU funding under all operational programs in 2014–2020.

To answer the research questions, further selection of investments was carried out based on the following criteria:

- the type of the main investor: SME according to the EU definition (Table 2),
- location of the investment: Mazovian Voivodeship.

The generated database included 15,568 entries describing 5679 investments carried out by SMEs located in Mazovian Voivodeship, Poland. The qualitative data included information on the main beneficiary type, the exact location of the project, the title of the project, the name of the operational program, its priority and action, as well as its assignment to the main investment category. Quantitative data included the total value of the investment, the value of qualified costs, and the value of EU funding obtained for the projects. The data made a basis for calculating the value of domestic funding contributed to the project, as well as the share of the EU and domestic funding in the total value.

In the next stage, a standard qualitative data analysis (QDA) was applied to analyze the textual information of the entries, while descriptive statistics and comparative analysis were used to conclude based on the quantitative data.

Table 2. Main criteria defining micro, small, and medium-sized enterprises

Company category	Staff headcount	Turnover	Balance sheet total
	annual work unit	million euro	
Medium-sized	< 250	≤ EUR 50	≤ EUR 43
Small	< 50	≤ EUR 10	≤ EUR 10
Micro	< 10	≤ EUR 2	≤ EUR 2

Note: further explained in the [EC 2015].

Source: Author's elaboration based on the Commission Recommendation [EC 2023].

RESULTS

Out of the total number of 5679 investments carried out by SMEs located in Mazovian Voivodeship, 56% were realized by micro-enterprises, 23% by small, and 21% by medium-sized enterprises (Table 3). The total value of these investments equaled PLN 10.5 billion and was generated by small businesses (41%), followed by medium-sized (38%) and micro (20%). The SME's investments were co-financed by PLN 5.84 billion from the EU funds. Quite similarly, in the case of the total value, the biggest share of this money was obtained by small businesses (41%), followed by medium-sized (32%) and micro (26%). On the other hand, one can say that micro-enterprises benefitted from the EU funding most, as its share in the total value of their projects made up as much as 72%. Small enterprises ranked second with 56% of EU funding in the total value, while medium-sized enterprises achieved 47% of EU co-funding in their investments under operational programs in 2014–2020.

The contribution from domestic funding, necessary to obtain the EU funds, made PLN 4.7 billion, i.e., 44% of the total value of analyzed investments. However, this share varied with different subgroups of SMEs: micro enterprises provided only 28% of domestic funding for their investments, small enterprises 44%, and medium-sized 53%. Again, looking at the total value of PLN 4.7 billion in domestic funding, the biggest 46% share of this amount was contributed by medium-sized, 41% by small, and 13% by micro-enterprises. In sev-

Table 3. Descriptive statistics for the total value, domestic funding, and EU co-funding of investment projects carried out by SMEs in Mazovian Voivodeship under Operational Programs in 2014–2020 (as of March 31, 2023)

Data category	Type of enterprises	Sum	Minimum	Maximum	Range	Mean	Median	Stand. Dev.	Kurtosis	Skewness	N
		in thousand PLN									
Total value of projects	micro	2 141 514.0	1.6	48 806.4	48 804.8	677.9	159.9	1 937.3	0.18	0.01	3 159
	small	4 341 689.9	23.3	1 201 554.9	1 201 531.7	3 274.3	667.7	33 358.6	1.26	0.04	1 326
	medium-sized	4 036 347.8	18.7	363 248.4	363 229.6	3 380.5	311.1	13 301.5	0.5	0.0	1 194
	all SMEs	10 519 552.0	1.6	1 201 554.9	1 201 553.3	1 852.4	287.6	17 339.9	4.1	0.1	5 679
Domestic funding	micro	603 180.6	0.0	32 963.2	32963.2	190.9	21.6	851.3	0.7	0.0	3 159
	small	1 930 586.9	0.0	646 921.5	646 921.5	1 455.9	129.7	17 925.6	1.3	0.0	1 326
	medium-sized	2 142 764.5	0.0	174 987.6	174 987.6	1 794.6	39.9	7 125.3	0.3	0.0	1 194
	all SMEs	4 676 531.9	0.0	646 921.5	646 921.5	823.5	45.0	9 304.2	4.1	0.1	5 679
EU funding	micro	1 538 333.5	1.6	22 357.1	22 355.6	487.0	98.7	1 242.8	0.1	0.0	3 159
	small	2 411 103.0	8.0	554 633.4	554 625.3	1 818.3	417.2	15 480.5	1.2	0.0	1 326
	medium-sized	1 893 583.3	10.9	188 260.8	188 249.9	1 585.9	276.1	6 440.6	0.6	0.0	1 194
	all SMEs	5 843 019.8	1.6	554 633.4	554 631.8	1 028.9	230.4	8 116.1	3.9	0.1	5 679

Source: Author's elaboration based on data from CST (2014–2020).

eral individual cases, the EU funding covered the total costs of investments and did not require any domestic co-funding. However, the majority of projects needed contribution from both these sources.

EU co-funding was obtained by SMEs from different operational programs (OPs) (Table 4). A total of 5679 projects were carried out under:

- 3398 (59.8% of all) under Regional OP for Mazovian Voivodeship in 2014–2020,
- 2103 projects (37% of all) under OP Intelligent Development in 2014–2020,
- 126 projects (2.2% of all) under OP Knowledge Education Development in 2014–2020,
- 44 projects (0.8% of all) under OP Infrastructure and Environment in 2014–2020 and
- 8 projects (0.1% of all) under OP Digital Poland in 2014–2020.

SMEs carried out different projects, as presented in Table 2. The categorization is based on the assignment of investments to individual priorities and actions of the above-listed operational programs. The biggest group of 1839 projects was carried out under action 3.3, Innovation in SMEs of the Regional OP for Mazovian Voivodeship in 2014–2020. Their total value of 1077.9 million PLN included 420.4 million PLN of EU funding from the European Regional Development Fund. The action supported the financial liquidity of enterprises to maintain current operations during the COVID-19 pandemic.

Investments in research and development were another significant group. SMEs carried out 927 projects of this kind under 5 different actions (Table 4). Their total value equaled 5PLN 135,4 million, including PLN 2795 million of EU co-funding. The total value of individual projects ranged from PLN 15,000 (e.g., 'Ordering the research into the recipes of new vegan and vegetarian products' or 'Developing new innovative dental diagnostics') up to PLN 13.1 million (e.g., 'Establishing a research and development base for Enovio Sp. z o. o., focused on conducting R&D work in the area of geoinformation technologies and optoelectronic systems in the Smart Cities sphere'); under action 1.2: Research and development activities of enterprises, nearly PLN 40 million; under action 1.1: R&D projects of enterprises ('Preclinical and clinical development of arginase inhibitor for use in anti-cancer immunotherapy'), 37.5 million for the project 'Preclinical and clinical development of an inhibitor of the ubiquitin-proteasome pathway as an innovative drug used in cancer therapy' (under action 1.2 'Sectoral R&D programs') and the highest, 103.3 million under action 2.1: Support for investments in R&D infrastructure of enterprises ('Expansion of the structure and research facilities of Celon Pharma S.A. through the construction of the Development Research Center'). The effects of these investments supported the development of many economic, social, and environmental protection fields.

The 572 investments categorized as 'working capital grants', action 3.4 under OP Intelligent Development in 2014–2020 were the third most numerous group of projects carried out by SMEs. SMEs of all legal forms and all three subcategories benefitted from this support. The value of grants ranged from PLN 18,7 thousand to PLN 422.4 thousand. This action did not require any domestic funding, and the eligible costs equaled the total cost. Thus, the EU funding made 100% of the total costs of the project, making an exception to the general rule of a maximum of 85% of EU co-funding of eligible costs.

Investments classified as 'Water and sewage management in agglomerations', action 2.3 under OP Infrastructure and Environment in 2014–2020 reached a total value of nearly 937,5 million PLN, including 50% of EU funding. This money covered the costs of 21 investments, all of which were carried out by the limited liability small and medium-sized companies established by local governments. The value of these investments ranged from 1.3 million PLN ('Improving the water and sewage management of the city of Sochaczew–- stage II (part II)) to 363.2 million PLN ('Modernization and expansion of water and sewage management in the Radom agglomeration–- stage III'). Their effects enabled environmental protection and improved the standards of living of the inhabitants.

Table 4. Categories of investments carried out by the SMEs in Mazovian Voivodeship under operational programs in 2014–2020, as of March 31, 2023

	Type of the investment based on the N° and titles of the actions of operational programs in 2014-2020	N° of projects	Total value million PLN	EU funding	
				million PLN	% of the total value
Regional OP for Mazovian Voivodeship in 2014–2020	1.2 Research and development activities of enterprises	466	819.5	485.4	59
	2.1 E-services	26	48.4	36.9	76
	3.1 Improving the development of SMEs in Mazovian Voivodeship	223	49.4	30.9	63
	3.2 Internationalization of SMEs	117	71.3	26.7	37
	3.3 Innovation in SMEs	1839	1077.9	420.4	39
	4.1 Renewable energy sources	16	30.8	12.3	40
	4.2 Energetic efficiency	7	52.2	15.4	29
	5.2 Waste management	2	15.8	8.4	53
	6.1 Healthcare infrastructure	5	18.2	15.2	83
	6.2 Revitalization of marginalized areas	1	5.7	2.8	50
	8.2 Professional activation of professionally inactive people	15	19.2	18.2	95
	8.3 Facilitating the return to professional activity of people caring for children under 3 years of age	44	58.6	46.6	80
	9.1 Socio-professional activation of excluded people and counteracting social exclusion	200	203.0	190.6	94
	9.2 Social and healthcare services	158	193.8	179.8	93
	10.1 Education and development of children and youth	110	77.9	67.8	87
	10.2 Promoting key competencies among adults	82	78.5	69.6	89
	10.3 Professional development	88	95.2	84.5	89
	12.2 REACT-EU for e-services in Mazovia	1	7.0	7.0	100
OP Intelligent Development	1.1 R&D projects of enterprises	237	1773.4	1247.3	70
	1.2 Sectoral R&D programs	61	382.5	253.9	66
	2.1 Support for investments in R&D infrastructure of enterprises	34	385.3	138.4	36
	2.3 Pro-innovative services for enterprises	432	207.0	127.7	62
	3.1 Financing innovative activities of SMEs using risk capital	11	4.1	1.6	40
	3.2 Support for the implementation of R&D results	129	1774.7	670.0	38
	3.3 Support for the promotion and internationalization of innovative enterprises	468	230.1	157.3	68
	3.4 Working capital grants	572	108.8	108.8	100
	4.1 Scientific research and development	6	24.3	18.3	75
	6.2 Support for SMEs in the field of digitalization-digitalization vouchers	153	39.6	33.3	84
OP Digital Poland	1.1 Eliminating territorial differences in the possibility of access to broadband Internet with high bandwidth	6	118.2	66.6	56
	3.1 Training activities for the development of digital competencies	2	3.4	3.2	94

Table 4. (cont.)

	Type of the investment based on the Nº and titles of the actions of operational programs in 2014-2020	Nº of projects	Total value million PLN	EU funding	
				million PLN	% of the total value
OP Infrastructure and Environment	1.1 Supporting the production and distribution of energy from renewable sources	1	21.5	14.9	69
	1.5 Effective distribution of heat and cold	2	36.2	25.0	69
	1.6 Promoting the use of high-efficiency cogeneration of heat and electricity based on the demand for useful heat	5	102.4	34.7	34
	2.2 Municipal waste management	1	4.9	3.4	69
	2.3 Water and sewage management in agglomerations	21	937.5	472.9	50
	6.1 Development of public transport in cities	2	1230.1	573.8	47
	7.1 Development of intelligent energy storage, transmission, and distribution systems	4	38.7	22.2	57
	9.1 Emergency medical infrastructure	6	27.0	14.7	55
	9.2 Infrastructure of supra-regional medical entities	2	11.8	9.7	82
OP Knowledge Education Development	1.2 Support for young people in the regional labor market-competition projects	74	62.1	58.9	95
	1.3 Support for young people in particularly difficult situations	1	0.8	0.8	95
	1.5 Development of the professional potential of people with disabilities	4	7.0	7.0	100
	2.1 Equal opportunities for men and women in all areas, including access to employment, career development, reconciliation of work and private life	1	1.4	1.4	97
	2.10 High quality of the education system	1	7.6	6.8	90
	2.14 Development of tools for lifelong learning	1	1.3	1.3	100
	2.17 Effective justice system	1	1.7	1.7	100
	2.18 High-quality administrative services	7	8.8	7.8	88
	2.2 Support for strategic management of enterprises and building a competitive advantage in the market	3	3.6	3.2	90
	2.21 Improving management, developing human capital, and supporting innovative processes of enterprises	3	20.6	17.7	86
	2.4 Modernization of public and non-public employment services and their better adaptation to the needs of the labor market	1	0.3	0.2	97
	2.5 Effective social assistance	1	0.5	0.5	97
	2.7 Increasing employment opportunities for people particularly at risk of social exclusion	4	3.7	3.6	97
	2.8 Development of social services provided in the local environment	1	1.3	1.3	97
	4.2 Transnational mobility programs	7	5.4	5.3	97
	4.3 Transnational cooperation	1	1.4	1.3	97
	5.1 Prevention programs	2	1.3	1.3	100
	5.2 Quality-promoting activities and organizational solutions in the healthcare system facilitating access to affordable, durable, and high-quality health services	7	3.6	3.5	96
	5.4 Professional competencies and qualifications of medical staff	6	3.3	3.2	97

Source: Author's elaboration based on data from CST (2014–2020).

CONCLUSIONS

SMEs who located their investments in Mazovian Voivodeship were very active beneficiaries of operational programs in 2014–2020, which is confirmed by the main financial and quantitative effects of their investment activity (research question 1). As of March 31, 2023, they carried out 5679 projects, and the total value generated by micro, small, and medium-sized enterprises equaled PLN 10.5 billion. This amount included PLN 5.84 billion of EU co-funding obtained from the European Regional Development Fund, the European Social Fund, and the Cohesion Fund under 5 operational programs. The SMEs' investments covered a wide range of topics, supporting both the development of enterprises themselves and, at the same time, the social, economic, and environmental development at the local and regional levels (research question 2). However, some of the actions under operational programs supported this sector during COVID-19 to enable its survival and further functioning. All three subcategories of SMEs, i.e., micro, small, and medium-sized enterprises, benefitted from the EU support, carrying out projects of different values, scopes and thematic profiles, irrespective of their legal form (research question 3).

This study has some limitations. On the one hand, the findings refer to Mazovian Voivodeship and are based on the full set of data as of March 31, 2023; therefore, they answer the research questions fully. On the other hand, the conclusions cannot be extrapolated to other regions of Poland, and this limitation is, at the same time, an indication for taking up further studies on the effects of the participation of SMEs in operational programs in 2014–2020 in other regions of the country.

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EFEKTY FINANSOWE I RZECZOWE INWESTYCJI MŚP W RAMACH PROGRAMÓW OPERACYJNYCH 2014–2020 W POLSCE

STRESZCZENIE

Cel: Znaczenie MŚP dla polskiej gospodarki, ich sytuacja finansowa oraz zasady przyznawania środków unijnych beneficjentom rodzą pytanie o skutki udziału MŚP we wsparciu polityki regionalnej UE. Ponieważ problematyka ta nie była dotychczas rozpatrywana dla perspektywy finansowej 2014–2020, niniejsze opracowanie ma na celu wypełnienie tej luki. **Metoda:** W bazie danych znalazło się 5679 inwestycji realizowanych przez MŚP, zlokalizowanych na terenie województwa mazowieckiego. Dane jakościowe obejmowały m.in. informację o rodzaju głównego beneficjenta, dokładnej lokalizacji i tytule projektu, nazwie programu operacyjnego, priorytecie i działaniu. Dane ilościowe obejmowały całkowitą wartość inwestycji oraz wartość kosztów kwalifikowanych i dofinansowania UE. Do analizy informacji tekstowych wpisów zastosowano standardową analizę danych jakościowych (QDA), natomiast do wyciągania wniosków na podstawie danych ilościowych wykorzystano statystykę opisową i analizę porównawczą. **Wyniki:** MŚP z województwa mazowieckiego były bardzo aktywnymi beneficjentami programów operacyjnych na lata 2014–2020, co potwierdzają główne efekty finansowe i ilościowe ich działalności inwestycyjnej. Na dzień 31 marca 2023 roku łączna wartość wygenerowana w projektach przez mikro, małe i średnie przedsiębiorstwa wyniosła 10,5 mld PLN. Inwestycje MŚP obejmowały szeroką gamę tematów, wspierając zarówno rozwój samych przedsiębiorstw, jak i jednocześnie rozwój społeczny, gospodarczy i środowiskowy na poziomie lokalnym i regionalnym. Część działań w ramach programów operacyjnych wsparła ten sektor w czasie Covid-19, aby umożliwić jego przetrwanie i dalsze funkcjonowanie. **Wnioski:** Wszystkie trzy podkategorie MŚP, czyli mikro, małe i średnie przedsiębiorstwa w województwie mazowieckim skorzystały ze wsparcia UE, realizując projekty o różnej wartości, zakresie i profilu tematycznym, niezależnie od ich formy prawnej.

Słowa kluczowe: małe i średnie przedsiębiorstwa, fundusze UE, Polska

Acta Sci. Pol.
Oeconomia 22 (4) 2023, 81–92
acta_oeconomia.sggw.pl ISSN 1644-0757 eISSN 2450-047X DOI: 10.22630/ASPE.2023.22.4.27

ORIGINAL PAPER

Received: 14.10.2023
Accepted: 27.12.2023

STRATEGIC PROGRAMMING IN POLAND – CHANGES WITHIN HISTORICAL PERIODS

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ABSTRACT

Aim: The article aims to assess the dynamics and consequences of different periods on planning and development strategies as well as perturbation of the political system transformations, different governments, and the effect of election cycles. **Methods:** A review of the literature and the use of statistical analysis for synthesis and conclusions was conducted. The sources of materials were various: theoretical literature, legal acts, government documents, plans and strategies, and statistical data from GUS and Eurostat. **Results:** A comprehensive long-term period overview of changes in strategic programming in Poland was completed. The time frame of the study includes the period between 1918–1939, the centrally planned economy after World War II, the process of political transformation in 1989, and the economic and institutional transformation in the 1990s, up to the period after accession to the EU in 2004. **Conclusions:** Strategic programming in Poland within the EU is an important instrument for allocating public funds to directions and objectives adopted commonly by all member states and European Institutions. The last 8 years have shown how the policies of one government can affect the system in a state with unstable institutions guarding democratic values. Further reform of the economy is necessary both for the needs of developing strategic planning and, in the short term, primarily to meet the requirements necessary to unlock structural funds from the KPO.

Keywords: strategic programming, history, transformation stages, Poland
JEL codes: B22, E61, H7

INTRODUCTION

Strategic programming is understood as the development and implementation of various types of program documents, strategies and plans, and legal, institutional, and administrative regulations. The term "strategic programming" in relation to development programming at the national and regional levels, as well as at the supranational level, has its origin in the theory of strategic management at the micro level. The term emerged in economic policy with the spread of the term "strategy" for public administration programming documents, influenced by the development of the theory and practice of strategic management at the level of companies and corporations. Originally, the concept of "strategy", a term derived from the Greek's *strategos* in economic literature, was taken from the theory of the art of war in the late 18th and early 19th centuries after the Napoleonic wars. The German general Carl von Clausewitz [2021] is the one who defined strategy as "the art of winning battles

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to achieve the goals of war", which is recognized as a classic military understanding of that term.

Primarily, the term "strategy" was used in economic policy exclusively to describe long-term, comprehensive concepts for national development. Strategic programming is one of the main tools of a development policy and the formation of structural features of the economy, which determine its sustainable growth and international competitiveness. An attribute of strategic programming is an active, creative adaptation to changing external and internal development conditions. An important feature is a systemic approach, i.e., aimed at primarily activating the key elements of the system. Examples of some countries have shown that by implementing an appropriate strategy for national development, it is possible to achieve spectacular success. On the other hand, the lack of strategic planning results in the loss of competitiveness and degradation in the international division of labor. Of course, a strategy does not guarantee success, as the decisive factor is the operative tactics, but it significantly increases the chances of achieving it. In addition, strategies provide an opportunity to coordinate and concentrate efforts, making it possible to achieve goals more efficiently and effectively.

Strategic programming deals with areas related to the performing of state functions. As the government's role and functions in the economy evolve, so do its spheres of influence. A symptom of this is, for instance, the expanding role of the state in performing the function of assuring conditions that foster economic competitiveness in the environment of globalization. It is believed that in order to achieve this goal, the state should create opportunities for the efficient functioning of businesses (including through the system of legislation, expansion of infrastructure, and reduction of bureaucratic barriers), conduct active macroeconomic and structural policies, and undertake pro-innovative activities (including co-financing of R&D activities) and the promotion of them. Thus, with changes in the role and functions of the state in the economy, both the scope of the objective programming and the priorities within the various sectors of a socio-economic policy are changing.

The role of governments evolves depending on political budget cycles. The wide range of time frames in this article justifies drawing attention to this issue even though some empirical findings suggest that when the analysis was done over the long term, there were fewer signs of political budget cycles [Wyszkowski and Zegarowicz 2018]. The political budget cycle is a component of the state budget cycle caused by the election cycle. This term is most often associated with an increase in the level of government spending or a reduction in taxes in an election year. The decisions mentioned above are seen as motivated by the desire of those in power to maintain their dominant position on the political scene. There are numerous theoretical and empirical studies on political budget cycles. Looking at the history of economic thought, we should mention the classic work of Nordhaus, *The Political Business Cycle* [Nordhaus 1975]. In developing countries, cycles in fiscal policy and public spending tend to be larger and often rewarded by voters. In developed countries, cycles occur less frequently, are smaller in scale, can be moderated by well-designed institutions, and may even be punished by voters [Shi and Svensson 2006, Brender and Drazen 2008, Streb et al. 2009]. Bonfatti and Forni [2019] and Gootjes et al. [2021] showed that strict fiscal rules weaken political budget cycles. Media freedom plays a key role in determining electoral patterns in budget deficits. Sidorkin and Vorobyev point to corruption as a determinant of the level of the political budget cycle [2018]. Political systems and governance mechanisms have their own dynamics and directions of change both globally and regionally. Each country also has its own historically shaped experiences. The experience of Poland is extensively described by Rydlewski in his book "Rządy i rządzenie w Polsce 1918–2018 – ciągłość i zmiany" [2018], where he analyzes and evaluates the 100-year period of our national statehood from the perspective of governance, presenting all subsequent governments and commenting on the changes occurring in the background of transformations in governance in other countries.

There are some interesting empirical studies in Poland [Wielechowski 2018]. He tested that post-communist history affects election cycles in the European Union countries. He observed that pre-election fiscal manipulation increases total public spending per capita in specific spending categories: general public services, public order, and safety. At the same time, there were no significant spending deviations in the remaining EU Member States, except for expenditures linked to environmental protection. Earlier research conducted by Čajka [2012], stated that before elections (political cycles), the structural deficit usually increases.

Wyszkowski and Zegarowicz, in their studies using statistical analysis, observed that there is a connection between the election cycle and the condition of revenues and expenditures in Poland's public finance sector. They verified this division of public finance into three subsectors: central government, local government, and social security funds. The analysis enabled a positive verification of the hypothesis that in Poland, the occurrence of a political budget cycle that appears in a "loose" fiscal policy prior to elections and a "restrictive" policy right after elections can be observed [Wyszkowski and Zegarowicz 2018].

It should be noted that the occurrence of political budget cycles in Poland is not unique. The easing of a fiscal policy before an election can be observed in almost all EU economies [Efthyvoulou 2012, Ademmer and Dreher 2016]. This is also the case for non-EU economies, including Turkey [Eryilmaz and Mercan 2015] and China [Tsai 2016]. However, when analyzed over the long term, there are fewer signs of political budget cycles.

STRATEGIC PROGRAMMING (PLANNING) UNTIL 1989, BEFORE THE SYSTEM TRANSITION

In Poland's history, economic plans were carried out during both the communist period and the Second and Third Republics of Poland. Before the Second World War, two economic development plans were elaborated: the Four-Year Plan (1936–1940) and the Fifteen-Year Plan (1939–1954). As we know, World War II interrupted and ended that period. As a result of geopolitical changes after World War II, Poland found itself in the category of countries with a centrally planned economy. The doctrinal and regulatory principles of this economy were externally imposed; nevertheless, there was also the considerable baggage of experience resulting from the implementation of successive long-term economic plans: the Three-Year Plan in 1957–1959; the Six-Year Plan for the industrialization of the country in 1950–1955; and the series of five-year plans that came after. In detail:

- The Three-Year Plan (1947–1949) was a plan for economic reconstruction after the war damage and for bridging the gap between the so-called "retaken territories" and the rest of the country.
- The Six-Year Plan (1950–1955) was a plan for economic development through increased investment and industrialization of the country using the model of the USSR, including mainly the development of heavy industry.
- The First Five-Year Plan (1956–1960) was an economic development plan aimed at completing the investments of the Six-Year Plan, with greater emphasis on the development of industry and agriculture.
- The Second Five-Year Plan (1961–1965) was a plan to develop the national economy through the development of heavy industry.
- The Third Five-Year Plan (1966–1970) was similar to the previous one.
- The Fourth Five-Year Plan (1971–1975) was a plan for the socio-economic development of the country, assuming an increase in national income, industrial production, agricultural production, and real wages. It was also planned to increase investments.
- The Fifth Five-Year Plan (1976–1980) was a national social and economic plan (the so-called "economic maneuver") aimed at saving an economy strained in the first half of the 1970s.
- The Second Three-Year Plan (1983–1985) was a national social and economic plan.
- The Sixth Five-Year Plan (1986–1990) was a national social and economic plan.

There were also central institutions established in the country's system of state governance responsible for economic planning: from 1945 to 1949, it was the Central Planning Office, and from 1949, the State Economic Planning Commission. In December 1956, the Economic Council was instituted.

Its main tasks were to design changes in the planning system, give comments on economic plans, and collect information on the state of the economy. The chairman of the council was Oskar Lange, and members included

Czesław Bobrowski, Włodzimierz Brus, Michał Kalecki, Edward Lipinski, and Kazimierz Secomski [Bobrowski 1981, Karpiński 1986]. These are also well-known names of the people who left a significant contribution to publications relating both to the theory of planning and assessing the processes taking place in the economy. Research work was carried out, among others, within the framework of three committees of the Polish Academy of Sciences: the Committee for Spatial Planning, the Committee for Demographic Sciences, and the Committee of Research and Forecasting "Poland 2000" [Secomski 1974]. There were differentiating and striking opinions (having a different opinion than the officially ruling system doctrine seldom ended in banishment – an example of staff cleansing at universities after the March events of 1968) at many economic universities, e.g., at SGPiS (now SGH) and at research institutions. A notable case here is that of the eminent scholar and economist Kalecki, who in 1963 wrote a memorandum to Wladyslaw Gomulka, in which he warned that in the adopted objectives of the five-year plan for 1966–1970, Poland was under a threat of economic crash at the end of the 1960s. The consequence was that the professor lost his position as advisor to the chairman of the Planning Commission. Kalecki commented on this fact with a paraphrase of the Polish economist's Hamletian dilemma: "To be or not to be a government advisor". In 1968, there was further persecution by the party authorities in the form of removing the professor from all of his positions, and the denial of publishing contracts for the publication of the collection of his works "Z zagadnień gospodarczo-społecznych Polski Ludowej" [Kalecki 1964]. A similar fate was met by Professor Kazimierz Łaski, a loyal follower and propagator of Kalecki's theories, who was forced to emigrate and found work in Austrian scientific institutions, and is now ranked as one of the prominent international economists [Muller 1999].

It can be assumed that the reason for the complete rejection of the experience and often the research output in the area of central planning issues from the previous system, at least in the first period after the system change in 1990, was the prevailing doctrinal stigma weighing on many theories and models. It should be emphasized that in the past, researchers and, at the same time, people with high-ranking positions in planning institutions were aware of the divergence of theory and practice, as can be seen from a statement from the work of Secomski [1975]: "The need for planning and practical implementation of development processes requires the search for clarification in new areas of social and economic policy in order to find the most effective solutions (...) in practice, such solutions are often adopted without being based on an appropriate research base".

Worth highlighting is the research output from that period covering spatial planning issues. The works of the Committee on National Spatial Planning were published in dozens of volumes of "Studies" and "Bulletins" of the Committee [Kukliński 2003].

Secomski left a huge legacy of research in this area. He dealt with planning issues by analyzing three-year and six-year plans, highlighting their strengths and weaknesses. This was the starting point for the researcher's interest in long-term perspective planning [Secomski 1996]. In this work, he has emphasized the necessity of rationalization rather than maximization of development, long before the United Nations adopted a definition of sustainable development at the Earth Summit in Rio de Janeiro.

He has pointed out the need and necessity of a structurally and time-balanced development. Analyzing the concept of prospective planning and its initial elements, such as socio-economic conditions, demographics, foreign trade, and technical progress, he pointed out the multidimensional aspects of long-term planning (structural, spatial, global, etc.).

In the 1960s, the dominant research trends focused on the analysis and evaluation of the direct role of investment in achieving the production goals of development, the role of input-output flows in the economy, and their technical and quantitative parameters. This peculiar economism, in the work of Secomski [Secomski 1970, Secomski 1976], was enriched by elements of social development theory, i.e., paying attention to and giving greater importance to social factors. In these works, there are elements that lose nothing of their significance with the passage of time, constituting a universal theoretical achievement and a bridge between the past and the present, encouraging researchers nowadays to draw on the rich achievements of their precursors [Czekaj et al. 1991, Rakowski 1981, Grala 2005].

STRATEGIC PROGRAMMING DURING THE POST–1989 POLITICAL PROCESS TRANSFORMATION

Stage I – the shift from planning: the first years of transition

Poland's previous socio-economic system was based entirely on central planning. Accordingly, academic achievement and practical experience in this area were both essential parts of the tasks of public administration and important areas of research. With the political transformation, the experience of this period was practically completely abandoned. A particular type of planning, such as centrally directed and controlled planning, was rejected. However, socio-economic planning, in general, was also initially rejected. This was due to several factors, i.e.:

- psychological factors related to the strong antipathy existing in the public consciousness to the planning institutions identified with central command planning blamed for the inefficiency and, consequently, the failure of the previous system;
- the logic of the systemic change: the increasing degree of autonomy of economic units as privatization progressed (i.e., the withdrawal of the state from ownership functions) required a change in the nature of the planning activities of the state;
- the belief in the self-regulating market mechanism characteristic of the breakthrough period (reflected in the famous statements of some politicians proclaiming that "the best plan is no plan" and "the best industrial policy – is having no such a policy"), treating privatization as a panacea for all difficulties and management and development problems.

As early as 1989, the law on socio-economic planning was abolished, and the Planning Commission, the main planning entity in the previous economic system, ceased to operate. It was the Council of Ministers that took over the task of formulating the annual socio-economic policy assumptions that formed the basis for the Budget Act.

There was a lack of a program concept for the new authorities and the adoption in the economic policy of a version of the neo-liberal economic doctrine that questioned the need for the state to engage in development policy wider than macroeconomic policy.

The relatively few government program documents issued during this period were mainly concerned with ad hoc problem solving, although these were often matters with long-term, very important implications. Such issues included, in particular, the policy of privatization, which was the essence of the system transformation. The related policy of structural transformation of the economy was reduced to changes in the ownership structure, although the structure of the economy determines to a large extent the rate of growth that can be achieved.

As a result, structural changes have taken place very quickly, but not always in the right direction. An example would be the restructuring of domestic enterprises by size. In a situation where the importance of large enterprises increased in the world, and the relative importance of small and medium-sized enterprises decreased, in Poland, there was a process of elimination of large enterprises (in practice, these were often modernized plants, operating under a faulty management system) and domination not even of small and medium-sized enterprises, but mainly of micro-enterprises. This, in turn, had a very negative impact in the long term on, in particular, the level of innovation in the economy, a factor determining the country's competitive position in the era of the knowledge-based economy. Similarly, the privatization of State Agricultural Farms contributed to the fragmentation of the agrarian structure. Small economic entities, unlike large companies, are not able to finance their own research and implementation activities and have little ability to purchase licenses ready for use. As a result of not having adequate financial resources, small businesses neither create progress on their own nor create the demand for progress and innovation, which is the development factor of the domestic R&D sector and its relationship with the economy. As a result, the level of innovativeness of the Polish economy was very low, expressed by a sharp decline in the share of high-technology products in exports and a low number of patents.

Between 1989 and 1996, the function of the government planning institution was formally performed by the Central Planning Office (CUP), whose tasks included long-term planning, but in practice, its role was limited to advising the government on the preparation of various expert opinions. At a crucial moment of the system change in Poland, when a national development strategy was most needed, it was not developed, not in the least because of the widespread aversion at the time to the institution of central planning associated with the rejected system. Although there were attempts to construct a long-term development strategy (CUP had such a task included in the scope of its duties), none of the resulting projects achieved the status of an official document.

Stage II – a gradual revival of the development programming

From the mid-1990s, the gradual return to socio-economic planning began, although in a modified form adapted to the conditions of a market economy, naturally [Wilczyński 1996, Knakiewicz et al. 1997, Dudek 2002]. Transformation resulted both from a growing understanding of the necessity for program-oriented state action, even in market conditions, but was primarily associated with the process of preparation for accession to the European Union. Poland signed the European Agreement (Association Agreement) on 16 December 1991, submitted its official application for accession on 8 April 1994, and the membership negotiations, which had been conducted since March 1998, were closed on 13 December 2002 at the European Council summit in Copenhagen.

Poland, like the other accession countries, was gradually integrated into EU programming procedures. Information about the planning system in the Union and its member states was initially received with suspicion and distrust, as being diametrically opposed to the neo-liberal doctrine. Objections were only overcome by the requirements accompanying the first aid programs. Looking from the present perspective, it can be seen that even the process of integrating the accession countries into EU programming structures was clearly a planned one. The requirements for the programming documents to be prepared, which were initially modest and relatively easy to meet, were consistently increased as the Polish side gained the relevant skills and experience. Poland, like the other candidate countries, was obliged to develop a several-year, annually updated so-called Pre-accession Economic Program (PPG) containing information on the current and projected macroeconomic situation (economic growth, inflation, balance of payments), the state of public finances (budget deficit and public debt), and structural reforms in the enterprise sector, the financial sector, the pension system, the labor market, etc.

The purpose of these plans was to:

- define medium-term economic policy objectives and priorities with a view to accession,
- prepare the new countries institutionally for participation in EU programming procedures.

Due to the low comparability of the data contained in the first edition of the PPG, the European Commission developed and presented the candidate countries with guidelines for the work on the next edition of such plans – their structure, method of data presentation, etc. Poland was also being prepared, for example, for full inclusion in the implementation of the European Employment Strategy. The document entitled "Joint Assessment Paper on Polish Employment Policy" (JAP) was prepared. The document was signed on 29 January 2001 by the Minister of Labour and Social Policy and the Commissioner for Employment and Social Affairs of the European Commission. In 2002 and 2003, reports on the implementation of the provisions contained in the JAP were drawn up and submitted to the European Commission in the area of social policy. The Joint Inclusion Memorandum (JIM) was prepared for the development of the post-accession time National Action Program for Social Inclusion. In addition to programs developed in direct coordination with the EU, the number of national programs and strategies also grew dynamically during this period. In Poland in the pre-accession period, for example, the Preliminary National Development Plan for the years 2000–2003 was developed as the basis for applying for PHARE, SAPARD, and ISPA funds, and later – the National Development Plan 2004–2006 as the base for benefiting from the structural funds after accession. In the period between May 1994 and May 2004 (i.e., from the submission of the application for accession to the EU to the time of accession), more than two hundred government programming documents were prepared, a significant number of which referred to the relevant EU programs.

In 2000, the Council of Ministers adopted the first long-term national development strategy, prepared at the Government Centre for Strategic Studies, "Poland 2025. Long-term Strategy for Sustainable Development". The document did not play a proper role in economic policy due to the lack of adequate legal anchoring in the relevant development programming legislation at that time, and the non-determinate financing of the strategy.

POLAND IN THE EUROPEAN UNION: STRATEGIC PROGRAMMING AFTER 2004

Stage III – Poland's inclusion in the EU programming structures

The next stage of programming started with the accession to the EU on 1 May 2004, when Poland was included in all procedures of coordination of the European Union's economic policy. In practice, this meant, among other things, an obligation for member states to periodically prepare a number of programming documents, which gradually became part of the national development programming system. The development of strategic programming within the European Union was primarily determined by the following circumstances: the introduction of the principle of programming aid funds, the creation of the Economic and Monetary Union (EMU), and the passing of the Lisbon Strategy.

In the Third Republic of Poland, various economic plans were implemented:

- Strategy for Poland (1994–1997) – a program of social and economic development,
- The First National Development Plan (2004–2006),
- Strategy for Responsible Development,
- National Reconstruction Plan (in Polish – KPO).

The rules of programming the aid funds were established in the 1989 reform known as the Delors package, as the result of which the Community budget and individual policies began to be programmed on a multi-annual basis, and the cohesion policy became the second most important policy in terms of the scale of the resources. One of the basic principles for implementing Structural Funds has been the rule of programming. This means that only projects that contributed to a specific development strategy are financed. The use of funds requires specific programming procedures. In accordance with the general principles of the Structural Funds, their implementation is the result of programming at the level of the EU, the Member State, and the beneficiary region. Despite some shortcomings of the Act, its enactment, as well as the development and adoption in late 2006 of the National Development Strategy 2007–2015, were important events in the history of the system transformation. Indeed, they have opened another stage in the development of strategic programming (i.e., socio-economic planning in a market economy) in Poland, where strategic programming has become a statutorily decreed official tool of development policy. For the first time, it is possible to speak of the emergence of a coherent, legally mandated system of development programming in Poland within the framework of European Union membership.

Strategic programming at the state level assumed the construction of the four-level system of strategic documents: (in accordance with the Act of 7 November 2008 amending certain acts related to the implementation of the Structural Funds and the Cohesion Fund) [Bober et al. 2008]:

The first level of strategic programming: horizontal long-term strategies with an implementation horizon of at least 15 years are developed at this level.

1. The second level of strategic programming: horizontal medium-term strategies with an operational period of 4 to 10 years, will be developed at this level.
2. The third level of strategic programming: other development strategies are prepared at this level. In the case of strategies developed by the central government, these are documents with an implementing perspective of 4–10 years, but no longer than the implementing perspective of the existing medium-term national development, unless a longer time horizon

results from the development specifics in a given area. Strategies developed by local self-government units may have a different time horizon. However, they must not go beyond the period covered by the current first-level strategies.

3. The fourth level of strategic programming – at this level, programs are developed with an implementation perspective of one to several years, but not longer than the implementation perspective of the respective development strategy.

Due to the subject matter of the strategic documents, we can specify the following areas of strategic programming:

1. Programming the state's social and economic development. It results from the definition of programming that it should take into account the main objectives and tasks of development, covering the economic and social sphere, macroeconomic development and directions of the main sectors' development, social conditions and needs, as well as implementation instruments, methods, and programs. Examples of strategic documents are a long-term national development strategy, a medium-term national development strategy, a national cohesion strategy, and other development strategies and programs: among them operational programs and development programs (including multi-annual ones).
2. Programming of regional development (without the local level). In this area, we can include such strategic documents as a national regional development strategy, supra-regional strategies, voivodeship development strategies, regional operational programs (negotiated with the European Commission), and voivodeship development programs.
3. Programming of spatial development (without the local level). Programming in this area is extremely important. This is due to the fact that the lack of spatial development plans may hamper the dynamics of investment processes both from national and EU funds. The following strategic documents can be presented in this area: a long-term national development strategy (in the section concerning the national spatial development guidelines), a midterm national development strategy (in the section concerning the spatial development), a national spatial development plan, and voivodeship spatial development plans (and resolutions of voivodeship self-governments on establishing temporary land reserves for public purpose investments of voivodeship and powiat significance).
4. The important category is horizontal documents, with their thematic scope covering the most important issues of national economic and social development, also from a regional perspective, placing them in spatial determinants. Due to their thematic range, these documents are intended, on the one hand, to consolidate various development activities undertaken in the country, and on the other hand, to coordinate them. Horizontal documents include: a long-term national development strategy and a medium-term national development strategy, horizontal documents resulting from international agreements, such as the National Cohesion Strategy, and other horizontal documents, such as the National Spatial Development Plan.

The development management system creates a framework for guiding the state development policy, which allows for defining the country's development goals and planning how and with what methods or instruments these goals will be achieved. The basis for these activities is the Act of 6 December 2006 on the principles of development policy (Polish Journal of Laws No. 227 Item 1658) and for the current government (for the last 8 years), the document Development Management System of Poland, which was adopted by the Council of Ministers on 29 October 2018. Since then, a package of strategies has been created, existing documents have been put in order, and laws creating the legal framework for the proposed solutions have been adopted.

A new impulse for reviewing and possibly revising national development strategies, beginning with the medium-term national development strategy, is the forthcoming elaboration of a Concept of National Development with a time horizon up to 2050.

The Concept of National Development to 2050 is currently underway and should be adopted by the Council of Ministers by the end of 2023. This document will identify global development trends, their potential impact on Poland, and possible development scenarios in the 30-year perspective. The concept will include a vision of possible national development paths and the current knowledge of how global factors affect the shape of the socio-economic and environmental/spatial situation.

This document will form the background for the preparation of the development strategies. The recommendations it contains on the methods, objectives, and directions of public agencies would be used to update the medium-term strategies of the government and would be a reference point for preparing other public (e.g., local government) and private agencies' strategies.

The country's medium-term development strategy

The Strategy for Responsible Development up to 2020 (with a perspective to 2030) – the Strategy (in Polish – SOR) – was adopted on 14 February 2017 by the Council of Ministers. It is the obligatory and key document of the present government, defining the objectives and directions of social, economic, and spatial development from a medium-term perspective.

The Strategy contains recommendations for implementing public policies. SOR approval has also initiated the implementation of the project-based approach in public administration [Informacje… 2023].

In the current development management system, the next level of governance is represented by nine integrated development strategies, specifying the SOR in priority development areas. Within the strategies, seven have been updated:

5. the National Ecological Policy 2030 – Development Strategy for Environment and Water Management (Ministry of Climate and Environment), adopted by the Council of Ministers on 16 July 2019;
6. the National Regional Development Strategy 2030 (Ministry of Funds and Regional Policy), adopted by the Council of Ministers on 17 September 2019;
7. Sustainable Transport Development Strategy 2030 (Ministry of Infrastructure), adopted by the Council of Ministers on 24 September 2019;
8. the Strategy for Sustainable Rural Development, Agriculture and Fisheries 2030 (Ministry of Agriculture and Rural Development), adopted by the Council of Ministers on 15 October 2019;
9. Social Capital Development Strategy (Interaction, Culture, Creativity) 2030 (Ministry of Culture and National Heritage), adopted by the Council of Ministers on 27 October 2020;
10. Human Capital Development Strategy 2030 (Ministry of Family and Social Policy), adopted by the Council of Ministers on 14 December 2020;
11. the Energy Policy of Poland until 2040 (Ministry of Climate and Environment), adopted by the Council of Ministers on 2 February 2021.

Integrated strategies aim to combine social, economic, and spatial planning and take into account the links between different sectors. That way, they facilitate better coordination and greater efficiency. All government development programs and public policies should be in line with the provisions of integrated strategies. The Council of Ministers has adopted 13 public policies and 88 development programs, including 49 multi-annual programs (March 2022).

The Act on the Principles of Development Policy specifies what conditions a supra-regional strategy must meet and what the procedure for its adoption is. The competence to prepare supra-regional strategies is the responsibility of the voivodeship self-government.

The supra-regional strategy is facultative and may be prepared jointly by the self-governments of the voivodeships whose area is covered by the strategy. As a rule, the supra-regional strategy is adopted by the regional assemblies of the voivodeships. The Council of Ministers adopts a supra-regional strategy if the voivodeships request it. Such a solution is applied in the case of the necessity to prepare a supra-regional strategy defining a strategic framework for programs as the basis for applying for EU funds.

The adoption of the SOR and the revision of the Amendment to the Act on the Principles of Development Policy, which came into force on 13 November 2020, were important steps in building a new system for managing Poland's development. The amendment was aimed at integrating the socio-economic and spatial dimensions in strategic documents.

The most important changes resulting from the Act include:

- introduction of a national development concept: an instrument identifying global development trends in the perspective of 2050; at the same time, the long-term national development strategy and the concept of spatial management of the state have lost legal force;
- regulation of public policy status: a document prepared at the national level, which shows how, in relation to the state's development goals, the goals concerning a given sector, area, or territory are being met;
- introduction of a new approach to the agreement of development activities with the territorial self-governments based on a catalog of instruments: a program contract, a sectoral contract, and a territorial agreement; the program contract has been linked to the co-financing and conditions for the use of EU funds under the regional operational programs; the sectoral contract is a mechanism for agreeing with the scope of the territorially oriented sector;
- activities from the level of the government administration; both types of contract are concluded between the government administration and the self-governments of the voivodeships; the territorial agreement is a tool for agreeing with interventions relevant to local communities;
- definition of "areas of strategic intervention" (OSI), i.e., an instrument that strengthens the development policy with a mechanism serving areas with specific social, economic, and spatial conditions, which require integrated public interventions; OSIs are introduced at the national and regional level and at the same time are linked to investment or regulatory support;
- giving the voivodeship development strategy a leading role in planning development activities in the region in social, economic, and spatial terms;
- legal empowerment of the local (gmina) development strategy and introduction of the possibility to prepare supra-local development strategies – these documents are of a non-obligatory character;
- alignment of the process of appraising draft development strategies, development programs, or public policies with the new catalog of strategic documents and new requirements regarding the content of these documents.

CONCLUSIONS

Existing weaknesses and limitations of the strategic programming system, which prevent the proper definition of Poland's development goals, are related to the lack of continuity of programming efforts (resulting, for example, from changes in governing teams; strategic documents are updated after a change of government). Budgetary planning is not sufficiently linked to the strategic objectives of the development policy, which results in financial resources being dispersed or duplicated (e.g., national multiannual programs, which are often created ad hoc, are not being correlated with investment projects provided for within individual operational programs co-financed from EU funds). There is still a lack of effective multiannual financial planning covering all public funds, which hampers the extension of the strategic planning horizon. The situation is further complicated by so-called election time budgets. There is also no system for evaluating (assessing) the use of public funds to achieve the public objectives set. At the same time, there is a lack of a clearly outlined long-term vision for state development – which results in the dispersion of objectives, duplication of actions, or even support for mutually overlapping ideas. A number of documents of a strategic nature are at the same time characterized by internal and external incoherence and inconsistency of the terminology used in these documents. For the practical implementation of the development strategies, on the other hand, good governance is of fundamental importance, the essence of which is contained in the idea of good governance understood as efficient and partnership in management, based on the principles of transparency, responsibility, efficiency, and cohesion.

The last part of the article discusses the strategies and plans for distributing European Union funds, of which Poland is a beneficiary after accession in 2004. One of the basic principles for implementing Structural Funds has been the rule of programming. Strategic programming in the EU is an important instrument for allocating public funds to directions and objectives adopted commonly by all member states and European Institutions. This is not an easy path, as shown by the latest example of the National Recovery and Resilience Plan (in Polish – Krajowy Plan Odbudowy, KPO) practically agreed upon between the Polish government and the European Commission, but two years have passed since the European Commission adopted the KPO; however, the funds have still not been transferred to Poland. Grants and loans will be launched when Poland as a member state meets the so-called milestones, including reform of the judiciary and restoring the rule of law. Prolonging the reforms means giving up about 300 billion PLN. The society and economy of Poland cannot afford it.

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PROGRAMOWANIE STRATEGICZNE W POLSCE – ZMIANY W UJĘCIU HISTORYCZNYM

STRESZCZENIE

Cel: Ocena dynamiki i następstw zmieniających się okresów planowania strategicznego, a także perturbacji związanych z transformacją ustrojową, zmianami rządów i efektami cykli wyborczych. **Metoda:** przegląd literatury i wykorzystanie analizy statystycznej do syntezy i wnioskowania. Różnorodne źródła materiałów: literatura teoretyczna, akty prawne, dokumenty rządowe, plany i strategie, dane statystyczne GUS i Eurostatu. **Wyniki:** Dokonano kompleksowego przeglądu zmian w programowaniu strategicznym w Polsce w długim okresie. Ramy czasowe badania obejmują lata 1918–1939, gospodarkę centralnie planowaną po II wojnie światowej, proces transformacji ustrojowej w 1989 roku, transformację gospodarczą i instytucjonalną w latach 90. XX wieku, oraz okres po przystąpieniu do UE w 2004 roku. **Wnioski:** Programowanie strategiczne w Polsce w ramach UE jest ważnym instrumentem alokacji środków publicznych na kierunki i cele przyjęte przez wszystkie państwa członkowskie i instytucje europejskie. Ostatnie 8 lat pokazuje, jak polityka jednego rządu może wpływać na zmiany systemowe w państwie o niestabilnych instytucjach stojących na straży wartości demokratycznych. Dalsza reforma gospodarki jest konieczna na potrzeby rozwoju planowania strategicznego, ale w krótkim okresie przede wszystkim dla spełnienia wymogów niezbędnych do odblokowania funduszy strukturalnych i środków z KPO.

Słowa kluczowe: programowanie strategiczne, historia, etapy transformacji, Polska

Acta Sci. Pol.
Oeconomia 22 (4) 2023, 93–106
acta_oeconomia.sggw.pl ISSN 1644-0757 eISSN 2450-047X DOI: 10.22630/ASPE.2023.22.4.28

ORIGINAL PAPER

Received: 28.07.2023
Accepted: 27.12.2023

DURABLE GOODS IN URBAN HOUSEHOLDS OF SILVER SINGLES IN POLAND

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ABSTRACT

Aim: The purpose of this article is to provide some insight into what home infrastructure is present in single seniors' households. It can be concluded that their home infrastructure is constantly improving, as directly reflected in a better satisfaction of their perceived needs. **Methods:** The research was conducted in two stages in 2018–2022. In the first of the planned stages, the survey was carried out on a sample of 3,167 silver singles in the period from 1 February to 30 October 2018 and from 1 May to 30 October 2019. The second stage lasted from 1 March to 30 September 2021 and then from 6 February to 30 September 2022 and covered a sample of 3,834 elderly people living alone. In accordance with the research assumptions, the sample included only single people aged 65 and older who took independent consumer decisions on the market. **Results**: In the analyzed period, the situation of single seniors' households regarding the possession of almost all durable goods improved, which undoubtedly stems from the fact that these goods are more common and available, e.g., through easily obtainable loans and decreasing product prices. When analyzing home appliances present in silver singles' households, it can be seen that households tend to replace the existing equipment with new appliances and purchase completely new, previously unknown products. The analysis of the infotainment equipment possessed by silver singles indicates a lower degree of its presence than that of home appliances. **Conclusions:** In the context of the obtained results, it can be stated that the surveyed households of single elderly people are increasingly better equipped with home appliances, infotainment equipment, and means of transport. This undoubtedly translates into the level at which the needs regarding durable goods are satisfied. The research findings indicate that in both stages, seniors actively attending U3A courses better assess the level of satisfaction of their needs regarding durable goods more frequently than members of parochial clubs.

Keywords: silver singles, home infrastructure, durable goods

JEL codes: A12, D03, D18

INTRODUCTION

The aging of many populations and progressing singalization, especially in Western and Central Europe and the United States, is becoming more and more common. Changes in mentality, distance from the institution of family, the cult of independence, and the building of one's own social position result in increased numbers of silver singles[1]. This, in turn, means greater social significance for elderly people in

[1] Throughout this article, the terms: "silver singles", "single seniors", "single elderly people", and "elderly people living alone" are used interchangeably.

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today's society, including those living alone. The fact that the segment of single seniors is constantly growing has a meaningful impact on their lifestyle, as it has on the structure of consumption and preferences regarding the place and frequency of shopping. All this makes single elderly people, as consumers, an important group on the market, and thanks to their growing purchasing power, they are increasingly attractive to producers. It should be borne in mind that the segment of seniors is very diverse [Zalega 2022].

The purpose of this article is to provide some insight into what home infrastructure is present in single seniors' households. It can be concluded that their home infrastructure is constantly improving, as directly reflected in a better satisfaction of their perceived needs.

The structure of this article is as follows. After a brief introduction and a literature review, the focus is on the research conceptualization and a description of the research sample and its characteristics. Further, the study synthetically analyzes what selected durable goods the households of elderly people living alone possess. Finally, major conclusions end this article.

LITERATURE REVIEW

A key feature of the consumption preferences of households, and consequently of their consumption model, is their possession of durable goods [Barsky et al. 2007, Dziechciarz and Dziechciarz-Duda 2017, Rocchi 2022]. Durable goods can be defined as tangible goods that are purchased for consumption purposes and whose use does not cause their immediate destruction, thus enabling them to be present in many subsequent acts of consumption. Such goods are accumulated and consumed over a long period of time and indicate the level of wealth that a particular household enjoys; they secure good living and, to some extent, balance out the impact that a temporary reduction in current income exerts on the degree to which the needs of each member of the household are satisfied. In general, the more durable goods a household possesses, the greater its freedom to manage its current income and the higher its average assessment of the standard of living.

Consumers in a specific socio-economic group often emphasize their possessions, thereby wishing to get closer to a certain pattern shaped under the influence of fashion, preferences, habits, social positions, etc. Such conduct often becomes a game changer for the consumption behavior of society and a modernizer of the structure of consumption and the structure of durable goods that households own.

Expenditure on durable goods is a key component of consumption dynamics, despite accounting for a modest share in aggregate household spending. Expenditure on durables tends to be volatile and pro-cyclical, reflecting the specific characteristics of this type of good. Consumer durables have specific characteristics that set them apart from other consumption expenditure items. Firstly, a durable good provides utility over multiple periods and (like capital) is subject to depreciation. This allows consumers to postpone purchases in times of economic hardship while still benefiting from the flow of services from the accumulated stock, and to adjust to the desired level of durables once the economy has recovered. Secondly, the purchase of durables can often be financed using credit, and the durables are sometimes eligible for use as collateral, which can make them more exposed to credit conditions and lending rates than non-durables. Finally, changes in the stock of durables may be subject to adjustment costs. This could lead to sluggish and protracted cycles in durable goods expenditure, since the presence of such costs determines "inaction zones" where a consumer finds it optimal not to adjust small differences between the actual and the desired stock of durables [Casalis and Krustev 2020].

A specific role of durable goods in the activity of each household consists in the improvement and mechanization of housework. Taking into account the multifaceted meaning of durable goods, three groups of household goods are distinguished in the literature [Kędzior 1989]:

- appliances used for preparing meals and storing food products, referred to as kitchen appliances, i.e., refrigerators, freezers, food processors, microwave ovens, etc.;
- equipment used for keeping order and cleanliness at home, for washing and maintaining clothing, referred to as general household equipment, i.e., washing machines, electric spin-dryers, vacuum cleaners, sewing machines, etc.;

- equipment to satisfy the needs related to home entertainment and leisure, referred to as consumer electronics, i.e., radios, tape recorders, TV sets, video recorders, etc.

Considering the type of household needs and the needs of individual household members, durable goods are divided into three groups:

- goods used directly in the household, related to the need to mechanize housework (e.g., prepare and store food products – cookers, food processors, refrigerators, freezers) and to keep the home clean, to wash and maintain clothing, e.g., automatic and rotary washing machines, dishwashers, ironing machines, food processors, sewing machines, and others;
- consumer electronic equipment to meet various needs related to home entertainment, leisure, or study, serving to directly satisfy the individual needs of household members, i.e., TV sets, video recorders, radio-broadcast receivers, video cameras, personal computers, and others;
- mobility-related goods meeting the needs in terms of movement, i.e., bicycles, motorcycles, cars.

Commonly used identifiers of the degree to which needs are fulfilled regarding durable goods include: the level and structure of expenditure from personal household income and possessed durable goods [Lovatt 2018, Sathya and Indirajith 2018, Kayode et al. 2021]. Expenditure on consumer goods and services determines the final phase of needs satisfaction in specific conditions of choice on the market. In the case of durable goods, it informs about the current purchases of goods and services. By analyzing the structure of expenditure, it is possible to determine the position of durable goods in the process of meeting needs [Zalega 2016, Kulshreshtha et al. 2017].

In order to diagnose the situation in households regarding their equipment facilitating various activities, a three-stage saturation scale is used [Kędzior 1989, Wu 2022]:

- a high degree of saturation where a particular appliance is owned by more than 80% of households;
- an average degree of saturation where a particular appliance is owned by 50 to 80% of households;
- a low degree of saturation where a particular appliance is owned by less than 50% of the population.

In turn, Kramer [1993], assessing durable goods possessed by households, distinguishes:

- standard goods that are available to every household when needed: they are owned by more than half of respondents from the group;
- goods of a higher standard that are owned by 10–50% of households;
- luxury goods present in less than 10% of households.

Durable goods, which form the household consumption infrastructure together with the house or flat, include a wide range of products such as home appliances, infotainment equipment, and means of transport. Therefore, these items are differentiated according to the type of needs met in the household and, at the same time, are characterized by a relatively long lifetime and different paces of physical and moral wear and tear.

Durable goods perform three basic functions: utilitarian, exchange, and symbolic. Utilitarian functions of these goods serve directly to meet specific needs or are a means of indirectly satisfying the felt needs. In turn, the exchange functions of durable goods have a certain exchange value, e.g., in the period of short -age of goods on the market, they serve as objects of the exchange process or become a deposit of surplus money. On the other hand, the symbolic function involves some goods (due to their rarity and indication of wealth) having become a dimension of social distinctions, e.g., a house in a stylish part of the city, various types of devices in which new information technologies are used, etc. Currently, most goods have lost their symbolic function and partly their exchange function. In view of the widespread availability of durable goods on the market, these goods mostly neither have the value of rarity nor are signs of wealth. The exception is durable goods classified as so-called Veblen goods, namely goods that are associated with conspicuous consumption most often pursued in high-income households and those that are referred to as economic elites [Kulshreshtha et al., 2017, Zalega 2017].

Households in a specific socio-economic group often emphasize their possessions, thereby wishing to get closer to a certain pattern shaped under the influence of fashion, preferences, habits, social positions, etc. Such conduct often becomes a game changer for the consumption behavior of society and a modernizer of the structure of consumption and of durable goods that households own. In addition, household durable goods, together with the house or flat, affect a wide range of everyday consumption behaviors of household members that make up the internal activity of the household. They also determine the length of free time and the way it is managed.

Regardless of the objective benefits, a significant part of durable goods owned by households meets higher-order needs, and as such, they characterize the population's standard of living and are an indicator of modernity. Though not always rightly, they are often treated as a symbol of social prestige, a new material culture, and a new lifestyle [Schwarz 2021, Amendola and Vecchiego 2022, Bertolotti et al. 2023].

The propensity of households to consume durable goods depends not only on their financial capabilities but also on many socio-demographic determinants that indicate the needs of their members. Therefore, in addition to purely demographic characteristics such as age, education, or gender, non-economic factors such as preferences, fashion, subjective preferences, and influence of patterns or tastes have a significant impact on the possessed durable goods.

The possessions of households in Poland at the turn of the first and second decade of the 21st century were changing rapidly, which was facilitated by the market increasingly being better supplied with goods with ever higher technical and quality parameters, and branded equipment. The process of globalization and internationalization of the world economy, as well as constant technical progress (notably the development of information technologies), are having a significant bearing on changes in home infrastructure. The effects of these developments are new and better quality products. For this reason, households seek to change their equipment both by replacing the existing equipment with new appliances and by purchasing completely new, previously unknown products. Over the last few years, some goods (e.g., microwave ovens, dishwashers, LCD and QLED TV sets, smartphones, iPads, tablets, etc.) that were an indicator of the high material status of their owners at the turn of the 20th and 21st centuries have become common in single-person households. Currently, these products are treated as popular, even standard household appliances that have almost "blended" into the functioning of an average single-person household.

RESEARCH CONCEPTUALIZATION

The main purpose of the designed and conducted empirical research was to provide some insight into what home infrastructure is present in single seniors' households. The empirical material contained in this article comes from direct research carried out in the form of a survey questionnaire among silver singles. This research method was chosen in view of the older age of respondents whose openness to new media (internet, smartphone, iPod) often used in direct research is limited. The material collected was then arranged, i.e., grouped, counted, and pre-assessed for completeness of the information. From the initial numbers of survey questionnaires received from 3,198 respondents in 2018–2019 and 3,863 respondents in 2021–2022, the following were deemed eligible: 3,167 and 3,834 questionnaires, representing 99.03% and 99.24% of the total sample, respectively. Further, they were coded and the data set thus created was processed by a statistical package. The application of the IBM SPSS 26.0 PL statistical package together with AMOS 29 and Matlab R2023b made it possible to analyze – in a relatively short time – the information obtained from standardized interviews. Pearson's correlation coefficients and Cramér's V association coefficient were used to determine the directions and strength of the relationships between dependent and independent variables.

SELECTION AND CHARACTERISTICS OF THE RESEARCH SAMPLE

The research was conducted in two stages in 2018–2022. In the first of the planned stages, the survey was carried out on a sample of 3,167 silver singles in the period from 1 February to 30 October 2018 and from 1 May to 30 October 2019. The second stage lasted from 1 March to 30 September 2021 and then from 6 February to 30 September 2022 and covered a sample of 3,834 elderly people living alone. The COVID-19 pandemic caused by the SARS-CoV-2 coronavirus and the lockdown introduced in Poland in March 2020, limiting free movement, made it impossible to conduct research among single elderly people in 2020. In accordance with the research assumptions, the sample included only single people aged 65 and older who took independent consumer decisions on the market.

In this article, "silver singles" mean people aged 65+, living alone by their own choice (in single-person households or separate flats), for reasons beyond their control (widows, widowers) or those who live alone again (divorced, abandoned, forsaken). These people usually have no parental responsibilities, are economically independent, have most often completed higher or secondary education, have a large group of friends and acquaintances, are strongly focused on themselves and their needs, and lead a specific lifestyle in which they pursue individual values and relationship patterns. In addition, this study assumes that single people cannot remain in informal LAT[1] or distant relationships, and their possible romantic relationships cannot be lasting[2]. This definition thus excludes elderly people who are in a permanent heterosexual or homosexual relationship and narrows the group of "silver singles", allowing research uniformity.

The author of this study divided silver singles into:
- young-old – people aged 65–74;
- old-old people aged 75–84;
- the oldest-old – people aged 85 and older.

The survey was conducted among participants of the University of the Third Age (U3A) at state universities in: Warsaw, Krakow, Łódź, Poznań, Gdańsk, Katowice, Lublin, Białystok, Toruń and Wrocław, as well as among members of parochial clubs in parishes located in the Archdioceses of Warsaw, Krakow, Łódź, Białystok, Gdańsk, Katowice, Lublin, Poznań, Wrocław and the Dioceses of Warsaw-Praga and Toruń.

In 2018–2019, 53.8% of the survey participants were women, and 46.2% were men. In 2021–2022, these shares changed to 54.3% for women and 45.7% for men. Taking into account the age of silver singles in both stages of the study, almost 3/5 of the respondents were young-old, every third person living alone represented the old-old age, and every tenth was the oldest-old. Respondents with secondary education formed the largest group. In both stages, over 35% of those surveyed declared this level. Every fourth respondent was a university graduate, and those with basic vocational education represented a similar percentage. In the sample surveyed, people with primary education were the smallest group (12%).

In both stages, the largest group among single seniors included people whose monthly disposable income ranged from PLN 2,501.00 to PLN 3,500.00. For every third respondent, the household income did not exceed PLN 2,500.00. In turn, every fourth single senior surveyed earned a monthly disposable income ranging from PLN 3,501.00 to PLN 4,500.00. The smallest group of respondents included households where disposable income was above PLN 4,500.00 per month.

Place of residence was also an important variable in the research. In line with the research assumptions, the sample comprised single elderly people who lived in large cities in Poland: one city with over 1 million inhabitants: Warsaw; one city with a population from 750,000 to 1 million inhabitants: Krakow; three cities with 500,000 to 750,000 inhabitants: Wrocław, Łódź, and Poznań; four cities with 250,000 to 500,000 inhabitants: Gdańsk, Lublin, Białystok, and Katowice; and one city with 100,000 to 250,000 inhabitants: Toruń.

In the first stage of the research covering the 2018–2019 period, almost 45% of silver singles described their economic situation as good, and 2/5 of them as bad. Almost one in ten respondents regarded their economic status as very bad, whereas only one in ten assessed their material situation as very good. In the second stage, however, the percentage of elderly people living alone who assessed their situation as very bad increased. This option was selected by every seventh respondent. The percentage of silver singles evaluating their financial situation as bad did not change. Interestingly, the percentage of single seniors who considered their financial situation as very good in 2021–2022 rose. This answer was given by every sixth respondent. Every third person living alone described their economic status as good. Moreover, the

Table 1. Assessment of durable goods possessed by single seniors' households (%)

Assessment of durable goods possessed by single seniors' households	Number of respondents		Percentage share (%)	
	n = 3,167	*n* = 3,834		
	2018–2019	2021–2022	2018–2019	2021–2022
Very good	795	1,139	25.1	29.7
Good	969	1,346	30.6	35.1
Average (satisfactory)	697	606	22.0	15.8
Bad	396	418	12.5	10.9
Very bad	310	326	9.8	8.5

Source: Author's research.

information obtained from the respondents shows that a positive correlation exists between the population of the city where singles lived and their self-perceived material situation. The bigger the city, the greater the percentage of silver singles who assessed their material situation as good or very good in the first stage of the research and in 2021–2022).

FINDINGS AND DISCUSSION

In the analyzed period, the number of single seniors content with the durable goods in their household increased. In light of the data obtained from both stages of the research, it can be concluded that every fourth silver single in the first stage of the research and every third respondent in 2021–2022 described their possession of such goods as very good. In turn, every third elderly person living alone assessed their possession of basic durables as good. On the other hand, the situation regarding basic durables possessed was considered bad by every eighth respondent in the first stage of the research and every tenth in the second stage. A very bad situation in this respect was indicated by every tenth single senior in 2018–2019 and every twelfth in the second stage of the study. Every fourth single senior in the first stage of the research and every sixth in the second stage said that their household was equipped with durable goods at an average level (Table 1). In addition, seniors who were students of U3As (53.3%) indicated higher assessments of their situation regarding durable goods possessed than members of parochial clubs (46.7%).

Home appliances

In every household, equipment serving to improve and mechanize housework plays an important role. Its purchase requires consumers to make prudent decisions based on information and evaluation of other options. Furthermore, the purchase of such equipment is determined by many economic, social, and cultural factors, as well as subjective consumer habits and experience.

In the analyzed period, the situation of single seniors' households regarding the possession of almost all durable goods improved, which undoubtedly stems from the fact that these goods are more common and available, e.g., through easily obtainable loans and decreasing product prices.

In both stages of the study, the ownership of home appliances in seniors' households and the degree of their commonness varied. Regarding home appliances pres-

[2] LAT (Living Apart Together) relationships are a form of partnership. These are romantic relationships between unmarried partners of the same or opposite gender who have separate domiciles, consider themselves a couple, and are perceived as such by others. Undoubtedly, a LAT relationship is one where the partners do not live together despite remaining in a long-term, stable, satisfying bond. In this case, the initial stages of the relationship, when living apart is still natural, are not taken into account. Partners make an autonomous, deliberate decision to maintain two households, and even other people may permanently stay at their homes.

[3] This definition of a silver single was presented to people participating in the survey before they filled out the questionnaire.

ent in the surveyed households of single seniors, a high degree of saturation concerned automatic washing machines, refrigerators, and electric vacuum cleaners, and an average degree of saturation was noted for food processors and microwave ovens. The least common home appliances included dishwashers and electric cookers with ceramic hobs. All of the above-mentioned appliances save time, make housework more efficient, and facilitate the functioning of respondents at home.

When analyzing home appliances present in silver singles' households, it can be seen that households tend to replace the existing equipment with new appliances and purchase completely new, previously unknown products. A good example of this is the growing popularity of cordless vacuum cleaners powered by batteries that are slowly pushing traditional models off the market. Undoubtedly, cordless vacuum cleaners are ideal for people who appreciate effective and simple equipment and want the convenience of an unlimited range while cleaning. Another example of modern home appliances is an induction cooker, which is characterized by energy efficiency, high cooking speed, good functionality, and aesthetic values. Since it was designed for people who do not cook much and do not use kitchen equipment often, it is increasingly present in many households of silver singles.

Infotainment equipment and means of transport

In addition to home appliances, equipment serving entertainment and leisure at home (so-called infotainment equipment) also plays a significant role, as well as means of transport allowing individual mobility.

The analysis of the infotainment equipment possessed by silver singles indicates a lower degree of its presence than that of home appliances. Nevertheless, the desire of people living alone for convenience and time savings can be seen not only in the automation of household chores but also in the growing interest in electronic devices.

A high level of saturation in single seniors' households can be noted only regarding television sets and mobile phones. Over 93% of silver singles had such devices. The study shows that among the owners of television sets, almost every fifth respondent had a TV set with full HD resolution, and every tenth person declared having a TV set with a resolution of at least 4K. Moreover, the information obtained from the respondents shows that almost one in five households had two TV sets.

It should be noted that nowadays, the lack of a TV set in the household is not an indicator of the material status of the consumer. Currently, this trend is reversed. Namely, the lack of a TV set is not the result of, for example, financial problems but a conscious decision that is influenced by various factors. Such a trend may ensue from the increased activity of household members on the internet and from the virtualization of life, with the development of consumption as a consequence (watching films, listening to music, storing photos and documents on a computer, using a mobile phone or the internet). It is mostly young-old singles who act in this way. Most commonly, the oldest-old seniors do not possess a TV set at home, usually by their own choice.

A good whose popularity is constantly growing in the contemporary world, at a rate similar to the internet and with a similar effect on people's lifestyles, is the mobile phone. This is reflected in its more common presence in single seniors' households over just a few years. In the context of the conducted research, it can be concluded that over 96% of respondents have a mobile phone, which confirms a high degree of saturation of this good in households. Over 4/5 of single seniors can no longer imagine leading an everyday life without a mobile phone because the list of advantages of having a mobile phone is very long. For example, one can stay in touch with relatives and friends and call for medical help should a need arise. In turn, landline phones were more often owned by the oldest-old respondents who were in a better financial situation, were secondary school and university graduates, and lived in Łódź, Białystok, and Katowice.

For 3.9% of single seniors, the main reasons for not using a mobile phone were: having a landline phone, inability to operate such a device, and too low frequency of making and receiving calls. Such answers were most often given by the old-old and the oldest-old respondents. It is worth noting that reasons such as the lack of confidence in mobile phones and too-high prices of mobile phones are much more frequently indicated by women. By the same token, men slightly more often said that a landline phone was enough and that they made and received calls rarely.

An average level of saturation can be noted in the case of devices for receiving fixed or cable TV broadcasts and personal computers with internet access. The study shows that only 34% of elderly people living alone use the internet. Young-old people indicated definitely more frequent use of a computer with internet access. It was also observed that those who were more educated declared more frequent use of a computer with access to the internet. The results, however, do not differ regarding the gender of single seniors. The main fears of using the internet, as most frequently indicated by the respondents, are the possibility of becoming a victim of fraud and no belief that they could learn how to use a web browser. Elderly people living alone, mostly the old-old and the oldest-old, use a computer (laptop) relatively rarely – only 26.5% of them declare doing so. The main barrier is the inability to use it, yet also no such need or no access to the equipment. Other barriers to the efficient use of information and communication technologies may be psychological obstacles, mainly fear of and anxiety (often unjustified) about addiction and loss of data, concerns about the security of one's online transactions, and the belief that the use of new technologies is the cause of dangerous radiation, as well as self-exclusion from the world of new technologies, which is very often associated with the aversion to all new things or changes and the conviction that one learns only until a certain age. This behavior of single seniors, especially the old-old and the oldest-old ones, can be explained by digital exclusion[4], which may be related to the feeling of physical isolation and loneliness. Empirical data shows that digital exclusion is more common in the group of older people due to the so-called digital gap between younger and older adults. The digital gap consists of significantly greater access to the internet by younger people as compared to seniors. For most respondents, therefore, television remains the main medium used on a daily basis. The marginal use of laptops and smartphones significantly limits the possibilities of bilateral communication with the outside world by means of ICT. On the other hand, the progressing digitization of services (including social ones) is focused on the use of state-of-the-art technologies, where access to the internet via a smartphone is the minimum necessity.

As for cable TV, it is used mainly by single seniors with secondary education, most commonly young-old and the oldest-old, with a monthly disposable income in the range of PLN 3,501.00–4,500.00, and living in Warsaw, Krakow, and Wrocław.

The surveyed households were equipped with DVD players and digital cameras at a low level. A very low level of possessions was noted for CD players, home cinema systems, printers, and landline phones.

The conducted survey reveals that the highest medium-term rate of decline in goods related to home entertainment, study, and information was observed with landline phones (a decrease of over 40%). Not having one mainly results from the fact that the respondents possess a mobile phone, which is sufficient for them (57.8%). A secondary reason, indicated by nearly one-third of those not using landline phones, is that they make phone calls rarely. The third factor is too-high prices of services (13.1%).

Analyzing the group of durable goods related to meeting mobility-related needs, an average degree of saturation with bicycles and passenger cars can be observed. In the examined period, these goods were owned by almost 2/5 of the respondents. Households of single seniors had two-wheeled vehicles (motorcycles, scooters, mopeds) at a minimum level. U3A students were better equipped with mobility-related durables than members of parochial clubs. The former owned more passenger cars, while the latter more often possessed bicycles and mopeds.

The study shows that the situation regarding durable goods present in single seniors' households has significantly improved in terms of quantity and quality; hence,

[4] The concept of digital exclusion is an element of a wider phenomenon, described as digital inequality, which manifests itself in the exclusion of people who do not use the internet for active or passive participation in the digital society. Digital exclusion and related information exclusion, understood as a kind of social exclusion, are predictors of lower quality of life and lower subjective mental well-being [Böhnke and Silver 2014].

Table 2. Average lifetime of selected durable goods in households of single seniors (% of responses)

Type of goods	Age of goods			
	2018–2019		2021–2022	
	up to 5 years	more than 5 years	up to 5 years	more than 5 years
Automatic washing machine or tumble dryer	24.2	75.8	23.6	76.4
Corded or cordless vacuum cleaner	22.4	77.6	21.8	78.2
Refrigerator, freezer, or refrigerator-freezer	23.8	76.2	24.3	75.7
Electric cooker with ceramic or induction hobs	50.7	49.3	51.1	48.9
Food processor	28.4	71.6	26.3	73.7
Dishwasher	50.2	49.8	51.1	49.9
TV set	5.2	94.8	3.9	96.1
Device for receiving satellite or cable TV broadcasts	51.1	48.9	52.5	47.5
Home cinema	20.3	79.7	19.9	80.1
Radio-broadcast receiver	10.1	89.9	9.7	90.3
CD player	4.4	95.6	3.6	96.4
DVD player	20.1	79.9	18.6	81.4
Digital camera	27.3	72.7	21.9	78.1
Computer (laptop) with internet access	52.4	47.6	56.7	47.3
Printer	50.6	49.4	52.1	47.9
Landline phone	8.9	91.1	6.7	93.3
Mobile phone (including smartphone) – including up to 2 years	97.7 46.9	2.3 -	97.9 49.6	2.1 -
Bicycle (excluding children's bicycles)	24.7	75.3	23.4	76.6
Motorcycle, scooter, moped	15.1	84.9	12.9	87.1
Passenger car	8.2	91.8	7.6	92.4

Source: Author's research.

the structure of such assets is being modernized. The cathode ray tube TV set, monophonic radio-broadcast receiver, and tape recorder have practically disappeared. New goods have taken over and have been quickly adopted. In particular, many new goods have appeared in the field of ICT, notably devices for receiving satellite and cable TV broadcasts, hi-fi equipment, personal computers, the internet, and mobile phones. It should be emphasized here that the lack of some durable goods in the surveyed households of silver singles may result not so much from the lack of financial capabilities, but from the reluctance to own them.

Lifetime of selected durable goods

The actual use of equipment for housework is primarily determined by its efficiency. Its efficiency can be inferred from its average lifetime. Appliances utilized longer than the so-called theoretical useful life are used to a limited extent. In general, their lifetime is closely correlated with the degree to which such goods are present in households. Therefore, it can be concluded that goods with a high and medium saturation level are those that are used for the longest period of time. In order to examine the most modern equipment present in silver singles' households, it was assumed that it had been used for up to five years, while the older generation included models used for five years and more. Older-generation equipment is considered as appliances that are less efficient, consume more electricity, are large, heavy, and do not meet the standards of use. Information on the average lifetime of home appliances, infotainment equipment, and means of transport is included in Table 2.

The data analysis reveals that in the examined period, the most modern infotainment equipment was a mobile phone (including a smartphone), owned by over 97% of silver singles. Slightly more than 2% of respondents had an older type of mobile phone used for more than 5 years, whereas a 2-year-old phone was owned by every second single senior. New equipment included a computer with internet access (about 54% of single seniors had it), a device for receiving satellite or cable TV broadcasts (every second silver single had it), and a printer (more than half of respondents possessed it). On the other hand, silver singles' households were poorly equipped with digital cameras (every third respondent had them), and DVD players and home cinemas were owned by only every fifth single senior. In turn, the oldest infotainment equipment used in singles' households includes a TV set and a CD player (over 96% of respondents had owned them for over five years) as well as a landline phone and a radio-broadcast receiver (over 93% of silver singles had owned them for over five years).

Regarding home appliances, the most modern ones used for less than five years turned out to be dishwashers and electric cookers with ceramic or induction hobs. Every second respondent had them. On the other hand, households were poorly equipped with new food processors (every third respondent had one) and automatic washing machines or tumble dryers and refrigerators or refrigerator-freezers. These appliances were possessed by only every fifth silver single. It should be borne in mind that households most often buy home appliances for a longer period because their age does not usually affect the quality of operation.

The study shows that in silver singles' households, means of transport are used for more than five years. The oldest means is a passenger car (more than 92% of respondents had one aged more than five years), whereas the most modern one was a bicycle (more than 3/4 of single seniors had a bicycle aged more than five years).

Taking into account the percentage of households equipped with durable goods, divided according to the cities where the research was conducted, there is a slight variation in household equipment, while the scale of this variation is correlated with the type of durable goods.

A detailed analysis of the obtained information, with consideration of individual independent variables, made it possible to observe certain regularities.

The situation regarding the equipment of the surveyed silver singles' households is statistically significantly influenced by their belonging to a specific income group ($VC = 0.281$, $p < 0.01$ in the first stage of the research and $VC = 0.291$, $p < 0.01$ in 2021–2022). The fewest differences were noted for the possession of such durable goods as: a refrigerator/refrigerator-freezer, an automatic washing machine or a tumble dryer, a corded or cordless vacuum cleaner, a TV set, and a mobile phone. Households of single elderly people with a monthly income of above PLN 4,500.00 significantly more frequently declared having such items as: a dishwasher, a home cinema system, and a digital camera.

The level of education of single seniors was also a variable with a very strong differentiating power regarding the standard of equipment present in the surveyed households. The strength of the relationship between the two variables is reflected in the value of Cramér's V coefficient , $VC = 0.126$, $p < 0.01$ in 2018–2019 and $VC = 0.119$, $p < 0.01$ in the second stage of the research. It was observed that households of single elderly people with primary education were significantly more often equipped with older-generation equipment than the remaining households. This conclusion is particularly relevant to the comparison of household equipment possessed by silver singles with divergent levels of education.

Statistically significant opinions expressed by the respondents on their durable goods were differentiated by their self-assessed satisfaction with the assessment of their current financial situation ($r = 0.216$ to 0.291, $p = 0.01$). Age also had a statistically significant im-

Table 3. The level at which needs are satisfied with regard to selected durable goods in silver singles' households (% of responses)

Type of goods	Level of satisfaction of needs					
	completely satisfied		average level		unsatisfied	
	2018–2019	2021– 2022	2018– 2019	2021– 2022	2018– 2019	202– 2022
Washing machine and electric spin-dryer or laundry machine	85.5	90.6	5.2	3.1	9.3	6.3
Electric vacuum cleaner	96.9	99.2	1.8	-	1.3	0.8
Refrigerator or freezer	99.3	99.7	0.3	0.1	0.4	0.2
Electric cooker with ceramic or induction hobs	72.5	80.7	12.1	8.9	15.4	10.4
Microwave oven	73.9	79.2	17.3	14.9	8.8	5.9
Food processor	61.2	64.3	26.6	21.5	12.2	14.2
Dishwasher	38.4	56.2	39.7	27.9	21.9	15.9
TV set	93.5	94.1	1.0	1.0	5.5	4.9
Device for receiving satellite or cable TV broadcasts	50.9	59.8	36.0	30.4	13.1	9.8
Home cinema	68.9	71.6	11.9	18.2	19.2	10.2
Radio or radio tape recorder with CD player	73.2	81.5	19.0	12.9	7.8	5.6
VCR player	61.8	63.8	17.1	16.8	21.1	19.4
DVD player	58.6	64.8	25.9	21.3	15.5	13.9
Digital camera	56.3	51.9	31.3	36.2	12.4	11.9
Computer (laptop) with internet access	72.1	74.4	16.0	15.0	11.9	10.6
Printer	51.2	53.1	28.0	26.7	20.8	20.2
Landline phone	68.4	71.3	19.5	19.1	12.1	9.6
Mobile phone	96.6	97.8	2.3	1.2	1.1	1.0
Bicycle (excluding children's bicycles)	60.4	61.7	19.4	20.2	20.8	18.1
Motorcycle, scooter, moped	38.2	36.9	26.7	24.9	35.1	38.2
Passenger car	55.6	57.1	23.2	22.8	21.2	20.1

Source: Author's research.

pact on the respondents' opinions. It should be stressed here that with age, the number of people indicating an improvement in the standard of household equipment decreased (r = –0.151, p = 0.01 in the first stage of the research and r = –0.147, p = 0.01 in 2021–2022), as did the number of people expecting an improvement in this respect in the near future (r = –0.211, p = 0.01 in 2018–2019 and r = –0.223, p = 0.01 in the second stage of the study). In turn, slightly lower values of correlation coefficients were noted for changes to take place in the future, depending on the degree of satisfaction with possessed durable goods (r = 0.109, p = 0.01 in the first stage of the research and r = 0.109, p = 0.01 in 2021–2022) and the self-assessed current situation (r = 0.104, p = 0.01 in 2018–2019 and r = 0.105, p = 0.01 in the second stage of the research).

The level of satisfaction of needs regarding durable goods

The level of satisfaction of needs regarding durable goods is strongly correlated with the level of household wealth. Durable goods owned by the surveyed seniors' households met their needs to varying degrees (Table 3).

In the analyzed period, the level at which silver singles' needs in this respect were met increased by 5.3%. The study shows that 68.3% of silver singles in the first stage of the research and 71.9% in the second stage said that their needs in terms of durable goods were completely fulfilled. On the other hand, every fifth single senior in the first stage and every sixth in the second stage assessed the extent to which their needs in this area were fulfilled as average. Every seventh respondent in 2018–2019 and over every eighth in 2021–2022 considered that their needs were unsatisfied.

In the context of the obtained results, it can be stated that the surveyed households of single elderly people are increasingly better equipped with home appliances, infotainment equipment, and means of transport. This undoubtedly translates into the level at which the needs regarding durable goods are satisfied. The research findings indicate that in both its stages, seniors actively attending U3A courses better assess the level of satisfaction of their needs regarding durable goods more frequently than members of parochial clubs.

CONCLUSIONS

The conducted analysis of durable goods possessed by urban households of silver singles in Poland allows for drawing the following conclusions:

1. Households of single elderly people are better equipped with home appliances than with infotainment equipment and means of transport.
2. Regarding home appliances, silver singles are best equipped with automatic washing machines, corded or cordless vacuum cleaners, refrigerators, or freezers. The worst situation regards electric cookers with ceramic or induction hobs and dishwashers. In the case of infotainment equipment, high saturation levels concern TV sets and mobile phones, whereas low saturation levels are noted for CD players, home cinema systems, and printers.
3. Almost every third single senior, mostly the old-old and the oldest-old, is affected by digital exclusion, which may be related to the feeling of physical isolation and loneliness.
4. The most modern equipment owned by single people is a mobile phone, an electric cooker with ceramic or induction hobs, and a dishwasher, while the oldest equipment includes a TV set, a CD player, and a landline phone.

Taking into account the presented survey results, some limitations ensuing from a small research sample should be borne in mind. Following the conclusions made, they should not be treated as representative of the population of silver singles in Poland. They only allow for providing some insight into housing conditions and satisfaction with the place of residence and durable goods present in silver singles' households.

This publication should contribute to a broader discussion and exchange of views on the home infrastructure of single seniors, thereby encouraging other scholars and researchers in Poland from various scientific and research centers to carry out extensive research in this area.

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WYPOSAŻENIE W DOBRA TRWAŁEGO UŻYTKU MIEJSKICH GOSPODARSTW DOMOWYCH SREBRNYCH SINGLI W POLSCE

STRESZCZENIE

Cel: Celem artykułu jest przybliżenie infrastruktury domowej w gospodarstwach domowych samotnych seniorów. Można wnioskować, że infrastruktura domowa w gospodarstwach samotnych osób starszych ulega ciągłej poprawie, co znajduje bezpośrednie odzwierciedlenie w lepszym zaspokojeniu odczuwanych potrzeb. **Metody:** Badanie zostało przeprowadzone w dwóch etapach w latach 2018–2022. Pierwszy z zaplanowanych etapów badań został przeprowadzony na próbie 3167 starszych singli w okresie od 1 lutego do 30 października 2018 roku oraz od 1 maja do 30 października 2019 roku. Z kolei drugi etap badań przeprowadzono od 1 marca do 30 września 2021 roku, a następnie od 6 lutego do 30 września 2022 roku na próbie 3834 osób starszych żyjących w pojedynkę. Zgodnie z przyjętymi założeniami badawczymi, w próbie znalazły się wyłącznie osoby żyjące samotnie w wieku 65 lat i więcej, które podejmowały suwerenne decyzje konsumenckie na rynku. **Wyniki:** W analizowanym okresie zaobserwowano wzrost wyposażenia gospodarstw domowych prowadzonych przez samotną osobę starszą w niemal wszystkie dobra trwałego użytku, co jest niewątpliwie konsekwencją większej powszechności i dostępności tych dóbr, m.in. poprzez łatwość kredytową i coraz niższe ceny produktów. Analizując wyposażenie gospodarstw domowych srebrnych singli w zmechanizowany sprzęt gospodarstwa domowego można dostrzec wymianę posiadanego sprzętu na nowy, jak i zakup zupełnie nowych, nieznanych dotąd produktów. Analiza stanu posiadania poszczególnych sprzętów informacyjno-rozrywkowych wskazuje na niższy stopień ich upowszechnienia niż zmechanizowanych sprzętów gospodarczych. **Wnioski:** W kontekście uzyskanych wyników można stwierdzić, że badane gospodarstwa domowe samotnych osób starszych są coraz lepiej wyposażone zarówno w sprzęt zmechanizowany, informacyjno-rozrywkowy, jak i sprzęty związane z mobilnością. Ma to niewątpliwie swoje przełożenie na poziom zaspokojenia potrzeb w zakresie dóbr trwałego użytku. Wyniki badania wskazują, że w obu jego etapach, seniorzy uczestniczący aktywnie w zajęciach organizowanych przez UTW częściej niż badani uczestniczący we wspólnotach parafialnych, lepiej oceniają poziom zaspokojenia swoich potrzeb w dobra trwałego użytku.

Słowa kluczowe: srebrni single, infrastruktura domowa, dobra trwałego użytku

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