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FROM THE EDITORIAL COMMITTEE

We are giving you the next 32nd 2 (2025) issue of the Scientific Journal of the Faculty of Management at the Rzeszow University of Technology entitled „Humanities and Social Sciences”.

The aim of the Publisher is to raise the merits and the international position of the quarterly published by the Faculty of Management, that is why we are still developing the cooperation with foreign team of reviewers, as well as an international Scientific Council. The Editors have also attempted to apply for international databases; currently the quarterly HSS is indexed in **Index Copernicus Journal Master List, The Central European Journal of Social Sciences and Humanities (CEJSH) ERIH PLUS, DOAJ and EBSCO**.

The journal „Humanities and Social Sciences” participated in the „Support for scientific journals” program in 2019-2020, and in the „Development of scientific journals” program in 2023-2024, organized by the Ministry of Science and Higher Education.

The articles published in this publication are devoted to the broader issues of the humanities and social sciences. They are the result both of theoretical and empirical research. The subjects covered vary considerably and reflect the interdisciplinary nature of the Journal. We do hope that the papers published will meet your kind interest and will be an inspiration to further research and fruitful discussions.

On behalf of the Editorial Board of „Humanities and Social Sciences” we would like to thank the Authors for sending the outcomes of their research. We would like to express particular gratitude to the Reviewers for their valuable feedback that greatly contributed to increasing values of the scientific publications.

With compliments
Editorial Committee

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PRIMARY HEALTHCARE SERVICE DELIVERY AND THE EFFECTIVENESS OF STATE-LOCAL GOVERNMENT RELATIONS: AN ASSESSMENT OF THE EMPIRICAL EVIDENCE FROM OYO STATE, NIGERIA

This study examined the effectiveness of the relationship between the Oyo state government and its local governments in providing primary healthcare service delivery. This study seeks to examine and offer evidence-based insights into how these levels of government cooperation, coordination, and communication affect the provision and quality of primary healthcare services. This study adopted a descriptive survey research design. The study is an in-depth inquiry using a structured questionnaire and interview session. Data collected were analysed using descriptive methods. Structural Functionalism is adopted as the framework of analysis of this work. The findings showed that the relationship between the state governments is effective in the recruitment, training, and placement of primary healthcare workers. The study therefore concludes that a relationship exists between the state governments in providing primary healthcare service. The study guides policymakers in making policies in health sectors, especially in Oyo state.

Keywords: effectiveness, state-local government, primary healthcare, service delivery, Oyo state.

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1. INTRODUCTION

Primary healthcare services are essential for ensuring the population's well-being and health (Behera et al, 2022; UNICEF, 2023; Pradhan et al. 2023). This applies to all states in Nigeria and other nations globally as it relates to effective service delivery, budget allocation, policy implementation, and ultimately improving health outcomes at the community level depending on effective coordination and collaboration between the state and local government levels (Chukwudi, Owoh, 2024). The effectiveness of the healthcare service delivery is very important to avoid health crises that can lead to loss of lives in the country. This commitment will also lead to the opportunity for individuals to have access to quality healthcare and eventual universal healthcare. A country must have officials who are dedicated to funding universal health coverage, experienced medical personnel, and people-centered care in a health system built on a solid, people-centered primary healthcare system to attain universal healthcare (WHO, 2022).

The governments of many countries of the world have embraced the provision of quality healthcare service which has added to their wealth and continuous productivity with the support of citizens and their general public. In support of the statement Alma-Ata (1978) declared that, since the attainment of health by citizens in any one country directly affects and benefits every other country, all nations should work with WHO/UNICEF on primary healthcare as a strong foundation for expansion and operation of primary healthcare throughout the world.

Historically, countries of the world have prepared for better healthcare systems, and this prompted Alma-Ata (1978) to declare that Governments must ensure the well-being of their citizens, with the implementation of effective medical policies and the achievement by all peoples of the globe by the year 2000 of a level of health allowing them to conduct a socially and economically productive life. The importance of primary healthcare to humanity cannot be overemphasized. Azevedo (2017), Wilba (2023) maintained that primary healthcare is still the best way to combat disease because it offers the fundamental preventive measures that make the system more affordable and lower rates of maternal and child morbidity and mortality two of the most avoidable outcomes that can increase life expectancy at birth.

The provisions of the 1999 Constitution of the Federal Republic of Nigeria, as amended, on inter-governmental relations remain among the most contested issues in the discourse of governance at the grassroots. The complexity of the issue is further complicated by the letter of the constitution which, as Awa (2021) points out, has left local government in Nigeria, particularly its establishment and control, a residual affair for state governments. The stability of the Fourth Republic is regarded as being consolidated or compromised through the dynamics of the nature of inter-governmental relations (Muheeb, 2020). Hence, Makoti and Odeku (2021) are of the view that inter-governmental relations are central to the success of all federal systems. In support of the assertion, Chukwudi et al (2019) submitted that the government through its style of leadership determines the success and outcome. Considering all levels of inter-governmental relations that are in operation in Nigeria's federal practice, the state-local relations are the most contentious. This is arguably so because every part of the country, whether urban or rural, falls into one local government area or the other.

Nigeria practices a three-tier healthcare system framework, with the greater part of the healthcare service at the primary healthcare level. The administration has proceeded with its endeavours to decentralise healthcare services to the Primary Healthcare Services

(PHCs) to guarantee that healthcare service is found nearer to the general population and are likewise more affordable. The acknowledgment of the importance of universal healthcare coverage and fairness in healthcare services provision led the World Health Organisation to recommend at the 2010 World Health Assembly plans to address the funding of healthcare services to guarantee worldwide coverage (Ataguba, Akazili, 2010).

Ordinarily, the state's ministry of health relates with the Department of Health at the local government level to provide healthcare services to the rural populace. This organisational design is to ensure healthcare programs are adapted to local populace needs, mobilise local resources, improve service delivery, raise community participation, and more importantly, coordinate regarding the procurement and distribution of vaccines and drugs at the grassroots level (Adeyemo, 2005). National development of all sectors can be rightly achieved through education and orientation (Udom, Gbervbie, Osimen, 2025). However, the role and intervention of the state government in the provision of primary healthcare service are unclear; the overlaps in the roles between state-local governments are evidenced by lack of coordination, inadequate funding, inadequate and decaying infrastructure, shortage and supplies of essential drugs, inadequate healthcare providers. This complex network of socio-political institutions and state-local governments has grossly affected primary healthcare service and rendered it insufficient in the face of emerging health challenges and the rapidly growing rate of the rural population.

Statement of the Problem

In essence, the lack of cooperation, support, and harmony between the state and local governments breeds institutional impediments that constitute a clog in the provision of primary healthcare service delivery for the rural populace (Abimbola, Negin, Jan, Martiniuk, 2017). (). Lack of funding may be a challenge to the effectiveness of healthcare delivery and there are cases where funding has been provided but corrupt personnel engaged in misappropriation of funds leaving their responsibilities unattended to. This mismanagement conduct therefore sours the relationship between the two tiers (state and local government) in healthcare service delivery. It is, therefore, against this backdrop that the study examined the effectiveness of state-local government relations in the provision of primary healthcare service delivery using Oyo State, Nigeria, as a case study.

The study answers the following question:

1. Are State-local government relations effective in funding primary healthcare services?
2. Are State-local government relations effective in the procurement and distribution of essential drugs and vaccines to primary healthcare centers?
3. Are State-local government relations effective in the acquisition, distribution, and maintenance of medical equipment of primary healthcare centers?
4. Are State-local government relations effective in the recruitment, training, and placement of primary healthcare workers?
5. Is there an effective relationship between the state ministry of health and the department of health of the local governments?
6. Is there an effective relationship between the state ministry of health and the department of health of the local governments?
7. Are State-local government relations effective in the renovation and expansion of primary healthcare centers?

The study is significant in different ways:

1. The study discusses the interaction between the state and local governments, which is a key component of governance. This partnership is essential to maintaining efficient service delivery, especially in critical domains like healthcare.
2. Since the return to democratic rule in 1999, it has been increasingly important to comprehend and enhance state-local government relations to advance democratic ideals, effective governance, and effective service provision at the local level.
3. Emphasis on basic Healthcare Services: The study highlights the availability and calibers of basic healthcare services, underscoring its significance as a key pillar of the public health system. Promoting community health and well-being is largely accomplished through primary healthcare.
4. The study offers data-supported insights into how collaboration, coordination, and communication between state and local governments affect primary healthcare worker hiring, training, placement, supervision, and monitoring. These perceptions can guide legislative choices and practical advancements in the provision of healthcare services.
5. The study's findings note that the current connection is effective in some ways, but they also point to areas where it may be strengthened. This knowledge helps determine how to improve the efficiency of state-local government cooperation.
6. The study makes specific suggestions that policymakers can use to strengthen the ties between the state and local governments and, as a result, improve healthcare services, including increasing the procurement and distribution of essential drugs and vaccines

Regarding policy implications, this study will guide the government in making policies that will be useful in the following areas:

1. Promote regular and structured channels of communication between state and local governments to promote information sharing, organize efforts, and address issues with the provision of healthcare services.
2. Invest in training and capacity-building programs for healthcare workers at the local level to enhance their abilities and expertise, notably in the acquisition and distribution of crucial medications and vaccinations.
3. Promote frequent and structured lines of communication between state and local governments to promote information exchange, organise efforts, and address issues with the provision of healthcare services.
4. Invest in training and capacity-building programmes for healthcare workers at the local level to enhance their abilities and expertise, notably in the acquisition and distribution of crucial medications and vaccinations.
5. Work towards bringing state and municipal healthcare regulations into line to provide uniformity and consistency in the acquisition, distribution, and provision of healthcare services, reducing ambiguity and increasing overall effectiveness.
6. Create community engagement initiatives that educate the general public on the value of immunisations, safe drug consumption, and healthcare services while building a sense of civic duty and community cohesion.
7. Create an effective system for tracking and assessing the efficiency of local and state-level healthcare service delivery, utilizing data-driven insights to constantly enhance procedures and results.

8. Allocate enough funds and resources to local and state healthcare systems so they can support their infrastructure upgrades, procurement activities, and healthcare services in a fair and accessible manner.

2. LITERATURE REVIEW

Healthcare Delivery at the Grassroots Level in Nigeria

Local government is a third-tier government with a representative government charged with the responsibilities of making by-laws and provision of social services, including a primary healthcare system at the local government level. The delivery of primary healthcare services at the local government level is inextricably linked to local governance. The local government at the local level mostly provides primary healthcare. This is because, at the grassroots level, local government is closer to the people (Adeyemo, 2005). Local government, particularly local government in Nigeria, provided, among all other things, drugs, maternity centers, good water and a clean environment, and health centers where the people at the grassroots level can have access to it.

According to (Alenoghena, Aigbiremolen, Abejegah, Eboreime, 2014), primary healthcare facilities in Nigeria are insufficient to meet the demands of the entire population; both the government and private individuals provide healthcare services. Government-run healthcare facilities, such as primary care clinics, clinics, and maternity care centers, are more accessible to the general public because they are often less expensive than privately managed institutions (Adeyemi, 2013). However, the majority of public health groups lack the necessary management and instruments. Basic hospital essentials such as beds, incubators, and sterilising equipment are frequently unavailable. There is also an auspicious shortage of manpower in the public health sector due to poor motivation, as most health workers have moved to private health establishments in search of better wages, incentives, and working conditions (Adeyemo, 2005). There is little evidence that the Nigerian government is inclined to fund the healthcare sector sufficiently to bolster efficiency. Under-funding has tended to be the order of the day (Udenta, Udenta, 2019).

On the other hand, privately owned health facilities, though relatively better equipped, are economically inaccessible to most grassroots people. They charge astronomically compared to public health institutions for their services, and they maintain a policy of payment before service, which further constrains people's access to their services. This is so because most grassroots people do not have insurance coverage for their health, and thus, healthcare expenditures are not budgeted for in advance (Ekwunife et al., 2022). Most such care-seekers seek to obtain care before they or their relatives go to raise the money to pay for such services. However, private health establishments (and most public health facilities) allow little room for such a pattern of payment for care. As a result, many grassroots people are left without access to proper medical care.

At the institutional level, the attitudes and conduct of health workers have been identified as a major problem. Health workers in primary healthcare facilities, clinics, and dispensaries are often very hostile and unfriendly towards care-seekers. This is often in flagrant disregard of professional ethics and the feelings and rights of those seeking care. The worsening plight users of health services face goes beyond inadequate facilities and paucity of funds. The problems are compounded by many health workers' disregard for medical ethics and the feelings or rights of patients. Although public hospitals parade some of the best brains in the sector, they hardly put their expertise into the service of patients at public institutions (Onalu et al., 2021).

Poverty is one of the most significant barriers to accessing primary healthcare in Nigeria. In Nigeria, the fees of those seeking treatment fund a large amount of the healthcare system. Out-of-pocket medical expenses account for more than 25% of total healthcare spending in more than three-quarters of Sub-Saharan African nations, including Nigeria, according to the World Health Organisation (Onwujekwe et al., 2020). These out-of-pocket expenses include user fees paid by patients at public healthcare facilities as well as direct payments to private healthcare providers (private hospitals, pharmacies, and traditional healers). Thus, grassroots people bear a greater burden of healthcare service funding in Nigeria, and this has had a very crippling impact on household income and livelihood. The direct cost of obtaining care during illness episodes usually gulps a significant percentage of total household income. An increasing number of people in Nigeria are impoverished by illness-related expenditures, while an equally large number of people experience serious financial difficulties on account of healthcare expenditures (Gyuse et al., 2018).

In the face of the daunting financial cost of healthcare services, people at the grassroots adopt many strategies to cope with health problems (Arodiwe, E., Arodiwe, I., (Okoronkwo, Okoye, Onu, Ulasi, Ijoma, 2023). These coping strategies range from ignoring symptoms of illness to delaying care-seeking in the hope that the illness will "die a natural death." In most cases, the illness intensifies and eventually increases the cost of care, more so because the sick person will have to be taken to a hospital for more intensive care rather than a clinic. Some people rely on self-medication, while others utilise traditional or alternative therapies, including medicinal roots, herbs, and mineral substances that are found in their immediate environments (Bawa et al., 2019).

There is a widespread belief in the potency of natural products such as roots of medicinal trees, therapeutic herbs, fruits, and other substances to cure ailments among the people of Nigeria (Akande-Sholabi, Iluyomade, Ilesanmi, Adisa, 2023). Thus, on sensing any symptom of illness, most people use herbal concoctions to treat it. Hospital care is usually a second (or last) resort in the healthcare-seeking itineraries of grassroots Nigerians. The use of traditional medicine is widely used by grassroots people in Nigeria as an important option for healthcare (Muhibbu-Din, 2019).

A key function of local government administration is to improve the health condition of local people through the provision of adequate healthcare services, among other things. Health is a cardinal area of human survival: it is directly related to other spheres of human existence and development. Improvement in the health condition of a population through access to proper healthcare services, sanitation, good drinking water, food and nutrition, and decent housing enables them to execute their duties effectively and to contribute significantly to the development of their society. The commitment of local government administration to the provision of adequate healthcare services is fundamental given the central role of health and well-being in grassroots development.

Local government, especially local government council, often than not provides the primary healthcare system. Among such services include:

- (a) Maternity centres
- (b) Drugs and medications
- (c) Clinics
- (d) Provision of a good water system
- (e) Provision of a clean environment
- (f) Maintenance of clean and environmental sanitation.

All these and many more are provided by local government and state government for people within their jurisdiction. All these show that local government is the bedrock and the foundational background of the primary healthcare system.

Theoretical Framework

The theoretical underpinnings of this work are based on Structural Functionalism. English philosopher and biologist Herbert Spencer (1820–1903)'s writings served as the foundation for functionalism. Spencer was referring to the social institutions' patterns of thought and action aimed at addressing societal needs such as the government, the family, the healthcare system, the economy, and education. According to the sociological theory of structural functionalism, society is viewed as a complex system made up of numerous interconnected pieces that work together to maintain stability and order (Delaney, 2015). It focuses on the roles that various social institutions play in advancing the health and function of society. According to Durkheim (1893), society is a complex system of interconnected and interdependent pieces that cooperate to maintain stability. Durkheim also thought that shared beliefs, languages, and symbols are what hold society together. According to Durkheim, society may be made up of individuals, but sociologists must go beyond these individuals to social realities to analyse society (In Lumen, n.d.).

To comprehend the dynamics between the Oyo state government and its local governments regarding the delivery of primary healthcare services, the principle of structural functionalism is applied to the analysis of this work. The state government, the local governments, healthcare systems, and infrastructure supporting public health are considered social institutions in the context of this study, and the local government is closer to the local area while connecting with the state (Adeyemo, 2005; Alenoghena et al, 2014; Eneanya, Bello, Oladoyin, Fasanmade, Chukwudi, 2025). The main duty is to offer the populace high-quality primary healthcare services. Local governments oversee putting healthcare policies into practice at the ground level and managing healthcare facilities. Healthcare providers oversee providing healthcare services, and the public health infrastructure consists of the facilities, tools, and supplies required for service delivery in the healthcare industry. This shows the interconnection of different levels of institutions in government with the responsibility of the government to maintain stability (Chukwudi, Gberevbie, Abasilim, Imhonopi, 2019)

Stability in the provision of primary healthcare services is a result of the state and local governments' successful partnership and cooperation.

Sufficient resources for funding, education, and oversight support the equilibrium needed for a successful healthcare system.

The Theory has been criticized despite its fitness for this analysis. The stability and order of society are frequently overemphasised, while the likelihood of conflict and change is frequently minimised, according to structural functionalism. It might not sufficiently address societal conflicts, power relationships, and disparities (Turner, 2021).

According to critics, structural functionalism frequently supports the social norms and structures that already exist, maintaining the status quo. It might dissuade people from questioning or opposing established power structures and disparities, which could impede social progress and change.

Neglect of Individual Agency: According to structural functionalism's detractors, the influence of personal agency and decision-making on societal structures and functions is ignored. It frequently overlooks the acts and decisions of individuals in favour of societal patterns.

Despite all the criticism, Potts et al (2016) maintained that structural-functional techniques are very beneficial and useful when employed as a foundation for systemic analysis of actual, multi-layered, complex planning systems to support evidence-based governance reform,

Study Area

The geographical focus of the study was Oyo State in southwest Nigeria. The state was chosen because it is one of six pilot states established by the National Health Insurance Scheme in 2012 to reduce and minimise infant and child death rates in rural Nigeria. It encompasses the state of Oyo. The state was divided from the former western state on February 3, 1976. It is made up of the three (3) senatorial districts of Oyo Central, Oyo North, and Oyo South. There are 29 Local Council Development Areas and 33 Local Governments within it. Oyo State has a population of 5,580,894 people, according to the 2006 Nigerian population census.

3. METHODOLOGY

Primary and secondary data sources were employed for this inquiry. The primary source of data was gathered through in-depth interviews and a standardised questionnaire. The study adopted a multi-stage sampling procedure in selecting 3 Ministries, 3 Local Government Areas, and 6 Community Development Association in Oyo state. The population of the study, 1,151 consists of senior civil servants on Grade Level 07-16 in Health (24); Finance & Budget (26); Local Government & Chieftaincy Affairs (18); Department of local governments: Health (31); Finance (34); Community Development (31); and Executive of Community Development Association in Oyo State (8). The proportionate sampling strategy was used to select 15% of the research population, or 172 respondents, as the sample size for administering the questionnaire. Six stakeholders were interviewed about state-local government relations and the delivery of primary healthcare services to supplement the data acquired from questionnaire administration.

Three ministries were purposively selected in the study area: the Ministry of Health; the Ministry of Finance & Budget and the Ministry of Local Government & Chieftaincy Affairs. These ministries were selected based on their active involvement in the provision of primary healthcare service delivery in the state. The Local Governments in the state were stratified along the three senatorial districts. Random sampling techniques were used to select one local government area from the three senatorial districts of the state.

The three selected Local Governments include Egbeda Local Government representing Oyo Central Senatorial District, Iseyin Local Government representing Oyo North Senatorial District, and Ibadan North Local Government representing Oyo South Senatorial District. Also, a random sampling procedure was used to select executive members of selected community development associations. Secondary data were obtained from books, academic journals, and the Internet. Data generated were analysed using frequency percentage and mean value, while the hypothesis of the study was tested using linear regression.

4. RESULTS

This section assessed the effectiveness of the link between the state and local governments in delivering primary healthcare services in Oyo State, Nigeria, throughout the research period. Using a Likert scale, respondents were asked to score their agreement

or disagreement with seven claims made by the researcher about the efficiency of state-local government relations in the provision of primary healthcare services in the study area during the study period. The mean value (\bar{X}) here evaluates the respondents' support for each of the statements made to attain this goal, with ($\bar{X} < 4.0$) suggesting disagreement and ($\bar{X} > 4.0$) denoting agreement, and the latter factor functioning as an effective area of relationship.

As shown in Table 1, 81 (56.3%), respondents disagreed that state-local government ties are advantageous in financing basic healthcare services. ($\bar{X} = 3.31$). It was discovered that the delivery of primary healthcare services faces significant challenges due to low funding during the research period (2012-2022). Also, state-local government relations were said not to be effective in the procurement and distribution of essential drugs and vaccines to primary healthcare centers. ($\bar{X} = 3.94$). This was evidenced in 93, representing 64.7% of the respondents who discredited this assertion. However, 27 representing 18.8% of the respondents, did not decide with this same statement. By implication, the relationship between the state and local government is not effective in the procurement and distribution of essential drugs and vaccines to primary healthcare centers.

It was also revealed that the state and the local governments were not effective in the acquisition, distribution, and maintenance of medical equipment at primary healthcare centers. This resulted from a level of dissatisfaction with the statement of 74.3% ($\bar{X} = 3.66$). The interpretation of this data revealed that the state and local governments were unable to provide contemporary medical equipment to the primary healthcare institutions under their authority. Furthermore, it was reported that ties between state and local governments are effective in attracting, preparing, and placing primary healthcare practitioners. In this study, 88 participants (61.1% of the sample) agreed with the proposition ($\bar{X} = 4.28$). In addition, 32.6% of respondents strongly agreed with the assertion that local and state governments are successful in attracting, preparing, and placing primary healthcare professionals in the research region.

It was also stated that the state ministry of health and the municipal governments' departments of health work well together. In their responses, 89 respondents (61.8% of the sample) agreed with the statement ($\bar{X} = 4.15$). This observation was supported by 39 of the respondents, who strongly agreed with the claim that the state ministry of health and the local governments' departments of health effectively collaborate to deliver primary healthcare services in the study area. The renovation and expansion of primary healthcare facilities can be performed successfully through state-local government collaboration. However, 100 representing 69.4 of the respondents, negated this assertion ($\bar{X} = 3.68$). Though an aggregate of 34, representing 23.6%, did not decide on the statement, by implication, the relationship between the state and the local government within its jurisdiction is not effective in the renovation and expansion of primary healthcare centers in the state.

In addition, one of the potential areas for efficient cooperation between the state and local governments in the delivery of primary healthcare services was investigated. This entailed overseeing and monitoring the installation of primary healthcare services. In response, 86 people (59.7%) agreed with the statement ($\bar{X} = 4.47$). This finding was partly influenced by the fact that 32.6% of respondents strongly agreed with the statement that the state-local government relationship is effective in monitoring and supervising the provision of primary healthcare services in the study area throughout the study period.

Based on the research described above, this study assesses the efficiency of the relationship between the state and the local governments under its authority in the delivery

of primary healthcare services. Recruitment, training, and placement of primary healthcare workers (61.1%), the relationship between the state Ministry of Health and the Department of Health at local governments (61.8%), and supervision and monitoring of healthcare service delivery (59.7%) were identified as areas of effective relationship between the state and local governments in the provision of primary healthcare service delivery.

Table 1. Assessment of the effectiveness of state and local government relations in the provision of primary healthcare service delivery within the period under study in Oyo State, Nigeria

Variable	Strongly agree	Agree	Undecided	Disagree	Strongly disagree	N = 144
	f %	f %	f %	f %	f %	X
1. State-local government relations are effective in funding primary healthcare services.	38 (26.4)	21 (14.6)	4 (2.8)	81 (56.3)		3.31
2. State-local government relations are effective in the procurement and distribution of essential drugs and vaccines to primary healthcare centers.	22 (15.3)	2 (1.4)	27 (18.8)	93 (64.7)		3.94
3. State-local government relations are effective in the acquisition, distribution, and maintenance of medical equipment in primary healthcare centers.	6 (4.2)	18 (12.5)	4 (2.8)	107 (74.3)	9 (6.3)	3.66
4. State-local government relations are effective in the recruitment, training, and placement of primary healthcare workers.	47 (32.6)	88 (61.1)	6 (4.2)	2 (1.4)	1 (.7)	4.28
5. There is an effective relationship between the state Ministry of Health and the department of health of the local governments.	39 (27.1)	89 (61.8)	15 (10.4)	1 (.7)		4.15
6. State-local government relations are effective in the renovation and expansion of primary healthcare centers.	3 (2.1)	6 (4.2)	34 (23.6)	100 (69.4)	1 (.7)	3.68

Table 1 (cont.). Assessment of the effectiveness of state and local government relations in the provision of primary healthcare service delivery within the period under study in Oyo State, Nigeria

Variable	Strongly agree	Agree	Undecided	Disagree	Strongly disagree	N = 144
	f %	f %	f %	f %	f %	X
7. State-local government relations are effective in monitoring and supervising primary healthcare services.	47 (32.6)	86 (59.7)	4 (2.8)	7 (4.9)		4.47

NB: f = Frequency

% = Percentage

X = Mean value

N = Total Number of Respondents

Source: Field Survey, 2023.

5. DISCUSSION

Primary healthcare in Oyo State is greatly impacted by bureaucratic inefficiency and political dynamics. Most of the time, the functions of the state ministry of health and the primary healthcare board overlap, thereby causing inefficiency on both parts, as there is a lack of clarity regarding their functions (Abimbola et al, 2017). In this situation, it will be difficult for both sides to claim or deny responsibility in time, whether good or bad. Red tape also becomes a problem in the handling of funds, human resource issues such as recruitment, promotion, retirement, discipline, demotion, and other functions. Emergency situations like epidemics, disease outbreaks (Ebola, Polio, COVID-19, Monkey Pox), need a quick response, and with financial implications. Once there is a lack of clarity in funding, skilled personnel, monitoring groups, establishing and equipping health infrastructure in this era of technological innovation, redundancy and backwardness will be the outcome.

Political dynamism in the appointment and promotion of health officers based on loyalty instead of merit is dangerous to the progress of the health sector (Olowu, Sako, 2002; Onwujekwe, Agwu, Orjiakor, McKee, Hutchinson, Balabanova, 2019). It is a show of corruption that adds no progress to the health system. Change in government must not be allowed to cause changes in the health sector, but instead, recognized, funded, and strengthened for more efficiency in services to the people

The interview analysis is hereby summarised. Some stakeholders were contacted to supplement the quantitative data obtained through the distribution of questionnaires. The majority of those interviewed said that the state ministry of health and the departments of health of local governments work together well to deliver primary healthcare services in Oyo State, Nigeria, and the rest of the nation. The relationship is further strengthened through the supervision and monitoring of healthcare programs and policies in the state. However, a director of health from the local governments existing within the jurisdiction of the state averred that the state did not give full operational capacity to the state primary healthcare board, which subjected primary healthcare service delivery in the state to the control of the state ministry of health. He stated that "the state should ensure that full

operational capacity is given to the state primary healthcare board to ensure effective provision of healthcare services in the state”.

Further engagement is recommended between the departments of health of local governments in their primary healthcare services in Oyo State, Nigeria, and the rest of the nation. Divisive activities in healthcare services must be abstained because diseases do not check boundaries. Collaborations must be promoted and efforts encouraged for efficiency and effectiveness.

6. CONCLUSIONS

It is crucial to understand that even while a relationship does exist, there is still an opportunity for it to be more effective with the application of the techniques of the relationship as availed by structural functionalism. This study concludes that there is an established nexus between the state governments and local government's primary healthcare centers in the provision of healthcare service delivery to the populace.

However, recruitment, training, and placement of primary healthcare workers, cordial relationships between the state ministry of health and the department of health at the local governments as well as supervision and monitoring of healthcare service delivery were the identified areas of an effective relationship between the state and local governments in the provision of primary healthcare service delivery within the study area.

It is therefore vital for Governments to develop national policies, strategies, and plans of action to start and sustain primary healthcare as a component of a comprehensive national health system and in collaboration with other sectors.

The following recommendations were offered to improve the effectiveness of state-local government relations and primary healthcare service delivery in Nigeria.

There is a need for the state government and other tiers of government to increase their financial allocation to the health sector; the local governments in Nigeria should be aggressive in revenue generation to combat dependency syndrome on the federal and state governments in financing primary healthcare service.

It is vital to increase financial allocations, with careful handling of the issues of corruption in the system, resource mismanagement, and inefficiencies in fund distribution, to ensure effectiveness in the healthcare sector.

It is also recommended that the state and local governments should set priority for the procurement and distribution of essential drugs and vaccines to primary healthcare centers and the acquisition, distribution, and maintenance of medical equipment to the healthcare centers.

It is further recommended that the state should set priority for the renovation and expansion of primary healthcare centers existing within its jurisdiction to accommodate the growing population of the state, and procurement of modern medical equipment would go a long way in tackling challenges affecting the effectiveness of state-local government relations in the provision of primary healthcare service delivery.

Constant monitoring and daily supervision of health personnel will surely reduce corruption practices and increase the efficiency of the available personnel.

All authors have read and agreed to the published version of the manuscript.

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THE EXPERIENCES OF DIVERSITY AND INCLUSION PRACTITIONERS IN ORGANIZATIONS IN POLAND²

In response to increasing employee diversity, companies started creating positions for diversity, equity, and inclusion (DEI) specialists. The aim of the study is to explore the experiences of DEI practitioners in Poland. Since women constitute a majority of DEI practitioners, six women were interviewed and the semi-structured in-depth interviews were recorded, uploaded to Nvivo and analyzed using inductive coding procedure. The key contribution is identifying organizational barriers: lack of resources, formalized structures, and procedures and most importantly lack of senior management support. The interviewees were often the first to take on this role in their companies, which required them to build the professional identity. The findings are in line with previous research utilizing Bourdieu's concept of symbolic power in context of DEI. The conclusions from their experiences are valuable for organizations that consider creating similar roles as well as for the people who contemplate assuming such a position.

Keywords: diversity management, DEI, inclusion, inclusive organization, person-organization fit.

1. INTRODUCTION

Every person is unique and so are their needs. Creating a working environment that allows everyone to feel like they belong could be an impossible task. However, this challenge will become even more compelling in the coming years, because of the increasing employee diversity (Schertler et al., 2023). Organizations like Apple and Microsoft has acknowledged this trend and already created positions of diversity and inclusion chief officer a few years ago (Microsoft News Center 2018; Lev-Ram 2020). Their main responsibility is handling increasingly heterogeneous workforce in a way that allows everyone to effectively cooperate so that company can reap the benefits of having diverse employees (Gardiner, Tomlinson, 2009). Other companies followed the example and started hiring diversity, equity and inclusion (DEI) managers in order to create

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inclusive workplace – where employees can fulfil both their need for belongingness and uniqueness (Shore et al., 2018).

The global changes are affecting countries in a different pace and to a various extent. In Poland topic of DEI has become prominent later than in Western Europe or United States (Gross-Golacka et al., 2022). However, recently companies operating in Poland started to follow the example of companies in Global North. Number of them created positions dedicated to tackling the challenges of DEI (Waligóra, 2018). Since the responsibilities of DEI managers are intertwined with human resource management (HRM), the position is typically located within HR department (Nadiv, Kuna, 2020). Majority of HR department employees are women (Koc, 2014) and usually, DEI initiatives are also responsibility of women.

Since the role of DEI practitioners is relatively new there is very little information on how people in such positions perceive their role. Additionally, the diversity literature tends to focus on specific practices or organizational aspects instead of perspective of people responsible for them (Tatli, 2017). While the role of DEI manager has been investigated in e.g. UK (Gardiner, Tomlinson, 2009; Greene, Kirton, 2009) and Israel (Nadiv, Kuna, 2020) there has been no similar research in Poland. Many international companies have opened subsidiaries or outsourced processes to Polish shared services centers. This trend has brought foreign management practices into the local context. Among them are DEI initiatives. These practices are often shaped by Western values. Their transfer to Central and Eastern Europe raises important questions. One of them concerns the role of DEI managers in this process. Another concerns the fit between imported practices and local realities (Hennekam et al., 2017). That is why the aim of the research is to uncover personal experiences of women HR professionals involved in DEI area in Poland in context of person-organization fit.

This study addresses the call to explore the HRM practices in the context of DEI initiatives (Ayoko, Fujimoto, 2023). The DEI manager job is to help foster inclusive workplace i.e. organization where people feel that they belong and their diverse contributions are valued. The study explores how DEI managers try to achieve this goal and what is their experience with this process in organizations operating in Poland. The goal is to understand how they contextualize their own work in relation to the business needs of organizations and how they strive to achieve their professional goals. As workforce becomes increasingly diverse, employees bring a wide range of expectations, many of which may conflict with one another. HR professionals aim to reconcile those contrasting wishes to ensure that employees are satisfied with their work environment which leads to better person-organization fit (PO fit) and in consequence to higher level of engagement, motivation and lower rotation (Kristof-Brown et al., 2023).

The study addresses the knowledge gap regarding perspective of DEI managers in Poland that was explored through the following research questions:

1. How DEI managers in Poland perceive their role?
2. How the socio-cultural conditions in Poland are affecting DEI managers' work?
3. How the concept of PO fit is relevant to the DEI initiatives?

This paper is organized as follows: firstly, overview of the role of DEI manager is presented, then relation of employee diversity and PO fit is discussed. The methods section explains why qualitative approach was optimal, what was the process of sample selection and the coding of the interviews. Finally, findings regarding the experiences of DEI managers are discussed. Lastly, practical implications and recommendations for future research are discussed.

2. LITERATURE REVIEW

2.1. Diversity and Inclusion Specialists

An inclusive economy has established itself as a desirable goal, with inclusive organizations being crucial to its realization (Szczygieł, Piecuch, and Lozinski 2019). Achieving social justice requires organizations to create an inclusive work environment. While low-level employees come from diverse backgrounds, the board of directors and top management remain white and male (Garcia et al., 2023). Because the work environment is shaped by the privileged, homogenous group it often does not accommodate for the needs of different groups (Ortlieb et al., 2021). Furthermore, many individuals may lack awareness that their behaviors constitute microaggressions. They also do not have an understanding of the adverse impacts that workplace incivilities can have on both mental and physical health (Timming et al., 2023). That is why creating a role with responsibility for DEI is necessary.

DEI manager role is an underexplored area, because this is a position created fairly recently and expectations greatly vary between organizations. Despite the fact that positions such as chief diversity officer have existed for more than a decade in companies operating in Western Europe and the US, only recently similar positions have been created in organizations operating in Poland (Microsoft News Center 2018; Lev-Ram 2020). Because of that, companies still are trying to decide what is the optimal approach and how to fit this position in organizational structure. In some organizations this is a full-time position, in other cases an employee allocates a portion of their time for the DEI role (Fields et al., 2022). In consequence, the scope of responsibilities and necessary credentials are not clearly defined (Hays-Thomas & Bendick, 2013).

Previous research on diversity tended to omit managers' agency or overlook their role altogether (Tatli, 2017). Tatli (2017) suggests the analysis of DEI manager position through the Bourdieuan lens and indicates that they can derive their power from 'expertise and skills, job status and organisational position, and organisational support'. Firstly, the knowledge (regarding regulations but also the situation of different – often marginalised – groups) is a fundamental component. Since this is a highly dynamic field it requires continuous learning. Environmental and personal factors can often shape the interest in this field. Secondly, the position within the structure is of paramount importance for the DEI managers' agency (Tatli, 2017). If roles related to DEI are only part-time it may indicate that the organization is not committed to increasing the inclusion and prefers to allocate the resources to other areas. In consequence it can undermine the position and the legitimacy of inclusive practices. Thirdly, since DEI managers often do not hold a position of authority sufficient to make significant impact on the functioning of the organization, senior management support is crucial for success (Ashikali et al., 2020). The symbolic capital that Bourdieu described can refer to the organizational support offered by middle and senior management. The formal support can be construed by either integrating DEI initiatives with business plans and including commitment to inclusion in business goals. Alternatively, DEI targets could be included in performance assessment (Tatli, 2017). Both approaches help in keeping employees accountable and monitoring the progress as well as showing symbolically that organization is prioritising DEI.

Position of DEI manager is challenging because of lack of resources, support and differences between countries (Fields et al., 2022). Without explicit endorsement from top management implementing DEI initiatives is near impossible – that is why inclusive leadership is gaining importance (Mah et al., 2022). Finally, organizations often assign one

person to coordinate DEI efforts in a region comprising of a number of territories e.g. Europe, Middle East and Africa (EMEA). However, cross-national variation in legal frameworks and societal norms prevents direct policy transfer between countries (Cachat-Rosset et al., 2022).

DEI initiatives in Poland have short history, so there is no robust legislation that would facilitate this process. The necessary changes must happen both within the organization as well as in the environment they exist in – especially in legislative, economic and social aspects (Bertone, Abeynayake, 2019; Gould et al., 2022). Additionally, social attitudes towards sexual harassment, racism and homophobia are often ambiguous, hampering ambitious and progressive DEI projects (Kędziora et al., 2018). The politics and practices that are supposed to create inclusive work environment and rectify the situation of historically disadvantaged groups often elicit negative responses (Iyer, 2022). DEI managers are also dealing with a resistance to change, which slows implementation of DEI initiatives that can later translate to disappointing results (Nadiv, Kuna, 2020). Both organizational context and factors outside the organizations in Poland make the job of DEI managers harder. However, creating position of DEI manager has already been established as a good practice (Waligóra, 2018). Many DEI initiatives has been inspired by practices implemented by foreign companies or developed on a global level and later implemented in subsidiaries – also those located in Poland. The creation of position of DEI manager follows this pattern. However, as Hennekam et al. (2017) pointed out, the Western approach to DEI may often be incongruent with the local context.

DEI management is a feminized profession (Koc, 2014; Reichel et al., 2010). This is partly rooted in gender stereotypes and perceiving some tasks as inherently female or male (Reichel et al., 2010). Despite research showing impact of HRM on organizational success it can still be deemed unimportant in comparison with other departments (Reichel et al., 2010). Similarly, the validity of DEI is questioned which means that taking up such a position is inherently linked to experience of hostility or dismissiveness. Especially members of minorities (e.g. Black women) are expected to dedicate their efforts to creating inclusive environment despite pervasive microaggressions and lack of recognition for their work (Johnson, 2023). Although women and minorities are groups that should benefit from DEI initiatives, designing and executing inclusive projects become additional burden for them, increasing risk of burn out (Fields et al., 2022).

2.2. Person-organization fit

Research consistently demonstrates that PO fit represents a critical factor influencing individuals' decision to join specific organizations and their subsequent retention patterns within those institutions (Kristof-Brown et al., 2023). According to seminal work in this field 'the compatibility between people and organizations that occurs when: (a) at least one entity provides what the other needs, or (b) they share similar fundamental characteristics, or (c) both' (Kristof, 1996). Originally a lot of researchers focused on PO fit. However with time it became clear that general characteristics of organization matter and the better congruity the better chance of success – both for individuals and organizations (Kristof-Brown et al., 2023). Research shows that PO fit increases job satisfaction and organizational commitment simultaneously decreasing turnover intentions (Kristof-Brown et al., 2023).

The diversifying demographic composition itself is a change that may decrease the PO fit for some employees. The companies have to decide how to approach this challenge. The past literature reviews pointed that it is important to explore the consequences of increasing

diversity on PO fit (Kristof-Brown et al., 2023). Some practitioners worry that emphasizing the importance of PO fit in hiring may result in creating in applicants belief that the organization is not committed to DEI and intends to create homogenous teams (Kristof, 1996). Organizations can show that they value DEI and convince diverse applicants that will be appreciated if they decide to work there. It is important to uncover how organizations are successfully balancing PO fit and DEI. Taking into consideration changes in the nature of workplace and potential conflict between concept of PO fit and growing diversity, some scholar point to person-skill fit as the optimal direction for the future (Chalutz-Ben Gal, 2023).

3. METHODOLOGY

Much diversity research relies on quantitative methods, to demonstrate the effectiveness of specific practices and their business impact, providing a rationale for investing in DEI initiatives (Tatli, 2017). However, some researchers point out that DEI is quite nuanced and context-sensitive area where incorrect approach can have detrimental consequences. That is why the qualitative approach is necessary. It allows find out the reasons why the DEI strategy may be falling short of expectations or why certain approach did not work in a particular country even though it has proved successful previously.

A qualitative approach was used to explore the experiences of women DEI managers in Poland and the PO fit in context of increasing diversity. This approach was deemed suitable, because it allowed to discover and interpret how they make sense of their role in organization (Creswell, 2013). Since previous research in this area in Poland was quantitative, this qualitative approach completes the picture (Maj, 2023).

3.1. Sample

There is no consensus on the number of participants required to achieve an optimal outcome (Khilji, Pumroy, 2019). Some suggest that as few as 6 interviewees may be enough to reach saturation of data, in other cases more than 20 participants would be necessary (Creswell, 2013). The data saturation is reached when 'the new information does not provide further insight' (Creswell, 2013). In this study, saturation was reached at six participants. The criterion for sampling was that participants had experience with DEI work in organizations – either as full time position or as a part of their role. Additionally, the experience of creating inclusive workplace must be connected to organizations operating in Poland – either those responsible for the Polish market or for a broader region which includes Poland (e.g. EMEA). Since women are more likely to be engaged in DEI – both as practitioners and academics – the last criterion was gender: women or female-presenting practitioners were invited to participate.

3.2. Data collection

In order to find potential participants, LinkedIn was searched using key words (e.g. DEI manager, inclusion specialist, diversity lead) to identify people that had experience in that role. A total of six participants were interviewed, who were responsible for DEI initiatives in the organizations operating in Poland.

Semi-structured interviews were conducted via Microsoft Teams, recorded, transcribed and uploaded to Nvivo. Each interview lasted between 48 and 75 minutes. The interviews included questions about participants' role in organizations, goals and challenges they face, the factors that influence their work (both inside and outside of the organizations) as well

as their opinion about PO fit and diversity. The questions were derived from the literature review.

Next step was the inductive creation of codes drawn from the participants statements (Gioia et al., 2013). The process of open coding was centred around research questions which resulted in 189 first-order codes, which were later analysed and grouped around specific themes.

Table 1. Demographic characteristics of research participants

ID	Highest level of position	Experience in the company in DEI role (years)	Full time/ part time	Age range (years)
Participant 1	Global	7	Part time ~30%	30-34
Participant 2	Global	1	Full time	40-44
Participant 3	Country	2	Full time	40-44
Participant 4	Country	1	Full time	25-29
Participant 5	Global	1	Part time ~50%	35-39
Participant 6	Global	2	Full time	50+

Source: own elaboration.

Among six participants, four were responsible for DEI initiatives on a country level and two had bigger scope coordinating also the processes outside Poland. Four people started their role within last 2 years and they took up the role that was just created within the structures of the company. Only one person had longer experience with DEI in her current company. The respondent stated that she was involved in DEI initiatives ever since she joined the company, but for the first few years it was mainly grassroots movement, initiated independently by the employees. The formal structures and position of chief diversity officer for a whole company has been created later in this company.

4. RESULTS

After analyzing the data the main themes that emerged were: defining the role, facing the challenges and making positive impact.

4.1. Theme 1: defining the role

Respondents emphasize that they remember the very beginning of DEI initiatives in their respective organizations, before any specific position was created. Origins were often described as bottom-up approach, when a handful of determined people wanted to organize the network of employees or an event around a certain issue. Some participants reported that they were the first person in that position, that the structure was still undergoing some changes, there was no DEI strategy yet, the company was still identifying needs and trying to decide what targets should be established. DEI practitioners have to often rely on their own resources and networks to complete their tasks:

‘I was lucky that my supervisor was supportive and I didn’t have to do this in overtime [...] and I had experience in marketing that was useful and I knew what team I can ask for help, so it’s based on your connections’ (Participant 1).

Subtheme: data and goals

All DEI practitioners emphasized that the starting point is always the data. It allows establishing who are the people in the organization and what are their needs. In order to identify the needs regular surveys, where employees can share their suggestions are implemented.

‘Measuring! Quantitative approach that translates into KPI. In Poland, this is very difficult, because sensitive data are protected – obviously this is good, that there is legislation in place that that protects sensitive data – but from DEI point of view this is a certain limitation.’ (Participant 3).

The goals were spanning from improving everyday interactions between employees, by creating sense of community, increasing awareness of unconscious biases and introducing inclusive language to achieving specific business goals regarding attracting best candidates, employer branding, decreasing gender pay gap or increasing representation in the board of directors.

Subtheme: localization and adjustments

Majority of the respondents mentioned that at least some policies or practices regarding DEI were prepared at the HQ level HQ and later locally adjusted. In some cases, DEI practitioners in Poland made minimal changes to the content of training or wording of the communication. In other cases the modifications were significant:

‘We changed a lot of elements of the training; we removed references to Islam, because we received feedback that this is not relevant here, that there are no problems because of different faith [...] there was also feedback to change the stock photos with the models. There were photos of people of different races and we heard that ‘there are no such employees here’ so they should be changed’. (Participant 4).

Apart from the adjustments linked to the country specificity, some respondents pointed out that there are some changes are necessary because of the industry:

‘We are talking strictly IT and obviously, I would love to have 50% of men and 50% of women as employees. However, is it realistic? If we look at the women in STEM statistics, we will find out that there are currently maybe around 27% of women at universities, and maybe 34% already in the labor market’ (Participant 5)

4.2. Theme 2: facing the challenge

DEI practitioners face the challenges both at organizational and societal levels. They pointed out that the individual resistance within the company often stems from lack of knowledge. Members of the privileged group that has not experienced discrimination or microaggressions are oblivious to those issues:

‘This is the result of the fact, that something was not part of my experience. This is typical behavior, one of my favorite slogans <I’ve worked here 20 years and I have never seen such a thing>’ (Participant 3).

Subtheme: organizational obstacles

Respondents reported that main obstacles are lack of resources, lack of formalized structures and procedures and most importantly lack of top management support. That is why educating employees and raising awareness was often selected as most important step,

tessential in the initial stage. Another problem DEI managers face is finding balance between making real impact and holding people accountable while avoiding introducing any mandatory trainings, to avoid discouraging people. All respondents stressed that it was delicate job. It required skillful tailoring of arguments and finding optimal framing to gain support – essentially adjusting the communication to specific groups.

Subtheme: individual resistance

There was a number of reasons why implementing DEI practices was a challenge: several participants expressed beliefs that some topics are still taboo:

‘I think that topics, that are still not openly discussed in Poland – or are causing discomfort – are issues of LGBT+ community. These are still sensitive topics. [...] But diversity increased and will continue to do so’ (Participant 2)

Another challenge is resistance to any change:

‘It is much easier to address this with new people, joining the organization, but it is much harder with people who have worked here for years’ (Participant 2)

Last challenge was addressing the opinions that DEI in general is redundant and is absolutely marginal issue.

4.3. Theme 3: making positive impact

Despite the challenges, all interviewees very positively assessed their roles. They emphasized that they believe their job contributes to the creation of better, more inclusive work environment. As one person described: ‘we want the whole organization to do D&I [...] so that in the long term my position is redundant’ (Participant 3).

Subtheme: personal satisfaction

Those DEI practitioners who combined DEI position with another role, reported that they applied for the position in that particular company, once they were assured during recruitment process, that they will be involved in DEI activities. All interviewees reported that their personal values and beliefs were aligned with DEI and it was very satisfying to participate in such a process.

Subtheme: business case

While impression that they are creating better work environment was rewarding, all participants referred to the business case as well. One of the major argument for DEI is the positive impact on business: performance, creativity and retention. In relation to PO fit, one DEI practitioner answered, that they communicate very transparently importance of inclusive culture. They consider DEI initiatives their asset that will attract candidates who have compatible values:

‘We sometimes hear during the recruitment process: ‘I came here, because I heard you have this approach’ [...] people work better together, when we share the same values’ (Participant 6).

However, as the other interviewee mentioned:

‘I disagree with this idea, because I have seen this in recruitment processes that were discriminatory. As long as we understand looking for a ‘fit’ as looking for a person who looks like us this is absolutely contrary to what DEI stands for.’ (Participant 2).

5. DISCUSSION

The aim of the study was to explore the experiences of DEI practitioners in organizations in Poland. After analyzing the interviews three main themes were identified and six subthemes. The main themes that were identified are: defining the role, facing the challenges and making positive impact.

The first research questions addressed the general perception of the DEI manager role. In majority of cases respondents were the first person taking up such a role in the company, a lot of time and effort was spent on trying to navigate this situation – understanding what are the company's expectations, testing how much real impact they can have and addressing the resistance, which is in line with research results presented by Iyer (2022). All of the respondents were confident that part of the challenge is the fact that they are the first person directly responsible for DEI and the situation is successively improving. In some cases the company already had global structures that were helpful and procedures that only needed adjustment before implementation in Polish subsidiary which is consistent with previous research on DEI initiatives (Bay et al., 2023). In other cases, the perception of respondent was that creation of this position was superficial – the only goal was to report that the organization has done so. Because of that, the person who was hired had no feedback what were the expectations and how this role fit within the structure.

The respondents whose role was entirely dedicated to DEI (as opposed to those who combined this with another position) emphasized that they were hired specifically because they were experts in their field, with years of experience. Their previous roles within DEI area was mainly abroad and they believed this gave them additional, broader perspective. They stressed that they are competent and confident in their abilities which is line with Bourdieu theory, that expertise and skills are the key component of professional identity, that can be the source of power (Tatli, 2017). However, the inherent part of the role was facing the difficulties and the respondents were confident that without top management support no change was possible – an observation consistent with previous research (Al-Atwi, Al-Hassani, 2021; Zhong et al., 2022). The main conclusion is that currently DEI managers in Poland operate in VUCA environment: the demographic composition of employees in organization is constantly changing, the goals DEI practitioners are expected achieve are sometimes unclear and elusive, availability of resources – especially budget – depends on many factors, and what exactly inclusion means to each person is still being debated. The study allowed to describe how DEI practitioners are crafting their job and what are their priorities. Finally, the study shows that the ability to make positive contribution and improve workplace is very rewarding and motivating.

The second research question was linked to the impact of the country context. Respondents reported that they face a lot of challenges because topics related to identity are often polarizing or that they believe are still considered sensitive by society. Employers stressed that addressing political events should be avoided at all costs and often the priority for the company is to avoid supporting any of the political options. While some noted that they have faced backlash either from coworkers or customers after introducing LGBT+ friendly practices, they stressed that situation is successively improving. Moreover, it was noted that legislation in Poland limits the ability to gather necessary data for devising any DEI strategy. It was also stated that legislation in Poland does not facilitate the process of creating inclusive work environment. The reason for this is that it does not recognize situation of certain employees and the beneficial provisions of Polish labor law are often not applicable to non-binary people or those in nontraditional families. Country context

also impacts diversity training – respondents were asked to remove or adjust the content related to Islam and racism as those topics were deemed irrelevant.

Previous research indicated that DEI managers can develop their skills and expertise in-house, especially if they work large organizations (Tatli, 2017). However, the results of the study indicate that this is still new topic for many organizations in Poland and there are not many resources available. Therefore, the DEI managers had to have previous experience and training that they usually gained abroad.

The third research question addressed the PO fit concept in context of DEI initiatives.

The interviewees shared that there are different interpretations among practitioners. On one hand it can be understood as the approach to recruitment based on looking for people who are similar to the employees that are currently working at the company. However it can lead to reproducing inequalities. On the other hand, some interviewees suggested that PO fit can also be interpreted conversely as a way to increase diversity by hiring people from underrepresented groups, so that they can add their unique perspective and experience. The DEI managers had ambiguous attitude to both interpretations and mostly pointed out the risks of misunderstanding the concept that may result in discriminatory hiring practices.

6. CONCLUSIONS

The main contribution of this study is uncovering how the role of DEI managers is currently understood and practiced in Poland, providing contextualized observations. The results indicate that companies have very different understanding of this position. In some cases it may entail adapting the content of diversity training that has already been prepared in the headquarter. It may also involve the creation of whole DEI strategy. The study also contributes to better understanding of DEI field in under-researched country such as Poland. The conclusion from the research is that companies operating in Poland are keenly aware of global trends and are implementing DEI initiatives as a response to growing employee diversity. Finally, the study offers insight for future DEI practitioners, helping them to understand what they may expect in this role. The main takeaway for future DEI managers is that they should have some experience and extensive DEI knowledge prior to applying for such positions. Organizations can offer minimal support at best in this area. It is unlikely that DEI manager would be taking over established DEI strategy integrated with the business goals and HR processes. Additionally, if they were to move to another company to take up similar role, their responsibilities would likely be very different.

The main limitation of this study is the low number of participants. This type of position has been created in some organizations in Poland fairly recently. There are very few DEI practitioners to begin with, although this number systematically increases and future research should involve more participants. Another limitation is the fact, that the only source of data are the interviews. In the future, more in-depth research utilizing e.g. case study method should be conducted to see how the role of DEI practitioner is perceived by other people in organization.

The author has read and agreed to the published version of the manuscript.

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THE PHENOMENON OF FINANCIALIZATION IN INTERNATIONAL COMPARISONS

The article presents the results of empirical research on comparisons of the phenomenon of financialization internationally. The research aims to find out whether financialization is a universal phenomenon and looks similar in different European countries, and if not, whether it is possible to speak then about groups of countries where financialization is similar to each other. The extent of financialization was calculated based on 6 measures of financialization, selected based on an analysis of the literature on the subject. When comparing financialization in different countries, reference was made to median financialization indices, and correspondence analysis (CA) was used to find groups of countries with similar sizes of financialization. The study used data from Eurostat and OECD databases, and calculations were made using the R software package and an Excel spreadsheet.

Keywords: financialization, measurement of financialization, economic change, financialization degree.

1. INTRODUCTION

The term financialization refers to the growing role of financial motives, markets, actors and institutions in transactions taking place in the national and international economy (Epstein, 2005). This is the classic, often-quoted, definition of financialization, although not the only one. The phenomenon itself is complex and multifaceted, hence one can come to understand it in a variety of ways.

Financialization has become a reality and is often cited as one of several major trends existing in the modern economy, alongside such trends as globalization, liberalization, deregulation, etc. The effects of financialization are enormous and affect virtually every area of the economy's functioning (Sawyer, 2017). Understanding this phenomenon is necessary to be able to control it. This is because it has both favorable and unfavorable effects (Ratajczak, 2017).

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This article presents the results of a study comparing the phenomenon of financialization internationally. The scope of the research makes it possible to check whether the phenomenon of financialization is universal internationally or not. The objectives accompanying the research are two:

- 1) Assessing the extent of financialization in all countries studied;
- 2) Assessing the extent of financialization in groups of countries.

Such a goal is accompanied by two research hypotheses:

H1) The extent of financialization in all countries studied is uneven (achievement of objective one);

H2) There are groups of countries where the magnitude of financialization is similar to each other (realization of objective two).

The study covered 20 European countries, these are: Belgium, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom. Countries for analysis were selected due to the availability of empirical data, but also to make them diverse in terms of their national income. The group of countries studied included both the countries of Central and Eastern Europe, including Poland, which are probably only at the beginning of the process of intensive financialization, and the countries of the so-called Euro-12 group, i.e. rich European countries with mature financial markets, where the process of financialization has been evident for a long time. Covering such a large number of countries in the study is a new approach to the subject, as few studies published to date address such a large group of countries. The exceptions are the studies by Karwowski et al. (2019), Maxfield et al. (2017).

Figures found in Eurostat and OECD databases were used for the study. Both databases were treated as complementary databases. Only by combining the information contained in these databases was it possible to obtain the necessary set of data to realize the purpose of the study and to have a sufficiently long time series. The use of data contained in international databases made it possible to obtain comparable information. The study used as long a time series as access to the necessary data and the ability to compare them allowed. Some of the historical data available only for certain variables were dropped, making sure that the time series used were of the same length. In the end, data from the period 2007-2017 were taken into account. For the period 2007–2017, 6 different measures of the size of financialization were calculated for each of the 20 countries included in the study. A total of 132 measures relating to the size of financialization were obtained. For the resulting time series, 5 descriptive statistics were determined for each country and each type of measure, thus obtaining another 600 values. On such a set of numbers created in this way, all subsequent calculations were carried out and data summaries were created. All calculations were made using the R program package and an Excel spreadsheet.

2. MEASURING FINANCIALIZATION

Assessing the extent of financialization requires the adoption of a way to measure its magnitude. Just as there is no single, universally accepted definition of financialization, there is no single, universal way to measure it. On the basis of a critical analysis of the literature on the subject, the study adopts 6 measures of financialization that illustrate the phenomenon in different aspects. Two of them relate to the financial sector, two to non-financial enterprises, and two to households. The measures were selected to reflect the outcome of the financial sector's activities and the involvement of non-financial enterprises

and households in the financial markets, as well as debt in the financial sector, non-financial enterprises and households (Gemzik-Salwach, 2023). These are summarized and presented in Table 1.

Table 1. Accepted measures of financialization with their reference to the literature on the subject

Measures of financialization	Authors who recommended a particular indicator or an indicator with a similar design
Value added created by finance and insurance sector, % of value added	Assa (2012); Arcand et al. (2012); Barradas et al. (2018); Beck, Levine (2004); Gołębiowski, Szczepankowski (2015); Karwowski et al. (2016); Kedrosky, Stangler (2011); Palley (2007); Svilokos, Burin (2017).
Financial sector leverage (debt to equity, %)	Karwowski et al. (2016); King, Levine (1993); Palley (2007).
Financial assets of non-financial companies, % of GDP	Batt, Applebaum (2013); Gołębiowski, Szczepankowski (2015); Kalogerakos (2013); Karwowski et al. (2016); Krippner (2005); Krippner (2012); Stockhammer (2010); Tori, Onaran (2017).
Debt of non-financial enterprises in relation to total surplus	Arcand et al. (2012); Barajas et al. (2013); Barradas et al. (2018); Cecchetti, Kharroubi (2012); Dabla-Norris, Srivisal (2013); Easterly et al. (2000); Gołębiowski, Szczepankowski (2015); Grabowski, Maciejczyk-Bujnowicz (2016); Jordà et al. (2014); Karwowski et al. (2016); Levine (2005); Loayza, Rancièrè (2006); Rajan, Zingales (1998); Rioja, Valev (2004); Rousseau, Watchel (2011); Stockhammer (2010).
Household financial transactions, % of net disposable income	Dünhaupt (2014), Epstein (2005); Fierla (2017); Karwowski et al. (2016).
Household debt as a % of net disposable income	Arcand et al. (2012); Barajas et al. (2013); Barradas et al. (2018); Bernanke, Gertler (1996); Cecchetti, Kharroubi (2012); Dabla-Norris, Srivisal (2013); Easterly et al. (2000); Grabowski, Maciejczyk-Bujnowicz (2016); Jordà et al. (2014); Karwowski et al. (2016); Karwowski, Stockhammer (2017); Kim (2013); Levine (2005); Loayza, Rancièrè (2006); Minsky (1982); Minsky (1996); Minsky, Whalen (1996); Palley (2007); Philippon, Reshef (2012); Rajan, Zingales (1998); Rioja, Valev (2004); Rousseau, Watchel (2011); Saci et al. (2009); Stockhammer (2010); Whalen (2011); Wrzesinski (2014).

Source: own compilation based on: (Gemzik-Salwach, 2023).

3. FINANCIALIZATION IN ALL COUNTRIES SURVEYED

The first step in analyzing the magnitude of financialization was to calculate descriptive statistics for all financialization measures selected for the study by country. Table 2 summarizes the medians for the financialization measures by country.

Table 2. Median for financialization measures by country

Country/ Measure of Financialization	Value added created by finance and insurance sector, % of value added	Financial sector leverage	Financial assets of non- financial companies, % of GDP	Debt of non- financial enterprises in relation to total surplus	Household financial transactions, % of net disposable income	Household debt as a % of net disposable income
Belgium	6,13	194,50	222,30	5,80	4,32	105,00
Czech Republic	4,31	567,40	46,00	2,11	3,65	65,70
Dishes	5,95	204,70	169,90	6,02	0,70	314,20
Estonia	3,88	370,80	83,70	3,26	6,35	85,20
France	4,23	358,10	121,60	6,27	4,99	111,20
Greece	4,60	1047,20	39,80	4,16	-2,80	111,30
Spain	4,16	572,60	86,20	5,22	4,55	141,50
Lithuania	2,19	608,20	38,10	1,65	2,51	47,70
Luxembourg	26,83	56,80	621,00	19,24	9,43	165,60
Latvia	4,16	684,20	42,90	3,71	0,14	71,40
Netherlands	8,46	145,30	247,40	6,62	5,25	266,40
Germany	4,19	515,80	97,00	2,91	8,89	95,20
Poland	4,26	301,20	39,40	2,54	5,10	60,10
Portugal	6,29	364,30	97,50	7,64	3,49	150,80
Slovakia	4,01	841,50	86,10	3,22	-0,04	55,30
Slovenia	4,32	594,00	51,60	5,42	1,85	56,90
Sweden	4,31	219,00	138,70	5,91	7,00	168,30
Hungary	4,38	120,60	70,80	3,64	9,38	63,20
United Kingdom	7,81	885,60	101,40	6,77	4,49	148,90
Italy	5,38	758,80	61,50	4,95	2,09	87,20

Source: own elaboration.

An analysis of the median value achieved by each measure of financialization shows that there are large differences between the values of this measure for individual countries. This confirms hypothesis one, which states that the size of financialization in the group of all countries studied is unequal. The median spreads across countries for each measure of financialization are:

- From 2.2 to 26.8 – for the financialization measure, the value added created by the finance and insurance sectors expressed as a percentage of value added,
- From 56.8 to 1047.2 – for the measure of financialization leverage of the financial sector,
- From 38.1 to 621.0 – for the measure of financialization, the financial assets of non-financial enterprises as a percentage of GDP,
- From 1.7 to 19.2 – for the measure of financialization, the debt of non-financial enterprises in relation to the total surplus,
- From -2.8 to 9.4 – for the financialization measure, household financial transactions expressed as a percentage of net disposable income,

- From 47.7 to 314.2 – for the financialization measure, household debt as a percentage of net disposable income.

Such heterogeneity of financial processes taking place in different countries was emphasized in works by Becker et al. (2010), Zhang (2009), among others. In the study conducted for financialization as measured by the following measures: non-financial corporate debt to total surplus, financial sector leverage and household debt as a percentage of net disposable income, the greatest variation occurring across countries was noted. The countries where the size of financialization differs the most are Luxembourg and Greece.

An analysis of the size of financialization by country showed that the group of countries studied is not homogeneous in terms of the size of financialization. Moreover, this statement is true for all the financialization measures selected for the study, since for none of the financialization measures did the obtained research results turn out to be close enough to each other to recognize the homogeneity of the group. Therefore, we proceeded to analyze the size of financialization in groups of countries.

4. FINANCIALIZATION IN GROUPS OF COUNTRIES

Analysis of the types of financialization in each country makes it possible to assign a country to a particular measure of financialization. In other words, thanks to it, it is possible to determine the measure of financialization (one of the six selected for the study), the size of which is dominant in a given country. Such knowledge makes it possible to determine which type of financialization, is dominant in a country and in which sector of the economy it manifests itself most strongly. The analysis is designed to answer the question of which of the six measures of financialization was the dominant size in each of the countries studied.

The study was conducted using the method of correspondence analysis (CA), which is equivalent to principal component analysis (PCA). The difference between these methods is, among other things, that the correspondence analysis method can be applied to variables that are not presented on a quotient scale. This is an alternative method to principal component analysis, which is less accurate, but also shows the relationships that occur. Both methods show relationships between variables. The algorithm used in the correspondence analysis method groups correlations by themselves, that is, it checks whether an increase in one variable is accompanied by an increase in another variable, and a decrease is accompanied by a decrease. Thus, the correlations highlighted refer to dynamics rather than to existing structures. The purpose of correspondence analysis is to graphically illustrate the relationships that exist between variables in a space with fewer dimensions while retaining as much original information as possible (Greenacre, 2007; Misztal, 2015). The method creates artificial variables, called dimensions, to which other variables are assigned – in the case of this analysis, these are the financialization measures, six in number. Thus, in place of the six measures of financialization, a smaller number of artificial variables, called dimensions, are created, which do not mean anything in themselves, but instead represent the relationships that exist between the measures of financialization, that is, they show which of the six measures of financialization are grouped together. The basis for the grouping here are the eigenvectors, the results of which are shown in Table 3.

Table 3. Median for financialization measures by country

	Eigenvector	Variance	Cumulative variance
Dimension 1	0,2846312663	85,19429947	85,19430
Dimension 2	0,0436952460	13,07862598	98,27293
Dimension 3	0,0048373793	1,447898350	99,72082
Dimension 4	0,0007093097	0,212306770	99,93313
Dimension 5	0,0002234085	0,066869430	100,00000

Source: own elaboration

Table 3 shows the relationships that exist between the variables. It shows that 5 dimensions of financialization were created, nevertheless 98.27% of the cumulative variance was already attributed to the second dimension. This means that if two artificial variables, called dimensions, had been created, 98.27% of the results, i.e. practically the entire set, could have already been attached to them. This is good information because it means that a six-element set of financialization measures can be reduced to a two-element set. This relationship is confirmed in Figure 1, which shows the so-called elbow graph, also known as a settlement graph.

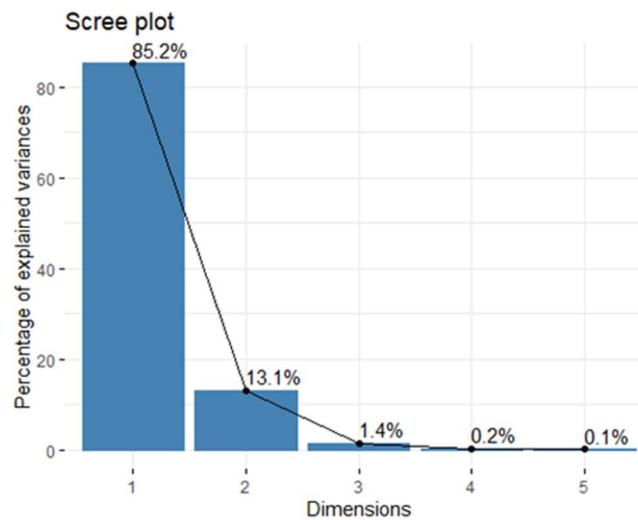


Figure 1. Elbow diagram for vectors

Source: own elaboration.

In Figure 1, you can see the breakdown of the line already after the first dimension, this means that the number of $n + 1$ dimensions should be used for the analysis, where n is the number of the dimension after which the breakdown occurred. Thus, in the case under analysis, the number of dimensions will be 2, which corresponds to the calculations shown in Table 3 – the variance for the first dimension marked in Figure 1 was 85.2, and for the second dimension - 13.1%. Together, this represents 98% of the cumulative variance value, which corresponds to the number of cumulative variance assigned to dimension 2 in Table 3.

The study of the size of financialization in each country using the correspondence analysis method also made it possible to determine which country is dominated by which type of financialization. A graphical representation of these relationships is shown in Figure 2, with the financialization measures numbered from 1 to 6 (*Measure 1, Measure 2, Measure 3, ..., Measure 6*) used in the description of previous studies being replaced for the figure by the terms financialization sizes, also numbered from 1 to 6, with corresponding numbering (*Size 1, Size 2, Size 3, ..., Size 6*).

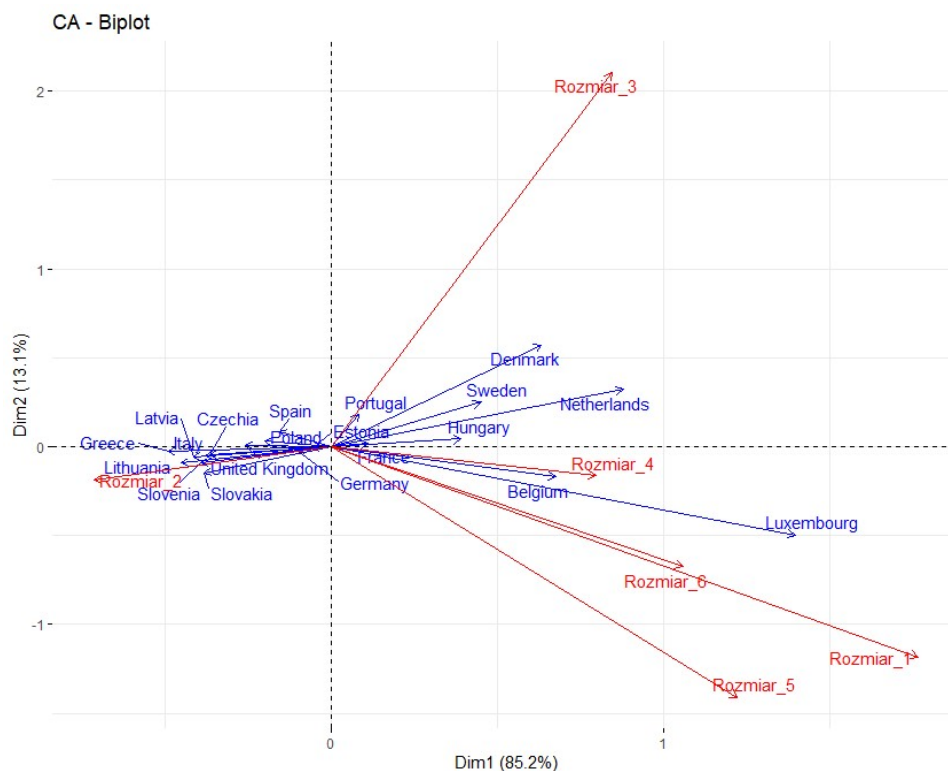


Figure 2. Dominant types of financialization by country
Source: own elaboration.

The survey made it possible to determine which countries have higher numbers in the size of financialization defined by the selected measures, and which countries most closely match these higher values of the measures, and therefore which type of financialization dominates in a given country. Based on an analysis of the information presented in Figure 3, it can be concluded that some countries are dominated by one specific type of financialization, e.g. financialization measured by size 1, a measure – value added created by the finance and insurance sector, expressed as a percentage of value added for each country – is the type of financialization most characteristic of Luxembourg. Luxembourg has been placed some distance from other countries on the chart, suggesting that financialization will proceed differently here than elsewhere. In contrast, there is a whole group of countries (the Czech Republic, Greece, Italy, Latvia, Lithuania, Poland, Slovakia,

Slovenia, the United Kingdom) where the same type of financialization, as measured by measure 2, financial sector leverage, is dominant. This analysis seems to confirm the thesis of the existence of groups of countries with similar size and type of financialization and prompts us to look for them.

Another important piece of information is that the square of independence between the two variables (*chi-square of independence*) was 4857.741, that is *p-value* = 0. This means that there are structures, and therefore groups of countries similar in terms of financialization can be distinguished. A *p-value* close to 0 means that the analysis is highly statistically significant.

5. CONCLUSION

This article accomplishes two goals, namely, assessing the size of financialization in all the studied countries and their groups, and verifying two hypotheses, namely, that the size of financialization in all the studied countries is unequal, and that there are groups of countries in which the size of financialization is similar to each other.

It is clear from the research that financialization is not a simple process that takes place uniformly in all countries and all sectors of the economy. The extent of financialization varies from country to country and from sector to sector. Financialization should therefore be understood as a differentiated process, both in terms of economies and sectors.

The analyses confirmed the veracity of hypothesis one, which states that the magnitude of financialization in the group of all countries studied is uneven. Sectoral processes can work in opposite directions, but will always have an impact on the economy as a whole. For example, the financialization of non-financial companies manifested in the placement of their cash holdings in financial assets instead of tangible investment will mean precisely a decline in investment and thus inhibit global demand. At the same time, rising household indebtedness will certainly translate into an increase in consumer demand and thus stimulate global demand growth. The overall macroeconomic outcome thus depends on sectoral interactions.

The existence of similarities concerning the size of financialization in groups of countries was found, which confirmed the validity of hypothesis two. It should be noted that the existing similarities in the size of financialization across groups may indicate that there is still a lack of macroeconomic theories to explain and understand financialization according to the experience and development path of each country. The presented research results showing the size of financialization in each group of countries can support research on financialization in this area.

All authors have read and agreed to the published version of the manuscript.

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DEVELOPMENT AND FORMS OF SHARED MOBILITY: A CHALLENGE FOR LOCAL GOVERNMENTS AND TRANSPORT COMPANIES

The article discusses sharing economy in transport car sector. It addresses the history of the development and forms of shared mobility and the challenges that local governments and transport companies face in this area.

Methodology: The authors used analysis of the literature. The adopted methodological strategy involved the snowball sampling method, which identifies scientific articles addressing shared mobility. Industry studies and quantitative analyses of open statistical data from databases such as the Local Data Bank of the Central Statistical Office (LDB) and Statista were also used.

Results: The research indicates that the main challenges for local governments and transport companies regarding shared mobility include the lack of common legal and organisational regulations, balancing public and private interests, infrastructure issues, and psychological barriers.

Main contribution of the paper: The article highlights the importance of shared mobility in today's economic reality, considering changing trends, consumer attitudes, and sustainable economic development.

Keywords: shared mobility, transport, development, local governments.

1. INTRODUCTION

The sharing economy (SE) is a new socio-economic trend that offers promising prospects for future development through innovative technologies. New technologies have caused changes not only in production or sales processes (Koopman et al., 2015), but also significant organisational, social, and cultural transformations (Mishra et al., 2015; Parise et al., 2016). One such transformation is the development and spread of the sharing economy, a new form of economic cooperation. The essence of the sharing economy is

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meeting needs by sharing and utilising unused resources, tangible (such as equipment, living space, vehicles, and food) and intangible (such as money, time, and skills). Sharing provides access to necessary functionalities and resources without requiring ownership, thus removing the associated financial burden. (Mężyk, 2020). The sharing economy helps people realise that owning goods can cause more harm than benefit (Nielsen et al., 2015; Banaszek, 2018). Thus, the sharing economy provides an opportunity to utilise without owning. It represents a shift from a one-to-many model to a many-to-many model. The sector's rapid growth connected with new technologies leads to the continuous development of new and competitive (not only price-wise) services, which, according to the European Commission, can have a positive impact on economic growth and job creation in the EU, provided they are regulated and developed responsibly.

Transport is an area where the principles of the sharing economy thrive in C2C (customer-to-customer) and B2C (business-to-consumer) relationships. The offering concerns alternative ways of navigating, replacing private vehicles, public transport or taxis. Shared mobility is a new revolutionary way of using and moving around the city. It aligns with the spirit of the times, encompassing concepts such as the sharing economy and the smart city. It also has a growing concern for residents living conditions and quality of life, particularly in the context of ongoing climate change.

The high density of transport modes in the urban transport system causes numerous problems for city authorities and city logisticians. According to all forecasts, the demand for urban mobility will increase rapidly, due to, among other things, the growing number of people in cities and the expansion of cities over ever larger areas. Under these conditions, shared mobility appears as one of the main tools to mitigate the negative consequences of this phenomenon.

This paper aims to show the impact of shared mobility on the functioning and policies of local governments and transport companies. By characterising shared mobility models, the authors also intend to show how the sharing economy influences the formation of consumer attitudes and trends, and what solutions are being introduced to the transport services market. To achieve this goal, the following research problems were formulated as questions:

- Does shared mobility pose a challenge for local governments and transport companies?
- How do local governments and companies address the sharing economy's challenges?

The basis for the considerations is a thorough and critical analysis of the literature on the subject, both domestic and international. The adopted methodological strategy involved the snowball sampling method, which identifies scientific articles addressing shared mobility, its variants, and related issues. Industry studies and quantitative analyses of open statistical data from databases such as the Local Data

Bank of the Central Statistical Office (LDB) and Statista were also used to supplement the content.

2. LITERATURE REVIEW

Although the sharing economy has gained prominence in recent years (Pouri, Hilty, 2021; Bin et al., 2016; Mondal, Samaddar, 2020; Perkumienė et al., 2021; Roblek et al., 2016), the authors of this article point to a lack of theoretical research on so-called shared mobility in particular (Petrini et al., 2017).

It should be emphasised that the popularity of the sharing economy has been greatly influenced by digitalisation in business, which has opened up a range of potential opportunities and challenges for economic activity, including a fundamental shift in organisational and distribution models (Wang, Zhang, 2012; Filipiak et al., 2020; Perelygina et al., 2022). This revolution has led to the development of various resources, some of which are technology-based, involving the provision of digital platforms and applications. In this context, the sharing economy has emerged. This concept is understood as a type of shared consumption aimed at solving social problems and providing corresponding benefits. It is based on the widespread use of products or services to transform unsustainable consumption into sustainable and rational consumption (Lamberton, 2016; Luri Minami et al., 2021; Wroblewski, Dacko-Pikiewicz, 2018). The relationships between the sharing economy and sustainable development in any economic field are essential, indicating their significant role in contemporary cooperation between various economic entities.

Given the above, the authors of the article highlighted the relationship between the sharing economy and transport and demonstrated the impact of this phenomenon on sustainable development (Table 1).

Table 1. The sharing economy in the context of transport and sustainable development – a literature review

	Transport Sector	Sustainable development
Sharing Economy	Bardhi, Eckhardt, 2012; Viti, Croman, 2013; Rayle et al. 2014; Stiglic et al., 2015; Wang et al., 2016; Centobelli et al., 2017; Standing et al., 2019; Geissinger et al., 2020; Andreu et al., 2020; Mouratidis et al., 2021; Castellanos et al., 2022.	Gössling, Cohen 2014; May, Crass, 2017; Centobelli et al., 2017; Wang et al., 2019; Raymand et al., 2021.

Source: own study.

Referring to the above literature review, the focus is on the transport sector in the service industry, which underpins the advocacy of the sharing economy by practitioners, industry, policymakers, and researchers.

As mentioned earlier, the significance and potential of sustainable development in the sharing economy are gaining recognition (Curtis, Lehner, 2019). However, the impact of the sharing economy on sustainable development remains under-researched, especially regarding rebound effects. The authors of this article analysed the phenomenon of the sharing economy based on the concept of sustainable development, which plays a significant role in fundamental service industries such as transport. Sustainable development, especially environmental aspects, is a key factor relating to the quality of services from the perspective of the transport industry. This is because the transport services market greatly impacts the natural environment. Considering transport and its implications for sustainable development in the context of the sharing economy, it is proposed to share transport resources to eliminate or minimise, for example, air pollution, and traffic congestion, or improve transport logistics (Wang et al., 2019).

The sharing economy in transport is changing how people move around cities, helping create a more sustainable, efficient, and accessible transport system. By reducing the number of vehicles on the roads and encouraging the use of more eco-friendly modes of

transport, such as bicycles and electric scooters, the sharing economy can contribute to reducing carbon dioxide emissions and other pollutants, partly because car owners often share their space with others (Redman et al., 2013; Koźlak, 2017). Furthermore, shared transport systems often integrate different modes of transport, such as public transport, bicycles, scooters, and electric cars, which promotes a more sustainable and efficient transport system.

2.1. Shared mobility

Shared mobility is one of the segments of the sharing economy that is most fully realised in urban transport systems, which face significant challenges. According to Shaheen et al. (2015), shared mobility is short-term access to shared vehicles by users depending on their needs and convenience, without the need to own vehicles. This phenomenon has intensified due to demographic and cultural changes and is primarily related to the new social approach to the ownership of goods, mainly in developed countries. However, the fundamental development of shared mobility began in the 1990s, mainly due to the rapid growth of telecommunications and information technologies. The service system is based on passengers sharing the modes of transport to meet temporary transport needs without transferring ownership rights from the service provider to the customer (Nansubuga, Kowalkowski, 2021).

Shared mobility is primarily a new, distinct category of urban mobility comprising different types of vehicles (e.g. bicycles, scooters, UTOs, scooters, cars) intended for independent and individual use. They are most often rented via mobile technologies. Once the journey is completed, the vehicle becomes available for subsequent users. The broadly understood shared mobility includes various transport modes and services that allow users short-term access to transport modes if needed.

The first shared transport services are attributed to city bike systems. This form of shared transport dates back to the second half of the 20th century. (Kuzma et al., 2022). Poland's first public bike-sharing system was launched in Kraków in 2008, co-financed through the European programme 'Civitas Caravel.' (Puzio, 2020). In 2016, it was replaced by a fourth-generation self-service bike rental system called Wavelo, operated by BikeU. It operated until 2019. This was followed by the RoweRes public bicycle system in Rzeszów (by Romet Rental Systems) and the Wrocław Urban Bicycle System (by NextBike), launched in 2011. The flagship project is the Veturilo public bike system in Warsaw. The second most popular form of shared mobility is car-sharing, and the first car-sharing experience in Poland dates back to 2015, with the start-up company GoGet.pl from Wrocław (Kubera, 2018). Another type of shared service is electric scooters. In Poland, the first electric scooter service available by the minute was launched in 2017 in Warsaw by Blinkcity, responsible for electric scooters and urban bicycle systems in Poland. Electric scooters are the last type of vehicle included in the shared transport system, representing the latest developments in urban micro-mobility. E-scooter systems in Poland first gained attention in 2018, thanks to Lime.

Shared mobility will develop rapidly. On one hand, it is convenient and intuitive, and on the other, it helps solve many problems that cities face globally. The growing interest in vehicle sharing is seen worldwide (Figure 1). Despite the noticeable attachment to ownership and possessing a vehicle in Western culture the shift towards using shared mobility services is gaining importance from a psychological perspective (Prettenthaler, Steininger, 1999).



Fig. 1. The global shared mobility market

Source: Statista: <https://www.statista.com/accounts/pa>

Transformation and changes in the transport sector are integral to its functioning (Cohen, Kietzmann, 2014). Vehicle sharing primarily meets the basic transport needs of the population while also being an alternative, ecological, and economical mode of transport. It contributes to reducing traffic congestion in cities. This helps decrease air pollution emissions and the demand for parking spaces. Fewer cars on the roads create greater travel comfort and safety (Kozłak, Pawłowska, 2017).

2.2. The sharing economy in the transport sector in Poland

The sharing economy in transport involves sharing transport resources, such as cars, bikes, scooters, or e-scooters instead of individual ownership. This type of usage, including transport modes, offers numerous benefits for providers and renters. One key element of this concept is the optimisation of resource use, as instead of needing to own a vehicle, users can access a fleet of cars, which allows existing resources to be used more efficiently (compared to traditional methods) and reduces the need for producing new vehicles (Standing et al., 2019). Vehicle sharing also reduces costs, as actual vehicle usage is cheaper than ownership when considering expenses such as purchase, insurance, fuel, maintenance, parking, and more. Furthermore, sharing models can improve transport accessibility in areas where traditional transport services are limited or insufficient (Schwieterman, Bieszczat, 2017).

In 2020, over 25 million passenger cars were registered in Poland. Meanwhile, one shared vehicle can replace up to 7–11 private cars. Globally, the spread of car-sharing could reduce the number of vehicles by up to one-third.

The choice of goods and services nowadays is quite wide and many items are based on accessibility, with car-pooling as an example of this process (Zhang et al., 2016). This phenomenon involves sharing a seat in a private car in exchange for a specified fee. People search for car-pooling opportunities online and advertise available car seats (Shaheen et al., 2016). The most popular platform is the previously mentioned BlaBlaCar (Kamińska, 2017). BlaBlaCar is the largest global community-based transport network, enabling over 90 million users to carpool in 22 countries. The one-way car-pooling portal is inonecar.com, which connects employees through shared commuting. The service allows users to set departure times and choose travel companions. An example of car-pooling is

the JedziemyRazem platform, which connects people travelling in the same direction or along regular routes and also allows for planning one-time journeys. The second group of services facilitates vehicle rental through publicly available car fleets. An application enabling car rental by the minute is Traficar. It lets users reserve a vehicle, drive it within the city, and leave it anywhere, with the fee based on the kilometres driven. (Kamińska, 2017). The platform started its operations in 2016 and initially operated within Krakow. Today, it is the largest car-sharing company in Poland, currently operating in 26 Polish cities. It has a fleet of over 2,500 cars (www.traficar.pl as of 1.07.24). A similar application called 4mobility started on the Warsaw market. It currently operates in several cities. Its fleet includes over 400 cars. The platform offers car rentals by the minute or hour while providing fuel and parking meters. It also offers short-term rentals for days, weeks, and months. The company rents cars for longer periods of over 6 months (www.4mobility.pl as of 1.07.24.). PANEK S.A., a company founded in 2000 in Lubin, Lower Silesia region, started as a local car rental company. It was established and has been developed and managed by Maciej Panek, who, through his determination and an appropriately chosen strategy, transformed a small provincial company into a nationwide leader in the car mobility industry within just a few years, offering comprehensive services including rentals by the minute, short-term rentals, and daily, monthly, and yearly rentals. The company is also involved in ecological activities, as evidenced by its regularly refreshed fleet consisting exclusively of low-emission hybrid and fully electric cars (www.ipanek.pl as of 1.07.24). The last group of platforms connects passengers with drivers who own their vehicles. These services resemble regular taxis and include Uber and Bolt. Both applications are available in Poland.

In the Polish market, it is also possible to rent other modes of transport that are more environmentally friendly than cars. These include electric scooters and bicycles, which are particularly popular in spring and summer. Currently, almost 70 Polish cities have decided to launch so-called city bikes, with a total of nearly 25,000 shared bicycles and around 3,000 stations across the country. In 9 cities, users can also access almost 7,000 electric scooters (<https://www.teraz-srodowisko> as of 1.07.24). However, using these eco-friendly alternatives to cars comes with drawbacks. It is not possible to reach high speeds. Problems also arise in unfavourable weather conditions. Nevertheless, it is sometimes quicker to reach a specific point. A positive aspect for the environment is the reduction of carbon dioxide emissions released into the atmosphere. Solutions in this area are offered by Bolt or, more recently, the Free Now app. The German start-up TIER has also entered the Polish market. It offers electric bicycles and scooters in 82 locations in Poland (www.tier.app/pl as of 1.07.24).

3. FORMS OF SHARED MOBILITY

Shared mobility encompasses various forms of transport aimed at providing shared access to vehicles and other transport modes, reducing the need for individual car ownership. They can be divided into several main categories: car-sharing (cars by the minute or day), bike-sharing (public bike systems), personal vehicle sharing, ride-sharing, shared micro-mobility, on-demand ride services including ride-sourcing, alternative transit services, and courier network services (Kuzma et al., 2022). Meeting transport needs in shared mobility involves the use of multiple systems and modes of transport.

Shared mobility can be divided into emerging innovative and basic, existing shared services. Innovative services include those that use cutting-edge technologies such as

mobile applications and the Internet as the basis for rides, such as bike-sharing, car-sharing, e-hail, micro-transit, micro-mobility, and ride-sourcing. Basic services, which have existed on the market for some time, include traditional car rentals, limousines, rickshaws, paratransit, taxis, shuttle services, and, above all, public transport. A combination of both classifications includes car-pooling, van-pooling, and slugging services (Kuzma et al., 2022).

3.1. Car-sharing

Car-sharing is one of the most rapidly developing models of the sharing economy in transport in recent years. The term consists of two English words: 'car' and 'sharing,' which together mean sharing or making a car available (Hui et al., 2017). Car-sharing involves the shared use of cars made available to users for a fee for a short period of time (sometimes counted in hours) (Mallus et al., 2017) by fleet operators. The operation of such a system increases the efficiency of vehicle use per day and leads to a reduction in the number of privately registered cars (Godlewska, Szpilko, 2020; Namazu et al., 2018). As a result, this solution contributes to reducing not only congestion in urban areas but also the problem of lack of parking spaces (Wojewódzka-Król, 2021). Customers interested in such a service can pick up their vehicles from specially designated locations and return them after their trip is completed. Special parking zones for such cars are designated in urban areas. Users of this form of transport are charged according to the kilometres driven or the time of use (Millard-Ball et al., 2005).

Three models of car rental and parking have been identified in car-sharing services (Cervero et al., 2007):

- free-floating – involves leaving the car anywhere within a designated zone, e.g. within the city limits except for the outskirts of the city;
- station-based – requires leaving the vehicle only in a designated zone or specific location, with the possibility of booking the car in advance;
- peer-to-peer – based on the voluntary sharing of private cars to customers registered in a special database.

In terms of its functionality, car-sharing can be divided into three types. The first is classic car-sharing, which requires users to rent and return the car at the same location. This most often involves specifying the exact time of pick-up and return of the vehicle (Heilig et al., 2018). The second type is free-floating car-sharing, which allows the car to be picked up and returned at any location convenient for the user. Car bookings in the free-floating system can be made even a few minutes in advance, e.g. via a mobile application or website. This provides users with the convenient option of returning the vehicle anywhere and anytime. This is the main difference from classic car-sharing, where the booking time must be specified in advance. The third system offers the possibility to return the car to a different location from where it was collected. This type is called one-way car-sharing (Seik, 2000).

3.2. Car-pooling

Car-sharing is often confused with car-pooling. Car-pooling started earlier but, like car-sharing, developed significantly in the age of the Internet and mobile applications. The term means drivers offer a seat to others wishing to travel in a particular direction. The primary aim of car-pooling is to increase the number of passengers on a car journey. This system makes passenger cars resemble public transport (Shaheen et al., 2016b). The car-pooling system is mainly developed in places where the availability of public mass

transport is insufficient. This mode is typically used by people travelling to school, university or work and is often practised informally. Car-pooling mainly operates based on mobile applications functioning as social networking sites, including Uber or Lyft (Correia, Viegas, 2016). Such a solution has cost-saving benefits for both parties (Godlewska, Szpilko, 2020).

3.3. Bike-sharing

A similar solution for shared urban mobility is bike-sharing systems, which is the possibility of renting a bike on-demand from a docking station and returning it to the same or any other dock within the same system (Wojewódzka-Król, 2021). Bike-sharing stations are usually unattended, concentrated in urban areas, and offer one-way station-based access (bicycles can be returned to any station) or round-trip station access (bicycles must be returned to the pick-up station). Bike-sharing provides a variety of pick-up and drop-off locations for bicycles. Most public bike-sharing operators cover the costs of maintenance, storage and parking. Typically, rides lasting less than 30 minutes are included in membership fees (Shaheen et al., 2016a). The benefits of public bike-sharing systems are numerous, such as avoiding parking and maintenance issues with private bicycles, providing more convenient connections to public transport, reducing travel times and costs in city centres, improving physical health, and offering opportunities for more social and recreational experiences (Li, Kamargianni, 2018).

3.4. Ride-sharing

Ride-sharing involves shared trips by multiple travellers on similar or overlapping routes (origins/destinations) and departure times, using the same vehicle, usually a car or van (Fagnant, Kockelman, 2018). Ride-sharing significantly reduces congestion by decreasing the total number of vehicles on the roads by encouraging travellers to share rides. These practices are facilitated by communication technologies such as the Internet, smartphone applications, and connected vehicles. It represents a new type of point-to-point transport network service based on a dynamic platform, where drivers offer their private vehicles to passengers seeking transportation to similar destinations (Chen et al., 2017; Di, 2018). Individual participants in ride-sharing benefit from shared journeys because travel costs are reduced and journey times are shortened.

3.5. Van-pooling

Van-pooling typically involves 7 to 15 people who regularly commute in a van or a similar-sized vehicle, sharing the travel costs. This form of mobility usually has a coordinator. Its advantages include (Ferguson et al., 1994) reliability, social interactions, stress reduction, financial, environmental, and ecological benefits, as well as productivity.

3.6. Ride-sourcing

Ride-sourcing is understood as companies providing transport networks or flexible mobility on demand. It offers a solution for interactive and shared mobility systems, involving a paid ride-sharing service that uses private vehicles for paid rides on demand. In such systems, the service charge includes fuel costs, vehicle depreciation, driver remuneration, company fees for connecting service providers with end consumers, and any taxes related to service regulation (Atasoy et al., 2015).

In ride-sourcing systems, a fleet of private vehicles provides users with transport services that are uninterrupted, personalised and highly flexible, accommodating individual

requests and offering door-to-door service (Atasoy et al., 2015). Carranza et al. (2016) note that a key advantage of ride-sourcing is the cost savings on vehicle purchase, operation and maintenance. Moreover, ride-sourcing programmes enable users to use their travel time for activities other than driving, such as reading, making phone calls and sending emails or messages. However, as Calvert and Chatterjee (2016) caution, this shared mode of transport is heavily reliant on information and communication technologies.

4. THE ROLE OF LOCAL GOVERNMENTS IN THE DEVELOPMENT OF SHARED MOBILITY

It is widely indicated that the future of cities lies in mobility, especially its multimodal integration and optimisation of transport usage (Nikitas et al., 2017). Urban areas are seen as key centres of sustainable growth on a global scale, due to the ongoing trend of population increase and their dominant influence on shaping new usage patterns (Ly, 2020; Thynell et al., 2010; Chodkowska-Miszczuk, Lewandowska, 2018). Therefore, the role and actions of local governments become highly significant.

Local governments play a key role in the development of shared mobility, shaping policies and infrastructure and cooperating with private companies and local communities. Local governments can and should influence the development of shared mobility by creating supportive policies and legal regulations that ensure safety and compliance with local laws, and generally foster the development of the sharing economy in the transport sector (Castellanos et al., 2024). Local governments should provide financial support to start-ups or businesses operating in the sharing economy by introducing subsidies, tax reliefs, and other incentives to encourage using such services. Local governments should also introduce incentives for companies that offer eco-friendly solutions, such as electric vehicles, which contribute to emission reductions.

As part of the development and maintenance of infrastructure, local governments should build and maintain cycling and pedestrian infrastructure to facilitate the use of shared bicycles or scooters. Dedicated parking spaces for shared vehicles and charging stations for electric vehicles should be created. Integration with public transport also plays an important role and should be achieved through the construction of transfer hubs, enabling easy changes in transport modes (Docherty et al., 2018).

Local governments should play an important role in promoting the sharing economy and education in this regard. They should conduct educational and informational campaigns promoting the benefits of shared mobility, such as cost savings, and ecological and health benefits. Local governments should cooperate with local organisations (for example, in the form of public-private partnerships) and communities to promote and implement shared mobility services.

The role of local governments should also include supporting research and innovation in new technologies and business models related to shared mobility. To ensure appropriate conditions for the development of sharing economy services, local governments should consider the needs of residents in spatial planning, such as creating low-emission zones and areas with restricted car traffic (Zhang et al., 2022), which encourage the use of environmentally friendly modes of shared transport. It is also important to control and monitor services provided by the sharing economy to better plan and adapt infrastructure and the scope of services offered to meet the demand. Evaluation and adaptation of the implemented solutions should also be the responsibility of local governments, which should regulate these solutions according to the needs of local communities. Local

governments should also introduce and enforce safety regulations concerning the safety of users of shared transport modes, such as mandatory helmets for electric scooter users (Lukasiewicz et al., 2022).

In conclusion, by actively engaging in the development of shared mobility, local governments can significantly contribute to creating more sustainable, efficient, and environmentally friendly transport systems that benefit residents and the environment (Janczewski, Janczewska, 2021).

5. CHALLENGES FOR TRANSPORT COMPANIES

It is undeniable that shared mobility is transforming the traditional transport industry. The potential in the form of innovative technology contributes to social, environmental, and economic efficiency. This scenario puts pressure on conventional transport companies (bus operators, taxi companies, etc.), which are forced to improve and upgrade their services to retain customers (Machado et al., 2018). Therefore, the current transport sector must remain vigilant and continuously build the ability to develop new business strategies and adapt to different circumstances, and incorporate new technologies.

Shared mobility clearly demonstrates the importance of openness to mutual cooperation and dialogue between all the parties involved in shaping the urban reality: city administrations, mobility service providers, companies and institutions in the city, residents, and policymakers. Simply put, it is important to consider the perspectives of multiple parties. Most shared mobility services are provided by private companies, some by community initiatives, and a very small number are entirely public shared modes.

Existing shared mobility programmes have involved a series of discussions and negotiations between the public and private sectors. The role of private companies in the shared mobility industry raises concerns about e.g. the feasibility and acceptability of related sharing activities. One aspect that still needs to be adequately explored is the implications of integrating shared mobility services, mainly provided by private companies, into the existing public transport, which is characterised by strong government regulations. It is important here to identify synergies between the existing public transport network and emerging shared mobility programmes in such a way that the provision of these services contributes to achieving the primary goal of sustainable mobility (Cohen, Kietzmann, 2014; Akyelken et al., 2018; Akyelken et al., 2018).

Among the many challenges faced by companies wishing to provide transport services is the creation of an efficient model for fleet relocation and battery charging. Operators of e-scooters, for example, face such problems. Additionally, there is the need to manage supply and demand in such a way as to avoid accusations of profit maximisation while shifting the problems generated by e-scooters to local authorities and the community. Interest in car-sharing is also growing yearly, offering a new perspective on urban mobility and becoming an alternative solution to taxis and public transport. In this situation, it is important to consider the connection between the service provider and the customer using it. Thus, attention should be paid to digital technologies that enable sharing and connecting interested parties while reducing costs (Godlewska, Szpilko, 2020).

Understanding the local context, establishing relationships with the community, and adapting to the specifics of the city are crucial for the success of the company entering a given market to a much greater extent than millions spent on cooperation with a well-known influencer or on advertising. Without these measures, a shared mobility company or service may leave the city much faster than it entered it.

It is also necessary to meet the different expectations of various customers in shared mobility. It seems beneficial to establish cooperation with other companies. Trying new solutions, the company Traficar, in collaboration with Castorama, offered the possibility of renting 6 Renault Kangoo delivery vans. The cars were designed to transport larger purchases of up to 800 kg. In response to enquiries from entrepreneurs, Traficar introduced a car rental option for businesses, known as fleet-sharing (<https://www.traficar.pl>, as of 05.04.2020). This option became an alternative to company cars and taxi rides. Another solution will be an option where companies can rent cars for their employees.

The 21st century is increasingly concerned with the environment and the mass use of natural resources (Cherry, Pidgeon, 2018; Cohen, Kietzmann, 2014). Customers also attach great importance to environmental protection. Therefore, electric-powered modes of transport are becoming increasingly important among entities responsible for shared mobility. Among all shared mobility modes in Poland, up to 25% are electrically powered (and when including electric-assisted bicycles, this figure rises to 30%). Therefore, considering the 'environmental aspect' in building infrastructure and providing services by transport companies seems to be obligatory in the future. In conclusion, transport companies face new challenges in response to the changing reality of mobility. Several of the many challenges shared mobility service providers will need to address have been highlighted.

6. CONCLUSION

Currently, environmental considerations and the need for more socially and financially efficient modes of transport are paving the way for a new generation of transport users. Two features that seem to concern and unite all users are environmental care and familiarity with technological devices. Another noticeable trend, as confirmed by the research of Fluery et al. (2017), is the increasing number of shorter journeys involving middle-aged, well-educated people with at least average incomes. These changing consumer preferences, as well as stricter regulations on vehicle technical standards and breakthrough technological solutions, contribute to a fundamental shift in the behaviour of individual transport users. Users are increasingly opting for multiple modes of transport, combining the advantages of the various solutions offered by shared mobility solutions.

Shared mobility represents a real transport alternative and a new quality, different from individual transport, public transport or on-demand mobility services (e.g. taxis). Sharing opens a new chapter in the history of urban mobility. It complements existing models rather than opposing them. Shared mobility is, on the one hand, convenient and intuitive; on the other, it helps solve many of the challenges plaguing modern cities (congestion, traffic jams, poor air quality, and lack of parking spaces). Additionally, innovations and technological advances allow for the introduction of new types of vehicles and new business and operational models. Shared mobility is a new, distinct category of urban transport that fosters urban sustainability and addresses the pressing needs of modern cities: e.g. improving air quality (by eliminating transport emissions), better utilisation of existing urban resources (e.g. infrastructure, space, residents' time), reducing the rate of individual motorisation, and improving quality of life. Shared mobility is also intended to foster social inclusion and mitigate transport exclusion, particularly for people without private modes of transport (Whitmore et al., 2022).

However, to effectively harness the advantages of new forms of transport, it is necessary to create the conditions for their development. This is a complex task – from

promoting awareness of the social benefits of shared transport, raising awareness of their availability, and demonstrating their advantages to users, to striving for local and central government regulations that keep pace with innovation and the spirit of the times. Equally important is improving the efficiency and effectiveness of urban transport, integrating different branches of transport, reducing the need for private car ownership, and thus reducing the number of vehicles on the roads, resulting in a significant reduction in congestion, air pollution, and noise emissions (Mitropoulos et al., 2021; Kopec, 2019). Shared mobility highlights the importance of openness to mutual cooperation and dialogue between all parties that shape the urban reality: city administrations, mobility service providers, companies and institutions, residents, and policymakers.

All authors have read and agreed to the published version of the manuscript.

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GENERATION Z'S PRO-ENVIRONMENTAL BEHAVIOUR

A review of research conducted since the 20th century indicates that there has been a rise in environmental consciousness among consumers. Nevertheless, there is a paucity of evidence to suggest that this has had any impact on purchasing behavior. The significant presence of Generation Z as a demographic of consumers and their strong eco-awareness have the potential to reshape consumption patterns, necessitating a detailed study. This research examines the relationship between environmental intentions and purchasing behavior within Generation Z, proposing two hypotheses. It can be demonstrated that socio-economic factors exert a significant influence on both environmental intentions and actions. The interrelations between variables were analyzed using a range of statistical methods. The respondents' views on environmental impact, purchasing habits, and resource conservation were assessed using a Likert scale. A distributional analysis and dependency tests were conducted, with the results presented in descriptive statistics. Currently, environmental challenges are of paramount importance. The promotion of responsible consumption is in alignment with ecological principles, a key focus for scholars and practitioners alike. Generation Z's pro-environmental intentions are reflected in their actual purchasing behaviors, with women exhibiting stronger pro-environmental attitudes. Consequently, it is of paramount importance to enhance environmental education.

Keywords: environmental consciousness, Generation Z, purchasing behavior, pro-environmental attitudes, responsible consumption.

1. INTRODUCTION

The subject of environmental awareness has been the subject of investigation by researchers since the 20th century. Initial studies Bhate and Lawler (1997) indicated a gradual increase in consumer awareness of this issue. Nevertheless, scholars have questioned whether environmental concern would ever result in tangible changes in everyday purchasing behaviours. Although this issue has been explored in the context of Generations X and Y, it remains unclear whether similar discrepancies persist among members of Generation Z – a group widely perceived as more environmentally conscious.

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This ambiguity underscores the importance of reassessing the intention–behaviour gap within this new generational landscape. Analyses of data from Generation X and Generation Y revealed no statistically significant correlations between variables related to purchasing decisions and environmental concern. Although consumers were willing to pay a premium for environmentally friendly products, they were not inclined to actively seek out such products (Bhate, Lawler, 1997).

Generation Z represents the most rapidly growing consumer group in countries such as the USA, Europe, and China (Grabowoda, 2018). This generation represents the largest proportion of the global population, comprising over one-third of the global population (Mason et al., 2022). Generation Z's considerable purchasing power is anticipated to have the potential to redefine consumption and production (Guo, Luo, 2023). A number of authors have proposed that Generation Z is driven by a desire to reverse climate change and promote ecological awareness (Wang, 2021). It is evident that this generation is demonstrably more concerned about climate issues than any other. Paczka (2020) posits that a defining characteristic of Generation Z is their awareness of global economic issues. Members of this generation are characterised by a pervasive sense of uncertainty about the future. According to Dębski and Borkowska-Niszczoła (2020), the majority of Generation Z adheres to ecological principles and strives to minimise their environmental impact. Moreover, empirical evidence indicates that individuals belonging to this generation are actively engaged in environmental protection efforts. Kotler et al. (2021) posit that Generation Z is more aware and responsible in terms of finances, as well as sustainable development and social change. Moreover, members of this generation assert that they introduce significant positive environmental changes through their daily choices. Andruszkiewicz et al. (2023) propose that Generation Z is influenced by the trend towards sustainability, such as the selection of environmentally friendly products during grocery shopping, and that they are eager to share their pro-environmental behaviours on social media. Furthermore, the authors posit that levels of awareness and education influence the behaviours of Generation Z.

It is evident that Generation Z has been significantly impacted by global issues, resource shortages, and climate change. This should prompt them to adopt sustainable development attitudes and embrace responsible consumerism (Khalil et al., 2021). Research indicates that intentions influence the purchasing behaviour of environmentally friendly products (Opoku et al., 2020; Amaro, Duarte, 2015).

In their 2021 study, Dilotsotlhe and Akbari found that adolescents who encounter limited resources in their environment are more likely to purchase organic products because they believe that doing so can provide solutions to problems. Surahman et al. (2023) demonstrated that environmental knowledge strengthens the connection between pro-environmental attitudes and purchases of green products, thereby highlighting the inclination of Generation Z towards environmentally conscious behaviour.

The necessity for the urgent identification of solutions to reverse the detrimental effects of environmental degradation underscores the need to understand the underlying drivers of environmentally harmful behaviours. Understanding individual-level actions – such as consumer purchasing habits – is essential for developing effective mitigation strategies. Accordingly, this study focuses on Generation Z's purchasing behaviours in the context of their environmental intentions. These issues are predominantly the result of human actions, and thus their elimination must also be driven by humans. In order to overcome environmental challenges, it is essential to comprehend the individual behaviours that contribute to these challenges and the mechanisms that connect them. Nevertheless,

previous studies have not conclusively shown whether environmental awareness translates into concrete purchasing behaviours. This study addresses this gap, focusing on Generation Z as a key demographic. Onel and Mukherjee (2016) posit that this knowledge is crucial for motivating behavioural change and engaging in pro-environmental actions. It is of paramount importance to conduct comprehensive research on the consumption intentions of Generation Z, not only for businesses to effectively adapt to the market and meet the needs of all stakeholders (Wu et al., 2024), but also to address the measures required to enhance the environmental sensitivity of the younger generation.

2. RESEARCH METHODOLOGY

The quantitative study employed the research procedure outlined by Dyduch (2015). This framework was selected due to its structured approach to operationalising research models and hypotheses in the field of management and social sciences, making it particularly suited for exploring behavioural relationships. In accordance with this framework, the initial stage of the research entails a comprehensive review of the pertinent literature. Based on the literature review, a need for further investigation into the relationship between environmental intentions and actual purchasing behaviours among Generation Z was recognised. The study investigates the relationship between environmental intentions and purchasing behaviours among Generation Z, in line with the research objective previously stated.

As indicated by Rószkiewicz et al. (2013), hypotheses are conjectures related to the issues under investigation. In order for these hypotheses to be validated, it is necessary to operationalise the research model. Consequently, a model was developed that graphically presents the lines of inquiry undertaken in this study (Figure 1).

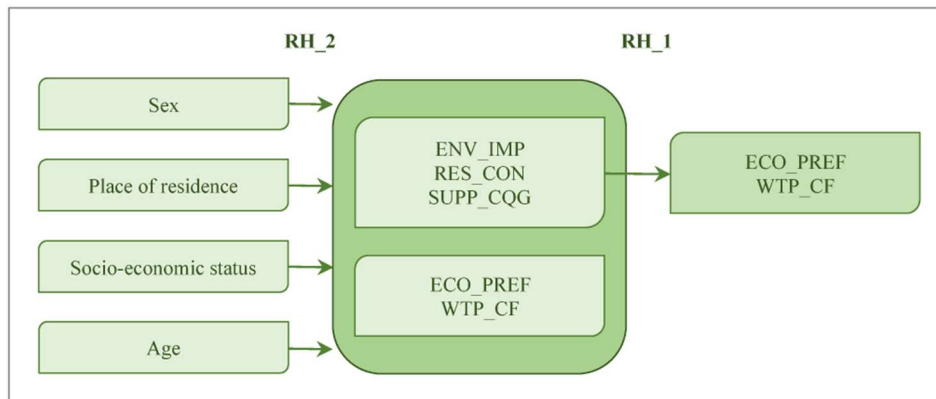


Figure 1. Research model

Source: Created by the author.

The model incorporated a number of variables pertaining to socio-economic characteristics, including gender, age, socio-economic status, and place of residence. Furthermore, the model incorporated variables related to environmental intentions, including the extent to which individuals care about how a particular product or service affects the environment and their beliefs about the necessity for action to reduce natural

resource consumption and support the production of inexpensive, low-quality goods. Finally, the model incorporated variables related to pro-environmental behaviours. These included the extent to which individuals purchase products bearing environmental certifications and their willingness to pay a premium for a product or service with a low carbon footprint. The necessary areas for the study were delineated and justified in Table 1 based on a comprehensive literature review.

The data analysis followed a two-stage procedure. In the first stage, descriptive statistics and frequency distributions were used to explore the general trends and characteristics of the responses. This provided a foundational overview of attitudes and behaviours within the sample. In the second stage, statistical dependency tests were applied to examine relationships between variables and to test the research hypotheses. The specific tests employed included Kendall's tau for correlations between ordinal variables and the Mann-Whitney U test for group comparisons. This stepwise approach ensured that both the general profile and the interrelations between variables were adequately assessed.

Table 1. A description of the variables in relation to the existing literature and codes

Variable	Review of the Literature	Code
I am concerned about the environmental impact of a given product/service	The green economy is inextricably linked to environmentally conscious consumer behaviours (Xuan et al., 2023). Khalil et al. (2021) indicate that Generation Z consumers appear to be more supportive of ecological initiatives and are more willing to incur additional costs, such as those associated with staying in eco-hotels. Hartmann and Apaolaza-Ibáñez (2012) demonstrated that users of green energy derive emotional benefits from combating climate change and are willing to pay additional fees for social benefits.	ENV_IMP
I believe action should be taken to limit the consumption of natural resources	In the study 'Ecological awareness of Poles' (GfK Polonia, 2005), respondents indicated that their behaviour has a minimal impact on environmental protection and its quality. Consequently, they do not take action to reduce the consumption of natural resources. In contrast, in a study by Jarosz et al. (2011), the majority of respondents declared that their individual behaviour contributes to improving the environment.	RES_CON
I endorse the production of inexpensive, low-quality goods	Bittar (2018) posits in his research that environmental awareness does not influence consumer purchasing decisions. Instead, the economic aspect is the primary determinant of consumer purchasing decisions. Consequently, consumers are more likely to purchase lower-quality goods if they are cheaper than others. In contrast, Kranton (2003) asserts that companies produce high-quality goods to maintain their reputation among consumers.	SUPP_CQG

Table 1 (cd.). A description of the variables in relation to the existing literature and codes

Variable	Review of the Literature	Code
I purchase products with an environmental declaration	Kachaniak et al. (2014) demonstrated that approximately half of the surveyed respondents expressed a preference for products packaged in environmentally-friendly materials, while over one-third demonstrated an interest in labels indicating ecological and environmental quality.	ECO_PREF
I am willing to pay a premium for a product or service with a low carbon footprint	Cichocka et al. (2018) posit that one of the environmentally friendly behaviours is a willingness to bear the costs of environmental protection, which manifests in the prices of products or services. The price of a product is a significant factor influencing consumer purchasing decisions. It is a commonly observed phenomenon that environmentally friendly products are typically priced at a higher level than their less environmentally friendly counterparts (Tian et al., 2022). From an objective standpoint, high prices represent a primary obstacle to the development of pro-environmental purchasing behaviours (Steg et al., 2014).	WTP_CF

Source: Created by the author.

The analysis of the relationship between variables and pro-environmental behaviours necessitated the application of various statistical methods. The respondents indicated their level of agreement with statements concerning the environmental impact of products, purchasing decisions, and the reduction of natural resource consumption. A Likert scale was employed in the questionnaire, with responses ranging from 1 (indicating complete disagreement) to 5 (indicating complete agreement). The utilisation of this scale enables the collection of reliable quantitative data. This scale is frequently employed in investigations of social attitudes (Mellor, Moore, 2014). In order to minimise the potential for distortion or loss of information, a 5-point scale was employed in the study. A more extensive range may have intensified respondents' reluctance to provide responses, potentially leading to difficulties in selecting the appropriate response or misleading respondents.

In the empirical section, the following statistical abbreviations were employed:

- \bar{x} – mean,
- Md – median,
- σ – standard deviation,
- \bar{R} – mean rank,
- τ – Kendall's tau correlation coefficient,
- U test – Mann-Whitney U test,
- ES – effect size,
- α – level of significance.

In order to address the research objective, research hypotheses were formulated.

RH_1: The intention to act in an environmentally responsible manner affects the way in which consumers make purchasing decisions.

There is a paucity of empirical evidence to suggest that the environmental intentions of Generation Z are reflected in their purchasing behaviours. Muthu (2019) found that only 3% of the 30% of consumers who expressed concerns and care for the environment made

purchases of sustainably produced products. Khaleeli and Jawabri (2020) demonstrated a positive relationship between knowledge and purchase intention. Nevertheless, the study was unable to demonstrate a direct link between attitudes and purchasing behaviours. It can be demonstrated that emotions play a significant role in the selection of environmentally friendly products. This is evidenced by the findings of Hartmann and Apaolaza-Ibañez (2012), who found that these products exert a stronger influence on purchasing behaviours than product functionality. Those who utilise more environmentally friendly products may experience a sense of moral satisfaction, as they believe they are contributing to the improvement of the natural environment (Akbar et al., 2019).

RH 2: The socio-economic characteristics of individuals exert a significant influence on their intentions with regard to the environment and their purchasing behaviours in relation to environmentally-friendly products.

A study conducted by the Polish Ministry of the Environment (Kachaniak et al., 2014) indicated that individuals aged between 15 and 24 exhibit less ecologically oriented behaviours regarding excessive shopping. Zhang et al. (2021) found that income and age contribute to differences in pro-environmental attitudes. Cultural influences and group pressure were found to have a greater impact on surveyed students than their own environmental intentions. Wang et al. (2019) demonstrated that as living standards improve, consumers increasingly understand and accept the additional costs associated with eco-friendly products. Furthermore, the pursuit of social status is one of the motivations for consumers to use specific products (Nelissen, Meijers, 2011). Customers make purchases based on the assumptions adopted by the community in which they live, and those purchasing eco-friendly products desire their actions to be visible to a particular society. Consequently, the purchasing intentions and consumer behaviours regarding eco-friendly products can also be perceived through the lens of a desire to conform to other individuals within the same social hierarchy (Biswas, Roy, 2015).

3. PRESENTATION OF RESEARCH RESULTS

The survey questionnaire was distributed via the Google Forms online platform exclusively to Polish students studying in Poland. The study covered individuals belonging to Generation Z, born after 1995 (Baran, Kłos, 2014; Sidor-Rzadkowska, 2018). The research sample was selected at random from the population of Polish students so that each individual had a known and defined chance of being included in the sample. The aim of this selection of participants was to obtain a representative sample that would allow the results of the study to be generalised to the entire population of students in Poland. A total of 306 participants took part in the study, of whom 63.1% were women and 36.9% were men. In terms of place of residence, most people came from rural areas (42.2%), followed by large cities with a population of 150,000 to 500,000 inhabitants (21.5%), cities with a population of over 500,000 (13.7%), small towns with a population of up to 50,000 (14.1%) and between 50,000 and 150,000 (8.5%). Half of the respondents were not employed, while the other half were both studying and working. Table 2 presents the socio-economic characteristics, gender, place of residence and age distribution of the respondents.

Table 2. Respondent characteristics

	<i>N</i>	%		<i>N</i>	%
Gender:			Socio-economic status:		
Woman	193	63.07%	I am only studying	153	50.00%
Men	113	36.93%	I am studying and working	153	50.00%
Residence:			Age:		
Village	129	42.16%	17 – 20 years	80	26.14%
Town up to 50,000 inhabitants	43	14.05%	21 – 22 years	100	32.68%
Town from 50,000 to 150,000 inhabitants	26	8.50%	23 – 24 years	83	27.13%
City from 150,000 to 500,000 inhabitants	66	21.57%	25 – 27 years	43	14.05%
City above 500,000 inhabitants	42	13.72%			

Source: This study is based on original research findings.

A preliminary analysis of response frequencies was conducted in order to provide a foundation for the subsequent analysis based on dependency tests. The results of the analysis are presented in percentage tables, with the data described using basic descriptive statistics. Table 3 presents the distribution of attitudes towards pro-environmental behaviours, accompanied by descriptive statistics pertaining to these attitudes.

Table 3. Distribution of pro-environmental behaviour based on descriptive statistics

	1 pt	2 pt	3 pt	4 pt	5 pt	\bar{x}	σ	<i>Md</i>
ENV_IMP	24 (7.84%)	32 (10.46%)	78 (25.49%)	136 (44.44%)	36 (11.76%)	3.42	1.08	4
RES_CON	21 (6.86%)	28 (9.15%)	56 (18.30%)	133 (43.46%)	68 (22.22%)	3.65	1.13	4
SUPP_CQG	108 (35.29%)	100 (32.68%)	60 (19.61%)	26 (8.50%)	12 (3.92%)	2.13	1.11	2
ECO_PREF	38 (12.42%)	72 (23.53%)	100 (32.68%)	80 (26.14%)	16 (5.23%)	2.88	1.09	3
WTP_CF	58 (18.95%)	71 (23.20%)	86 (28.10%)	71 (23.20%)	20 (6.54%)	2.75	1.19	3

Source: This study is based on original research findings.

The surveyed individuals frequently concurred that action should be taken to limit the consumption of natural resources (3.65 points), as well as that they care about how a particular product impacts the environment (3.42 points). In contrast, respondents were less inclined to agree with the following statements: that they purchase products with an environmental declaration (2.88 points), that they are willing to pay a premium for a product/service with a low carbon footprint (2.75 points), and that they support the production of cheap, low-quality goods (2.13 points).

RH_1: The intention to act in an environmentally responsible manner affects the way in which consumers make purchasing decisions.

The association between attitudes towards specific pro-environmental behaviours was examined using the Kendall's tau test. The test is employed to ascertain the monotonic relationship between two random variables. The results of these analyses are presented in Table 4. The results demonstrate a statistically significant association between placing importance on the environmental impact of a product or service and purchasing products with environmental labels ($\tau = 0.57$; $\alpha < 0.001$), taking actions to reduce natural resource consumption ($\tau = 0.47$; $\alpha < 0.001$), and willingness to pay more for a low-carbon footprint product or service ($\tau = 0.44$; $\alpha < 0.001$). Furthermore, a correlation was identified between purchasing products with environmental labels and undertaking actions to reduce natural resource consumption ($\tau = 0.39$; $\alpha < 0.001$), as well as willingness to pay more for a low-carbon footprint product/service ($\tau = 0.52$; $\alpha < 0.001$). Those who espoused the view that it was their duty to take action to reduce the consumption of natural resources were more likely to declare their willingness to pay more for a product or service with a low carbon footprint ($\tau = 0.46$; $\alpha < 0.001$).

Table 4. The relationship between pro-environmental behaviour and attitudes

		ENV_IMP	RES_CON	SUPP_CQG	ECO_PREF	WTP_CF
ENV_IMP	τ	–				
	α	–				
RES_CON	τ	0.47***	–			
	α	0.000	–			
SUPP_CQG	τ	–0.07	–0.08	–		
	α	0.159	0.108	–		
ECO_PREF	τ	0.57***	0.39***	0.02	–	
	α	0.000	0.000	0.704	–	
WTP_CF	τ	0.44**	0.46***	–0.01	0.52***	–
	α	0.000	0.000	0.770	0.000	–

Source: This study is based on original research findings.

RH_2: The socio-economic characteristics of individuals exert a significant influence on their intentions with regard to the environment and their purchasing behaviours in relation to environmentally-friendly products.

The non-parametric Mann-Whitney U test was employed to examine relationships between variables. This test was selected due to the ordinal nature of the data collected via a Likert scale, the lack of normal distribution, and unequal group sizes, which rendered parametric alternatives such as the *t*-test inappropriate. In the dataset subjected to the test, an independent (grouping) variable and a dependent variable measured on a quantitative scale were distinguished. The Mann-Whitney U test allows the null hypothesis to be verified, namely that two samples originate from the same population (Andrasiak and Wróbel, 2018; Malska, 2017). A significance level was established in the study. It was

assumed that at $p < 0.05$ (*), there exists a statistically significant relationship; at $p < 0.01$ (**), there is a highly significant correlation; at $p < 0.001$ (***), there is a very high statistically significant relationship.

In order to ascertain the differences in attitudes towards environmental behaviour between men and women, a comparative analysis was conducted utilising comparative tests. The results are presented in Table 5. The analyses revealed a statistically significant difference between women and men in terms of the following variables: the importance they place on the environmental impact of a product or service (U test = 4.04; $\alpha < 0.001$; $ES = 0.23$), and their inclination to purchase products with an environmental declaration (U test = 4.22; $\alpha < 0.001$; $ES = 0.24$). Furthermore, the necessity to take action to reduce the consumption of natural resources (U test = 4.05; $\alpha < 0.001$; $ES = 0.23$) and the potential for paying more for a product/service if it has a low carbon footprint (U test = 5.69; $\alpha < 0.001$; $ES = 0.33$) were identified. The findings indicated that women were more likely to engage in environmentally conscious behaviours than men. Conversely, no statistically significant difference was observed between women and men in terms of their support for the production of low-cost, poor-quality goods (U test = 0.30; $\alpha = 0.765$; $ES = 0.02$).

Table 5. Relationship between attitudes to pro-environmental behaviour and gender

	Women			Men			U test	α	ES
	$\bar{x} \pm \sigma$	Md	\bar{R}	$\bar{x} \pm \sigma$	Md	\bar{R}			
ENV_IMP	3.62 ± 0.95	4	168.26	3.07±1.2	3	128.29	4.04	***	0.23
RES_CON	3.88 ± 0.96	4	168.37	3.26±1.27	4	128.10	4.05	***	0.23
SUPP_CQG	2.09 ± 1.04	2	152.40	2.19±1.22	2	155.38	0.30	0.765	0.02
ECO_PREF	3.08 ± 1.01	3	169.28	2.54±1.14	3	126.54	4.22	***	0.24
WTP_CF	3.04 ± 1.08	3	174.91	2.26±1.22	2	116.93	5.69	***	0.33

Source: This study is based on original research findings.

The relationship between attitudes towards pro-environmental behaviours and socio-economic status was investigated. The results of the analysis were found to be statistically insignificant ($\alpha > 0.05$). Consequently, no significant differences were observed between working and non-working students in terms of their attitudes towards pro-environmental behaviours. Furthermore, an investigation was conducted to determine whether there is a correlation between attitude towards pro-environmental behaviours, age, and place of residence. To this end, a Kendall's tau correlation analysis was conducted. The results were statistically insignificant ($\alpha > 0.05$), indicating that there was no association between attitude towards pro-environmental behaviours and age or place of residence (Table 6).

Table 6. The relationship between attitudes towards pro-environmental behaviour and socio-economic status, age and place of residence

	I am only studying			I am studying and working			<i>U test</i>	α	<i>ES</i>
	$\bar{x} \pm \sigma$	<i>Md</i>	\bar{R}	$\bar{x} \pm \sigma$	<i>Md</i>	\bar{R}			
ENV_IMP	3.37 ± 1.09	4	148.49	3.46 ± 1.07	4	158.51	1.05	0.295	0.06
RES_CON	3.65 ± 1.09	4	152.45	3.65 ± 1.17	4	154.55	0.22	0.827	0.01
SUPP_CQG	2.23 ± 1.13	2	161.32	2.03 ± 1.09	2	145.68	1.62	0.106	0.09
ECO_PREF	2.91 ± 1.09	3	155.42	2.86 ± 1.1	3	151.58	0.39	0.694	0.02
WTP_CF	2.7 ± 1.16	3	149.43	2.8 ± 1.23	3	157.57	0.83	0.408	0.05
				Age			Residence		
ENV_IMP	τ			0.03			0.01		
	α			0.570			0.860		
RES_CON	τ			-0.03			0.05		
	α			0.551			0.298		
SUPP_CQG	τ			-0.04			-0.03		
	α			0.354			0.562		
ECO_PREF	τ			0.06			0.01		
	α			0.188			0.815		
WTP_CF	τ			0.06			0.04		
	α			0.212			0.403		

Source: This study is based on original research findings.

4. SUMMARY AND CONCLUSIONS

A significant proportion of the world's most pressing challenges can be attributed to environmental factors (Steg et al., 2014; Onel, Mukherjee, 2016). One of the most prominent contemporary trends, both among scholars and practitioners alike, is responsible consumption in line with ecological principles (Kotler et al., 2021). There is a growing tendency for consumers to adopt more environmentally friendly and responsible behaviours (Surahman et al., 2023; Wang et al., 2019).

The findings of the study provided clear evidence in support of the hypothesis RH_1. The study demonstrated a significant correlation between intentions and purchasing behaviours. It can therefore be concluded that the environmentally conscious intentions of Generation Z are reflected in their purchasing behaviours. Those who espoused the view that they would take action to reduce the consumption of natural resources were more likely to indicate a willingness to pay a premium for a product or service that had a low carbon footprint. Generation Z is attentive to a product's environmental impact, prompting them to purchase products with environmental declarations. Hypothesis RH_2 was only partially confirmed. Among the socio-economic characteristics analysed, only gender was found to condition specific pro-environmental attitudes and ecological purchasing behaviours. A greater proportion of women than men demonstrated pro-environmental behaviours. No statistically significant associations were found regarding the other socio-economic characteristics that were analysed.

The study reveals a positive outlook on the development of environmental awareness among the youngest generation. There is a genuine prospect that Generation Z will engage more deeply in ecological issues, environmental protection, and sustainable development than Generations X and Y.

Although the present study did not directly investigate the role of education, the results suggest that individuals who are more environmentally concerned are also more inclined to make eco-conscious purchasing decisions. This implies that environmental education may play a crucial role in reinforcing sustainable behaviours. Prior research has underscored the importance of knowledge in shaping environmental actions and perceptions (Onel, Mukherjee, 2016; Surahman et al., 2023; Andruszkiewicz et al., 2023). Future studies could explore the specific impact of formal and informal environmental education on narrowing the intention-behaviour gap among Generation Z. In this context, collaboration between academic institutions and policy-makers could be key to developing effective strategies for fostering environmental responsibility in younger generations.

The author has read and agreed to the published version of the manuscript.

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BUSINESS MODELS IN BANKING BUSINESS: SYSTEMATIC LITERATURE REVIEW AND RESEARCH AGENDA

The purpose of paper is (1) to systematize the existing developments in this topic (pointing out the main sub-streams of past research), and (2) to identify knowledge gaps concerning methods, theories, and constructs based on the compiled information and to provide detailed directions for future research.

The research was conducted based on bibliometric review and framework-based review categories in domain-based methodology.

Results and main contribution of the paper: The main sub-streams of past research are cooperative banks; crisis, stability, supervisory and risk; ESG; financial performance; innovation; and Islamic banking. Research gaps that can become areas of future scientific research are (1) the significance and the impact on banking business models such issues as geopolitical factors, innovations, pandemics and other “black swans”, current ESG trends and regulations; (2) the development of a methodology for a composite indicator of the effectiveness of business models and theoretical foundations of banking business modeling.

Keywords: bank, business model, bibliometric analysis, framework-based review.

1. INTRODUCTION

The banking business is one of the most significant elements of the modern economy, which on the one hand, is the financial engine of economic growth, and on the other – through the effect of contagion when the financial condition of banking institutions worsens, it can have a significant negative impact on the financial stability of the economy.

Consider current dynamic changes in various sectors of society (in particular information technology, environmental policy, and others), as well as “black swans” in the form of the COVID-19 pandemic and Russia’s war against Ukraine, bank managers encounter the task of timely response to existing challenges, in particular when developing and modifying business models for the banking activity. The objective of the scientists is to identify existing banking business models and factors that influence their design and modification, to develop a methodology for evaluating the effectiveness of business

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models, and proposals for constructing new business models of banks, taking into account current trends in various sectors of society.

The initial articles that strictly deal with banking business models, among those indexed in the ScienceDirect database (Elsevier), were published only in 2001 (Hensmans et al., 2001) and in Web of Science – in 2005 (DeYoung, 2005), but their number has increased significantly in recent years (figure 1).

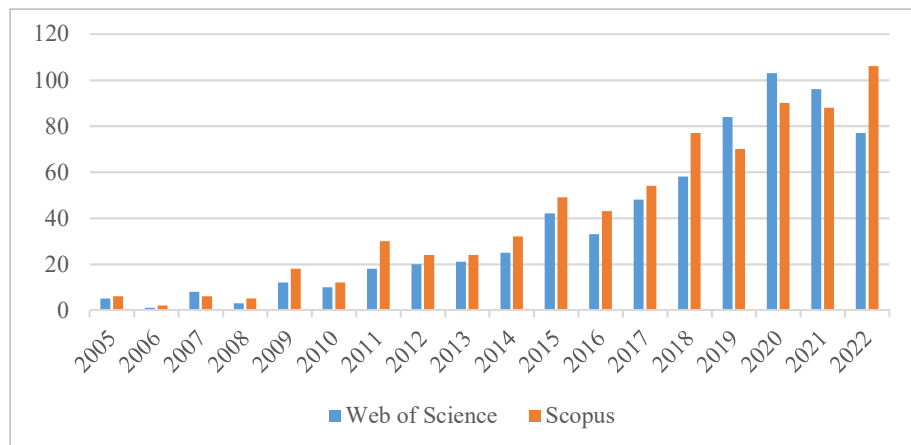


Figure 1. Annual publications concerning banking business models

Source: own preparation based on data from the Web of Science and Scopus databases.

Based on data from the Web of Science database, when applying the relevant keyword “business model*” (01.01.1960-17.07.2023; categories: economics, management), we get 8852 publications, of which 440 are review articles. If we narrow the relevant keyword to “business model*” AND “bank*”, we get 683 results, of which nine are review articles (only two reviews are partially meaningfully related to the banking business models). Inácio and Delai (2022) carried out a systematic literature review (content analysis of 63 papers) concerning, to some extent, the sustainability of banking business models. McKillop et al. (2020) offer a review of the economics and finance literature on financial cooperatives (in particular business models of cooperatives banks) published over the last five decades.

The scarcity of comprehensive review articles on scientific research of business models of banking institutions was the reason for writing this article, the aims of which are (1) to systematize the existing developments in this topic (pointing out the main sub-streams of past research), (2) to identify knowledge gaps concerning methods, theories, and constructs based on the compiled information and to provide detailed and specific directions for future research.

2. METHODOLOGY AND DATA

The research methodology was selected and formed based on recommendations from publications such as Paul and Criado (2020), Kraus et al. (2020), Palmatier et al. (2018), Evers et al. (2023).

The systematic literature review is „a review of an existing body of literature that follows a transparent and reproducible methodology in searching, assessing its quality and synthesizing it, with a high level of objectivity” (Kraus et al., 2020).

The research was conducted based on bibliometric review and framework-based review categories in domain-based methodology. The bibliometric review was performed using the bibliometrix R-tool (Aria, Cuccurullo, 2017). The framework-based review is based on a modification of the well-known framework – TCCM (Theory, Construct, Characteristics and Methodology), used in particular by Evers et al. (2023), Nelaeva and Nilssen (2022), Paul and Rosado-Serrano (2019). In the article is offered its own framework – SACMC (Sub-streams of research, Aim, Context, Methodology, Conclusion and Contribution) for implementing content analysis.

Search strategy includes (1) database: Web of Science; (2) generic keyword: “business model*” AND “bank*”; (3) searched method: TITLE-ABS-KEY (by title, keyword, and abstract).

Using a generic keyword in the Web of Science was found 1572 articles. In the next stage, publications were selected based on the inclusion and exclusion criteria (table 1).

Table 1. Screening criteria

Criterion	Inclusion	Exclusion	Number of articles after applying the criterion
Timespan:	modern publication (01.01.2018 – 01.06.2023)	older publication	878
Categories of publications	economics, management	any other categories	471
Document types:	article, book, review article	grey literature (such as working papers, conference proceedings etc.) and others	388
Focus	<i>stricte</i> banking business model	not relevant for business model of banks (such as parabanks etc.)	136
Citations	article, that has 1 or more citations	article without citations	101
Language of publications	English	any other language	98
Access	access to the full text	only abstract	79

Source: own preparation.

3. BIBLIOMETRIC REVIEW

The first component of the review was its bibliometric side, using a bibliometrix R-tool. Bibliometric reviews analyse an extensive amount of published research by using statistical tools, thus to figure out trends and citations and/or co-citations of a particular theme (Paul, Criado, 2020).

3.1. Descriptive analysis

A list of results for the bibliometric analysis conducted on a dataset of 79 studies, indexed in the Web of Science database from 2018 to 01.06.2023, is presented in Table 2.

Table 2. Main descriptive statistics

Description	Results
Timespan	2018-2023
Sources (Journals, Books, etc.)	60
Documents	79
Annual Growth Rate %	-28,89
Document Average Age	2,84
Average citations per doc	11,99
Authors	199
Authors of single-authored docs	10
Co-Authors per Doc	2,72
International co-authorships %	46,84

Source: own preparation based on data from the Web of Science database and the *bibliometrix* R-tool.

Table 2 shows that 79 papers are distributed across 60 sources with an average citation per document of 11,99. There are only ten authors with single-authored documents.

3.2. Performance analysis

In this section, the importance of various research, such as journals, authors, countries, and articles are analysed.

The sample included publications from 33 countries (Table 3), which indicate a broad international dimension (from all continents) of interest in the problems of the banking business models. Italy and the United Kingdom were the most productive.

Table 3. Most productive countries by country of origin of the corresponding author of the article

Country	Articles	SCP*	MCP**	Country	Articles	SCP*	MCP**
Italy	12	7	5	Spain	2	0	2
United Kingdom	10	6	4	United Arab Emirates	2	0	2
Germany	4	0	4	Ukraine	2	1	1
Vietnam	4	3	1	USA	2	1	1
Indonesia	3	2	1	Brazil	1	1	0
Switzerland	3	1	2	Croatia	1	1	0
Australia	2	0	2	Denmark	1	0	1
Belgium	2	0	2	Hungary	1	1	0
Canada	2	0	2	India	1	1	0
China	2	1	1	Kuwait	1	0	1

Table 3 (cont.). Most productive countries by country of origin of the corresponding author of the article

Country	Articles	SCP*	MCP**	Country	Articles	SCP*	MCP**
Czech Republic	2	2	0	Pakistan	1	0	1
France	2	2	0	Portugal	1	1	0
Ireland	2	1	1	Qatar	1	0	1
Malaysia	2	2	0	Saudi Arabia	1	0	1
Netherlands	2	1	1	South Africa	1	1	0
Poland	2	2	0	Sweden	1	1	0
Romania	2	2	0				

* SCP – Single Country Publications, ** MCP – Multiple Country Publications.

Source: own preparation based on data from the Web of Science database and the *bibliometrix* R-tool.

Based on the analysis with *bibliometrix* R-tool, it was determined that the most cited publications were from Italy (171 citations), the United Kingdom (132 citations), China (131 citations), and Germany (100 citations).

As for bibliographic analysis in the context of journals, most articles (5) concerning the banking business models in the selected timespan are published in well-known journals such as Journal of Banking & Finance and Sustainability (Figure 2).

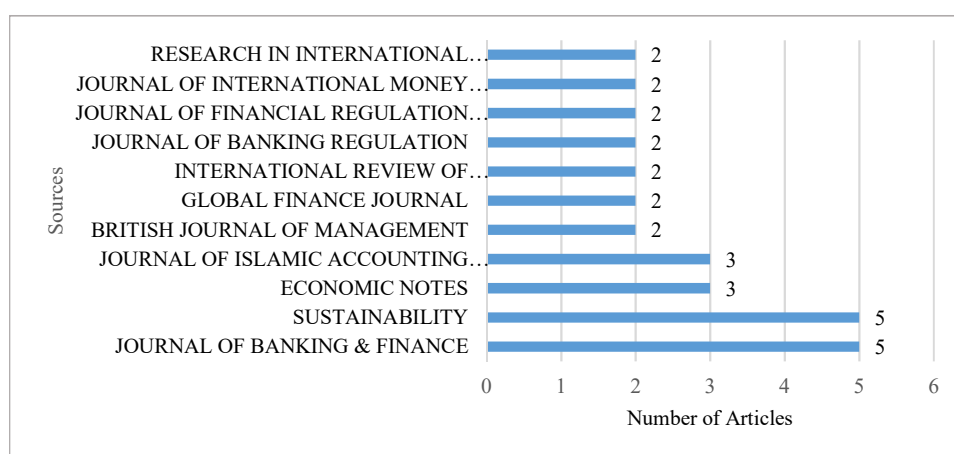


Figure 2. Most relevant sources

Source: own preparation based on data from the Web of Science database and the *bibliometrix* R-tool.

As for citations (more than 100 citations in references in scientific articles of the sample), the most influential scientific journals are Journal of Banking & Finance, Journal of Financial Economics, and Journal of Finance (Figure 3).

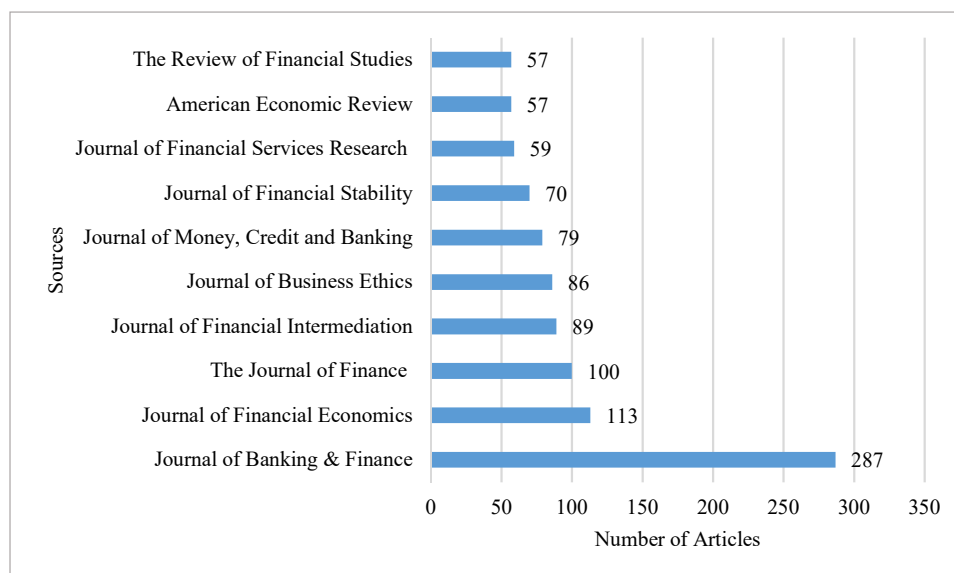


Figure 3. Most cited sources

Source: own preparation based on data from the Web of Science database and the *bibliometrix* R-tool.

In the context of authors of studies in the sample, we can observe only ten authors with two cited publications (R. Ayadi, T. Barbu, I. Boitan, V. Dang, M. Elnahass, M. Farne, L. Gambacorta, J. Huyhn, P. Molyneux).

The most cited (more than 20 times) are 11 works (Table 4), among which the leader in the citation is an article by Yip and Bocken (2018) regarding sustainable business models in the banking industry. The topic of ESG (Environmental, Social and Corporate Governance) was also explored by Gangi et al. (2019).

Table 4. Most global sited documents

Paper	Total Citations	Total Citations per year
Yip and Bocken 2018)	130	21,67
Gangi et al. (2019)	79	15,80
Niemand et al. (2021)	56	18,67
Nawaz (2019)	42	8,40
Molyneux et al. (2019)	40	8,00
McKillop et al. (2020)	39	9,75
Boot et al. 2021)	37	12,33
Azmi et al. (2019)	34	6,80
Paltrinieri et al. (2021)	33	11,00
Borri and Di Giorgio (2022)	22	11,00
Elnahass et al. (2018)	21	3,50

Source: own preparation based on data from the Web of Science database and the *bibliometrix* R-tool.

Highly cited are works on the specifics of the Islamic banking model (Nawaz, 2019; Azmi et al., 2019; Paltrinieri et al., 2021; Elnahass et al., 2018) or cooperative banking (McKillop et al., 2020), as well as the impact of innovations (Niemand et al., 2021; Boot et al., 2021), crisis (Borri, Di Giorgio, 2022) or evaluating the effectiveness (Molyneux et al., 2019) of the banking business models.

3.3. Science mapping

In this aspect, the bibliometric review built by the co-occurrence network reflects several clusters of scientific research from our sample related to social responsibility, performance and risk, impact (concerning business model, revenue diversification, credit), mergers, Islamic banks, and crisis (Figure 4).

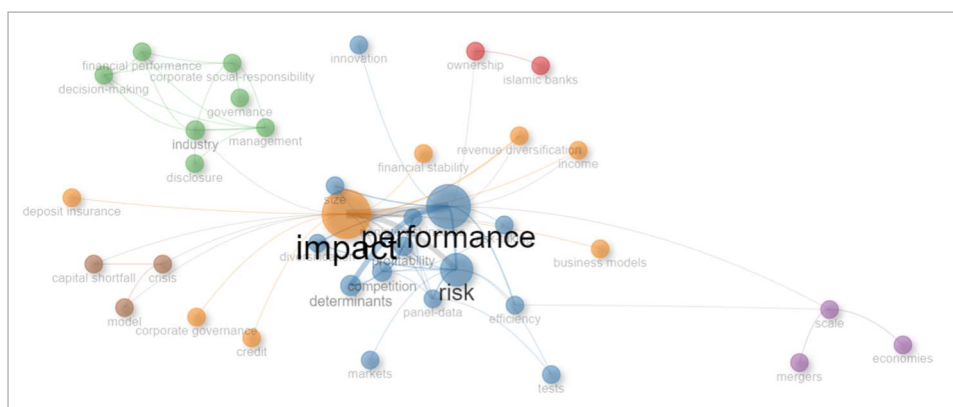


Figure 4. Co-occurrence network

Source: own preparation based on data from the Web of Science database and the *bibliometrix* R-tool.

In the next section, a content analysis of the sample will be performed, given that “some researchers, however, remain somewhat sceptical regarding the overall impact of bibliometric analyses” (Paul, Criado, 2020).

4. FRAMEWORK-BASED REVIEW

The study of selected 79 scientific articles in the content analysis aspect will help to reflect the development of research on business models of banking institutions. To do this, by modifying the approaches to the framework-based review (Nelaeva, Nilssen, 2022; Evers et al., 2023; Paul, Rosado-Serrano, 2019), in this article is proposed framework SCAMC (Sub-streams of research, Aim, Context, Methodology, Conclusion, and contribution), the elements of which will allow systematizing the existing works in the context of research areas, analyze the banking institutions of which regions are most interested in researchers, the aims of studies, the range of research methods, and also learn about the achievements and contribution of scientists to the development of the modern paradigm of understanding the business models of banking institutions (Table 5).

Table 5. SCAMS-framework

Author	Aim	Context*	Method**	Conclusion and contribution
Cooperative banks				
Diener (2020)	analyses the effects of human resources development on costs of banks.	E	QN	BM*** design of savings and cooperative banks is of secondary importance.
Barbu and Boitan (2019a)	analyses the strengths and challenges associated with a different BM.	E	QN	The results emphasized which cooperative member organizations still follow the original cooperative BM and mission, and which of them have migrated towards a more commercial banking one.
McKillop et al. (2020)	a review of the literature on published over the course of last five decades.	M	QL	The review has identified the power of cooperation, in the attainment of their common goals. It has highlighted the importance of relationship lending as a feature of BM development.
Kuc and Tepy (2018)	assesses the financial performance of credit unions.	E	QN	Authors reveal worse performance of Czech credit unions in terms of both profitability and stability compared to their European peers. Big credit unions in the Czech Republic have assumed a non-sustainable BM.
Venanzi and Matteucci (2022)	explores cooperative banks.	E	QN	Larger cooperative banks are more homogeneous among themselves and adopt a stable and recognizable BM and they still represent a good model of financial sustainability.
Crisis, stability, supervisory and risk				
Lucas et al. (2019)	studies to which extent banks' BMs adapt to low interest rates	E	QN	The global financial crisis and the euro area sovereign debt crisis had a substantial yet different impact on banks with different BMs. Changes in the yield curve predict changes in average BM characteristics.
Borri and Di Giorgio (2022)	studies the systemic risk contribution of the large publicly traded banks	E	QN	Banks significantly contribute to systemic risk, but larger banks, and banks with a BM more exposed to securities and derivatives trading in financial markets, contribute more.
van Oordt and Zhou (2019)	estimates how banks' BMs affect systemic risk	U	QN	Some characteristics of bank business models have a similar relationship to both tail risk and systemic risk.
Chiorazzo et al. (2018)	tests whether small traditional banks are more likely to survive than nontraditional banks	U	QN	Community banks adhering to the traditional banking BM have proven to be more resilient than other community banks under both normal and stressful economic conditions.

Table 5 (cont.). SCAMS-framework

Author	Aim	Context*	Method**	Conclusion and contribution
Crisis, stability, supervisory and risk				
Galletta and Mazzù (2019)	detects whether bank size and capital affect liquidity risk, and if there are significant differences between BMs	E	QN	The banking size increases the liquidity risk. For savings banks, income diversification raises the liquidity risk while investment banks reliant on non-deposit funding decrease the exposure to that risk.
Iwanicz-Drozdowska et al. (2021)	points to the factors which determined the share of deposits in the banks' funding structure	E	QN	The global financial crisis was one of the main factors that influenced the banks' funding models. The paper reports that the set of determinants affecting the banks' funding policies were different in the crisis in comparison to periods before and after the crisis.
Ayadi (2019)	analyses on BMs in banking, essential to understand bank businesses pre- and post-financial crisis and how they evolve in the financial system	M	QN	Book provided an overview on the evolving role of banks in the financial system. It explained how the BMs analysis could form part of the financial stability assessment framework and serve as a policy tool in terms of prevention, remedy and resolution.
de Haan and Kakes (2020)	documents banks' performance and explores the nexus between bank characteristics and fragility	E	QN	Large, market-oriented banks were particularly hit by the 2007-2009 global financial crisis whereas smaller, retail-oriented banks weathered these years relatively well. In subsequent years, retail-oriented banks were most affected.
Gambacorta et al. (2019)	investigates the foreign funding mix of globally active banks.	M	QN	Results add to those in other studies supporting the view that cross border interbank funding – that is, funding from unrelated banks – is the main adjustment channel in times of heightened global risk.
Argimon et al. (2019)	studies the relation between international transmission of monetary policy and global financial institutions' BMs	M	QN	Authors focus on the importance of BMs in the transmission of monetary policy.
Tran (2020)	investigates the association between functional diversification and bank liquidity creation	U	QN	Author document evidence of lower liquidity creation for higher diversification. The effect of moving into nontraditional activities on liquidity creation is more apparent with large banks and less pronounced with small banks.
Lueg et al. (2019)	identifies BMs	M	QN	Authors analytically define "bank BM" and add a theoretical basis.

Table 5 (cont.). SCAMS-framework

Author	Aim	Context*	Method**	Conclusion and contribution
Crisis, stability, supervisory and risk				
Marques and Alves (2020)	proposes a clustering ensemble approach to distinguish banks	E	QN	Authors provide a formal definition of “banking BM”; identify five strategic dimensions along which banks assume a long-term position relative to their peers; examine the level of similarity of banks operating with the same long-term BM; provide some evidence regarding the level of persistency of banks in terms of their BM.
Zarutka et al. (2020)	improves theoretical and methodological approaches to the definition and analysis of BMs of Ukrainian banks	E	QN	Authors propose a method of using differentiated supervisory approaches for different banks, which is based on the use of structural and functional analysis of bank groups.
Cantú et al. (2022)	investigates how the banking systems and their characteristics have affected the drivers of credit supply	L	QN	Large and well-capitalised banks with low risk indicators, stable sources of funding and a commercial BM generally supply more credit.
Vinas (2021)	analyses the credit supply of commercial banks and universal banks in France	E	QN	Universal banks and commercial banks had a similar credit supply prior to the crisis. During the 2008 financial crisis, universal banks had a strongly lower credit supply, leading to real effects on firms’ investment.
Nguyen et al. (2021)	determines the extent of the influence of BMs on banks’ stability.	As	QN	Authors find significant and negative impacts of a diversification model in which banks shift toward non-interest and fees-based activities.
Tanzi et al. (2018)	examines the BM of the niche players (focused on the distribution of investment services)	E	QN	The highest net profitability is found in the niche players group; the global players, as risk-takers, achieve lower remuneration. The originality mainly regards the BM risk perspective and the focus of the distribution of investment services.
Lopez-Penabad et al. (2022)	studies the impact of negative interest rates on the profitability and risk taking of banks.	E	QN	The effects of the implementation of negative interest rates policy affect bank profitability and risk taking differently, depending on the BM.
Infante et al. (2020)	analyses whether the BMs used by these banks affect the use of derivatives	E	QN	Authors examine some characteristics that delineate the bank’s BM into account.

Table 5 (cont.). SCAMS-framework

Author	Aim	Context*	Method**	Conclusion and contribution
Crisis, stability, supervisory and risk				
Everett et al. (2020)	investigates the effects of BMs on their foreign assets	E	QN	G-SIBs were markedly different from other bank types, as they not only increased their extra-euro area positions, but also contributed to maintaining cross-border flows within the euro area.
Ercegovic et al. (2020)	examines impact of various determinants of bank BMs on the bank risk	E	QN	Banks in which BM wholesale characteristics are dominant are more exposed to business risk in periods of market shocks.
Mynenko and Savchenko (2018)	identifies BMs typical of the banking system of Ukraine	E	QN	Certain banking groups are implementing similar BMs and risk concentration areas.
Sudrajad (2021)	examines to what extent is the impact of Basel II adoption on bank BMs in ASEAN countries	As	QN	Under the Basel II accord, banks have adjusted their BMs by diversifying their sources of income to avoid the obligation for keeping more capital
Grossmann and Scholz (2019)	examines liquidity-induced equity risks, triggered by exemplary rating shifts	E	QN	Retail banks bear significantly lower funding cost risks than wholesale and trading banks.
ESG				
Mehera and Ordonez-Ponce (2021)	explores the adoption of thematic components of a shared value BM by an bank; and develops an alternative BM	Au	QL	The study concludes by recommending an extended version of the shared value BM to enhance social and economic value creation based on stakeholder engagement.
Gyóri et al. (2021)	examines the MagNet Hungarian Community Bank's approach as a values-based bank	E	QL	These results can contribute to the operational improvement of both the investigated bank and other values-based banks and provide a good practice example for embedding values into BMs for more effective and efficient crisis and risk management.
Inácio and Delai (2022)	identifies the sustainability issues that have been evaluated in the banking sector.	NA	QL	Both the sustainable banking construct and its domain are still not clearly defined and standardized and that they are partially developed.
Nosratabadi et al. (2020)	studies sustainable BM for the banking sector.	E	QL	Sustainability of the Norwegian and German banks' BMs is higher than in other countries.
Costa-Climent and Martínez-Climent (2018)	focuses on banks that have designed their activities and investments to contribute to sustainability.	NA	QL	show the existence of a range of BMs that arise following different responses by different types of banks (considering primary objective of sustainable banks).

Table 5 (cont.). SCAMS-framework

Author	Aim	Context*	Method**	Conclusion and contribution
ESG				
Jatmiko et al. (2023)	scrutinizes the ethicality of Islamic banks' (IBs') BM	As	QN	Unethical issues are still prevalent in the IBs' modes of financing. Authors develop a theoretical method to audit IBs' idiosyncratic balance sheet structures.
Cornée et al. (2020)	how can social bank (SBs) survive without subsidies in the banking market?	E	QN	The results confirm that SBs benefit from a lower cost of funding, from both owners and deposit holders, and that they charge borrowers below-market interest rates.
Badunenko et al. (2021)	proposes approach to analyze banks' abilities to achieve a sustainable BM	E	QN	Authors present a new framework to analyze the effect of a BM on bank performance (measured by a state-of-the-art stochastic frontier model).
Barbu and Boitan (2019b)	measures the degree of efficiency of ethical, sustainable banks	E	QN	The results emphasize ethical banks' comparative performance, in terms of efficiency, and allow the identification of resembling peers whose monitoring may help the bank in achieving a further efficiency status.
Yip and Bocken (2018)	explores generic archetypes of BMs supporting sustainability.	As	M	Eight sustainable BM archetypes for banking are developed and validated
Gangi et al. (2019)	investigates how the CSR engagement of banks impacts their financial performance.	E	QN	The results support a win-win vision of the relationship between the social and financial performance of banks.
Karkowska (2020)	how does diversification of traditional activities of commercial banks affect their sustainability?	E	QN	The study contributes to the ongoing discussion on the recognized profitability and sustainability nexus as an important part of sustainable finance that may be a powerful solution to financial crises.
Khattak (2021)	investigates the impact of sustainability performance on the bank's performance in Muslim countries	M	QN	Authors found that banks with higher sustainability performance tend to have better financial performance.
Chang et al. (2022)	evaluates relative efficiency scores under the business activities of the Industrial and Commercial Bank of China	As	QN	Performance has improved as the Industrial and Commercial Bank of China has focused more on long-term society contributions.

Table 5 (cont.). SCAMS-framework

Author	Aim	Context*	Method**	Conclusion and contribution
ESG				
Mykhayliv and Zauner (2018)	studies social banks vs conventional banks (considering performance)	M	QN	Social banks are relatively more economically efficient than the G-SIBs since in all regressions the overheads to total asset ratio is significantly lower for social banks than for the G-SIBs.
Financial performance				
Ayadi et al. (2021)	evaluates BM migrations of banks	E	QN	Departing from the previous literature that focused on the analysis of the relationship between BMs and some accounting measures, authors focus on the determinants of migration. They also investigate the effects of migrations on bank performance.
Molyneux et al. (2019)	investigates the influence of negative interest rate policy (NIRP) on bank margins and profitability	M	QN	Bank margins and profits fell in NIRP-adopter countries compared to countries that did not adopt the policy. This adverse NIRP effect depends on bank specific-characteristics such as size, funding structure, BMs, assets repricing and product – line specialization.
Molyneux et al. (2020)	examines how NIRP (negative interest rate policy) has performed with respect to achieving an increase in bank lending	M	QN	Bank lending was weaker in NIRP-adopter countries. This effect have been stronger for banks that were smaller, more dependent on retail deposit funding, less well capitalized, had BMs reliant on interest income, and operated in more competitive markets
Sudrajad and Hübner (2019)	studies the nexus between market power and BMs of banks and examines the impact of BMs on banking stability and performance	As	QN	Authors find that banks with a strong capital base but lower net interest margin perform better in translating their market power into generating non-traditional income; document that banks with higher market power tend to increase non-deposit short-term funding in their financing mix.
Huynh and Dang (2021)	examines how loan portfolio diversification drives bank returns, mainly focusing on the conditioning roles of BMs and market power in this nexus	As	QN	Authors find that increased sectoral loan portfolio diversification reduces bank returns, but not all banks are equally affected. Banks that adopted a BM towards non-interest activities are hurt less from loan portfolio diversification, and bank market power may mitigate the detrimental effects of loan portfolio diversification on bank returns.

Table 5 (cont.). SCAMS-framework

Author	Aim	Context*	Method**	Conclusion and contribution
Financial performance				
Di Patti and Palazzo (2019)	investigates the impact of macroeconomic conditions on the profitability of banks according to the BM	E	QN	Studies relating bank profitability to macroeconomic conditions should take the heterogeneity of BMs into account.
Asmild et al. (2022)	analyses the difference in the pattern of inefficiency between the older family-dominated banks and the newer non-family-owned banks in Bangladesh	As	QN	There are few significant differences in the levels of variable-specific efficiency scores between the two subgroups.
Paulet (2018)	measures how the actual regulation affects banking margin and/or profitability.	E	QN	Banking liquidity regulation has transformed banks' BM and hampered entrepreneurial finance by reducing credit distribution.
Fayman et al. (2021)	examines performance of US Community banks and Non-Community banks post the Great Recession.	U	QN	Community banks, compared with their larger counterparts, tend to maintain higher levels of liquidity and lower levels of capital, and demonstrate a greater dependence on core deposits, Community banks should not be considered a homogenous group operating under a singular BM.
Farnè and Vouldis (2021)	identifies the main BMs of banks and studies how they differ with respect to performance, efficiency, credit risk and solvency.	E	QN	Evidence is provided that the sets of banks following the distinct four BMs differ with respect to performance and risk indicators.
Farnè and Vouldis (2020)	locates the banks' BM in a risk-return space.	E	QN	The main contribution of this study is the investigation of the link between banks' BMs and performance based on a rigorous econometric analysis which addresses also endogeneity issues
Jin et al. (2018)	examines the implications of banks' funding strategies for banks' earnings quality.	U	QN	Banks' funding strategy that relies more on retail deposits (conservative BM) increases banks' earnings quality.
Lagasio and Quaranta (2022)	analyses a link between the adoption of a specific BM and size, profitability, efficiency and risk profile.	E	QN	A bank BM is based on different endogenous factors (bank financial statements items and operating strategy) and can be linked to exogenous factors (financial crises, policies of central banks).
Dang and Huynh (2022)	examines the relationship between monetary policy and bank performance.	As	QN	Understanding the conditioning role of BMs in the monetary policy transmission through bank performance is a key contribution of this study.

Table 5 (cont.). SCAMS-framework

Author	Aim	Context*	Method**	Conclusion and contribution
Innovation				
Rajnak and Puschmann (2021)	derives a hypotheses model that connects IT innovations with the generic value disciplines of banks.	E	M	This paper connects blockchain technology research with BM research by demonstrating how the financial services industry is affected.
Boot et al. (2021)	examines innovation in the provision of financial services	NA	QL	Incumbent banks can exert market power through informational and spatial capture.
Niemand et al. (2021)	explains how banks can achieve superior performance in the digitalization age	E	QL	Banks that display high levels of entrepreneurial orientation report a higher level of performance.
Miranda and Balqiah (2020)	analyses the role of network externalities, innovation characteristics, and technological anxiety on the intention to use new forms of this financial BM.	As	M	Online bank managers should address the significant relationship within their marketing strategy in making managerial decisions. In a practical application, this research will help in gauging the impact of branding components of their BM.
Louw and Nieuwenhuizen (2020)	examines differences between traditional and digital-only banks' BMs	Af	QL	Authors highlight the importance of a mobile-first approach not only to traditional and digital-only banking services strategies but also to digital BM formulation in general.
Ramdani et al. (2022)	explores how investments banks adjust their BMs in response to internal and external challenges	As	QL	Investment banks can achieve resilience by adjusting their BMs through continuous activity changes in response to internal and external challenges.
Pramani and Iyer (2023)	explores the impediments to adoption of the payments banks by the financially excluded customer segments.	As	QL	The primary factors contributing to low adoption by the customer segments studied here, namely migrant labor and small vendors, have been identified as lack of awareness, lack of trust and lack of perceived need for their products/services.
Sund et al. (2021)	investigates challenges encountered by innovation labs in the retail banking industry	E	QL	Innovation labs are constrained not only by existing resources and capabilities, but also by the need to satisfy both top management and managers in the core business units.

Table 5 (cont.). SCAMS-framework

Author	Aim	Context*	Method**	Conclusion and contribution
Innovation				
Broby (2021)	explains the impact of financial technology and the Internet on the nature of banking.	NA	QL	Four strategies were proposed to navigate the evolving competitive landscape (for incumbents to address customer retention; for challengers to peruse a low-cost digital experience; for niche players to provide banking as a service; and for social media platforms to develop payment platforms).
Eriksson et al. (2020)	investigates the viability of the relationship-oriented BM.	E	QN	The relationship banking model generates non-interest revenue, but not revenue on net interest spread. The fine-grained client-level data also allows the investigation on how the effect of trust on client-level performance differs among client groups with different cognitive characteristics.
Islamic banking				
Nawaz (2019)	examines impact of investments in human capital and the corporate governance mechanism on the market performance of Islamic banks	M	QN	Investments in human capital to have a significant positive impact on the market value in the pre- and post-financial crisis period.
Azmi et al. (2019)	investigates the nexus of competition and stability	M	QN	Authors found no difference in the impact of competition and diversification on the stability of conventional and Islamic banks.
Paltrinieri et al. (2021)	examines difference in diversification effects on profitability between Islamic and conventional banks	As	QN	Authors find that diversification provides lower rewards for Islamic banks than conventional banks, with effects that are stronger for accounting-based measures rather than market-based metrics.
Elnahass et al. (2018)	examines institutional characteristics distinguishing Islamic from conventional banks	As	QN	Results provide significant evidence of capital and earnings management practices via loan loss provisions in conventional banks. Islamic banks tend not to use loan loss provisions in either capital or earnings management.
Elnahass et al. (2020)	examines whether board busyness is differently valued by investors engaging with the Islamic versus conventional banking sectors	M	QN	In conventional banks, board busyness is significantly and positively valued by the stock market. They find no supporting evidence on the market valuations of board busyness in Islamic banks.

Table 5 (cont.). SCAMS-framework

Author	Aim	Context*	Method**	Conclusion and contribution
Islamic banking				
Alhammadi et al. (2020)	shows how BM is key aspect of corporate governance	As	QL	Authors illustrate how an apparently successful BM may fail due to an inherent instability that could have been identified through the application of careful risk analysis (including stress testing) in the choice and ongoing evaluation of the BM, which robust corporate governance and strategic guidance require.
Rizwan et al. (2022)	examines differences in the systemic risk profiles of conventional and Islamic banks during the COVID-19 pandemic	As	QN	Comparative analysis shows that Islamic banks have similar systemic vulnerabilities to systematic and idiosyncratic factors. However, Islamic banks pose significantly less spillover to others relative to conventional banks while earning abnormal returns.
Raouf and Ahmed (2022)	examines the specific role of risk governance in promoting financial stability in banks	As	QN	The BMs of Islamic banks have features that can enhance stability, poor risk governance can potentially negate this positive feature.
Sakti and Mohamad (2018)	examines how Indonesian Islamic banks differ from conventional banks in terms of their BM, asset quality, stability and efficiency	As	QN	Islamic banks are relatively more efficient than conventional banks, as shown by their higher overall efficiency, as well as technical efficiency
Hidayat et al. (2021)	evaluates how conventional and Islamic banks trade off risk, efficiency and financial performance in their BMs.	As	QN	Islamic and conventional banks differ not in the levels of efficiency, risk and profitability, but rather in how risk and efficiency influence banks' financial performance.

* E – Europe, As – Asia, U – USA, M – Mixed sample of regions, L – Latin America, Af – Africa, Au – Australia, NA – article without sample of banks in some region, ** QN – quantitative methods, QL – qualitative methods, *** BM – business model.

Source: own preparation based on data from the Web of Science.

4.1. Sub-streams of research

Considering the importance of the external environment for interaction with banks, especially during crisis periods (in particular, during the global financial crisis in 2007–2009), the largest group of articles in recent years concerned business models of banking institutions with such a research area as crisis, macroeconomic and financial stability, effective supervision in the banking sector and risk management (31.6% of all publications in the sample). Other areas of research on banking business models are the question of ESG (19.7% of publications) and the profitability of their activities (17.7%). The number of

articles on the role of innovation (in particular, fintech) in banking modeling is also growing (7.9%). Researchers are also interested in specific banking models – Islamic banking and cooperative banks (Figure 5).

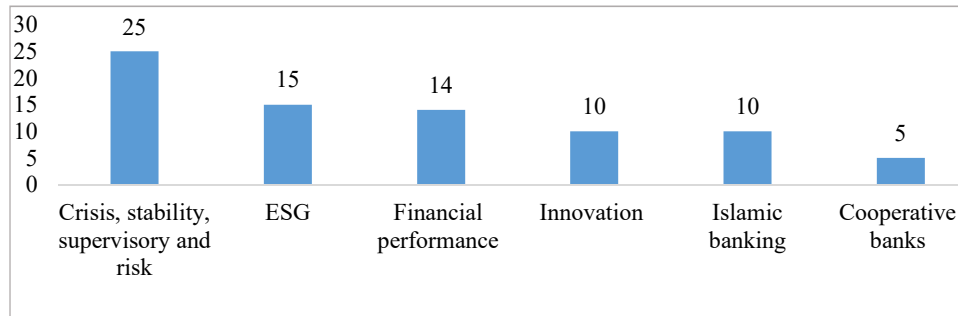


Figure 5. Sub-streams of research in sample

Source: Prepared by Author based on data from the Web of Science.

4.2. Context

The most frequently studied institutions are banks in Europe (45.6%), significant attention also concerned to institutions from the Asian region (countries with an Islamic banking business model, China, ASEAN countries, etc.), and only five studies in the sample relate entirely to banks in the United States. There is low interest and/or low citation of publications regarding the banking business models in Africa, Latin America, and Australia (Figure 6).

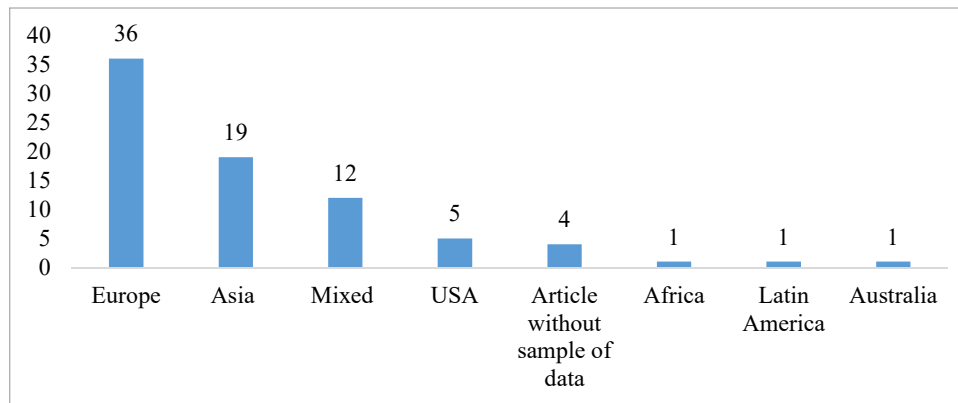


Figure 6. Geographical context of research subjects

Source: Prepared by Author based on data from the Web of Science.

4.3. Aim

The purposes formulated by the authors of publications can investigate in the context of sub-streams of research:

A. Cooperative banks. The authors investigate the strengths and challenges, performance or costs of this banking business model (BM).

B. Crisis, stability, supervisory and risk. The authors examine the impact of low-interest rates, systemic and liquidity risk on BM, survivability of different banking BM under normal and crisis economic conditions, the nexus between BM and banking funding structure, credit supply, foreign assets, derivatives, and the impact of regulation and monetary policy. Some articles aim to propose methodological approaches concerning the analysis of banking BM.

C. ESG. The authors explore components of a shared value BM, the sustainable business model in banks, social and ethical banks.

D. Financial performance. The authors study business model migrations of banks, the influence of different factors (monetary policy (in particular, the negative interest rate policy), regulation measures, loan portfolio, and funding strategies) on the profitability of banking BM.

E. Innovation. The authors examine the impact of IT innovations and financial technologies on banking BM, explore payment banks, innovation labs in the banks, and differences between digital and traditional banks.

F. Islamic banking. The authors study different characteristics distinguishing Islamic from conventional banking BM.

4.4. Methodology

An essential feature of modern scientific research in economics is their empirical nature with significant domination of quantitative methods. It is also concerning the banking business models – 65 (82.3%) articles from the sample used quantitative research methods (Table 5). Among these methods, regression analysis dominates (71%), in particular, the use of GMM panel regressions, vector autoregression, panel vector-error correction model, GARCH, logistic and Tobit regressions, Z-score, CAPM using Fama and French's three-factor model and International CAPM.

Researchers also use cluster analysis (15.1%), including Kohonen's self-organizing maps, as well as principal component analysis, stochastic cost frontier model, data envelopment analysis, and ANOVA (Figure 7).

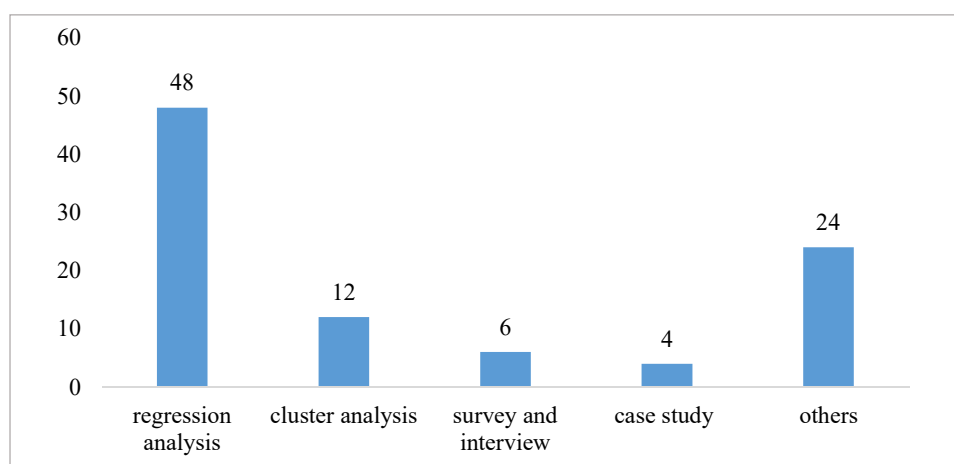


Figure 7. Research methods in studies of sample

Source: Prepared by Author based on data from the Web of Science.

In some studies also are used qualitative research methods – surveys (in particular cross-sectional surveys), interviews (in particular semi-structured interviews), case studies, Delphi-Analytic Hierarchy Process method, fuzzy logic methods, and Business Model Canvas method.

4.5. Conclusion and contribution

Key conclusions and contributions of the research sample of scientific articles are presented in Table. 5. Furthermore, we can observe that only a few researchers describe the essence of the banking business model. In particular, Lueg et al. (2019, p.2) note that “a valid and reliable measurement of business models is practically non-existent”.

Marques and Alves (2020) define a “banking business model” as a predominantly stable and long-term oriented organizational configuration that is adopted, with different levels of association, by a significant share of banks, resulting from a set of observable and interconnected managerial choices. Rajnak and Puschmann (2021) in their paper define the business model as “who” a firm’s customers are, “what” this firm is selling, “how” it produces its offering, and why its business provides “value”. The “why” dimension is used interchangeably with the term “value”.

Most studies use a quantitative approach at once to identify different banking business models without defining the business model. But in some works, we can see a definition of the bank’s business model based on a quantitative approach. Ayadi (2019) uses the activity-funding definition of a banking business model:

“In banks and other financial institutions, a pragmatic view of a business model is how these institutions manage their assets (activities) and liabilities (funding) over time to contribute to the financial system and the economy either by managing the risk (in their balance sheet and off-balance sheet or by accumulating it and transferring it to the system)”.

Zarutska et al. (2020) define the business model as a selected segment of the bank’s activity, that is characterised by a system of financial indicators that reflect efficiency, risk profile, other features of the bank’s viability and sustainability, and therefore the ability to generate an acceptable level of revenue in the long term. In article of Badunenko et al. (2021) the bank business model is defined in terms of the strategic framework in which the bank chooses its assets, funding, and income portfolios over time. Ercegovac et al. (2020) suggest that the basic concept of a bank business model is determined by diversification of business undertaken, the bank business objectives in budgeting assets and revenue structure, and bank funding structure.

Some researchers use basic definitions concerning the business model for their studies, adapting them to the banking sector. Lueg et al. (2019) use two theoretical foundations of business models (RBV and TCE) proposed by DaSilva and Trkman (2014) that suggest a more solid foundation in the resource based view (RBV) and transaction cost economics (TCE) and elicit that business models “represent a specific combination of resources which through transactions generate value for both customers and the organization”.

In some studies, the authors at once define the specific banking business models that are predominantly related to current trends in ESG. Nosratabadi et al. (2020) characterize sustainable banking business model as the achievement of sustainability goals in the business model. Costa-Climent and Martínez-Climent (2018) note that ethical banks are driven by an awareness of the destination of their funding activities and a willingness to

forgo profit in favor of social causes, conventional or commercial banks' primary interest is to maximize profits. Barbu and Boitan (2019b) suggest that ethical banks are in the spotlight as they are explicitly involved in channeling financial resources towards start-ups and investment projects characterized by the social, cultural and environmental value-added, by encouraging the development of responsible, durable projects.

In the sample of scientific research, we can also note that only a few papers describe elements of business models. For example, Nosratabadi et al. (2020) highlight nine components that make up the business model for the banking sector: value proposition, core competencies, financial aspects, business processes, target customers, resources, technology, customer interface, partner networks. Cornée et al. (2020) note that core business model comprises two pillars: benevolent ownership and specific intermediation mechanisms. Diener (2020) uses approach of Johnson et al. (2008) that elements of business model are customer value proposition, profit formula, key resources, and key processes. Yip and Bocken (2018) define the business models by three value components – the value proposition, value creation and delivery, and value capture (based on highly cited works of Osterwalder et al., 2005; Osterwalder, Pigneur, 2010; Richardson, 2008) and conduct value analysis of the eight financial sustainable business model archetypes.

5. FUTURE RESEARCH AGENDA

The analysis of the content of the cited scientific articles sample in recent years on banking business models, as well as new challenges to the functioning of the modern economy in the global dimension, allows us to identify research gaps that can become areas of future scientific research in this research area:

1. The significance of war and other geopolitical factors in the modification of banking business models. In the study sample, there was no research on this theme. It may be because the importance of geopolitical factors has increased significantly since February 2022 after Russia attacked Ukraine. Based on data from the Web of Science database (with search restrictions set only in economic disciplines), when applying the relevant keyword to “war*” AND “bank*”, we get 564 results (timespan 01.01.2022–26.07.2023), but when applying the relevant keyword “business model*” AND “war*” AND “bank*”, we get only 7 publications that are not significantly related to the study of the impact of war on banking business models.

In addition to the impact of military operations on the banking business models in Ukraine and Russia, the research domains may also include the following challenges to consider in business modeling in banking institutions:

- (a) geopolitical tensions in relations between EU and US, and China;
- (b) strengthening cooperation between the Gulf states and China;
- (c) the eventual expansion of geopolitical project in the form of BRICS;
- (d) the geopolitical struggle between US, EU, and China for influence in Africa.

An interesting area of research may be the development of a business model for foreign banks (in particular, EU and US) to enter the post-war financial system of Ukraine to finance the reconstruction of its economy.

2. The impact of modern information technologies and other innovations on the business models of banks. First of all, it is advisable to deepen the research of business models of the fintech sector regarding their possible adaptation by banking institutions or the development of new models of banks (in particular, online banks) as a response to the growth of competition from the fintech sector. Furthermore, obviously, the key research

area should be the impact of technologies such as artificial intelligence, distributed ledger technologies or machine learning on modeling of modern banking. An interesting research domain would be the development of proposals for modeling a new type of bank that would have the features of venture institutions, and this would contribute to the activation of financing for the startups' development. Another pertinent research theme is the development of potential scenarios for modifying banking business models, taking into account the expected introduction of digital money by central banks, as well as existing crypto assets in circulation.

3. The impact of pandemics and other "black swans" on the business models of banks. It follows from the analyzed sample that the impact of the COVID-19 pandemic is still poorly understood (Borri, Di Giorgio, 2022; Rizwan et al., 2022).

4. Influence of current ESG trends and regulations on banks' business models. Firstly, this concerns the EU banking sector, where several legal acts have already been implemented. Furthermore, the research area may be the impact of future changes in bank models in the EU considering the long-term Green Deal strategy. In addition to climatic factors, the issue of the relations between corporate governance and business models has not almost been the subject of research in scientific publications in recent years. A novelty area of research is also the model of ethical banks, which was described to a certain extent mainly for Islamic banking. Therefore, taking into account the cultural and historical aspects, it would be worth exploring the possibility of adapting the social doctrine of the Catholic Church to create a modern model of ethical banking. This research area should also consider the existing EU law regarding the functioning of European social entrepreneurship funds (EuSEF).

5. Development of a methodology for a composite indicator of the effectiveness of business models, which was not the subject of research in any scientific article from the analyzed sample. Such a composite indicator would also be an important tool for comparing the effectiveness of different business models, and factor analysis would allow determining the sensitivity of banks' business models to various challenges of the internal organization of banking activities and the changing external environment.

6. Development of theoretical foundations of banking business modeling. Considering the existing developments in the basic business models area, great opportunities are in developing a universal definition of the banking business model and its elements.

7. The impact of recent changes in the economies of countries on the business models of banks. First of all, the research subject should be the analysis of banking business models in conditions of high-interest rates (in particular, the study of the impact of inflation and monetary policy of central banks).

Thus, the research area on the business model in the banking sector contains a sufficient number of research gaps and is a future area of scientific research that will also have a significant practical effect on improving banking activities at the current stage of society development.

The author has read and agreed to the published version of the manuscript.

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ON SOME CONSEQUENCES OF THE CONFLICT IN UKRAINE ON EURO-ATLANTIC SECURITY

The Russian military invasion of Ukraine dramatically changed the Euro-Atlantic security scene. After long-standing disputes between the United States and its European allies over the burden-sharing within the North Atlantic Alliance, the outbreak of the conflict in Ukraine has given the Alliance a new sense of Euro-Atlantic partnership and brought a renewed emphasis on collective defense and on the core functions of deterrence and securing territorial defense of its member states. At the same time, Russian aggression raised many important questions about the future of the Euro-Atlantic security architecture and the role of the North Atlantic Alliance in its construction. Following this, the authors in this article, using relevant methods of interdisciplinary scientific research, examine the impact of the Russian-Ukrainian conflict on ensuring Euro-Atlantic security and, at the same time, deal with other topics closely related to it. In conclusion, based on the results of the research, the authors express the opinion that European countries must assume a larger share of responsibility for guaranteeing security and defense on the European continent, eliminate the gaps that have arisen and build new military capabilities and capacities, and improve the operational readiness and interoperability of their military forces.

Keywords: Euro-Atlantic security, Ukraine, conflict.

1. INTRODUCTION

Russia's military invasion of Ukraine has once again brought high-intensity warfare to the European continent. In a significant way, it disrupted the foundations of the Euro-Atlantic security architecture after the end of the Cold War and reopened the debate on the future of European security. Following the outbreak of the global economic and financial crisis in 2008, disputes over burden-sharing between the United States of America

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(hereinafter referred to as “the US”) and its European allies created a sense of fatigue in the transatlantic partnership, fuelling not only US threats to disengage from Europe, but also European fears of separation and calls for European strategic autonomy. However, the outbreak of the largest and most brutal war on the European continent since the end of the Second World War has clearly shown that European countries continue to be very heavily dependent on the US, especially in terms of military capabilities and capacities.

At the same time, the war emphasized the need to intensify cooperation between the North Atlantic Alliance (hereinafter referred to as “NATO” or the “Alliance”) and the European Union (hereinafter referred to as “EU” or the “Union”) and the necessity of expanding the role of the EU in the area of ensuring security and defence on the European continent. Closer cooperation and coordination between the Alliance and the Union will be particularly necessary in the next few years, as it is unlikely that there will be any major structural shift in US strategic priorities in the coming years. Rather, Russian aggression towards Ukraine and growing US concerns about China's assertiveness require European states to bear a much greater share of the burden of ensuring Euro-Atlantic security than they have done so far (Haroche and Brugier, 2023).

While after the outbreak of the conflict both organizations – NATO and the EU – updated their key governing strategic documents, in January 2023 NATO Secretary General Jens Stoltenberg, European Council President Charles Michel and European Commission President Ursula von der Leyen signed a joint declaration on cooperation between NATO and the EU with by promising to take their partnership to the “next level” (NATO, 2023a). This document was the third joint statement signed by both organizations, following the 2016 EU-NATO Joint Declaration and the 2018 EU-NATO Joint Declaration (NATO, 2023b). The declaration condemned the Russian invasion of Ukraine and affirmed the determination of the Union and the Alliance to act together against a wide range of security threats. At the same time, it confirmed NATO's primary role in ensuring Euro-Atlantic security and also firmly anchored the perspective of closer European security cooperation within the Alliance (NATO, 2023a). The joint statement also somewhat dampened calls for European strategic autonomy.

Nevertheless, the document says that, in the current systemic context, European leaders should seize the opportunity created by the war in Ukraine and pursue more intensive institutional integration in the field of European security and defence. Given the outbreak of military conflict in Europe, as well as deepening systemic tensions between the US and China, European Commission Vice-President and EU High Representative for Foreign and Security Policy Josep Borrell summarized the risks of inaction as follows: “The EU can no longer afford to be an herbivore in the struggle for power among carnivores” (Borrell, 2021). At the same time, it follows from the declaration that the Union must make a big and decisive leap towards achieving a certain degree of transnational centralization of the decision-making process, so that the EU can play a much larger role in the area of ensuring Euro-Atlantic security in the coming years than it has so far.

The authors, who – using relevant scientific research methods and approaches based on political, security and European studies – examine the consequences of the conflict in Ukraine on Euro-Atlantic security and at the same time deal with other closely related topics, such as the impact of the conflict on European strategic autonomy, the need for higher defence spending, initiatives to support innovation and investments in defence, strengthening the defence of the Eastern wing of the Alliance, the need to eliminate existing gaps and build new military capabilities and capacities, as well as the need to improve the operational readiness and interoperability of the military forces of European countries. In

the article, they are based on their own previous research (Ivančík, 2022; Ivančík, Jurčák, 2023; Jurčák, Ivančík 2023); theoretical constructs of renowned authors (Koudelka, 2016; Besh, 2022; Bond, Scazzieri, 2022; Jenkins, 2023; Ellison et al., 2023) and from information and databases of relevant international organizations, primarily the North Atlantic Alliance.

2. CONSEQUENCES OF THE CONFLICT IN UKRAINE ON EURO-ATLANTIC SECURITY

The beginning of the Russian “special military operation” in Ukraine at the end of February 2022 was a shock for Euro-Atlantic security (Daehnhardt, 2022). For the first time since the wars in the former Yugoslavia in the 1990s, a war of high intensity returned to European soil. Although Ukraine was not a member of NATO or the EU at the time of the invasion and is not likely to become a member of any of these organizations in the near future, the Russian invasion nevertheless shook the foundations of the Euro-Atlantic security architecture that was created at the end of the Cold War and gradually consolidated between the end of the 20th and the beginning of the 21st century. From the point of view of Euro-Atlantic security, this architecture was based on the main role of the Alliance as the primary provider of collective security and defence for the European and non-European member states of the organization, the provider of crisis management tools and also the main engine in the development of European military capabilities and capacities needed to conduct peacekeeping operations and crisis management (so-called Petersberg tasks) (European Union 2020). This architecture also relied on finding tools designed to ensure sustainable relations with Russia. While relations with Russia began to deteriorate already in the late 1990s and never fully recovered after the Russo-Georgian war in 2008 (Ratti, 2013), the annexation of Crimea in 2014, support for the separatist republics in Donbas, and full-fledged military the invasion of Ukraine in 2022 caused a significant disruption to the perspective of a permanent agreement between the West and Russia (Jarábik, 2023).

With Russia's ongoing war of aggression, the Euro-Atlantic security architecture has radically changed, with immediate consequences for both NATO and the EU, as well as their relationship with the Russian Federation. More specifically, the war had three main consequences for the Alliance and the Union:

Firstly, the Russian invasion brought about a revival of a security discourse based on deterrence and territorial defence rather than crisis management and cooperative security. It launched a resurgence of the US role on the European continent and strengthened Euro-Atlantic cohesion. It brought a tactical reorientation of US priorities towards Europe, which for the first time since the end of the Cold War led to a significant strengthening of NATO's forward presence on the eastern flank (NATO, 2023c). It also gave a fundamental impetus towards Allied unity and acted as a catalyst for Euro-Atlantic unity and strength. The United States used its diplomatic, intelligence, military, deterrence, and economic assets to respond immediately to the Russian invasion, assure its European allies of unreserved support, consult intensively with them on Ukraine's support, and provide a joint, coordinated response. The American quick and decisive reaction thus restored a strong sense of unity between the two sides of the Atlantic. The National Security Strategy (NSS) (White House, 2022) and the US National Defense Strategy (NDS) (US DoD, 2022) from 2022 also emphasized the importance of close cooperation with European allies from the Alliance.

Secondly, the outbreak of war in Ukraine brought a return to reality for the EU as a whole and for some European leaders in terms of ambitions regarding European strategic autonomy from the US and NATO. As a consequence of deepening disputes in the Alliance about the redistribution of the burden after the global economic and financial crisis, which broke out in full in 2008, when as a result defence spending in European NATO member states significantly decreased (figure 1), and also disputes from the period of Donald Trump's presidency between 2016 and 2020, who repeatedly spoke indiscriminately against European allies (Keneally, 2018; Todd et al., 2018), some European leaders (for example, former German Chancellor Angela Merkel and French President Emmanuel Macron) declared that Europe should take their destiny into their own hands, and began to call on the EU to gain strategic autonomy from the US and NATO (Macron, 2017; Merkel, 2018).

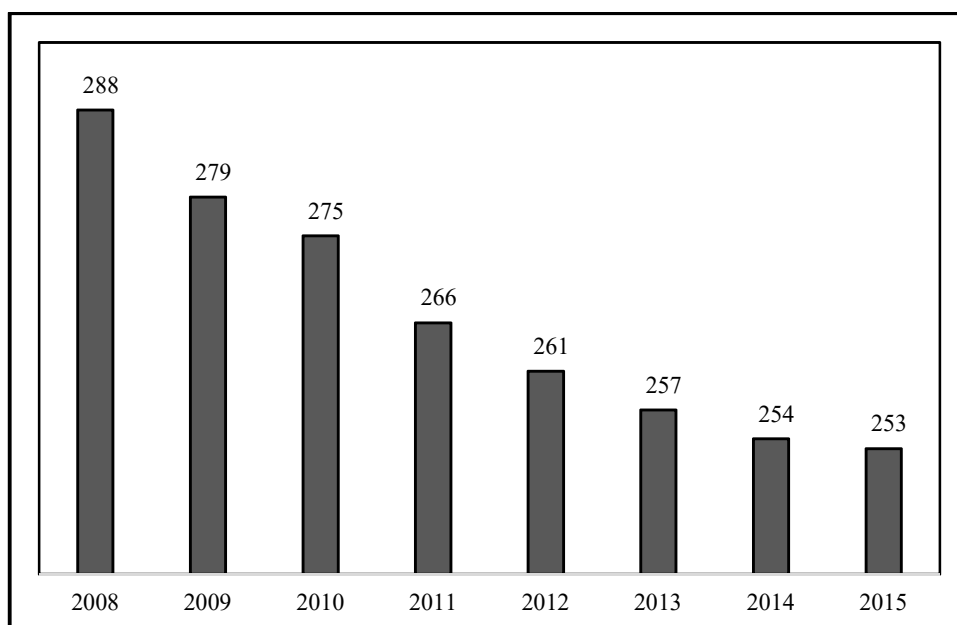


Figure 1. Defence spending in European NATO member states from 2008 to 2015 (at current prices in USD billions)

Source: (NATO, 2023d).

However, disputes over burden sharing are nothing new, essentially reflecting the White House's long-standing view that there are large disproportions in the contributions of the Alliance's member states. An example can be given, for example, by the statement of Robert Gates, who in his last official speech as US Secretary of Defense called NATO a two-tier alliance and at the same time warned European allies that future US leaders may start thinking about whether US investments in NATO are even worth it. (Gates, 2011). Similar views were expressed by his successor, Leon Panetta, on his first trip to NATO headquarters as Minister of Defense (Alexander, 2012). Similarly, in 2016, the US President Barack Obama openly criticized the European member states of the Alliance and accused them of behaving like "free riders" (Goldberg, 2016).

During the era of Donald Trump in the US presidency, these disputes have intensified and gained wide publicity. President Trump has been openly critical of NATO, calling the Alliance obsolete and claiming that the Europeans, especially Germany, owe the United States “tremendous amounts” of money (Gambino, 2017). The seriousness of Trump's stance and his administration's concerns about the systemic threat posed by China have deepened fears that the US could abandon its treaty obligations to ensure the security and defence of Europe (Swaine, 2019).

In response to Trump's loud and repeated criticism of European allies, French President Emmanuel Macron promoted the idea of European strategic autonomy as one of the main objectives of the EU's foreign, security and defence policy. In his famous speech at the Sorbonne University in September 2017, he called for the EU to develop an autonomous capacity to act (Macron, 2017). In August 2018, at a conference for ambassadors, he publicly stated that Europe cannot entrust its security to the United States alone and urged the Union to develop autonomous capabilities (Macron 2018). Subsequently, in 2019, he described NATO as “brain dead” (Macron, 2019). The French president also either directly initiated or supported several initiatives aimed at strengthening cooperation between EU member countries and promoting the EU's strategic autonomy. For example, in 2019, Emmanuel Macron and Angela Merkel signed the Aachen Treaty, in which they promised to deepen mutual bilateral cooperation and extend it to European partners (Hayes, 2019).

In the context of the above, we can also mention the calls of the former Vice-President of the European Commission and High Representative for the EU's Foreign and Security Policy, Federica Mogherini, and her successor in office, Josep Borrell, who called on the Union to acquire the institutional capacity to independently plan and conduct military operations in the entire spectrum of conflicts – including high-intensity military operations such as expeditionary and territorial defence operations – and autonomously develop and create the associated necessary military capabilities with little or no assistance from the US (Mogherini, 2019; Borrell, 2023). However, Russia's invasion of Ukraine, which has reintroduced high-intensity conventional warfare to the European continent and raised the prospect of a tactical nuclear strike in Europe, dampened those ambitions.

Thirdly, the Russian war of aggression not only renewed a strong sense of Euro-Atlantic partnership among the Allies, but also highlighted the need for an expanded European contribution to Euro-Atlantic security. And while the alliance was expressly designed to address threats to the Euro-Atlantic region, in recent years it has broadened its focus to the Asia-Pacific region, inviting the leaders of Japan, South Korea, Australia and New Zealand to attend its summits in Madrid in 2022 and in Vilnius in 2023 (Kuok, 2023). The new NATO Strategic Concept (NSC) adopted in 2022, which focuses on the consequences of a Russian invasion, marks China as one of the Alliance's priorities. It states that “Beijing's ambitions challenge the interests, security and values of the West” (NATO, 2022a). The geostrategic competition between the United States and China is set to intensify in the coming years, requiring the EU and its Member States to take greater responsibility for the security and defence of the European continent and show a greater willingness to act together to address complex and fundamental challenges than before.

3. STRENGTHENING OF POSITIONS ON THE EASTERN FLANK OF THE NORTH ATLANTIC ALLIANCE AND GROWTH IN DEFENCE SPENDING

One of the further direct consequences of the Russian invasion was a significant strengthening of the Alliance's positions on the eastern flank. While after the Russian-

-Georgian conflict in 2008, NATO refrained from deploying military forces on the territory of its new member states, after the Russian annexation of Crimea in 2014, the Alliance began deploying smaller military units in Eastern European member states in order to deter Moscow - it used the so-called the "tripwire" model (Vershbow, Breedlove 2019). The deployment of military forces took place in the context of the European Reassurance/Deterrence initiative launched by the Alliance in 2014 (Lařici, 2018). However, the Russian invasion of Ukraine made this approach no longer sufficient (DePetris, 2019), which led NATO to significantly strengthen its positions and increase the number of military units on its eastern flank. The US and European allies committed significant resources, agreed to unprecedented steps to strengthen deterrence, and established four additional multinational battle groups in Bulgaria, Hungary, Romania and Slovakia. This measure effectively doubled the number of battle groups deployed on the Alliance's eastern flank (NATO, 2023e).

The strengthening of NATO's positions on the eastern flank was also reflected in the development of the Alliance's official strategy. Roughly 4 months after the outbreak of the conflict, the Madrid Summit of the Alliance in June 2022 (already mentioned above) approved the new NATO Strategic Concept (NSC). Although the Founding Act of NATO - Russia from 1997 (NATO, 1997) was not formally announced at the summit, or recalled, the NSC describes Russia as the most significant threat to allied security. In the concept, the Allies affirmed their commitment to "defend every centimetre of Allied territory" (NATO, 2022a), while agreeing to strengthen "NATO's deterrent and defensive posture to deny any potential adversary any possible opportunities for aggression" (NATO 2022a).

At the same time, Alliance member states agreed to "deter and defend forward with a robust, multi-domain, combat-capable force" and increase their operational readiness, including by pre-positioning munitions, supplies and equipment, and agreeing to expand troop numbers as part of a NATO rapid response forces from 40,000 to 300,000 soldiers (NATO, 2022b; Albay, Oral, 2023). While some of the details of this enhanced position still need to be worked out, it is expected that this increased force will have a higher level of readiness than the current forces. Some allies have already agreed to send more troops. The US established a permanent Army Corps headquarters in Poland (Heeter, 2023) and sent more troops to Romania and the Baltic states. The United Kingdom, Germany and Canada have strengthened their existing deployments in the Baltic states, while Italy and France have strengthened their forces in the Balkans. The allies also agreed to increase the strength of the troops deployed on the eastern flank from battalions to brigades (NATO, 2023f).

These joint commitments will lead to a significant increase in NATO's enhanced forward presence on the Alliance's eastern flank in the years to come. Currently, NATO's Supreme Allied Commander Europe (SACEUR) has operational command of approximately 42,000 troops, more than 60 warships and hundreds of combat aircraft now in Eastern Europe as part of the Alliance's response to the Russian invasion of Ukraine. The new force model envisages a predominantly European force (of around 300,000 troops) kept on high alert, with around 100,000 troops expected to be deployed within ten days (NATO, 2022b). For the first time, all rapid reaction forces under NATO command will play both a deterrent and defensive role. All these forces will be consolidated under one command framework. While the new force will be kept on 24-hour alert, the bulk of NATO's force structure will be on 15-day alert. This will be a significant improvement over previous measures in which some forces were kept on 180-day standby (Stoltenberg, 2022; French-Lindley, 2023).

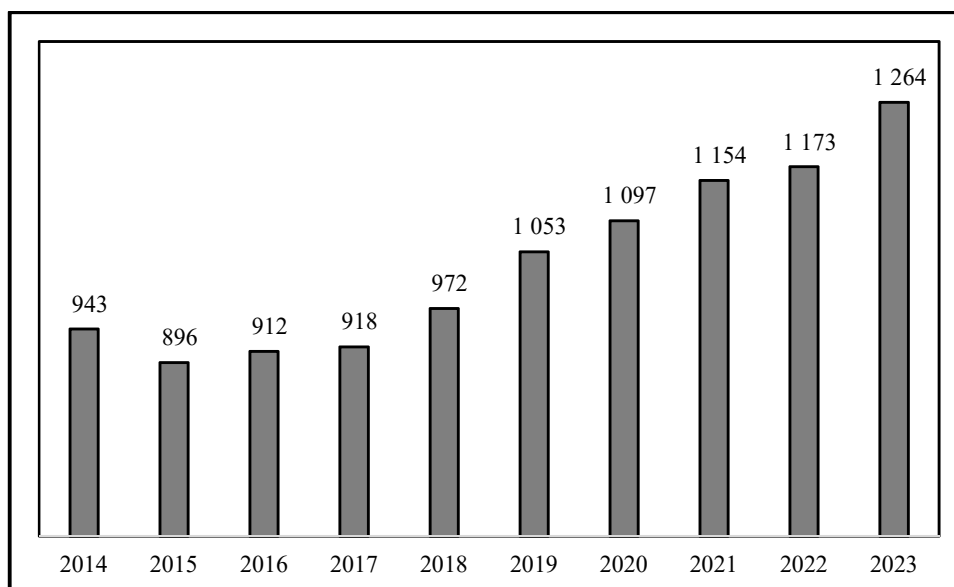


Figure 2. NATO defence spending from 2014 to 2023 (at current prices in billions USD)
Source: (NATO, 2023d).

At the Alliance's Madrid summit in summer 2022, the Allies also agreed, among other things, to ensure a significant and sustained presence on land, sea and air, including through enhanced integrated air and missile defence, while pledging to increase defence spending and invest in of the main weapon equipment by creating a new NATO innovation fund (NATO, 2022c). Although defence spending has been increasing for nine consecutive years (since 2015) and reached more than 1 264 billion US dollars in 2023 (NATO, 2023d) (Figure 2), the requirements to build new military capabilities and capacities will require additional investment in defence. The European member states of the Alliance must now quickly implement their obligations and prepare for a potential scenario of a long-lasting, high-intensity conflict in Europe.

Until now, Russia was not motivated to test the credibility of Article 5 of the North Atlantic Treaty, which states that “any attack against one or more member states shall be considered an attack against all” (NATO, 2023g). The Alliance's response to the Russian invasion offered a sufficient degree of deterrence. NATO has balanced incremental support for Ukraine with a reluctance to risk open conflict with Russia, implementing a form of deterrence through denial rather than punishment and proposing a new enhanced defence strategy. A significant and permanent military presence, supported by pre-deployment of equipment and strategic deployment of combat forces, has now become part of the new NATO force model (Pszczel, 2022).

In addition, NATO opened its doors to two other members – Sweden and Finland – who formalized their application for membership in the Alliance as a result of the war (NATO, 2022d). While Finland became the 31st member country of NATO in April 2023 (NATO, 2023h), Sweden's request is still waiting (at the time of writing the article) for ratification by Turkey and Hungary (Pugnet, 2023). The entry of Finland and Sweden (once the process is completed) will clearly strengthen security on the Alliance's northern flank,

allowing NATO to establish a strong deterrence position in the Scandinavian and Baltic regions. Indeed, both countries can significantly contribute to the redistribution of the burden and improve NATO's ability to modernize its defence planning and support the further development of capabilities and capacities (Dewey, 2023).

4. CONCLUSION

In conclusion, in close connection with the consequences of the conflict in Ukraine on Euro-Atlantic security, it can be stated that the allies, in order to ensure it, did not make any ambiguities even in the issue of the continuing deterrence role of nuclear weapons as a fundamental guarantee of their security. In the new strategic concept, they clearly emphasized that "the strategic nuclear forces of the Alliance, especially the forces of the United States of America, are the highest guarantee of the security of its members" (NATO, 2022a).

However, they will need to continue to invest significant resources in increasing the capabilities and capacities of their conventional forces, particularly in their deployment and pre-deployed stocks on NATO's eastern flank, as well as in improving their operational readiness and interoperability. These measures may also be particularly necessary in connection with the crisis of world and European arms control regimes following the collapse of the Intermediate Nuclear Forces in Europe Treaty and Russia's announcements in 2023 to withdraw from the New Strategic Arms Reduction Treaty and Conventional Forces in Europe Treaty.

To make these plans a reality in the coming period, NATO recently launched two very important initiatives to support defence investment and innovation: the €1 billion NATO Innovation Fund for investments in start-ups and technologies, and the Defence Innovation Accelerator for the North Atlantic, which is designed to leverage emerging and disruptive technologies by bringing together civilian and defence experts. Allies also recognized the need to strengthen the Alliance's 360-degree approach to security.

This is particularly important to ensure that the strengthening of positions along NATO's eastern flank does not threaten security in other parts of the Euro-Atlantic region. Therefore, the Alliance in no way overlooks or rather does not intend to neglect NATO's southern neighbourhood, especially the Middle East, North Africa, and the Sahel, and continues to emphasize the ongoing interconnection between NATO's eastern and southern flanks.

All authors have read and agreed to the published version of the manuscript.

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THE ASSASSINATION OF THE MINISTER OF THE INTERIOR BRONISŁAW PIERACKI IN THE LIGHT OF THE POLISH DAILY PRESS OF THE TIME

This article focuses on an attempt to recount the unclear circumstances of the assassination of Interior Minister Bronisław Pieracki by a member of the Organisation of Ukrainian Nationalists, Hryhoriy Maciejko. In this case, the assassination became the object of considerable interest from the media world, the center of which at the time was the press, particularly the sensationalist dailies, which were among the most widely read. Despite the many common features found in the analyzed accounts of the assassination, it was possible to discern elements seemingly insignificant to the overall picture. The article also takes a closer look at the purport of some journalistic and memoir texts, which is particularly interesting given the great diversity of press titles in terms of their political orientations.

Keywords: mass media, Organisation of Ukrainian Nationalists, Poland-Ukraine relations, Sanation, Second Polish Republic.

1. INTRODUCTION

This article aims to attempt to present an image of one of the most famous political murders in the Second Polish Republic, which was presented in many ways in the daily press, namely the murder of the Minister of Internal Affairs Bronisław Pieracki on 15 June 1934. This image includes a detailed presentation of the course of the assassination, an examination of its inspiration and instigators, and attempts to answer the question of the character of the murderer and a reconstruction of the social perception of the crime.

Bronisław Pieracki, still young on his death (born in 1895), played an important role in the Sanation camp that ruled Poland from 1926. In 1931, he became the Minister of the Interior and as head of this ministry attached importance to increasing the state's security and establishing dialogue with national minorities, especially the Ukrainian population living in the Second Polish Republic. However, the politician failed to turn his reconciliation efforts into success, as he was killed by the Organisation of Ukrainian Nationalists, hostile to the Polish state (and Piłsudski's supporters).

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The most important research problems posed in the article are questions about the method of reconstructing the course of the assassination of the minister using reports prepared “on the spot” by press correspondents (including differences in this respect), the issue of the investigation into the perpetrators of the murder presented in the analyzed publications, and attempts to reconstruct the general commotion that the assassination caused in society, presented in journalistic texts. Their authors usually commented professionally on current politics and in their texts often allowed for comments with a strongly emotional message, which were to attract the reader's attention at all costs.

In connection with the above, the basic source material was selected titles of the daily press published in the interwar period. The press market of those years was characterized by wealth and considerable diversity, which is visible in this article. In addition to sensational magazines, resembling today's tabloids in terms of rhetoric (and usually trying to remain apolitical), publications from pro-government, left-wing, right-wing and centrist titles were used. In addition to the above categories, there are two Polish-language dailies aimed at the Jewish community, which were also no strangers to the political events in the country at the time. A total of 34 press titles were used in the study, which allows for a relatively high level of credibility of the presented analysis.

2. THE ASSASSINATION ATTEMPT ON MINISTER BRONISŁAW PIERACKI AND ITS CONSEQUENCES

Born in 1895, Bronisław Wilhelm Pieracki was involved in the activities for Poland's regaining independence since his school days. He had already been a member of paramilitary organizations under Józef Piłsudski. During World War I, he was a soldier in the 2nd Brigade of the Polish Legions, and after 1918 he joined the Polish Army. The “military” period in his life was remembered for good together with the May Coup. He was one of the most talented politicians of the Piłsudski camp gaining power in Poland. The culmination of Pieracki's life was entrusting him with the position of Minister of Internal Affairs in 1931, a position he held until his tragic death on 15 June 1934 (Gawryszczak, 2014).

Pieracki's activities as head of the ministry were characterized by characteristic determination. These two features are particularly visible in the importance that politics attaches to strengthening the role of law enforcement and certain special honours of public entities. The actions taken by the minister were aimed at searching for alternative solutions and establishing dialogue with numerous members of the organization, and especially with the largest of them, the Ukrainian minority (Suleja, 1998).

This attitude also earned Pieracki many enemies – he was thrown out not only by the opposition (led by all the national democracies), but also by Ukrainian groups from the Organization of Ukrainian Nationalists. It was its members who carried out a successful assassination attempt on Minister Pieracki, which was carried out after shots fired by Hryhoriy Matseyko (Gołota, 1995; Landau, 1981).

Due to the ambiguities accompanying the initial stages, until July 12, 1934, the known perpetrators of the crime were unknown (the Endecja were most often suspected of revealing it). The most significant in public awareness was a specific law made on June 18 in the detention camp in Bereza Kartuska, where active political opponents of the Sanators had struck in the years. The finalization of the entity included therein lasted from November 18, 1935, to January 13, 1936. The trial included the conviction of the leadership responsible for the Organisation of Ukrainian Nationalists (the direct perpetrator of the

crime managed to leave Poland at that time and never faced any consequences) (Brzoza, Sowa, 2006; Juryś, Szafar, 1971; Rakowski, 1989; Żeleński, 1995).

3. RECONSTRUCTION OF THE ATTACK IN THE PRESS

According to most press reports, on June 15, 1934, at about 3:40 p.m. (Gawryszczak, 2014), a car driven by an employee of the Ministry of Internal Affairs, Stanisław Wituski, with Bronisław Pieracki stopped near the Social Club in Warsaw on Foksal Street. At that time, the minister usually arrived at this address for a lunch break, which was quite confidential information. The politician calmly headed towards the building. Besides, he felt safe in Warsaw and usually avoided bodyguards (this also applied to his private life, such as Pieracki's regular presence at opera performances) (Jeziński, 1934; Rawicz, 1979; *Pościg...*, 1934).

According to reports from the scene, an unidentified young man standing at the entrance to the building was unsuccessfully struggling with a package. At the same time, he noticed that the minister had almost reached the vestibule and rang the electric bell to signal his arrival. It was then that the young man standing there approached the entrance and fired his revolver twice at Bronisław Pieracki, who was only 25 centimetres from the barrel. Both bullets hit the minister in the head – one pierced his hat and lodged in the back of his head, violating the cochlea of his right middle ear. The second was fired when the minister had managed to turn around and hit his brain. At the moment of the shots, the victim was particularly exposed to danger, because a platinum valve, a relic from the Great War, was placed near the back of his head. When Pieracki slumped to the stone floor by the corridor, the perpetrator fired a third time – but this time he missed, hitting the floor (*Co donosi...*, 1934; *Krwawy zamach...*, 1934; *Po zamachu...*, 1934; Szczepanek, Jakubowski 2019).

After firing the shots, the attacker began to calmly walk away from the scene of the crime, according to some accounts whistling casually as he did so. His very ordinary posture was noticed by an employee of the Social Club, Adam Dawda, and the driver of the minister's limousine. Interestingly, several people were on the terrace of the building during the crime, including Prime Minister Leon Koźłowski and a member of the Sejm of the 3rd term (who was also the editor-in-chief of "Gazeta Polska") Bogusław Miedziński. However, they did not hear the shots (similar to people walking along Foksal Street, as the walls separating the Club building muffled the sounds of the weapons) and reacted only after the fact. In connection with the above, it was a person employed at the premises and Pieracki's driver who was the first to call for the capture of the suspicious youth; interestingly, the driver also did not hear the shots, as he was trying to park his car at the time (Pajdała 2022; *Pierwsze głosy...*, 1934; *Skrytobójcze strzały*, 1934).

The first press reports about the attack contained a rumour that the perpetrator was first spotted by a boy walking down the street. He allegedly heard the sounds of weapons, which was impossible due to the buildings. However, as soon as the child noticed the man leaving the Club, he allegedly shouted "Catch the thief" or "Criminal!" (Baliszewski, 2006; *Wywiad z uczestnikiem...*, 1934). However, this was not the leading position among the reports in the press; this information was treated rather as an urban legend with a noble (and somewhat sensational) tinge.

A version that seems much closer to the truth is that the call from Dawda and Wituski was first answered by the diplomat Kazimierz Wywrocki, but the assassin hit him with the butt of his revolver. The pursuit was continued by a policeman, Władysław Obrębski, who had been notified by the wounded man, who tried to shoot the escapee twice without

success. The assassin defended himself from the officer, trying to shoot him several times while running. One of the bullets hit the officer in the hand and got stuck there at the same time. This sudden decision on the part of the perpetrator of the murder determined his successful escape (*Wstrętny...*, 1934; *Minister spraw wewnętrznych Pieracki zamordowany*, 1934).

4. SIMILARITIES AND DIFFERENCES IN REPORTING THE EVENTS OF JUNE 15

The above-mentioned and, as it turned out over the years, the correct version of events was almost universally reported in the press. An exception in this matter was the telegraphic report by the correspondent of the Jewish minority newspaper "Nowy Dziennik". According to him, the minister was shot while leaving the building after eating lunch. Interestingly, under this text there was a very different statement from the Polish Telegraphic Agency, on whose reports most of the press information about the attack was based (*Minister spraw wewnętrznych Pieracki padł ofiarą...*, 1934). Despite the false details, "Nowy Dziennik", like most daily newspapers, reported information close to the lone gunman theory.

The cited hypothesis was not considered to be the leading one in the reports present in the socialist "Robotnik" and two titles with a conservative orientation: "Czas" and "Dziennik Poznański". The aforementioned publications put forward the thesis about the participation of two more people armed with revolvers, who formed a kind of escort for the perpetrator both during the assassination and during the escape. According to the Krakow "Czas", the assassin's assistants were supposed to have dispersed after misleading the pursuers: one towards Nowy Świat, and the other towards the bank of the Vistula, where he was supposed to meet Pieracki's murderer. According to the author, this was evidence of the collegial and meticulously organized nature of the crime (*Minister spraw wewnętrznych Pieracki padł z ręki...*, 1934). Meanwhile, the PPS press organ already on June 16 familiarized its readers with the location of the alleged accomplices of the murderer. They were supposed to have hidden behind the trees surrounding the building of the Social Club and shot towards both sides of Pieracki's corps (Rawicz, 1979). "Polonia", associated with Christian democracy, openly considered the presence of two assassins to be a misunderstanding, explaining in its columns that the second shooter was most likely... a random passer-by who passed the escaping assassin (*Po zamachu...*, 1934).

The press also spun theories about how the attacker had escaped from Szczygia Street, which was close to Foksal; one option was to jump over the fence surrounding the tile factory. It was also suspected that the perpetrator had hidden in the gardens belonging to the monastery buildings located on the aforementioned street; nearby were properties belonging to Count Adam Zamoyski. Due to the presented uncertainties, almost the entire district of the city was put under police surveillance (*Minister spraw wewnętrznych Pieracki zamordowany*, 1934). The lack of specific findings was also a problem for journalists, which is why some newspapers (mainly in the provincial press) published a provisional map of Warsaw with the murderer's escape route recreated (*Po tragicznej śmierci...*, 1934; *Proces morderców...*, 1935).

5. PRESS REACTIONS IN THE FIRST DAYS AFTER THE MURDER

Most newspaper covers published in the first days after the attack consisted of obituaries covering them in their entirety. They were usually created by members of the editorial staff, although, for example, “Dobry Wieczór! Kurier Czerwony” used a publication prepared by the Ministry of the Interior (*Zamordowanie Ministra...*, 1934). Some newspapers published short biographies of the minister, but here, at the expense of original texts, they often used notes prepared by the Polish Telegraphic Agency. One of the main themes of posthumous biographical notes was Pieracki's predispositions and the trust that Józef Piłsudski placed in him.

Even in the face of tragedy, some press titles publishing a journalistic perspective on it discreetly smuggled in their political views. An example is a journalist from the daily “ABC”, associated with nationalist circles, who, trying to obtain more information about the attacker, first considered potential nationalities and then considered the issue of his possible political views, which only fueled possible reader speculations. The newspaper considered the above criteria to be the most crucial in determining the identity of the murderer. The pro-National Democrat “Gazeta Warszawska” was also more reserved. Due to the small amount of information about the attacker, it did not enter into judgments about him. Instead, it emphasized the planned nature of the murder based on the testimonies of witnesses, immediately correctly ruling out the killer's presumed insanity. The accusation it refuted was a bold thesis, which contributed to increasing the media coverage of the case (*Opinia...*, 1934; *Przy trumnie*, 1934).

The ambiguities regarding the causes of the attack resulting from the small number of clues encouraged the emergence of further speculations. Partly because of this inept situation, the pro-government “Gazeta Polska” called the entire crime nonsensical. Despite this, the daily also suspected a political motive for the attack. In addition, the newspaper appealed for a brutal trial not only of the attacker but also of the politicians he supported or had contacts with. At the same time, it unequivocally ruled out the attacker's own, grassroots initiative. They did not want the murder of Gabriel Narutowicz to repeat itself, when the entire political scene was bidding farewell to the head of state, along with politicians of the National Democrats who were fanning hostility towards the president. They demanded that the future trial demonstrate the power of justice based on the letter of the law at the expense of the desire for revenge, which was contrary to Christian morality. Because it was hostile to the biblical concept of overcoming evil with good, put forward by St. Paul (Jeziński, 1934; Rossoliński-Liebe, 2018; *Po zamachu...*, 1934; *Wobec zamordowania...*, 1934). In turn, the magazine “Nowiny”, addressed mainly to the military community, assumed that the perpetrator was connected to the political opposition, which had succumbed to the phenomenon of radicalization. Without waiting for the results of the investigation, the newspaper began to call for a broad punishment of representatives of anti-government forces (*Zbrodnia*, 1934).

The conservative-oriented Krakow “Czas” described the crime as a terrorist and called for the condemnation of manifestations of this type of behaviour, which was supposedly something alien throughout Polish history. In remembering the deceased minister, his responsible and flexible way of managing the country's internal affairs, far from a rigid love of force, was emphasized. Pieracki was given credit for his work with local governments and for taking care of relations with the episcopate while simultaneously strengthening his personal religiosity. At the same time, an appeal was made to implement three postulates: reforming the national security system, disbanding all political militias

(including the pro-Sanation Legion of Young People) and increasing the fight against the economic crisis, which was supposed to be the main cause of radical attitudes (*Minister spraw wewnętrznych Pieracki padł z ręki...*, 1934; *Po zbrodni*, 1934). The conclusions published in "Czas" were recognized by Henryk Ryszewski, the Warsaw correspondent of "Dziennik Bydgoski", who, by the way, presented them in the pages of this newspaper (Ryszewski, 1934).

The attitude that particularly caught the reader's attention towards the unclear causes of the attack and the personal details of the perpetrator was presented by the Bydgoszcz "Nowy Kurier". All theories present in the discourse appeared in the form of a list on its pages; According to them, the attack could have been carried out by Jews, Ukrainians, communists or National Democrats (with particular emphasis on the National Radical Camp). At the same time, the author of the text appeared as an uncompromising supporter of the political background of the murder (*Zbrodnia...*, 1934).

A particularly exalted (and aimed at reaching the masses) commentary was published by the pro-government and sensational daily "Dzień Dobry", which believed that the need for justice was supposed to flow and almost scream from the sight of the body of the dying minister lying in the vestibule of the Social Club. The columnist also boldly compared the perpetrator, still unknown to the public, to manure, and gangrene, and even compared him to a malignant tumor growing on the healthy tissue of the nation; such terms in the perception of some recipients could constitute crossing the line of decency (*Żelazem rozpalonem...*, 1934).

A much more balanced style was presented by the commentary published in the Jewish "Nasz Przegląd". It emphasized the inconsistency of the assassination not only with Judaic ethics but also with Christian values. This type of position was understandable and symbolically expressed solidarity with other denominations present in the lands of the Republic (Jeziński, 1934; *Potępienie...*, 1934).

A very interesting issue (and at the same time showing the wide resonance of the crime) was the raising of the issue of Pieracki's murder in the foreign press. Thus, German journalists, in addition to presenting the murdered man and expressing condolences, emphasized his great involvement in building a dialogue between the two countries. The murder of the minister became one of the main topics in the French, Romanian, Czechoslovakian and Portuguese press (Piotrowski, 2018). In addition to information about the assassination, Romanian journalists published a likeness of the victim and his biography. The merits of the deceased were also brought closer to readers by the British dailies "The Times" and "The Daily Telegraph" (the latter of which called Pieracki "fearless") (*Pod wrażeniem zbrodni*, 1934; *Wrażenia...*, 1934; *Poważna strata...*, 1934; *Mord...*, 1934).

6. PRESS COLUMNISTS ON THE ASSASSINATION

In the press, reflections on the attack were sometimes described as an act of a terrorist nature, and indifference or lack of mourning in response to the news were interpreted as a lack of patriotism (*Minister spraw wewnętrznych Pieracki padł z ręki...*, 1934). Such views were justified by declaring that the event attacked the inner sense of strength of society. Therefore, it was feared that the perpetrator of the crime could be a person of Polish nationality; such a scenario was supposed to prove the final failure of attempts to unite the nation. Echoes of such views were especially present in the pro-government press. In the columns of pro-Sanation titles, attempts were made to keep readers in a sense of hope that

the crime would not violate the fundamental values of the Sanation camp (*Cześć pamięci...*, 1934).

The similarities between Pieracki's activity and death and the Sanation politician Tadeusz Hołówko, murdered three years earlier in Truskawiec, were quickly noticed. Interestingly, for fear of a hate campaign, they did not want to draw readers' attention to the origins of the perpetrators of the events in Truskawiec, but they noted the lack of appropriate punishment: in the Hołówka case, only the perpetrators were punished, not the instigators of their actions, i.e. the OUN leadership (*Minister Bronisław Pieracki skrytobójczo...*, 1934; *Cześć pamięci...*, 1934). They also noticed the similarity of the assassination of Minister Pieracki to the assassination attempt on French President Paul Doumer on May 7, 1932. There, the perpetrator turned out to be Paul Gorguloff, of Russian origin.

Sometimes the memory of the deceased politician bordered on a hagiographic nature, which is especially visible in the article by Henryk Hescheles, editor-in-chief of the Jewish "Chwila". He emphasized the special qualities of the minister's physiognomy (a dignified figure, an intelligent gaze) and his character (tenacity, balance and diligence), especially useful during Pieracki's frequent discussions with the parliamentary opposition (Hescheles, 1934).

Other publicists emphasized that the late minister's decisive disposition was not combined with scepticism towards a milder course of politics – evidenced by his attempts at dialogue with minorities, especially the Ukrainians. The deceased's conduct was supposedly based on traits acquired during his military service and Christian values, which were in line with his religiosity (*Cześć pamięci...*, 1934). According to publicists, the tragically deceased politician was also supposed to have made significant contributions to improving the safety of citizens; his good relations with the State Police and the generous support he provided them with were emphasized, which paid off, among other things, when the murderers of Tadeusz Hołówko were caught. Sometimes, the press tried to argue that Pieracki was one of the best heads of the Ministry of Internal Affairs in the short history of the independent state. The positive effects of his actions were supposed to be visible in many areas of social life (*Mord polityczny*, 1934).

In turn, the columnist of the Vilnius "Słowo" Ksawery Pruszyński (who later took part in Pieracki's funeral ceremony as a representative of the newspaper) drew attention to the consistency in the deceased's decisions. He contrasted his determination and dynamism with the passivity and phlegmatic nature of the previous head of the Ministry of the Interior, Felicjan Sławoj-Składkowski. The journalist also appreciated Pieracki's activities in trying to increase the public's trust in state institutions. Pruszyński compared the attack on June 15 to the death of Hołówka and pointed out that the course of the crime on Foksal Street indicates its detailed planning. He also concluded that the attacker could have had some experience in this matter. This was supposedly the result of his contacts with the criminal underworld (Pruszyński, 1934a, nr 161; Pruszyński, 1934b, nr 162).

On June 19, the columnist Wojciech Stpiczyński, associated with the Sanation camp, published a text summarizing Pieracki's political activity in the pages of "Kurjer Poranny". In it, he drew attention to the fight against bureaucracy and the improvement of the ministry's activities by the minister. He also praised the introduction of the decree on isolation camps (*Polityczne konsekwencje...*, 1934; Habielski, 2013).

The Jewish "Nowy Dziennik" published quotes from two of the deceased's parliamentary speeches, delivered on January 16, 1933 and February 10, 1934. They condemned intolerance towards national and ethnic minorities. The politician Abraham

Yehoshua Thon, who remembered Pieracki in that magazine, treated the deceased with great respect. He noted his dedication to the homeland and his constant willingness to engage in dialogue. He also characterized the minister's policy - based on the leading role of the state, but in some matters close to classical liberalism. This was quite an interesting judgment, far removed from the right-wing tendencies often noted in the minister's worldview (*Z przemówień...*, 1934).

An exceptional way of commemorating the deceased politician in the press was to publish the memoirs of former legionnaire Stefan Benedykt, who fought with Pieracki on the front in the 17th June issue of "Gazeta Polska", in the text. The author presented a rarely-seen image of the future minister, who, while being a demanding and mature man, was also distinguished by his cheerfulness and considerable distance from himself. These features were not supposed to abandon him even when he was wounded during the fighting (Benedykt, 1934a, nr 167; Benedykt, 1934b, nr 163).

For the press titles reporting on the attack on Foksal Street, the small amount of evidence and the noticeable lack of clarity in the witnesses' accounts were a significant obstacle. The perpetrator of the attack was also not immediately known, as exemplified by the numerous theories about him – difficult to verify by investigators and even more so by journalists. In the case of journalistic texts written shortly after the crime, a noticeable tendency among their authors was to interject their political views into their thoughts. Such actions could often contribute to increasing the polarisation of society. Some publicists forgot that tragic events can unite people and temporarily calm down previously existing disagreements. Meanwhile, a reader reading the memoirs could easily conclude that the murdered person could not have had any enemies and that the murder itself was an illogical act. The above line of thought was reinforced to some extent by the aforementioned ambiguity of the account of the assassination, which created assumptions that had a strong impact on society.

7. CONCLUSIONS

The course of the murder of the Minister of Internal Affairs, Bronisław Pieracki, can be largely presented in historiography thanks to the many accounts from the daily press of the time. Based on the conducted research, it can be seen that most newspapers (this applies to both the press published in Warsaw and provincial newspapers, for which the events in the capital were not the most important) accepted credible one narrative about the method of committing the crime. Minor differences mainly concerned the presence of potential accomplices of the murderer and the places in Warsaw where the assassin was supposed to have taken refuge after his successful escape.

The atmosphere of ambiguity and the questions and inquiries that appeared en masse were fueled by hypotheses appearing in the press regarding the identity of the assassin and, above all, the circle from which he was supposed to have come. Due to the controversies at the time regarding the activities of the National Radical Camp, a lot of suspicions began to fall on the entire circle of national democracy. At the same time, this scenario out of the others considered (internal settling of accounts in the Sanation camp, the actions of an unrelated madman, the influence of the "traditional scapegoats" – communists and Jews) seemed the most credible and justified. It gradually lost its significance due to the initial findings of the investigators, for whom the evidence gathered began to provide increasingly irrefutable conclusions leading to finding responsibility for the attack among members of the Organization of Ukrainian Nationalists.

An indispensable element of examining the presence of all kinds of events in the press is – in addition to the reports prepared – commentaries by publicists. Also in the case of the murder of Minister Pieracki, their advantage is the possibility of looking at the problem under consideration from a different, broader perspective and the chance for the author to demonstrate his erudition and brilliance. This time, the message flowing from the texts examined can be described as, on the one hand, praising the deceased, and on the other, warning and full of anxiety. The moods contained in the texts concerning the attack successfully reflected the fear and shock prevailing among the general public. Therefore, people were concerned not so much about the effects of the murder, but primarily about the possible deterioration of interpersonal relations manifested by increased social polarization and the strengthening of radical tendencies, which was visible on the Polish political scene and beyond since the early 1930s.

The author has read and agreed to the published version of the manuscript.

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INSTITUTIONAL AND LEGAL DIMENSION OF INFORMATION SECURITY IN POLAND IN THE CONTEXT OF EUROPEAN UNION LAW REGULATIONS – SELECTED ISSUES IN THE AREA OF CYBERSECURITY

This paper analyzes information security undertaken within the framework of the cybersecurity strategy in the institutional and legal dimension, both at the level of the European Union and at the level of the internal law of Poland, as one of the Member States. The main objective of the paper is to analyze the characteristics of legal institutions in Poland that deal with the policy of protecting cyberspace. The article analyzes the most important legal solutions that have occurred in Poland as a result of the introduction of new provisions into the legal system resulting from the transposition of the NIS Directive. Their role and significance in the context of the applicable legal provisions and institutions and bodies responsible for conducting cybersecurity policy in Poland are explained. In addition, the provisions of the newly adopted NIS2 Directive are analyzed, and its role in the process of protecting information security in cyberspace is determined. The paper ends with a conclusion that recommends the introduction of normative changes.

Keywords: information security, cybersecurity, European Union, NIS Directive, NIS2 Directive, security protection bodies.

1. INTRODUCTION

Modern information and communication technologies are increasingly becoming the main communication tool, both in private and public law relationships. The development of information technology and the digitalization of social and economic life draw more attention to “information security”, commonly understood as a state in which information is properly protected against threats, while ensuring its confidentiality and availability, and to “cybersecurity”, usually understood as the protection of teleinformatic systems, computer networks and digitally processed information against threats from cyberspace.

This means that in the era of digital transformation, states face new challenges related to the protection of information processed in cyberspace. Information, being undoubtedly

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a strategic resource, is also becoming the target of various forms of aggression – from cyberattacks, for example, resulting in the loss or unlawful use of data to disinformation and manipulation of public opinion. Moreover, the constantly advancing development of technology has caused information security to become an integral part of both national and international security, including the security of the European Union. In connection with the above, the protection of information security has begun to mean the need for a comprehensive approach to the problem in the institutional and legal dimension, which additionally includes both legislative mechanisms and institutions responsible for implementing digital security policies.

It should be emphasized that security management, including information security, is a continuous and complex process enabling optimally effective implementation of tasks by specialized entities appointed for this purpose. This process takes place in a constantly changing environment, with the occurrence of newer and not yet fully recognized forms of threats, as well as rapid technological progress, which constitutes another challenge for security institutions. The fight for security in a holistic approach should therefore include both the organizational, technical and legal aspects (Jarmoszko, 2014), while the importance of information security itself and generally understood cybersecurity is a priority for many countries in maintaining the proper level of national security, and more broadly, security in the entire European Union (Woszek, 2022).

2. EUROPEAN UNION INFORMATION SECURITY – LEGAL FRAMEWORK

The countries of Western Europe, when starting to build a community, initiated the construction of a common economic market within which there was to be a free flow of goods, services, people, capital and payments. However, time has shown that such a defined goal cannot be achieved solely by using economic means without interfering in the sphere of rights and freedoms of European citizens. The tendency towards economic and social integration of the European Union countries, and the directly related globalization of information (including personal data), exchange of information between Member States, high speed of flow of this information and its practically universal availability, revealed new problems in the field of its protection, which in turn led to a discussion on the need to introduce appropriate legal regulations and reconcile the right to privacy with the constantly developing internal market of the European Union (Fleszer, Rogacka-Lukasik, 2019).

One of the first significant normative acts aimed at protecting information security and, above all, ensuring the security of personal data was the international Convention No. 108 of the Council of Europe of 28 January 1981 for the protection of individuals with regard to automatic processing of personal data. This convention, ratified by some countries of the community and later the European Union (including France, Spain and Sweden, Poland (in 2002)), did not ensure the level of information security desired within the European Union internal market. Moreover, the internal legal regulations of individual member states still showed too deep a lack of normative uniformity, which was very harmful for the level of information security. In order to unify the applied internal legal regulations, Directive 95/46/EC was introduced, which aimed to introduce coherent principles of protection of fundamental rights and freedoms of EU citizens. In particular, this directive defined and specified the right of natural persons to privacy in the process of processing their personal data and also aimed to facilitate the free flow of data within the territory of the European Union (Fleszer, 2008). Other regulations, which supplemented the above, include, among

others, Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce in the internal market (so-called e-commerce directive), Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications) and amending Directive 2006/24/EC of the European Parliament and of the Council of 15 March 2006 on the retention of data generated or processed in connection with the provision of publicly available electronic communications services or of public communications networks and repealing Directive 95/46/EC, Regulation of 27 April 2016 of the European Parliament and of the Council (EU) being the so-called general data protection regulation (GDPR), the purpose of which was to ensure in all Member States an equal level of protection of the rights and freedoms of natural persons with regard to the processing of their data, which was a key element contributing to the creation of a single digital market in the European Union.

At that time, in response to the growing threat of cybercrime, the European Union intensified its activities related to the protection of EU citizens who used online services, and therefore, following the model of the treaty freedoms, the *Digital Single Market Strategy* was created in 2015, whose basic objectives included, among others, better access for European consumers and entrepreneurs to “digital goods”, creating appropriate conditions and equal opportunities for the development of digital networks and innovative services, and maximizing the growth potential of the digital economy (Hydzik, 2019). The basis for the cybersecurity of this strategy was the implementation of a package of legal acts, of which, in addition to the aforementioned General Data Protection Regulation (GDPR), the key one was also Directive (EU) 2016/1148 of the European Parliament and of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union (hereinafter referred to as the NIS – *Network Information Security*), which was addressed primarily to two groups of entities, namely digital service providers and operators of essential services.

The NIS Directive established the obligation for the Member States of the European Union to adopt a national strategy for the security of network and information systems and also established a cooperation group to strengthen it and to facilitate the exchange of information between Member States, in addition it established a network of computer security incident response teams (the so-called CSIRT *Computer Security Incident Response Team*) and established obligations for Member States to designate competent national authorities, single points of contact and CSIRTs with tasks related to the security of networks and information systems.

It should be emphasized that the NIS Directive was the first European Union act in the field of cybersecurity to introduce cross-sectoral regulations that focused on three issues, namely:

- institutions that should be established in all Member States,
- cooperation at the European Union level,
- mutual obligations in the field of network and information security.

In the scope of the first pillar, each Member State was obliged to establish competent authorities for network and information security, responsible for monitoring the application of its provisions in the sectors covered by its scope. Due to differences in national governance structures, Member States could designate more than one competent national authority responsible for performing tasks related to cybersecurity of essential service operators and digital service providers.

The second pillar of the directive covered cooperation between Member States. The NIS Directive introduced cooperation mechanisms at two levels, i.e. technical and political-strategic. Technical cooperation was to be ensured by the European CISRT network and the creation of mechanisms for the exchange of information on cross-border incidents between CSIRTs designated for essential service operators and digital service providers. Cooperation at the political and strategic level was to be implemented by establishing a Cooperation Group, which was to deal with the development of common strategic concepts and the adoption of, among other things, annual reports from the competent authorities.

The third pillar of the directive included obligations in the area of network and information security. Operators of essential services were obliged to assess the cybersecurity threats which they were exposed to, and to adopt appropriate and proportionate measures aimed at ensuring network and information security. Since, in the opinion of the European Union, it was this third pillar that required deeper cooperation between states and the introduction of further changes in this area, another directive was adopted that went a step further, i.e. another NIS directive. In 2022, Directive (EU) 2022/2555 of the European Parliament and of the Council of 14 December 2022 concerning measures for a high common level of cybersecurity across the Union, amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972 and repealing Directive (EU) 2016/114823 (hereinafter referred to as the NIS2 Directive) was adopted.

One should emphasize that the NIS Directive was the first comprehensive legal act of the European Union aimed at increasing the cybersecurity of networks and information systems in order to protect services that are essential for the economy and society of the community. In turn, the NIS2 Directive raises the common level of ambition of the European Union in the field of cybersecurity through a broader scope, clearer rules for the protection of information security and stronger supervision tools. The new Directive requires Member States to increase their cybersecurity capabilities, while introducing risk management measures and reporting requirements for entities from a wider number of sectors and establishing rules for cooperation, exchange of information, supervision and enforcement of cybersecurity measures. The NIS2 Directive is, among other things, a response to the fact that cybersecurity requirements imposed (by the previous NIS Directive) on entities providing services or conducting economically essential activities differ significantly depending on the Member State. They differ, among other things, in their nature, level of detail and supervision methods. The aim of this new Directive is therefore to eliminate such divergences between Member States, in particular by laying down minimum rules for the operation of the coordinated regulatory framework and establishing mechanisms for effective cooperation between the responsible authorities in the different Member States.

The NIS Directive created a national framework for the security of network and information systems by adopting national strategies for the security of network and information systems, and defining national capabilities, as well as implementing regulatory measures covering the necessary infrastructure and entities identified by each Member State. The NIS Directive² required Member States to adopt national cybersecurity strategies which are to include policies on supply chain security, vulnerability management and cybersecurity education and awareness. As part of the adopted strategies, each Member State should ensure that a policy framework enables increased coordination within that Member State between its competent authorities in the context of exchanging information on risks, cyber threats and incidents, as well as risks, cyber threats and incidents outside

cyberspace, and performing supervisory tasks. As a result of the changes introduced, competent authorities should cooperate and exchange information without undue delay, in particular with regard to the identification of critical entities, risks, threats and incidents in cyberspace and risks, threats and incidents outside cyberspace affecting critical entities, including cybersecurity measures and physical measures taken by critical entities, as well as the results of supervisory activities carried out in relation to such entities (point 30 of the NIS2 Directive).

The NIS2 Directive extends cybersecurity obligations to new sectors, imposing specific requirements on entities that play a strategic role in the functioning of the internal market of the European Union. In addition to the sectors already covered by the previous NIS Directive, such as energy, transport, healthcare, finance, water management and digital infrastructure, the provisions of the new Directive will apply to providers of public electronic communications services, a wider range of digital services, such as social media platforms, activities related to waste and sewage management, manufacturing of critical products, postal and courier services, public administration, both at central and regional level and even to activities involving space.

The requirements contained in the NIS2 Directive apply in particular to key and important entities that qualify as medium-sized enterprises, or that exceed the thresholds for medium-sized enterprises (employing at least 50 people and with an annual turnover or annual balance sheet total of at least EUR 10 million). The NIS2 Directive considers entities from the energy, transport, banking, public administration, healthcare, water supply, space, digital infrastructure or financial market infrastructure sectors to be key entities. In turn, the NIS2 Directive considers entities from the postal and courier services, digital services, scientific research, waste management, production, processing and distribution of chemicals and food as important entities (Article 3, paragraphs 1 and 2 of the NIS2 Directive). The groups of key entities and important entities also differ in the level of supervision, the way in which cybersecurity requirements are enforced and the level of penalties applied to them. For example, a key entity for violating the requirements of the NIS2 Directive may be subject to a fine of up to EUR 10 million. The maximum fine that can be imposed on an important entity is EUR 7 million (Article 34(4) and (5) of the NIS2 Directive).

Entities covered by the provisions of the NIS2 directive have been required to implement a number of measures and procedures related to cybersecurity risk management. One of them is the reporting of incidents that may have a potential impact on the provision of services. These incidents are to be reported to the Computer Security Incident Response Team - CSIRT or their competent authority. In addition, these entities have been required to implement appropriate and proportionate technical, operational and organizational measures to manage the risk to the security of networks and information systems that are used to conduct business or provide services and to prevent the impact of incidents on the recipients of these services. These activities include, but are not limited to, elements such as: risk analysis and IT security policies, incident handling, business continuity, e.g. backup management and disaster recovery and crisis management, supply chain security, including security aspects of the relationship between each entity and its direct suppliers or service providers, security in the acquisition, development and maintenance of networks and IT systems, including the handling and disclosure of vulnerabilities, policies and procedures for assessing the effectiveness of cybersecurity risk management measures, basic cyber hygiene practices and cybersecurity training, policies and procedures for the use of cryptography and, where appropriate, encryption, human resources security, access control

policies and asset management, where appropriate, the use of multi-factor or continuous authentication, secured voice, text and video connections and secured intra-entity communication systems in emergency situations (Article 21(2) of the NIS2 Directive). The Directive also imposes on entities covered by its provisions the obligation to notify recipients of their services of serious incidents that may have an adverse effect on the provision of those services and of the countermeasures they can take to reduce the risk resulting from a serious cyber threat. In addition, the Directive obliges Member States to impose on management bodies of key and important entities the obligation to undergo regular training in order to acquire knowledge and skills allowing to recognize risks and assess risk management practices in cybersecurity and their impact on the services provided and to also offer similar training to their employees (Article 20(2) of the NIS2 Directive). The NIS2 Directive also obliges Member States to introduce regulations resulting in the requirement to use own or acquired ITC products, services and processes, certified in accordance with the European certification program and the obligation to conduct regular security audits, carried out by qualified auditors, in order to assess compliance with applicable standards and regulations in the field of cybersecurity (Article 32 of the NIS2 Directive).

3. POLISH INFORMATION SECURITY SYSTEM – LEGAL AND INSTITUTIONAL FRAMEWORK

In Poland, despite attempts to consolidate the normative issues of information security and, consequently, securing IT systems, these issues are still partly regulated sectorally or fragmentarily, in accordance with the scope of activities of entities responsible for protecting information security and the individual tasks assigned to individual entities. There are still regulations regarding ensuring an information security management system in public entities (Regulation of the Council of Ministers of 21 May 2024 on the National Interoperability Framework, minimum requirements for public registers and the exchange of information in electronic form and minimum requirements for teleinformatic systems), separate regulations on combating cybercrime, regarding the prevention of terrorist threats (Act of 10 June 2016 on anti-terrorist activities), or regulations covering the problem of crisis management, among others in cyberspace (Act of 26 April 2007 on crisis management). Certain changes in this area were introduced by the need to implement the NIS Directive, which resulted in a normative clarification of the concept of cybersecurity and a certain degree of harmonisation of the cyberspace protection system in the Member States.

In Poland, the Act of 5 July 2018 on the National Cybersecurity System (hereinafter referred to as the NCS Act) was intended to implement the provisions of the NIS Directive into the internal normative system and, consequently, comprehensively regulate the national cybersecurity system. The basic assumption of the NCS Act was the cooperation of entities that, as part of their activities, deal with responding to so-called Computer Security Incidents. In light of the Act, these entities, together with the authorities competent for cybersecurity, the minister competent for computerization and the Cybersecurity Commissioner, are to ensure a coherent and complete risk management system at the national level, while carrying out tasks to counteract cybersecurity threats of a cross-sectoral and cross-border nature, as well as ensuring coordination of the handling of reported incidents (Article 3 of the NCS Act).

The National Cybersecurity System Act defines cybersecurity as the resistance of information systems to activities that violate the confidentiality, integrity, availability and authenticity of processed data or related services offered by these systems (Article 2, point 4 of the National Cybersecurity System Act), and at the same time indicates the entities co-creating the National Cybersecurity System. This system is co-created by, among others: key service operators, digital service providers, CSIRT MON (i.e. the Computer Security Incident Response Team operating at the national level, led by the Minister of National Defence), CSIRT NASK (i.e. the Computer Security Incident Response Team operating at the national level, led by the Scientific and Academic Computer Network - National Research Institute), CSIRT GOV (i.e. the Computer Security Incident Response Team operating at the national level, led by the Head of the Internal Security Agency), sectoral cybersecurity teams, selected public finance sector entities, research institutes, the National Bank of Poland, the National Economy Bank, the Office of Technical Inspection, the Polish Air Navigation Agency, the Polish Accreditation Centre, the National Fund for Environmental Protection and Water Management and provincial environmental protection and water management funds, selected commercial law companies performing public utility tasks, entities providing cybersecurity services, authorities competent for cybersecurity, the Government Plenipotentiary for Cybersecurity and the College for Cybersecurity. Cybersecurity (Article 4 of the NCS Act). Among the numerous entities indicated by the NCS Act involved in the protection of cybersecurity, in addition to the minister responsible for computerization, there were also the Police, Military Police, Border Guard, Central Anticorruption Bureau, Internal Security Agency and Intelligence Agency, Military Counterintelligence Service and Military Intelligence Service, courts, prosecutor's office, National Revenue Administration bodies, director of the Government Security Center and the State Protection Service (Article 7 of the NCS Act)

When discussing the institutional area of information security of the Republic of Poland, it is impossible to ignore the role of the Polish Armed Forces in protecting this security also in cyberspace. Already in the Constitution of the Republic of Poland of 2 April 1997, the legislator imposed special obligations on the Armed Forces, related to the implementation of state tasks specified in Art. 5 and 26 of the Constitution, i.e. protection of the independence of the state, the indivisibility of its territory and ensuring the security and inviolability of its borders. In turn, the Cybersecurity Strategy of the Republic of Poland for 2019-2024 states that "the Armed Forces of the Republic of Poland, as a basic element of the state's defence system, should engage in operations in cyberspace at the same level as in the air, on land and at sea, both in peace, war and in a crisis situation". In turn, in Art. 15 sec. 4 point 2 of the Act of 11 March 2022 on the Defence of the Homeland, it was indicated, among other things, that the Cyberspace Defence Forces, as a specialist component of the Armed Forces, are competent to carry out the full spectrum of activities in cyberspace, in particular in the scope of proactive protection and active defence of cyberspace elements and resources that are key from the point of view of the Armed Forces.

4. CONCLUSIONS

Providing information security is a challenge for all entities that create the national cybersecurity system, i.e. economic entities providing services using ICT systems, cyberspace users, public authorities, as well as specialized entities dealing with ICT security in the operational sphere. This is all the more important because Poland is closely linked to other countries through international cooperation within organizations such as the

European Union, NATO and the United Nations. This cooperation plays an important role in combating the growing number of incidents caused by illegal activities in cyberspace leading to both material and image losses. In Poland, the national cybersecurity system is created by many entities, primarily key service operators, digital service providers and public entities, which have been imposed obligations related to ensuring information security, as well as handling incidents. Key service operators have been divided according to sectors and subsectors indicated in Annex 1 to the KSC Act. For each sector, a competent authority for cybersecurity has been established, which is responsible for identifying and appointing key service operators and supervising and controlling compliance with the provisions of the Act in a given sector. Currently, however, as noted in the justification for the Draft Act amending the Act on the National Cybersecurity System and certain other acts of 24 April 2024, neither telecommunications undertakings nor trust service providers are entities of the national cybersecurity system.

The significant changes brought by the NIS2 directive are still ahead of us. According to current estimates, NIS2 should cover as many as several thousand entities in Poland (18 sectors). The scale of implementation will, therefore, be significant. The new provisions resulting from the transposition of the directive should apply in all European Union Member States from 18 October 2024. Unfortunately, in Poland, at the time of submitting this paper, the draft amendment to the Act on the National Cybersecurity System and certain other acts of 24 April 2024 has not even been submitted to the Sejm. The further, anticipated legislative process will undoubtedly be time-consuming, primarily due to the fact that NIS2 significantly expands the number of sectors covered by cybersecurity requirements. Moreover, the costs of implementing the new provisions for entities not previously covered by the NIS directive will be much higher than for those entities that had time to implement the previously applicable requirements.

Regardless of the final date for introducing the required regulations, strengthening information security and meeting the cybersecurity requirements set by European Union regulations will require action in several key areas, including increasing the level of institutional coordination and clearly defining the roles and competences between entities such as The Computer Security Incident Response Team, The Ministry of National Defence, The Internal Security Agency, The Nationwide Education Network, and new units provided for by the introduced regulations. In addition, awareness of the need for constant stimulation of the development of competences and human resources is becoming important, because effective information protection requires qualified specialists who smoothly perform their tasks in the sphere of cyberspace.

In addition, broad sector consultations also seem necessary to rationalize the changes being introduced. Security risks differ dramatically depending on whether we are talking about the energy, financial, or manufacturing sectors. The legislator should definitely take these differences into account in the legislative process. Transparent legislation and dialogue with the private sector will undoubtedly ensure the stability and predictability of regulations, which in turn will be the foundation of mutual trust and cooperation and will provide an opportunity to create national regulations that will actually raise the level of cybersecurity, without creating requirements that some entities will not be able to meet. However, we will still have to wait for the final shape and, above all, the assessment of the effectiveness of the emerging regulations.

The author has read and agreed to the published version of the manuscript.

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HIDDEN MECHANISMS OF ATTRIBUTION ERROR IN CONFLICT MANAGEMENT

The attribution error, which consists of incorrectly attributing the causes of other people's behavior, plays an important role in the conflict management process. The article analyzes the hidden mechanisms of this error, which can affect the behavior of employees. The result of these mechanisms is often an escalation of tensions and difficult conflict resolution, which negatively affects the effectiveness of the organization. The article identifies the main forms of attribution error in conflict management and analyzes their impact on decision-making processes and interpersonal relationships in teams. Based on the literature review, recommendations for managers and leaders for recognizing and minimizing the impact of these mechanisms in practice are also presented. The ultimate goal of the study is to understand how conscious management of attribution errors can contribute to more effective conflict resolution and building better collaboration in organizations.

Keywords: conflict management, attribution error, human resource management, communication and argumentation, behavioral economics.

1. INTRODUCTION

Conflict management is a key aspect of building good relationships within teams, as well as strengthening the effectiveness of the entire organization. One of the challenges that accompany the process of conflict resolution is the incorrect attribution of the causes of behavior and situations they so-called attribution error. This mechanism leads to inadequate assessments of other people's intentions and actions, which can escalate tensions and make dispute resolution more difficult. The error of attribution, especially in the context of conflict management, manifests itself in two main forms: excessive attribution of internal personality traits to others (internal attribution) and ignoring external factors that can have a key impact on employee behavior (external attribution).

These hidden perceptual mechanisms often lead to an unconscious exacerbation of conflict situations, which poses a challenge for both leaders and HR teams. Psychologists' research shows that people overly attribute the behavior of others to their character traits. If someone saw a man who, for example, gave someone homeless man money, they would

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immediately attribute him the quality of a sincere and empathetic person. On the other hand, people who are responsible for their own behavior focus on the analysis of a specific situation rather than their character trait (Kennedy, 2010) This is extremely important from the perspective of management and the argumentation itself in the business environment, so an additional goal of the article is to show that the executives, who, that differently analyze their own behavior, are subjected to errors of attribution in communication and argumentation with their team. The aim of this article is to analyze the hidden mechanisms of attribution error in conflict management, their impact on the effectiveness of the dispute resolution process and to provide practical recommendations for managers in terms of minimizing these errors. The article will also discuss the long-term consequences of ignoring these mechanisms, as well as tools supporting more effective conflict management in organizations.

2. THEORETICAL BASIS OF ATTRIBUTION ERROR AND ITS IMPACT ON CONFLICT PERCEPTION

The attribution error was first identified in social psychology as the tendency of people to explain the behavior of others in an overly simplistic way, which often leads to erroneous conclusions. The most common type of attribution error is the so-called fundamental attribution error, which consists in the tendency to attribute the causes of self-successes to internal actions (personal traits), while failures are attributed to external factors (Lee, 1977). These differences are particularly important in conflict situations, when, under the influence of high emotions, employees, instead of thinking about the situation, rashly assess the behavior of others as deliberately directed against them. Another type of attribution error is the situational attribution error, which involves the downplay of the other party's personality traits in favor of situational traits (Kelley, 1973). Both types of attribution errors can affect the way people perceive conflicts in an organization.

Conflict in organizations is a multidimensional phenomenon and can result from a variety of reasons - from differences in values and goals to contradictions in the interests of individuals or groups (Rahim, 2003). In the context of the error of attribution, interpreting the causes of conflicts becomes more subjective and emotionally. People involved in the conflict tend to assign negative motives to the other party, regardless of the actual intentions. Such communication generates a lot of misunderstandings between employees and reinforces negative emotions, which effectively hinders the implementation of daily tasks. The tendency to overgeneralize and focus on internal factors in the other person, while omitting situational circumstances, is the most common reason for attribution errors. An example of a hypothetical situation is shown in the figure below.

The figure above shows a situation in which employee A has a conflict with employee B. There is a high probability that employee A will attribute behavior to employee B as a result of his negative personality traits (malice, stubbornness, cold unpleasant handling of people) instead of taking into account external factors, such as time pressure or private troubles (maybe financial problems with which he is bothering himself). Sometimes someone's unpleasant behavior can result from really small reasons, such as rain on the way to work. In this way, the error of attribution can lead to an escalation of the conflict by deepening misunderstandings and strengthening negative emotions.

In the context of conflict management, the error of attribution is identified as one of the key factors that can hinder effective dispute resolution. Interpreting the actions of others as knowingly harmful can lead to the polarization of positions and hinder dialogue (Yoqubov,

Muminowa, 2002). In this view, it is important that managers and organizational leaders are aware of this trend and apply strategies that reduce the impact of attribution error on conflict management. An effective approach may be to promote an approach based on facts and data, rather than subjective personal assessments. In addition, the ability to actively listen and consider alternative interpretations of events helps reduce the negative effects of attribution and increases the chances of a constructive solution to the conflict.

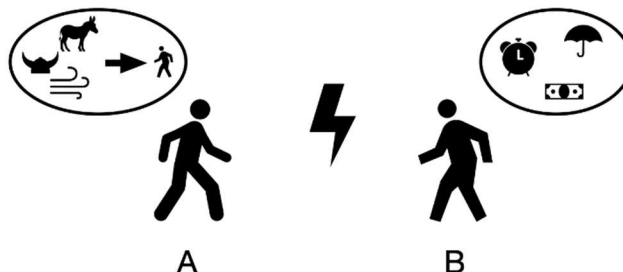


Figure 1. Hypothetical attribution errors situation

Source: own elaboration based on conducted research.

The attribution error is an important element in the process of perceiving conflicts in organizations. Its impact on the escalation of conflicts is clear, which means that managers must be aware of this mechanism and implement appropriate management strategies that will minimize its effects. Understanding the theoretical basis of an attribution error and its practical consequences can significantly contribute to more effective conflict resolution in organizations.

3. PSYCHOLOGICAL AND BEHAVIORAL ASPECTS OF CONFLICT MANAGEMENT

Conflict management is a key issue in the field of management, especially in terms of modern, complex organizations, which we define as a series of activities aimed at minimizing the negative effects of conflicts to ensure the smooth functioning of the organization and strengthen its strengths (Ciekanowski et al., 2019). The psychological and behavioral aspects of conflict play a significant role in how managers and teams deal with interpersonal and systemic issues. One of the most important psychological mechanisms that affect conflict management is the phenomenon of attribution error, which can lead to an escalation of conflicts and wrong decisions. This will present how attribution errors affect the perception of conflict and its management, as well as how to avoid these errors in order to minimize their negative effects.

The psychological mechanisms of attribution error can cause managers to treat different points of view as a threat rather than an opportunity to resolve the conflict. As a result, conflict management becomes more defensive, and decisions are made based on emotions, not actual data or rational arguments. This psychological aspect manifests itself in a phenomenon known as the effect of a self-fulfilling prophecy, which denotes a sequence of events beginning with the experience of a conflict situation whose experience defines the perception and approach to conflict at a later time (Trusz, 2018). According to the above definition, if the supervisor or manager has experienced unpleasantness related to a conflict

situation and, in addition, such a situation ended for him in an unpleasant and unfair way, such experience will determine his way of perceiving conflicts. With such an experience, his behavior in the face of a hypothetical conflict will be formed, as well as his reaction to a conflict that in reality does not have to run like the previous one. The very attitude towards conflict can, however, result in the fact that its effects will be as unpleasant as the previous one, which will only confirm this person in his approach to conflicts. This phenomenon often occurs in organizations where the overs foresee unfair actions of employees by starting to manage them in a more controlling way, which in turn reduces employee motivation and leads to confirmation of the original, erroneous attribution. The reproduction of the above scheme of self-fulfilling prophecy leads to an imbalance of the processes taking place in the organization, which consists of the behavioral aspect of conflict management.

Behavioral mechanisms of attribution error boil down to the perception of an organization as a single dynamic system that works with each other and the external environment. These mechanisms assume that it is not possible to maintain a state of equilibrium because conflict is a constant phenomenon that occurs in every organization and must simply be managed (Roszkowska, 2004). Another important behavioral mechanism is the tendency to self-reinforce. In this case, individuals tend to attribute successes to their skills and efforts, and failures to external factors. In an organizational context, this can lead to low self-esteem of employees who are unfairly blamed for failures, and to too high self-confidence among those who cannot properly assess their contribution to the team's success (Martinko, 2010). The behavioral mechanism can complement itself along with the psychological mechanism, reinforcing attribution errors and their harmful impact on the organization. In such a situation, the role of managing attribution errors in conflict increases significantly to prevent the negative effects of conflicts.

4. CONFLICT ATTRIBUTION ERROR MANAGEMENT

Managing attribution errors requires the introduction of strategies that minimize their impact on organizational conflicts. One of the most important tools is the development of attribution awareness among managers and teams. The ability to recognize misattributions, and awareness of their negative effects, can significantly improve the effectiveness of conflict management. Another strategy is to promote a culture of open communication, which allows intentions and motivations to be explained in a transparent way before the conflict escalates. Regular training on communication skills, mediation and diversity management can help teams understand each other better and avoid the pitfalls of attribution errors. An effective strategy for managing attribution errors is to promote "situational attribution". It consists in directing the attention of the participants in the conflict to external factors that may have influenced the behavior of the other party (Mazur, 2018). Instead of automatically assigning an opponent's actions to his character ("he is irresponsible"), people are trained to consider context ("maybe he had limited resources or time pressure"). With this process, people involved in the conflict become more open to alternative explanations, which reduces the tendency to attribute negative intentions to the other party. This strategy not only reduces tension, but also promotes a more rational approach to problems.

Another important strategy is to correct attribution biases through cognitive interventions. People involved in conflict can be educated about the prevalence of attribution errors, which increases their awareness of these phenomena and enables them

to more consciously manage their own reactions (Brycz, 1998). Training programs, which include techniques for recognizing and reducing cognitive errors, can significantly improve the quality of interaction between conflicting parties. Awareness of the tendency to attribute negative intentions or traits to other people too quickly leads to more balanced and less impulsive reactions. Mediation can also be an effective tool in managing attribution errors. Mediators, as third parties, are able to look at the conflict objectively and help the parties understand the extent to which their attributions can be wrong (Girnyk, 2018). Neutral intervention allows participants to look at the situation from a broader perspective, which promotes a reduction in prejudice and more constructive dialogue. The mediator can point out other possible causes of behavior and lead the discussion towards the search for common interests, instead of focusing on personal assessments.

It is also worth noting the role of organizational culture in conflict management. Open communication and an attitude towards cooperation support the clarification of misunderstandings that can cause a dispute and turn into conflict (Srokowski, 2011). Appropriate organizational culture sets the rules of behavior not only for managers but also for substantive employees, thanks to which the strength of individual employees in explaining inappropriate behavior in their feelings is greater. In addition, organizational culture can relate to standards in the use of technology in modern conflict management. The use of tools such as data analysis and artificial intelligence can help identify faulty attribution patterns and provide managers with objective information about the factors leading to conflict. Decision support systems that rely on analytical data can provide unbiased evidence, thus minimizing the impact of subjective cognitive errors.

In conclusion, managing attribution errors in a conflict requires the use of appropriate cognitive and interpersonal strategies. Promoting situational attribution, education on attribution bias, mediation and empathy are key tools that can help mitigate conflicts and improve communication between parties.

5. THE IMPACT OF HIDDEN ATTRIBUTION ERRORS ON DECISION- MAKING PROCESSES AND INTERPERSONAL RELATIONSHIPS IN EMPLOYEE TEAMS

Hidden attribution errors result from natural cognitive mechanisms that allow information to be processed quickly. In employee teams, this can lead to a false belief that the negative behavior of colleagues is the result of their laziness, lack of competence or bad intentions, instead of seeing the influence of external factors, such as overloading with duties or unclear expectations of superiors. For example, if an employee does not provide a report on time, co-workers may attribute this to their irresponsibility, ignoring the fact that the reason may have been on the side of too many tasks assigned by management. In the context of decision-making processes, attribution errors can lead to irrational decisions. When managers or team members perceive certain behaviors as a result of personal characteristics such as loud behavior and frequent gestures, they may suggest that someone is very confident and can be entrusted with more responsible tasks (Fiske, 1991). This leads to an incorrect assessment of the potential of employees and can lead to unjustified promotions or rewards. Such behavior has two negative faces: the first leads to overestimating the value of the employee on the basis of one positive behavior, and the second to excessive underestimation of his competence due to one negative situation.

In interpersonal relationships, hidden attribution errors can lead to deepening conflicts and violating trust in the team. When employees regularly attribute successes (internal attribution) to themselves and blame others for failures (external attribution), tensions and even open conflicts may arise (Eberly et al., 2011). An example is when an employee who performs well begins to treat his colleagues as incompetent, ignoring their contribution to the team or the difficulties they faced. In order to minimize the impact of hidden attribution errors on the functioning of teams, organizations should promote cognitive awareness and transparent communication. Employee education on the mechanisms of attribution errors, as well as regular feedback sessions, can help build a more objective picture of the situation and improve interpersonal relationships. The introduction of procedures to facilitate the open exchange of information and joint decision-making can further reduce the risk of attribution errors and thus contribute to better.

6. CONCLUSION

Managing attribution errors in conflict requires the use of appropriate cognitive and interpersonal strategies. Promoting situational attribution, education on attribution bias, mediation and empathy are key tools that can help mitigate conflicts and improve communication between parties. Very interesting research results conducted by Nisbett, Caputo, Legant, and Maracek show how much we are attached to giving other people specific characteristics based on observed behaviors (Sabini, Siepmann, Stein, 2001). It seems that solving the problem of attribution is much more difficult and one might be tempted to say that it may even be impossible. People can be guided by different needs in a given situation that someone from the outside can attribute to them as a character trait and then as intentional behavior. For example, someone may have a difficult financial situation at a given moment and therefore will not add flowers together with other employees for a colleague who has a birthday who may be perceived that he is a skner. Similarly, it is a matter of argumentation when someone cannot recall specific data in a discussion and may be suspected of a person who manipulates, or is not reliable. In fact, someone could have had a difficult day, so they did not have a chance to prepare reliably and is a great specialist.

In conclusion, one can ask why is it worth spending so much time studying the attribution error when everyone makes it and if it is so difficult to grasp? If you stopped thinking about it, would anything bad happen? Many studies show that people tend to make the error of attribution, but awareness of these errors takes the quality of research and communication to a higher level (Berry, Frederickson, 2015). However, what does the situation look like in the argument during the conflict? After all, participants pay attention to both body language and the very meaning of the arguments spoken. The answer comes behavioral economics, which shows that emotions are of great importance for human behavior and decision-making, so again, constant learning and awareness of the attribution error can affect the quality of argumentation and the way conflicts are resolved.

Supporting empathy is also a key element of conflict attribution error management strategy. When people in conflict are encouraged to put themselves in the other's position, they become more open to alternative explanations for their behavior. An empathetic approach allows for a better understanding of the other party's motivation, which reduces the likelihood of attribution errors. Attribution errors are a significant problem in managing conflicts in organizations. They can lead to escalation of conflict, weakening of interpersonal relationships and making wrong decisions. However, by developing

attribution awareness, promoting open communication, and using technology, organizations can significantly improve their ability to manage conflict and create harmonious work environments.

The author has read and agreed to the published version of the manuscript.

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DISABILITY IN THE WORKPLACE: GENERATION Z TOWARDS COLLEAGUES WITH DISABILITIES

The article covers the issue of how disability is perceived by Generation Z workers entering the labour market. Our research reveals how people with disabilities are perceived by future Generation Z co-workers. The risk of discriminatory behaviour emerging was examined, which may consequently lead to pathologies in human resource management within companies. Statistical methods were used in the study, and recommendations for employers were included in the final part of the work.

Keywords: co-workers, discrimination, generation Z, human resource management, statistical analysis.

1. INTRODUCTION

There are currently five generations operating in the labour market - traditionalists, the baby boom generation, generation "X", "Y" and generation "Z". Research is being conducted in the field of human resource management, which aims to understand the differences between generations and to indicate methods and techniques that will enable these managerial challenges to be met (Goh, Okumus, 2020). As Generation "Z" begins to participate in the labour market, the need to understand its needs and characteristic features becomes significant (Gabrielowa, Buczko, 2021).

Various social groups also operate in the labour market, which to some extent may encounter discriminatory behaviours. One of the challenges of human resources management is therefore the assessment of the risk of pathology in this area. Diversity management is a popular topic, but it usually focuses on gender and origin. Due to Europe's ageing society and the increasing trend in the number of people with disabilities, it is necessary for example to understand the challenges associated with the equal treatment of this group, from a managerial perspective as well as co-workers (Klinksiek et al., 2023). Undoubtedly, it is very important to provide people with disabilities with appropriate education, which will correlate with later career choice, so that it is possible to conduct professional activation and subsequent job maintenance. However, it is necessary to identify and describe some of the problems faced by people with disabilities in the

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workplace. Because one of the main barriers for these people is overcoming stereotypes and negative attitudes from colleagues and employers.

The theme of employees with disabilities remains insufficiently researched in the area concerning career development, occupational well-being, and relationships with colleagues and potential exclusion in these relationships.

The aim of this study was to indicate how strong the risk of discriminatory behaviours from co-workers is. The study paid special attention to the “Z” generation, which is just entering the job market. To the author's knowledge, no previous studies have addressed the issue of the risk of discriminatory behaviour towards colleagues with disabilities in relation to Generation “Z”. Work experience translates into life satisfaction for people with disabilities, so it is very important to identify whether discriminatory behaviour is likely to occur as a new generation enters the labour market and, if so, to identify recommendations for employers. In the first part of the article, emphasis was placed on discussing the importance of work and relationships with colleagues in the course of social and health rehabilitation. Given that the study included the “Z” generation, its characteristics were also described from the perspective of relationship and human resource management in companies, the methodology of own research was presented subsequently, followed by the results of the study on the risk of discriminatory behaviours occurring from colleagues.

2. LITERATURE REVIEW

2.1. People with disabilities in the labour market

Occupational discrimination of persons with disabilities is a construct of the social dimension, human attitude, and errors in organizations, through which these individuals are prevented from entering the labour market, thereby affecting their sense of worth, self-esteem and economic situation. This is usually due to an improperly chosen path of education and professional development. This usually results from an improperly chosen education and career development path. Over the past few years, due to the introduction of remote work as a result of the COVID-19 pandemic, the accessibility of some professions has improved for the benefit of disabled individuals (Schur et al., 2020). Ballo (2023) observes that the labour market is experiencing increasing demands for flexibility and efficiency, which could lead to people with productivity limitations being at risk of exclusion from the labour market.

The emphasis on supportive policy causes an increasing number of people with disabilities to enter the labour market. Zhu et al. (2018) conducted research allowing for the understanding of factors influencing the integration of people with disabilities in the workplace. The obtained data confirmed the impact of the interaction of disability, social inclusion, and team learning climate on the development of employees with disabilities. This means that positive relationships with colleagues support the development of individuals in a diverse work environment. This is confirmed by the results of a study conducted in Poland (TNS OBOP, 2010), which shows that disabled employees expected not only wage parity, to be treated like other employees and understanding of their limitations, but also to establish positive relations with their supervisor and colleagues. Positive relationships at work can influence job satisfaction (Śleboda, 2012).

Omolawal and Obisesan (2019) believe that relationships between colleagues can influence the potential exclusion of individuals with special needs both in the workplace and in society as a whole. They conducted a study concerning the fears of able-bodied employees about contact with persons with disabilities. The study results suggest a positive

attitude towards individuals with special needs in organisations. Only a few people did not know how to establish relationships with people with disabilities and expressed the opinion that such people arouse their sympathy, so they would feel uncomfortable in the company of such a person.

It should be remembered that people with disabilities are exposed to social stigma. It begins already in childhood, when there is a "negative discrepancy between actual characteristics and societal expectations" (Beatty, Kirby, 2006). People with disabilities also experience stigmatisation in the workplace. Avoidance, limiting eye contact, reduced interaction with peers, in the opinion of More et al. (2011), only some examples of negative experiences encountered by people with disabilities, which result in social isolation. In 2010, a survey was conducted on behalf of PFRON about the job satisfaction of people with disabilities (TNS OBOP, 2010). The most important aspects of work for people with disabilities were its conditions and relationships with colleagues and direct superiors. Foreign studies provide information about a range of adverse situations faced by people with disabilities. Shantz et al. (2017) indicate that these people receive lower remuneration than able-bodied individuals in the same positions. Dwertmann and Boehm (2015) believe that people with disabilities have worse relationships with their superiors and are exposed to different, negative treatment.

2.2. Attitude of Generation “Z” and challenges for human resource management in organizations

An attitude is a conscious or unconscious state of mind, a positive or negative attitude towards people, phenomena or objects (Atkinson et al., 1999). Bauman (1963) notes that self-perception changes and evolves as we experience social interactions. Piłat-Borcuch (2013) believes that the image of one's own person has a key impact on all dimensions of human life. An attitude, which is usually the result of personal experiences, can be shaped by education (Balázs-Földi, 2019). Attitude is acquired, shaped and modified as a result of the learning process. The attitudes adopted are particularly important due to their impact on social reality (Sadziak et al., 2022). Given that the initial stage of shaping attitudes is their cognitive dimension, efforts should be made to facilitate direct contact between able-bodied individuals and those with special needs, so that upon progressing to the second level of attitude shaping – the emotional, positive acceptance and relationships can be achieved. Attitudes have a huge impact on creating interpersonal relationships, not only in the social dimension, but also organizational.

As Beatty et al. note. (2018) social attitudes that lead to discrimination and improper treatment of people with disabilities stem from negative stereotypes associated with having a disability. If people with disabilities are to be effectively integrated into the labour market and remain in it, there is a need for organisational practices that will be based on the social-relational model and will help in reducing barriers (Klinksiek et al., 2023). Hiring people with disabilities should be based on acceptance and lead not only to improving the quality of their life but also to levelling up in social contacts. Based on numerous studies about what motivates Generation “Z” to work (Sillero et al., 2023; Kagan, Lissitsa, 2023) and the discrepancy in generational expectations towards work and its conditions (Świerkosz-Hołyś, 2016), it can be stated that in the coming years, employee motivation will be based on internal factors, such as, for example, the ability to decide who a person wants to work with (Malhotry et al., 2021). In the near future, human resources managers will have to reconcile generational, social and cultural interests within one task team.

Human resources play a key role in business development (Ditta, 2020). Currently, practitioners and scientists focus on diversity attributes, especially cultural and national origin, indicating that diversity of human resources affects the increase in chances of enterprises to gain additional resources and skills (Breuillot, 2024). Muster (2020) posits that Generation “Z” will actively create culture within organisations, rather than just conforming to existing norms and values. We will also have to deal with the ageing process of society in the labour market and its side effects in the form of an increase in the number of people with disabilities. In task groups, you can therefore find not only a large age diversity, but also people with specific needs. Therefore, human resource management faces two major challenges – managing diversity and controlling the risk of discriminatory behaviour, as well as managing diversity in the context of a strategic factor, helping to expand resources and knowledge.

3. METHODOLOGY

The aim of this study was to indicate how strong the risk of discriminatory behaviours towards people with disabilities from Generation “Z” co-workers is. To achieve the goal, three research questions were asked:

Q1: Does feeling pity influence discriminatory behaviour?

Due to the need for equal treatment, the feeling of pity among people with disabilities is perceived as a negative sentiment (Nowak 2015). Winiewski and Bulska (2010) indicates that ambivalent stereotypes cause mixed behaviours. Groups that are perceived by society as warm but with reduced competencies will invoke pity, which may translate into a willingness to help, or total disregard. Therefore, it will be verified whether people who feel compassion for disabled people are characterised by a lower level of discrimination.

Q2: Does education influence the ability to shape attitudes towards people with disabilities?

This question refers to the research findings obtained by Omolawal and Obisesan (2019), in which it was proven that the level of education and understanding of issues related to disability, affects the attitudes of co-workers. Banach (2016) draws attention to the impact of education on the development of individuals and society. Believes that education is a factor in minimizing the phenomenon of intolerance, social exclusion and aggression. The changing world necessitates the introduction of reforms to the education of the young generation. Through education, attitudes towards diversity should be shaped. Education will have to meet the challenge of preparing new generations for pluralism, openness and tolerance (Banach, 2017). Individuals in business entities managing human resources should focus on promoting equal treatment and educational and training support for colleagues with disabilities. However, to achieve educational success, it is necessary to analyse what socio-geographical characteristics influence attitudes towards people with disabilities. Depending on the country in which such studies were conducted, scientists have proven, or not shown a relationship between gender and discriminatory behaviours, age, and level of education (Sękowska, Witkowska, 2002; Chodkowska, 2015; Huszár et al., 2018; Kanar, 2021).

Q3: What socio-demographic factors among respondents influence the level of acceptance of a co-worker with a disability?

In a series of nationwide studies, it has been shown that women more often than men describe their attitude towards people with disabilities as positive. Geographical factors

influencing discriminatory behaviours include, among others, the place of residence. Respondents living in rural areas showed greater approval for people with disabilities receiving cash benefits. In the cited study (Szluz, 2016), questions were also asked about the assessment of the number of reliefs available to people with disabilities and the right to employment in the open market. No potential discriminatory behaviours were demonstrated in the case of these variables. Respondents attributed to people with disabilities such characteristics as unavailability and low productivity.

The answer to the research questions was obtained based on primary research. The study was carried out using a survey questionnaire. The questionnaire included phrases that pertained to discriminatory behaviours. They were selected based on the study by Chan et al. (2005), in which the authors analyse 35,763 allegations of discrimination, reported by people with disabilities to the U.S. Equal Employment Opportunity Commission (EEOC). Most of the reported discriminatory behaviours were related to issues of employment, dismissal, harassment, and workplace amenities, therefore they were directly related to employers' attitudes. Due to the lack of research on discrimination among colleagues, a point about workplace facilities was developed and the survey questionnaire asked how colleagues would relate to the rights assured to disabled people by the Polish Labour Code.

The aim of this study is to indicate how strong the risk of discriminatory behaviour occurring from Generation "Z" colleagues is. Respondents answered the questions contained in the survey questionnaire, on the Likert scale. The CAWI survey was conducted with N = 339 Generation "Z" students. 68.1% of women and 31.9% of men took part in the survey. The respondents were between the ages of 17 and 27 and therefore represent generation "Z" according to the classification (Kroenke, 2015). The majority of respondents live in rural areas – 41%. People studying exclusively made up 53.4% of the sample, and 46.6% were people who were studying and working. The structure of the research sample is presented in Table 1.

Table 1. Structure of the research sample

	N	%		N	%
Gender			Age		
Woman	231	68.1%	17-20 years	86	25.4%
Male	108	31.9%	21-22 years	120	35.4%
Place of residence			23-24 years	106	31.2%
Village	139	41.0%	25-27 years	27	8.0%
City up to 50,000	42	12.4%	Field of study		
City between 50,000 and 150,000	26	7.7%	Economics	71	20.9%
City between 150,000 and 500,000	78	23.0%	Production management and engineering	28	8.3%
City over 500,000	54	15.9%	Logistics	51	15.0%
Year of study			Business management	53	15.7%
1 year first degree	97	28.6%	Psychology	30	8.8%
2 year first degree	37	10.9%	Other science direction	38	11.2%
3 year first degree	108	31.8%	Another social direction	68	20.1%
4 year first degree	7	2.1%	Socio-professional status		
1 year second degree	22	6.5%	Just studying	181	53.4%
2nd year 2 nd degree	68	20.1%	I work and study	158	46.6%

Source: own study.

4. PRESENTATION OF RESEARCH RESULTS

4.1. Behavioural assessment distribution and descriptive statistics

To indicate whether and how strong the risk of discriminatory behaviour towards people with disabilities from Generation “Z” colleagues is, respondents were asked to subjectively evaluate the truthfulness of statements classified for the study as negative (a person with a disability evokes pity in me; I believe that people with disabilities will not work as efficiently as I do; I believe that people with disabilities should not work; people with disabilities should receive lower remuneration) and statements classified as positive (I am happy to befriend a disabled colleague; people with disabilities should receive extra leave from the employer; people with disabilities should work less than I do; I can work in a task team with a person with a disability; the employer should have lower performance requirements for a person with a disability). The study used a survey questionnaire, in which respondents rated their agreement with the statements on a Likert scale from 1 to 5, where 1 – strongly disagree, 2 – tend to disagree, 3 – hard to say, 4 – tend to agree, 5 – strongly agree. In the first part of the analysis, a breakdown of the evaluation of discriminatory behaviours was carried out, which was presented in Table 2.

Table 2. Behaviour assessment breakdown towards people with disabilities

	1 pt	2 pts	3 pts	4 pts	5 pts
PwD makes me feel pity	38 (11.2%)	84 (24.8%)	61 (18%)	132 (38.9%)	24 (7.1%)
I believe that PwD will not work as efficiently as I do	56 (16.5%)	94 (27.7%)	80 (23.6%)	85 (25.1%)	24 (7.1%)
I believe that PwD should not work	195 (57.5%)	94 (27.7%)	37 (10.9%)	6 (1.8%)	7 (2.1%)
PwD should be paid less	8 (59%)	13 (22.7%)	70 (14.4%)	123 (2.7%)	125 (1.2%)
I am happy to befriend a disabled colleague	21 (2.4%)	57 (3.8%)	139 (20.6%)	82 (36.3%)	40 (36.9%)
PwD should receive additional leave from the employer	19 (6.2%)	85 (16.8%)	121 (41%)	79 (24.2%)	35 (11.8%)
PwD should work shorter hours than I do	6 (5.6%)	10 (25.1%)	47 (35.7%)	132 (23.3%)	144 (10.3%)
I can work in a task force with PwD	200 (1.8%)	77 (2.9%)	49 (13.9%)	9 (38.9%)	4 (42.5%)
Employer should have lower performance requirements for PwD	48 (14.2%)	95 (28%)	110 (32.4%)	67 (19.8%)	19 (5.6%)

PwD – person with a disability

Source: own study.

Respondents rather admitted that people with disabilities arouse pity in them, and that they will not work as efficiently as they do. Respondents agreed that they would willingly befriend a disabled colleague and that they could work with such a person in a task team. Respondents were less likely to agree that people with disabilities should be given additional leave by their employer and that they should work shorter hours. Table 3

presents descriptive statistics for the assessment of behaviours towards people with disabilities.

Table 3. Descriptive statistics for assessing behaviour towards people with disabilities

	<i>M</i>	<i>SD</i>	<i>Me</i>
PwD makes me feel pity	3.06	1.17	3
I believe that PwD will not work as efficiently as I do	2.79	1.20	3
I believe that PwD should not work	1.63	0.90	1
PwD should be paid less	1.64	0.91	1
I am happy to befriend a disabled colleague	4.02	0.97	4
PwD should receive additional leave from the employer	3.19	1.05	3
PwD should work shorter hours than I do	3.08	1.06	3
I can work in a task force with PwD	4.17	0.90	4
The employer should have a lower performance requirements towards the PwD	2.75	1.10	3

M – mean, *SD* – standard deviation, *Me* – median

Source: own study.

4.2. Evaluation of the relationship between behaviours towards people with disabilities and gender, socio-professional status, place of residence, and year of study

In the next step, a Mann-Whitney U test analysis was performed for the relationship of behaviour assessments towards people with disabilities with gender. It was shown that there was a statistically significant association with gender:

- a) the assessment that people with disabilities will not work as efficiently as the examined $Z=2.70$; $p<0.01$; $r=0.15$.
- b) with the assessment that people with disabilities should not work $Z=2.13$; $p<0.05$; $r=0.12$.
- c) the assessment that people with disabilities should receive lower remuneration $Z=4.13$; $p<0.001$; $r = 0.22$.
- d) eagerness to befriend a disabled co-worker $Z=2.24$; $p<0.05$; $r=0.12$.
- e) the possibility of working in a task team with a person with disability $Z=3.94$; $p<0.001$; $r 0.21$.

Women were less likely to believe that individuals with disabilities should not work, would not be as efficient as able-bodied people, and that individuals with disabilities should receive lower wages. Women also more frequently expressed the desire to befriend a disabled colleague and the possibility of working in a task team with a person with a disability. The results of the analysis are presented in Table 4.

Table 4. Association of attitudes towards people with disabilities and gender

	Women			Men			Z	p	r
	M	Me	rank	M	Me	rank			
PwD makes me feel pity	2.97 ±1.19	3	163.36	3.24 ±1.11	4	184.21	1.90	0.057	0.10
I believe that PwD will not work as efficient as I do	2.67 ±1.2	3	160.44	3.04 ±1.14	3	190.44	2.70	0.007**	0.15
I believe that PwD should not work	1.57 ±0.87	1	163.12	1.77 ±0.94	2	184.71	2.13	0.033	0.12
PwD should receive lower pay	1.52 ±0.86	1	156.71	1.91 ±0.94	2	198.42	4.13	***	0.22
I would be happy to befriend a disabled co-worker	4.07 ±1	4	177.71	3.89 ±0.9	4	153.51	2.24	0.025	0.12
PwD should receive additional leave from the employer	3.18 ±1.08	3	170.27	3.19 ±0.99	3	169.41	0.08	0.937	0.00
PwD should work shorter hours than I do	3.13 ±1.07	3	173.98	2.97 ±1.04	3	161.49	1.14	0.256	0.06
I can work in a team with PwD	4.29 ±0.89	4	183.32	3.94 ±0.89	4	141.50	3.94	***	0.21
The employer should have lower requirements towards PwD in terms of productivity	2.68 ±1.1	3	163.74	2.9 ±1.08	3	183.38	1.78	0.075	0.10

M – mean, SD – standard deviation, Me – median, Rank – mean rank, Z – Mann-Whitney U statistic, r – magnitude of differences, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: own study.

Similarly, the relationship between the assessment of behaviours towards people with disabilities and socio-professional status was examined using the Mann-Whitney U test. The results of these analyses are presented in Table 5. Based on them, it can be concluded that there was a relationship between socio-professional status and the assessment that:

a) people with disabilities should not work $Z=2.70$; $p<0.01$; $r=0.15$.

b) people with disabilities should be paid less $Z=2.48$; $p<0.05$; $r=0.13$.

Individuals who are studying and working were less likely to believe that people with disabilities should not work and that people with disabilities should receive lower wages.

The study also aimed to evaluate the relationship of behaviours towards people with disabilities with age, place of residence, and year of study. Table 6 shows the results of Kendall's *tau* correlation analyses for these relations. Based on the results, it can be concluded that:

a) older "Z" generation students felt less pity for people with disabilities $\tau=-0.12$; $p<0.01$.

b) they less frequently agreed that a person with disabilities will not work as efficiently as an able-bodied person $\tau = -0.12$; $p<0.01$.

c) the employer should have lower performance requirements for people with disabilities $\tau = -0,10$; $p<0,05$.

Table 5 Association of attitudes towards people with disabilities with socio-professional status

	I only study			I work and study			Z	p	r
	M	Me	rank	M	Me	rank			
PwD makes me feel pity	3.02 ±1.14	3	166.25	3.1 ±1.21	4	174.29	0.79	0.431	0.04
I believe that PwD will not work as efficiently as I do	2.77 ±1.14	3	169.42	2.8 ±1.26	3	170.66	0.12	0.904	0.01
I believe that PwD should not work	1.75 ±0.97	1	181.92	1.49 ±0.79	1	156.35	2.70	0.007**	0.15
PwD should receive lower pay	1.74 ±0.93	1	180.89	1.53 ±0.87	1	157.53	2.48	0.013	0.13
I would be happy to befriend a disabled co-worker	4.02 ±0.96	4	169.72	4.01 ±0.98	4	170.32	0.06	0.952	0.00
PwD should receive additional leave from the employer	3.13 ±1.03	3	166.04	3.25 ±1.07	3	174.54	0.83	0.404	0.05
PwD should work shorter hours than I do	3 ±1.08	3	163.68	3.16 ±1.03	3	177.24	1.32	0.186	0.07
I can work in a team with PwD	4.15 ±0.97	4	170.40	4.2 ±0.83	4	169.54	0.09	0.930	0.00
The employer should have lower requirements towards PwD in terms of productivity	2.75 ±1.05	3	170.46	2.75 ±1.15	3	169.48	0.09	0.924	0.01

M – mean, SD – standard deviation, Me – median, Rank – mean rank, Z – Mann-Whitney U statistic, r – magnitude of differences, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: own study.

Students living in larger towns less often agreed that:

a) People with disabilities should receive lower remuneration $\tau = -0.15$; $p < 0.01$.

It has also been shown that older students:

a) they felt less pity for people with disabilities $\tau = -0.11$; $p < 0.01$.

b) they less frequently agreed that a person with disabilities will not work as efficiently as an able-bodied person $\tau = -0.17$; $p < 0.001$.

c) they agreed less often that disabled people should not work $\tau = -0.11$; $p < 0.05$.

d) they agreed less often that an employer should have lower performance requirements for people with disabilities $\tau = -0.09$; $p < 0.05$.

Table 6. Association of assessing behaviours towards people with disabilities with age, place of residence and year of study

		Age	Location residence	Year of studies
PwD makes me feel pity	<i>tau</i>	-0.12**	-0.08	-0.11
	<i>p</i>	0.006	0.066	0.012
I believe that PwD will not work as efficiently as I do	<i>tau</i>	-0.12**	0.02	-0.17***
	<i>p</i>	0.008	0.633	0.000
I believe that PwD should not work	<i>tau</i>	-0.08	-0.07	-0.11
	<i>p</i>	0.080	0.120	0.02
PwD should be paid less	<i>tau</i>	0.02	-0.15**	-0.03
	<i>p</i>	0.714	0.001	0.593
I would be happy to befriend a disabled co-worker	<i>tau</i>	0.01	0.04	0.03
	<i>p</i>	0.813	0.351	0.509
PwD should receive additional leave from the employer	<i>tau</i>	-0.04	0.02	-0.07
	<i>p</i>	0.342	0.741	0.151
PwD should work shorter hours than I do	<i>tau</i>	-0.04	-0.02	-0.03
	<i>p</i>	0.413	0.746	0.554
I can work in a team with PwD	<i>tau</i>	0.01	0.08	0.05
	<i>p</i>	0.836	0.081	0.329
The employer should have lower PwD lower performance requirements	<i>tau</i>	-0.10	-0.04	-0.09
	<i>p</i>	0.016	0.379	0.039

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: own study.

Similarly, the relationship between behaviour assessment and feelings of pity for the disabled was examined using Kendall's *tau* correlation analysis. The results of these analyses are presented in Table 7, and based on them, it can be stated that people who felt pity for disabled individuals more often believed that:

- a person with disabilities will not work as efficiently as they $tau=0.17$; $p<0.001$.
- people with disabilities should not work $tau=0.15$; $p<0.01$.
- people with disabilities should receive lower remuneration $tau=0.12$; $p<0.05$.

It was also shown that people who felt more pity for disabled people often thought that they should work less than able-bodied people $tau=0.17$; $p<0.001$, and that the employer should have lower work performance expectations for them $tau =0.22$; $p<0.001$.

Table 7. Association of behavioural assessment towards people with disabilities with a sense of pity

		PwD induces pity in me
I believe that PwD will not work as efficiently as I do	<i>tau</i>	0.17***
	<i>p</i>	0.000
I believe that PwD should not work	<i>tau</i>	0.15**
	<i>p</i>	0.002
PwD should be paid less	<i>tau</i>	0.12
	<i>p</i>	0.014
I would be happy to befriend a disabled co-worker	<i>tau</i>	-0.01
	<i>p</i>	0.869
PwD should receive additional leave from the employer	<i>tau</i>	0.08
	<i>p</i>	0.097
PwD should work shorter hours than I do	<i>tau</i>	0.17***
	<i>p</i>	0.000
I can work in a task force with PwD	<i>tau</i>	-0.03
	<i>p</i>	0.513
The employer should have lower productivity requirements towards PwD	<i>tau</i>	0.22***
	<i>p</i>	0.000

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: own study.

The correlation analysis also used the *tau* Kendall to examine the relationship between discriminatory and non-discriminatory behaviour towards people with disabilities. The results of these analyses are presented in Table 8. People who believe that a person with a disability will not work efficiently were less often of the opinion that:

- they could befriend a disabled co-worker $tau = -0.20$; $p < 0.001$,
- can work with PwD $tau = -0.25$; $p < 0.001$
- more often believed that the employer should have lower performance requirements for people with disabilities $tau = 0.12$; $p < 0.05$.

Also, people who believe that individuals with disabilities should not work were less frequently of the opinion that:

- they could befriend a disabled coworker $tau = -0.23$; $p < 0.001$.
- can people with disabilities work $tau = -0.28$; $p < 0.001$.

People who believe that disabled people should not work more often thought that:

- the employer should have lower performance requirements for people with disabilities $tau = 0.24$; $p < 0.001$.

It was also shown that those who thought that people with disabilities should be paid less were less likely to believe that:

- they could befriend a disabled co-worker $tau = -0.27$; $p < 0.001$.
- can work with a person with a disability $tau = -0.40$; $p < 0.001$

They often believed that:

- a) the employer should have lower performance requirements for people with disabilities $\tau=0.20$; $p<0.001$.

Table 8. Assessment of attitudes towards people with disabilities

		I believe, that PwD will not work as efficiently as me	I believe, that PwD should not work	PwD should receive lower remuneration
I would be happy to make friends with a colleague with disability	<i>tau</i>	-0.20***	-0.23***	-0.27***
	<i>p</i>	0.000	0.000	0.000
PwD should receive additional leave from the employer	<i>tau</i>	-0.03	0.01	-0.07
	<i>p</i>	0.463	0.834	0.133
PwD should work shorter hours than I do	<i>tau</i>	0.01	0.09	0.05
	<i>p</i>	0.791	0.058	0.341
I can work in a team with PwD	<i>tau</i>	-0.25***	-0.28***	-0.40***
	<i>p</i>	0.000	0.000	0.000
An employer should have lower requirements for PwD regarding labour productivity	<i>tau</i>	0.12	0.24***	0.20***
	<i>p</i>	0.008	0.000	0.000

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: own study.

5. SUMMARY AND CONCLUSIONS

Awareness of the need to manage diversity is increasing, and this trend is likely to persist as Europe's population ages, thereby creating conditions that lead to disability. Increasing awareness of the challenges faced by corporate human resource managers – multi-generationalism, cultural diversity, people with disabilities – is also generating sustained interest among researchers. First and foremost, dimensions of diversity are analysed from the perspective of demographic, geographic, and economic factors. Further research will not only allow for the determination of appropriate policy directions towards people with disabilities, in terms of their education and employment selection, but will also provide guidelines for practitioners in organisations on how to break down barriers on the path to promoting diversity and above all equal treatment of all employees.

The purpose of this study was to indicate how strong is the risk of discriminatory behaviours occurring from Generation “Z” co-workers. The results of the survey conducted confirm the findings of other studies – women generally show less discrimination against people with disabilities.

Q1: A very disturbing phenomenon is the fact that the respondents admitted that they felt pity for persons with disabilities and that they would not work as efficiently as them. Researchers mostly disagreed that individuals with disabilities should receive additional leave from their employer and that they should work fewer hours. Respondents who felt pity for people with disabilities were more likely to believe that they would not work as efficiently as the rest, that people with disabilities should not work, and that people with

disabilities should receive lower remuneration. It was also shown that respondents who felt more pity for disabled people were more often of the opinion that disabled people should work less than able-bodied ones, and that employers should have lower performance expectations for them. These results confirmed the studies described in the article, which proved that the level of mercy correlates with the risk of discriminatory behaviour arising.

Q2: It was found that older students were less likely to feel pity for disabled people, less likely to agree that a disabled person would not work as efficiently as an able-bodied person, and also less likely to agree that an employer should have lower performance expectations for persons with disabilities. These results may indicate a positive impact of education on the perception of people with disabilities and the risk of discriminatory behaviour directed towards them.

Q3: Individuals who are studying and working were less likely to believe that people with disabilities should not work and that people with disabilities should receive lower wages. Students living in larger towns less frequently agreed that people with disabilities should receive lower pay. The study results confirmed that there is a lower risk of discriminatory behaviour towards people with disabilities amongst women.

The research makes a significant contribution to the development of management and quality sciences. It complements the literature on the risk assessment of discriminatory behaviour occurrence from the perspective of “Generation Z” colleagues, who, according to many authors, will consciously shape the realities on the contemporary labour market. The study showed that Generation “Z” does not exhibit different behaviours than those described by authors studying the overall population in terms of age structure.

Human resource managers should care about the development of employees in the context of education, in terms of working in diverse task teams. Education indeed has a significant impact on the perception of people with disabilities. It also influences the shaping of proper attitudes among young people, future workers.

This study reinforces the need for active diversity management within teams, particularly in light of new generations entering the labour market. Employers and managers should focus on promoting equal treatment and providing educational and training support for colleagues with disabilities, as this can positively influence workplace integration. The finding that positive relationships with colleagues support the development of individuals in a diverse work environment serves as a direct appeal to employers to build an inclusive organisational culture where stereotypes and negative attitudes are avoided. Implementing practices based on the social-relational model is essential for reducing barriers and ensuring the effective integration of people with disabilities into the labour market. These conclusions provide crucial guidelines for human resource management practitioners worldwide to actively foster discrimination-free work environments.

The author has read and agreed to the published version of the manuscript.

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THE CAUSES OF FINANCIAL EXCLUSION ACCORDING TO THE CLIENTS OF COOPERATIVE BANKS

This paper attempts to determine the causes that contribute to financial exclusion. A questionnaire-based survey was conducted from January to April 2023, on the population N=1502 clients of cooperative banks, maintaining a very high confidence level $\alpha = 0.98$ and estimated maximum error of 3%. A quantitative study of the clients of cooperative banks was performed according to the Mixed Mode Design procedure, which obtains the same information (based on the same survey questionnaire) from different individuals with the use of various research techniques: CAWI, CATI, CAPI. The study looks at financial exclusion, which refers to the situation when individuals or their groups are deprived of the access to basic financial services, such as bank accounts, credits or insurance. The results demonstrate that the profiles of excluded individuals have a significant impact on the existing financial exclusion: family status, social and professional status, gender, age, nationality, education, employment type, level of income, duration of residing under the same address or ownership type of a flat/house. The study shows as well that a low income level is a major factor contributing to banking exclusion within the client-bank relationship. In turn, according to the clients, negative credit history has the greatest influence on credit exclusion, while in their opinion exclusion from the savings system results from the fact that it is not offered to the individuals with low income. Cooperative banks, due to their mission and principles of operation, might play a crucial role in limiting financial exclusion. The offer of cooperative banks addressed to clients residing in rural areas and small towns might, according to those surveyed, contribute to limiting financial exclusion.

Keywords: financial exclusion, clients of cooperative banks, Polish nationwide study.

1. INTRODUCTION

Financial exclusion refers to the situation when individuals or their groups are deprived of the access to basic financial services, such as bank accounts, credits or insurance. Among those vulnerable to financial exclusion, we can enumerate the individuals with low income

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as well as the unemployed. The most important motives for undertaking the research activity in this field are as follows:

- willingness to verify a common belief that cooperative banks, due to their mission and principles of operation, might play a crucial role in limiting financial exclusion,
- lack of comprehensive studies concerning the phenomenon of financial exclusion as well as the exclusion from the access to banking services, credits and savings system.

Having the above in mind, main objective of considerations presented herein constitutes an attempt to determine the causes contributing to financial exclusion, and thus the exclusion from the access to banking services, credits and savings system. Research objective consists in determining the role of cooperative banks in limiting financial exclusion.

Collecting the data concerning broadly understood financial exclusion was possible in particular with the use of the empirical study designed and conducted by the author.

The following detailed objectives were adopted for the thus established general research framework:

1. Determining the causes leading to financial exclusion.
2. Determining the causes leading to banking exclusion within the client-bank relationship.
3. Determining the causes leading to credit exclusion within the client-bank relationship.
4. Determining the causes leading to the exclusion from the savings system within the client-bank relationship.
5. Determining the role of cooperative banks in limiting financial exclusion.

2. LITERATURE REVIEW ABOUT FINANCIAL EXCLUSION

The notion of financial exclusion appears in subject-related literature already in the 1990s (Leyshon, Thrift, 1993). In the report by the European Commission, financial exclusion was defined as the process within which the citizens experience on the main market the difficulties in accessing financial products and services suitable for their needs and making it possible for them to live a normal life within the society (Financial Services Provision and Prevention of Financial Exclusion, 2008). Financial exclusion is often perceived as the society's non-access to banking (Folwarski, 2021)). On the other hand, L. Anderloni defines the phenomenon of financial exclusion as the impossible or hindered access to universal products (Anderloni, 2007). A. Alińska defines financial exclusion as the inability of individuals, households or social groups to use necessary financial services under the appropriate form (Alińska, 2011). Thus, financial exclusion constitutes a phenomenon that combines social and economic factors (Stolarz, 2010; Stolarz, 2014). According to M. Sołtysiak, individuals suffering from financial exclusion experience a certain disability in their everyday functioning (Sołtysiak, 2017). Iwanicz-Drozdowska states that in Western European countries financial exclusion constitutes the cause of social exclusion, while in Poland, social exclusion leads to financial exclusion (Iwanicz-Drozdowska, 2011). It is also substantial to perceive the phenomenon of financial exclusion as gradual disconnection (isolation) from the market of financial services, for example due to the offer failing to match client's needs, low level of income or financial problems (Kata, Walenia, 2015). Table 1 includes the most frequently quoted definitions of financial exclusion.

Table 1. Selected definitions of financial exclusion

Definition	Author	Year
Financial exclusion consists in the inaccessibility for certain social groups of suitable, cheap and safe financial products and services provided by leading service providers (financial institutions).	R. Mohan	2006
Financial exclusion is the inability (even if occasional) to access the financial system by certain social groups	S. Carbo, E. Gardener, P. Molyneux	2005
Financial exclusion means the inability to access necessary financial services in an appropriate form.	S. P. Sinclair	2001
Financial exclusion refers to those processes than make it impossible for certain individuals and social groups to access the financial system.	A. Leyshon, N. Thrift	1995

Source: (Carbo, Gardener, Molyneux, 2005; Gloukoviezoff, 2007; Leyshon, Thrift, 1995; Mohan 2006. In Solarz, 2010).

Thus, social exclusion results also in financial exclusion. Social situation of a household, e.g., the level of education, psychological or financial aspects, has the impact on financial decisions made within it. As mentioned above, financial exclusion might also result in social exclusion (Folwarski, 2021). Thus, cause and effect relationships appear between the enumerated exclusions (chart 1).

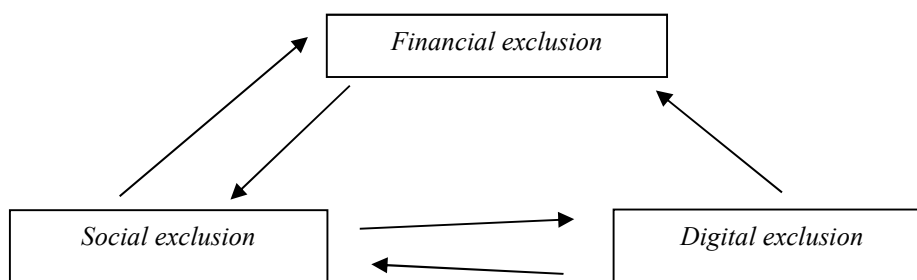


Chart 1. Cause and effect relationships between social, digital and financial exclusion

Source: (Folwarski, 2021).

Frequently quoted reasons of financial exclusion are (www1):

- low level of education,
- low level of income or the lack of stable source of income (it includes both the situation of an unemployed individual as well as for example an artist who does not receive regular salary and it is thus difficult for them to document their income while applying for credit),
- social situation (for example single parenting),
- health condition, in particular disabilities,
- advanced age (including retired individuals),
- residing in a small village,
- fear of new technologies.

One of the most obvious forms of financial exclusion consists in banking exclusion understood as the lack of access to a bank account and the services connected with it. Another form of financial exclusion is credit exclusion (lack of access to credits) as well as the exclusion from the savings system (lack of access to the account, bank deposits etc.).

3. METHODOLOGY

Material and methods

Within the framework of implementation of the research project entitled “Innovations in the sector of cooperative banks and limiting social exclusion” no. NdS/550697/2022/2022 forming part of the programme by the Ministry of Education and Science “Science for Society”, the answers to the following questions were searched for:

- What are the reasons of financial exclusion?
- What are the reasons of banking exclusion within the client-bank relationship?
- What are the reasons of credit exclusion within the client-bank relationship?
- What are the reasons of the exclusion from the savings system within the client-bank relationship?
- What is the role of cooperative banks in limiting financial exclusion?

Contents partners of the implemented project are: the National Association of Cooperative Banks (KZBS) and the Mazovian Centre for Social Policy (MCPS) in Warsaw. Subject-related literature and own empirical studies were used for fulfilling the research task thus specified. Statistical tests and descriptive methods were applied. The results were presented in the descriptive form as well as under the form of charts and graphics.

Organization of the research process

Analysed data

Questionnaire-based surveys were conducted from January to April 2023 on the population of 1502 respondents, clients of cooperative banks. Research techniques applied: CAWI, CATI, CAPI.

The analysis took into consideration the gender, age, education, place of residence, household size, social and professional situation as well as material situation of those surveyed. Some social and demographic characteristics (voivodeship and gender) have a representative character as they constituted the basis for sampling. Respondents' gender constitutes one of such characteristics. The sample is representative with relation to the gender of the clients of cooperative banks – residents of subsequent macro regions. As the structure of clients of cooperative banks remains unknown, the sampling was based on variables characteristic for all adult residents of the studied macro regions (taking into consideration the number of cooperative banks in a given voivodeship). Among those surveyed there were 52.3% of women – clients of the Cooperative Bank and 47.7% of men using the services of the Cooperative Bank.

Statistical analysis plan

Basing on the data obtained, the estimated number of clients of cooperative banks amounted to over 2 000 000. According to the data of the National Association of Cooperative Banks (KZBS), at the end of 2021, the number of shareholders of cooperative

banks amounted in Poland to 898 204 individuals². Nevertheless, it is worth noticing that the data may differ from the total number of clients of cooperative banks, as not all clients are shareholders. For comparison, in 2023 the Cooperative Banks Group (SGB) had over 1.5 million clients (www 1). Taking the estimated general population into consideration – the number of clients of cooperative banks in Poland, representative research sample shall amount to N=1502, while maintaining a very high confidence level $\alpha = 0.98$ and estimated maximum error of 3%.

Sampling

The sampling was based on the following specified data.

- The location of cooperative banks is known – market saturation in subsequent voivodeships/counties. Cooperative banks usually represent local character. We can thus assume a priori that the clients of cooperative banks are usually the individuals residing in the county where a given Cooperative Bank is located.
- 88.5% of adult Poles have a payment account (according to the data by the National Bank of Poland NBP)³ and the lowest percentage of bank account owners was recorded among the individuals aged over 65.

Sampling reflects the population of adult citizens of Poland with proportional share of the inhabitants of those voivodeships in which cooperative banks are located (corrected for individuals aged over 65). For determining the sample, current statistical data by Statistics Poland (GUS) were used, representing the structure of the population of Poland and taking into consideration the place of residence (voivodeship) and gender. Assuming the abovementioned criteria, the study was representative nationwide.

4. RESULTS AND DISCUSSION

Reasons of financial exclusion

The author has begun her considerations by providing the causes that lead to financial exclusion. Study participants could provide three answers, so their total is significantly higher than 100.00%. The analysis of the study dedicated to the causes of financial exclusion enumerates a number of significant factors. On top of their list, with the result of 60.5%, one can find the profile of excluded individuals. This category includes many different factors, such as family status, social and professional status, gender, age, nationality, education, employment type, level of income, duration of residing under the same address or ownership type of a flat/house. All these aspects have an impact on financial exclusions and each of them may require individual approach. This may indicate the complexity of the problem of financial exclusion and the necessity to adopt a multi-faceted approach towards solving it. The second most important factor consists in the lack of access to a bank account, with the result of 44.0%. Without the bank account it is difficult to shop online, receive social benefits or retirement pension. The lack of access to a bank account may thus substantially limit financial capacities and everyday life of individuals suffering from financial exclusion. The third category, with the result of 43.4%, consists in the lack of access to credits. The impossibility to take a credit may impede professional activation as well as satisfying even most basic everyday needs. It is an important factor as credits are often necessary for professional development and fulfilling some needs. The

² Statistics (kzbs.pl).

³ Payment habits in Poland in 2020. National Bank of Poland (NBP).

impossibility to access specific banking services, with the result of 34.2%, has been identified as another barrier. This category might include many different types of services, from bank accounts to credits, and may require more thorough analysis in order to better understand which specific services are inaccessible to individuals suffering from financial exclusion. The fifth position, with the result of 20.0%, has been taken by the lack of access to savings accounts. They constitute an important tool for managing finances making it possible to collect savings for the future and secure oneself against unexpected expenses. The list is closed by the inability to access banking deposits. They are a crucial investment tool but may be less accessible to the individuals suffering from financial exclusion due to the required minimum amount of deposit. To sum up, the results point to a number of causes of financial exclusion. Understanding them is of major importance for establishing efficient strategies for extending the access to financial services and reducing financial exclusion.

Table 2. Reasons of financial exclusion (N=1502, in %)

	N	%
The profile of excluded individuals – family status, social and professional status, gender, age, nationality, education, employment type, level of income, duration of residing under the same address or ownership type of a flat/house.	908	60.5%
No access to a bank account (impossibility to shop online, have social benefits or retirement pension transferred)	661	44.0%
No access to the credit system – influence on professional life (professional activation) and quality of life (satisfying only basic everyday needs)	652	43.4%
No access to specific services – banking	514	34.2%
No access to a savings account	300	20.0%
No access to bank deposits	148	9.9%

Source: Own study.

Reasons of financial exclusion within the client-bank relationship

Within the client-bank relationship, banking exclusion can be understood as the situation when an individual or a group of individuals are unable to fully use banking products and services commonly accessible to the majority of society. Banking exclusion has different causes and forms. On the individual level, it may result from low income, lack of understanding for financial products, lack of trust in financial institutions or geographical barrier – such as the lack of banking outlets on a given area. At the system level, potential causes are discrimination, unequal credit practices or the lack of financial products adjusted to the needs of certain social groups. As a result, the individuals suffering from financial exclusion may encounter difficulties in managing their financial life, which in turn may lead to social and economic inequalities. Study participants pointed out three main factors of financial exclusion within the client-bank relationship. Over 62.8% of respondents emphasize that the low level of income constitutes a key factor of banking exclusion. This suggests social determinants of exclusion, resulting from broad-based social and economic inequalities. In the context of the client-bank relationship, for the individuals with low income keeping a bank account or taking up loans may constitute a challenge, which results in their marginalization within the financial system. Excessive

indebtedness, declared by 46.7% of respondents, constitutes another important factor. This phenomenon shows that the individuals who are already using financial services may be trapped in a debt spiral, which may lead to their isolation and further banking exclusion. The lack of receipts on the bank account, claimed by 46.3% of respondents, is strictly connected with the low level of income and emphasizes the fact that regular receipts often constitute a condition necessary for opening a bank account. Three factors mentioned above were quoted by the biggest percentage of those surveyed. A significantly smaller group of respondents, 19.2%, treat the lack of permanent place of residence as an obstacle. This factor reveals the importance of housing stability and security for full participation in the financial system. Failure to adjust the offer to clients' needs (17.7%) and no contact with the client (16.7%) draw the attention to the role that the banks themselves play in generating the exclusion. These factors prove that financial institutions should undertake the efforts aimed at understanding the needs of their clients better and satisfying them, in particular within the marginalized social groups. 14.2% of respondents referred to behavioural factors – lack of trust in banks – as the reason of financial exclusion, which points to psychological and cultural barriers that may separate the individuals from the banking system. Insufficient number of transactions (13.3%), the way in which the services are provided (9.5%), geographical limitation (6.9%), behavioural factors – the fear of losing control (5.1%) and cultural factors (1.7%) constitute the remaining causes that have been enumerated. Even though their influence is more limited, they also contribute to the problem of banking exclusion. The total of presented data is higher than 100.00% as more than one answer was selected by the respondents.

Table 3. Causes of banking exclusion within the client-bank relationship (N=1502, in %)

	N	%
Low level of income	944	62.8%
Excessive indebtedness	701	46.7%
Lack of receipts on the bank account	696	46.3%
Lack of permanent place of residence	289	19.2%
Failure to adjust the offer to clients' needs	266	17.7%
No contact with the client	251	16.7%
Behavioural factors – no trust in banks	213	14.2%
Insufficient number of transactions	200	13.3%
The way in which services are provided directly influences the level of banking exclusion	143	9.5%
Geographical limitations	104	6.9%
Behavioural factors – the fear of losing control	76	5.1%
Cultural factors	26	1.7%

Source: Own study.

Reasons of credit exclusion within the client-bank relationship

Apart from determining the reasons of banking exclusion within the client-bank relationship, study participants were asked to determine the most important causes of credit exclusion within the client-bank relationship. In this case each respondent also had the possibility to provide a few answers, so their total is significantly higher than 100.0%. The results demonstrate that the most frequent reason of credit exclusion within the client-bank

relationship consists in negative credit or banking history, constituting 52.8% of all cases. This means that a client used to have problems with timely settlement of their financial obligations, which negatively affected their creditworthiness. The lack of sufficient collateral constitutes the second most frequently quoted reason – 47.7% of cases. The banks often require a collateral in case a client failed to repay their loan. If a client is unable to provide such collateral, it may lead to credit exclusion. The lack of official or legal income, i.e. the work in grey economy, constitutes 39.5% of cases. If a client does not have official income, the bank may state that the risk of the failure to repay the loan by them is too high. Other credit obligations were quoted by 37.7% of respondents. If a client already has other credit responsibilities, the bank may assume that additional credit may constitute for them an excessive burden and increase the risk of failure to repay the loan. The lack of credit or banking history was referred to by 32.6% of those surveyed. If a client does not have any credit history, the bank is deprived of the basis to assess their credibility and ability to repay the credit. 24.4% of those surveyed mentioned too low income. If a client's income is too low, the bank may conclude that they will not be able to repay the loan. One in five respondents, 20.5%, quoted the lack of permanent place of residence. For banks, having a permanent place of residence often constitutes one of the requirements for granting a loan. The least frequently mentioned reason of credit exclusion was the absence of credit offer suitable for a client, 9.6%, i.e. the situation when the offer of a given bank does not meet the client's financial expectations and possibilities.

Table 4. Reasons of credit exclusion within the client-bank relationship (N=1502, in %)

	N	%
Negative credit/banking history	793	52.8%
Lack of sufficient collateral	717	47.7%
Lack of official/legal income (work in grey economy)	593	39.5%
Other credit obligations of the client	567	37.7%
No credit/banking history	489	32.6%
Too low income	366	24.4%
No permanent place of residence	308	20.5%
No credit offer matching client's needs	144	9.6%

Source: Own study.

Reasons of exclusion from the savings system within the client-bank relationship

Another component of the survey conducted on the clients of cooperative banks consisted in acknowledging the reasons of exclusion from the savings system within the client-bank relationship. As all of those surveyed had the possibility to select maximum three reasons-answers, their total is higher than 100.00%. Among all of the answers provided, on the top position, with the result of 65.1%, one can find the conviction that "saving is not for those with low income". This statement manifests how strongly our convictions and stereotypes influence our financial decisions. Many individuals with low income may feel that saving is out of their reach, which results in their exclusion from the savings system. The second most common cause, quoted by 51.7% of respondents, consists in the lack of trust in banks. Trust constitutes a key component of the client-bank relationship. Without it, clients may feel uncomfortable while entrusting their savings to a financial institution, which results in the exclusion from the savings system. The structure

of savings products offered was referred to by 38.1% of those surveyed. It is another important factor. If the products offered do not match clients' needs or are too complicated, the clients may resign from saving in a bank. According to 31.9% of those surveyed, the way in which services are provided has an important impact on the exclusion from the savings system. This may refer to various aspects, such as customer service, accessibility of online solutions or user-friendliness of banking services. The geographical factor, manifesting that the location influences saving ability, was quoted by 14.9% of respondents. For some individuals, in particular those residing in remote or rural areas, the access to banking services may be hindered. The cultural factor has found itself at the bottom of the list with the result of 7.5%. This fact shows that our saving habits are often shaped by the culture in which we grow up. In some cultures, saving in a bank may constitute common practice, which leads to the exclusion from the savings system.

Table 5. Reasons of exclusion from the savings system within the client-bank relationship (N=1502, in %)

	N	%
Conviction that "saving is not for those with low income"	978	65.1%
Lack of trust in banks	777	51.7%
Structure of savings products offered	572	38.1%
Way of providing the services	479	31.9%
Geographical factor	224	14.9%
Cultural factor	113	7.5%

Source: Own study.

Influence of Cooperative Banks on limiting financial exclusion

Cooperative banks, in connection with their mission and principles of operation, may play a key role in limiting financial exclusion. Financial exclusion refers to situations when individuals or their groups are deprived of the access to basic financial services, such as bank accounts, credits or insurance. In many communities, especially those characterized by lower level of income, in rural areas or smaller towns, the access to financial services may be limited. Cooperative banks often operate within the areas where bigger banking institutions may not be present, which makes the access to basic financial services easier for local communities. What is more, thanks to their understanding for the local community, they are often more flexible and open to the individual needs of their clients compared to big commercial banks. Cooperative banks often get involved in microfinancing, i.e., granting small loans to individuals deprived of the access to traditional credits. Cooperative banks often assist their clients in understanding the principles of managing personal finances better, which contributes to increasing their financial awareness and independence. It is also worth noticing that cooperative banks, as the institutions connected with local communities, often get involved in the activities dedicated to those communities, supporting various social initiatives, which translates into greater trust and bonding with clients. The activity of cooperative banks, through the provision of financial services, financial education and social involvement, contributes to limiting financial exclusion, promoting financial inclusion and sustainable development of local communities. A positive role of cooperative banks in the field of preventing the phenomenon of financial exclusion is also noticed by their clients. Results of the survey

conducted in the group of clients of cooperative banks definitely emphasize the role of these institutions in fighting financial exclusion. As many as 70.0% of respondents confirmed that the activity of the Cooperative Bank helps in limiting financial exclusion. It is a very important statement as the access to basic banking services constitutes a key factor enabling full participation in social life. Cooperative banks, thanks to being rooted in local communities and concentrating on the individual attitude towards clients, are often capable of providing financial services to those for whom it could be difficult to obtain them from traditional commercial banks. This social group consists for example of the individuals with low income, working in informal economy, or the inhabitants of rural areas, where the access to bank outlets may be limited. In spite of this positive image, it is worth noticing that 20.3% of respondents declared not to know whether the activity of the Cooperative Bank contributes to limiting financial exclusion. This fact may point out to the need for better communication of the role played by cooperative banks in their communities and the influence that they have on extending the access to financial services. Only 9.7% of respondents think that the activity of the Cooperative Bank does not help in fighting financial exclusion.

Table 6. Influence of the activity of the Cooperative Bank that contributes to limiting financial exclusion (N=1502, in %)

	N	%
Yes	1051	70.0%
No	146	9.7%
I don't know	305	20.3%
Total	1502	100.0%

Source: Own study.

The respondents who claim that the activity of cooperative banks contributes to the limiting of financial exclusion (70.0% of the total of those surveyed) were asked to enumerate the activities that in their opinion contribute to minimizing this phenomenon. As each respondent had the possibility to enumerate maximum three answers, the total of presented answers does not equal 100.0%. The clients of cooperative banks notice numerous activities of such institutions that contribute to the limiting of financial exclusion. The results of the survey shape the image of a bank that knows their customers and tries to adjust its offer to their needs. The greatest importance is attributed to the offer addressed to clients residing in rural areas and small towns and it was mentioned by 58.0% of those surveyed. This fact shows the importance of maintaining the accessibility of financial services within the areas where financial institutions may be encountered less frequently. Over a half (55.5%) of respondents also appreciated the offer addressed to less wealthy clients, which shows that cooperative banks may serve as a bridge enabling the accessibility of financial services to individuals with low income for whom it may be difficult to access them in other banks. The offer addressed to farmers, mentioned by 38.3% of respondents, constitutes another proof how deeply cooperative banks are rooted in their local communities, adjusting their services to specific demands of their clients. 32.3% of respondents emphasized the significance of preserving traditional channels for accessing the services, such as a developed network of outlets, direct contact with customer service or an important share of cash transactions. In the era of expanding digitalization of financial services, it is important to emphasize the importance of personal contact and traditional

forms of accessing banking services for many individuals. Even electronic access channels that were less frequently mentioned (19.9%) have their role to play. They may enable the access to financial services to those who may find it difficult to reach a physical bank outlet, such as the elderly, persons with disabilities or residing in remote locations.

Table 7. Activities of the Cooperative Bank contributing to limiting financial exclusion (N=1052, in %)

	N	%
The offer addressed to clients residing in rural areas and small towns	610	58.0%
The offer addressed to less wealthy clients	583	55.5%
The offer addressed to farmers	403	38.3%
Preserving traditional channels for accessing the services, such as a developed network of outlets, direct contact with customer service or big share of cash transactions.	338	32.2%
Electronic access channels	209	19.9%

Source: Own study.

5. SUMMARY AND CONCLUSIONS

Financial exclusion constitutes a process that affects the individuals experiencing problems with accessing financial products and services. According to the respondents, clients of cooperative banks, main reason of financial exclusion is constituted by the profile of the individuals experiencing exclusion – family status, social and professional status, gender, age, nationality, education, employment type, level of income, duration of residing under the same address or ownership type of a flat/house – 60.5% of the answers. All these factors may influence financial exclusion and each of them may require individual approach. This may point to the complexity of the problem of financial exclusion and the necessity to adopt a multi-faceted approach towards solving it.

Over 62.8% of respondent emphasize that low level of income constitutes a key factor of banking exclusion. This points to structural determinants of exclusion that result from large-scale social and economic inequalities. In the context of the client-bank relationship, individuals with low income may experience difficulties in keeping a bank account or taking up credits, which results in their marginalization within the financial system.

The results of the study show that the most frequent cause of credit exclusion within the client-bank relationship consists in negative credit or banking history, which constitutes 52.8% of all cases. This means that a client used to have problems with timely settlement of their financial obligations, which negatively affected their credit capacity.

Another component of the survey conducted on the clients of cooperative banks consisted in discovering the causes of exclusion from the savings system within the client-bank relationship. Among all of the responses provided, the conviction that “saving is not for those with low income” occupies the top position. This shows how strongly our financial decisions are influenced by our convictions and stereotypes. Numerous individuals having low income may feel that saving is out of their reach, which results in their exclusion from the savings system.

The author has read and agreed to the published version of the manuscript.

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STRATEGIC RISKS IN INDUSTRY 4.0 – SCALABILITY PERSPECTIVE

This article identifies key strategic risks relating to the functioning of organizations within Industry 4.0, emphasizing scalability. It employs a quantitative CAWI survey that involves 400 organizations from 16 European countries. It uses a research model that categorizes strategic risks based on the components of Industry 4.0's nine pillars and dimensions of scalability. The findings highlight diverse perceptions of strategic risks. Notably, the risks linked to unit cost, market niche potential, and distribution standardization. Risk distribution varied significantly among the studied European countries, with no universal predominant risk identified. This research provides a structured framework that classifies Industry 4.0 risks and opportunities aligned with scalability dimensions, advancing strategic risk management in dynamic technological environments. The developed Industry 4.0's risk and opportunity matrix serves as a managerial tool, supporting strategic decisions by prioritizing risks and opportunities according to their potential impact on organizational performance and competitive advantage.

Keywords: strategic risk, Industry 4.0, scalability, technological risk.

1. INTRODUCTION

The Fourth Industrial Revolution has significantly altered the management of many organisations. These entities have, in a sense, been compelled to adopt new technological solutions (Bordeleau, Felden, 2019; Sony, Naik, 2020; Wichmann et al., 2019), leading to continual evolutions in their strategies and business models. As a result, the traditional

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concept of competitive advantage has diversified, presenting numerous novel avenues for achievement. However, this advancement comes with persistent risks.

A predominant focus within the context of Industry 4.0 has been on technological risk (Leonhardt, Wiedemann, 2015; Süzen, 2020; Tupa et al., 2017). Nonetheless, this perspective does not comprehensively address the entire spectrum of risks. A critical area that remains under-explored is strategic risk, especially significant in the dynamic conditions of Industry 4.0, which is itself evolving towards Industry 5.0.

Strategic risk is identified with factors that threaten the strategic activities of the organisation, and in this version, they are most often identified with the forces acting on the organisation in accordance with the approach of M.E. Porter (Porter, 1979). However, as it turns out, in the case of Industry 4.0, the source of risk is the inside of the organisation, which generates a type of objective risk (Fischhoff, et al., 1984). Objective risk relates to real economic phenomena and is defined as the relative deviation of the actual loss from the expected loss (Gardner et al., 2005). It is linked to the potential threat posed by the volatility of an individual's environment. Measures of this category can be measures of dispersion, most notably the coefficient of variation or the maximum likely deviation of the actual result from the assumed figure (Mitchell, 1992). In the case of the risk of Economy 4.0, the sources of risk will be the 9 pillars of Industry 4.0, namely (Forcina, Falcone, 2021): 1) Industrial Internet of Things (IoT); 2) Big Data; 3) Horizontal and vertical integration of systems; 4) Simulation/Digital Twin; 5) Cloud Computing; 6) Augmented Reality; 7) Autonomous Robots; 8) 3D Printing (Additive Manufacturing) and 9) Cybersecurity.

As risk itself is a complicated category, difficult to explain (Fischhoff et al., 1984), generally related to the existence of a disadvantageous situation (unidirectional risk), in practice it also offers the possibility of profit (multidirectional risk) and is, therefore, a necessary condition for economic progress. In this approach, we analyse the strategic risk related to Industry 4.0 in the context of our own model, the core of which is scalability, as one of the criteria for the profitability of Industry 4.0 projects. This model includes elements such as: economics of scale and experience curve, network effect obtained within the network of suppliers, producers, and customers, long tail effect, and Big Data effect (an advantage in data processing and analytics). These elements have been assigned specific strategic risks in the context of Industry 4.0. This model is also presented in this study.

Therefore, taking into account three factors, namely: strategic risk and its scalability and the conditions of the 4.0 economy, the following research questions were asked in this study:

1. Which Industry 4.0 risks determine the development of modern organisations in Europe?
2. What is the distribution of risk in individual countries in Europe? Which of them is leading? Is the same type of risk present in each country?
3. Which Industry 4.0 opportunities determine the development of modern organisations in Europe?
4. What is the distribution of opportunities in individual countries in Europe? Which of them is leading? Is the same type of opportunity leading in each country?
5. Are there opportunities that, if exploited, will minimize risks? Is it the same opportunity in each country?

In turn, the aim of the article is to present the results of strategic risk research in the context of Industry 4.0 from the point of view of the scalability model and to identify

conclusions of a utilitarian nature that result from the research conducted in the context of strategic risk in Industry 4.0.

2. STRATEGIC RISK IN INDUSTRY 4.0

Strategic risk in the context of business activities means potential risks and related uncertainties that prevent the achievement of long-term goals in the organisation. Uncertainty is related to quantum theory, which replaced certainty with probability, highlighting the fact that all situations are uncertain (Moore, 2013). About the importance of strategic risk write A.J. Slywotzky and J. Drzik, according to whom this is a category for which there are no systematic methods and procedures developed due to the rapid changes taking place in this area. Undoubtedly, strategic risk goes beyond the challenges known to organisations related to introducing a product to the market or taking over a company (Slywotzky, Drzik, 2005). That is why it is so important to know the subcategories of strategic risk and the elements that influence its form.

These risks are often associated with the strategic decisions and actions an organisation takes to position itself in its competitive environment and pursue its desired future state. Strategic risk encompasses the uncertainties and challenges that can arise from external factors, internal decisions, or a combination of both, which may hinder the successful execution of a company's strategic plans (Maurya, Srivastava, 2022). Managing strategic risk is essential for an organisation's sustainability and long-term success.

The practical definitions of strategic risk (The Risk Management..., 2013; COSO, 2017; Institute of Risk..., 2017; International Organisation ..., 2018) provide a comprehensive understanding of strategic risk, emphasising its connection to decision-making, strategy execution, and the external environment. Nevertheless, there is a trend in the literature to combine strategic risk with operational risk (Schroeck, 2002), which means that in the case of the analysed conditions of the variable economy 4.0 – it becomes a key category in the conceptualisation of this category. Based on research conducted so far, published in articles *Technological risk in the strategies of international companies. Industry 4.0 perspective* (Sus, Trzaska, 2023) and *Industry 4.0 business strategic risks based on the scalability 4.0 concept. Artificial Intelligence area* (Trzaska, Sus, 2023) the authors identified the components of strategic risk, which were subjected to research. These elements are presented in Table 1.

Based on such identified elements of strategic risk in the conditions of Industry 4.0, the authors conceptualised this concept. Strategic risk will therefore be understood as threats (and opportunities – including in research questions No. 3, 4, and 5) that significantly affect the survival of the organisation (Allan, Beer, 2006), and which cover 4 basic research areas, namely:

1. Economics of scale and experience curve.
2. Network effect obtained within the network of suppliers, producers, and customers.
3. Long tail effect.
4. Big Data effect (an advantage in data processing and analytics).

It should be remembered that the analyzed strategic risk concerns the conditions of the digital economy (4.0 and/or 5.0). Importantly, these risks do not use quantitative data and do not use historical data because they do not identify the diversity of future events. In each of these four elements, partial risks can be identified, which are described in Table 1. These elements constitute the basis for building a scalability model – described in the next part of the article.

Table 1. Elements of Strategic Risk in the Context of Industry 4.0

Component Element of Strategic Risk	Description	Authors / Year
Economics of Scale and Experience Curve		
Unit cost risk	Despite company development and providing the same solution to a wider customer group, the unit cost does not decrease, potentially due to suboptimal technology selection needing constant modification.	Miller, Chen (2003); Górecki, Díaz-Madroñero (2020)
Transaction cost risk	Even with consolidated activities and new technologies to streamline processes, transaction costs are not reduced, possibly due to changing customer preferences.	Balduzzi, Lynch (1999); Clemons, Hitt (2004); Hoffmann et al. (2013)
Ecosystem risk	Risks arise from serving the same customer group with solutions when, for example, the demand no longer exists.	Adner (2006); Petersen, Kumar (2015); Zhang, Watson (2020)
Network Effect within Suppliers, Producers, and Customers		
Risk of ineffective network growth	Despite developing an inter-organisational network and customer base, potential remains untapped, possibly due to expanding the network with ineffective users, increasing maintenance costs, and decreasing revenue.	Becker, Peters (1998); Kulmala et al. (2002); Yang et al. (2018)
Network platform risk	Inefficiency persists despite a good fit of users, potentially due to poorly selected or built technology and community platforms.	Kang et al. (2015); Zhou et al. (2021)
Long Tail Effect		
Risk of non-standardised production tools	Opportunities from production technology or manufacturer numbers may fail to meet customer expectations due to a too-diverse production mix affecting product quality.	Mack, Sharples (2009); Tiedemann, Latacz-Lohmann (2013)
Risk of non-standardised distribution tools	New distribution opportunities like the internet might be inefficiently used, possibly due to products being too expensive to distribute compared to their selling price.	Pyke, Cohen (1994); Cheng et al. (2019)
Risk of failing to connect supply and demand	Technology enabling trend observation might lead to mismatches in buying/selling decisions and operational capabilities, possibly due to excessive inventory.	Hallikas, Lintukangas (2016); Paesbrugge et al. (2017)
Risk of missing market niche potential	Failure to match market niche needs despite segment reach, possibly due to a retail-focused approach or misunderstanding niche needs.	Hlavacek, Reddy (2013)

Table 1 (cont.). Elements of Strategic Risk in the Context of Industry 4.0

Component Element of Strategic Risk	Description	Authors / Year
Big Data Effect (Advantage in Data Processing and Analytics)		
Risk of lacking process optimisation	Quick data collection and processing might lead to an overly detailed approach, slowing down the organisation, possibly due to complex computational operations and data overload.	Lüthi, Doege (2005); Chatzoglou, Diamantidis (2009); Au et al. (2019)
Risk of lacking business integrity	High accuracy from data collection and analysis might lead to a lack of business integrity due to unequal data access, causing a rift between departments.	Kjønstad, Willmott (1995); Koehn (2005)

Source: own study.

3. SCALABILITY MODEL 4.0

One of the criteria for the profitability of Industry 4.0 projects is the scalability measure. This category means the ability of a system to accept an increasing number of elements or objects to process with ease and/or be amenable to expansion.

The desk research conducted involved a critical review of existing literature, strategic documents, and secondary data from industry reports. Specifically, the analysis included previous publications by the authors and relevant theoretical frameworks from Industry 4.0 literature, allowing us to formulate and structure the research questions around strategic risk and scalability dimensions in Industry 4.0 contexts.

Scalability refers not only to applications or products (hardware or software) and their ability to change size/volume, but the term is also implementable on the ground of strategic management (Bondi, 2000), which often means a strategy to find new opportunities to scale a business (Bailetti et al., 2020). In this approach, scalability will generate benefits in the form of economic rents (Niemczyk et al., 2019), which will be the core of the structure of business models and patterns of economic operation, with the effects of personalization of operation. In the context of the analyzed Industry 4.0 – the formula of Scalability 4.0. will mean the possibility of generating the effects of mass production, mass commerce, and mass service provision (Stampfl et al., 2013), along with customization. Such processes, by eliminating the role of classical management based on human resources in favor of tactical and operational management based on artificial intelligence using the Internet of Things, as well as machine-to-machine communication, the possibilities of new industrialization through robotization and automation, additive manufacturing, image recognition, cloud solutions, virtual reality and telepresence, smart sensors, mobile devices, and autonomous vehicles, i.e. almost all Industry 4.0 technologies – cause a significant increase in the efficiency of management processes, but also generate risks in this area. Nevertheless, what was impossible due to limitations in manufacturing technologies, transportation technologies, and sales technologies due to, among other things, the cost of changing technologies, transportation costs, and the cost of packaging an individual offering, is now possible. In the analyzed areas, Scalability 4.0 takes the form of four research areas – which were already mentioned in the paper.

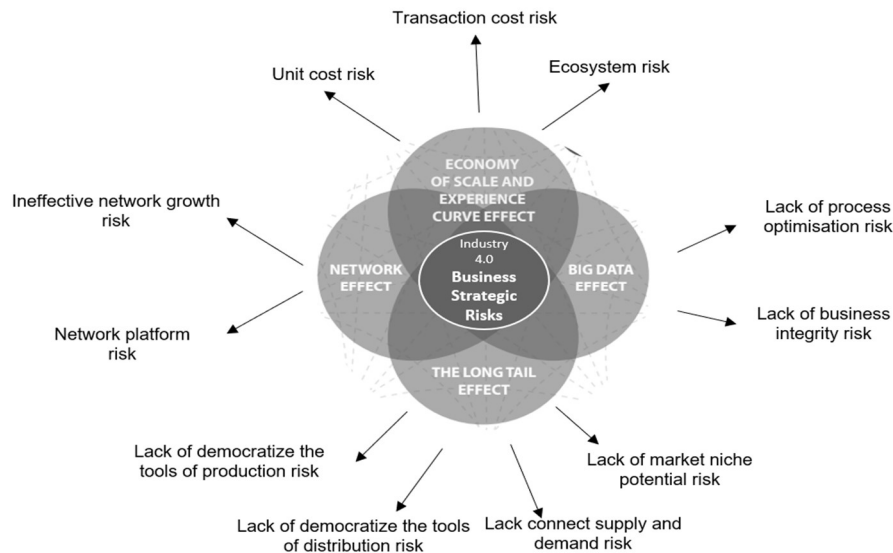


Figure 1. Industry 4.0 business strategic risks based on the Scalability 4.0

Source: (Trzaska, Sus, 2023).

Figure 1 presents the areas of the Scalability 4.0 concept, as well as a sample catalogue of risks. The proposal presented focuses on business strategic risks arising from the Scalability 4.0 concept, where risks will be directly linked to the speed of technology development, the potential to execute technological leaps of a given market (the example of Africa and banking – the leap from gold exchange to mobile banking skipping the development of outlets), access to technological resources, as well as the intellectual capital of the company, inter-sector mobility of the company (building an ecosystem), the ability to perceive suddenly emerging market turns (chaos theory), the ability to penetrate the market and adapt to customer needs (creating a catalogue of niche e-commerce stores), building a business network (social networks, networks of partners, cooperation with competitors), mass and personalised production, as well as the emergence of ecosystems.

4. RESEARCH METHOD

The research was carried out using a procedure appropriate to the triangulation of research methods. The following research methods were used:

- (a) desk research – in an exploratory approach,
- (b) quantitative research using a survey questionnaire, CAWI technique (Computer-Assisted Web Interview survey) as the main survey (Figure 2).

The research process began with a literature review aimed at identifying and clarifying the research problems, followed by the conceptualization of variables and indicators, and subsequently the formulation of research questions. The next step was the selection of the research platform and the construction of the survey questionnaire. The surveys were then implemented, the database was verified, and analyses were conducted.

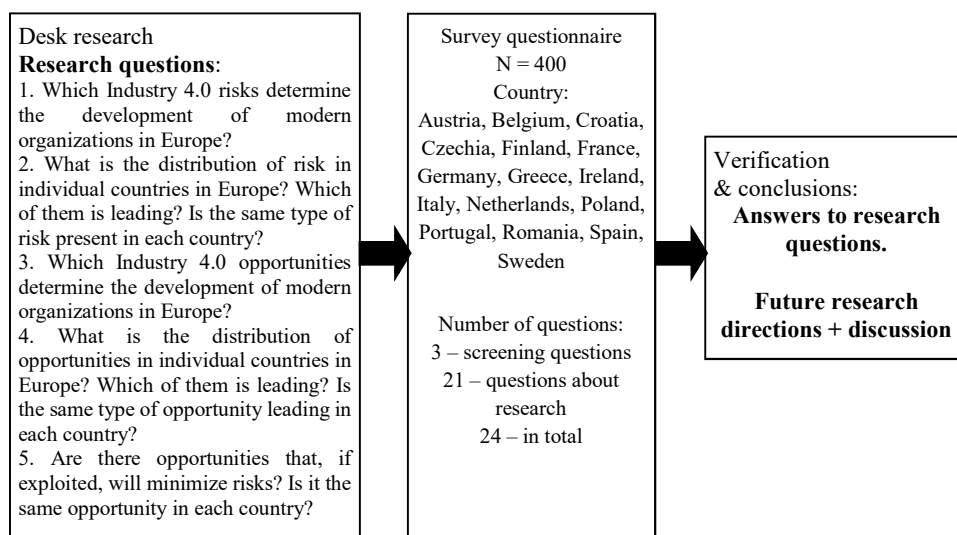


Figure 2. Research process for the presented study

Source: own study.

The sampling method precluded the implementation of the study using random sampling techniques due to the lack of a sampling frame.

The research also included a triangulation of research perspectives, i.e.,

- (a) the perspective on the scientific output in this area (review),
- (b) the perspective of organisations actively engaged in Industry 4.0,
- (c) the perspective of researchers engaged in different areas of Industry 4.0.

The survey research allowed to verify the level of significance of 9 elements of strategic risk in Industry 4.0 among 400 managers of organisations operating in the European Union in large organisations (the smallest enterprise of the surveyed employs 250 people).

The research was carried out using the CAWI technique on the platform <https://www.pollfish.com/> (accessed on 18 October 2023) among consumers of the following countries: Austria, Belgium, Croatia, Czechia, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Poland, Portugal, Romania, Spain, Sweden. The number of survey units (N = 400) is presented in Figure no. 3. The countries included in the survey were selected based on their significant engagement with Industry 4.0 technologies within the European Union, ensuring diversity in terms of economic development and digital maturity. Companies within each country were selected using non-probability sampling, specifically the convenience sampling method due to the absence of a comprehensive sampling frame, with participants being managers from large organizations (minimum 250 employees) actively engaged in Industry 4.0 implementation.

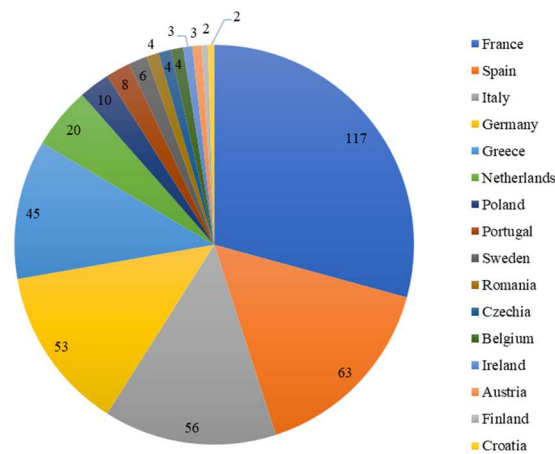


Figure 3. Number of responses by country

Source: own study.

The survey questionnaire included 24 questions. The survey used a 5-point scale. The first three questions verified the respondents' knowledge of Industry 4.0. The verification was carried out by indicating the Industry 4.0 technology used, thus providing the opportunity to compare this data in individual countries (they are not discussed in this article). In addition, the verification question concerned the level of scalability of the company through the technological solutions used in the Industry 4.0 area and general knowledge of the topic of Industry 4.0. Table 2 shows the connection between the research questions and the survey questions. For the sake of clarity, the authors shortened the survey questions to reflect their meaning.

The significance level of risks and opportunities was evaluated using a 5-point Likert scale, where 1 means very low significance and 5 indicates very high significance. Ratings of 3 and above reflect elements currently considered critical for organisational performance under Industry 4.0 conditions. Ratings below 3 indicate factors presently viewed as having minor impact at the analyzed stage of organizational development. However, it is recommended that organizations periodically reassess these factors, as the significance of particular risks and opportunities may evolve over time, especially as managerial awareness of emerging Industry 4.0 threats and potentials increases. Regular monitoring and updating of risk assessments are crucial to maintaining strategic flexibility and readiness to respond to changes in the environment.

The research was not conducted on a representative sample due to the cost of such a research process. Nevertheless, they constitute an important set of information on the basis of which it was possible to obtain answers to the research questions, so the pilot study is quasi-representative.

Table 2. Connection between research questions (RQ) and survey questions (SQ).

Research Question (RQ)	Corresponding Survey Question (SQ)
RQ1: Which Industry 4.0 risks determine the development of modern organisations in Europe?	<p>SQ4: Assessment of transaction cost risk associated with ineffective reduction despite process consolidation and new technologies.</p> <p>SQ5: Evaluation of ecosystem risk tied to reliance on a specific customer group and their potentially unmet evolving needs.</p> <p>SQ6: Evaluation of risks associated with ineffective inter-organisational and customer network growth.</p> <p>SQ7: Assessment of risks stemming from inefficiencies within network platform processes.</p> <p>SQ8: Evaluation of risks related to insufficient standardisation of production tools and inconsistent product quality.</p> <p>SQ9: Evaluation of risks arising from inefficient utilisation of new distribution channels.</p> <p>SQ10: Evaluation of risks due to mismatches between supply-demand alignment and operational capabilities.</p> <p>SQ11: Evaluation of risks associated with missed market niche opportunities due to inadequate market segmentation.</p> <p>SQ12: Evaluation of risks linked to the lack of process optimization due to overly detailed data analysis.</p> <p>SQ13: Assessment of risks resulting from inadequate business integrity due to inconsistent data access within the organization.</p>
RQ2: What is the distribution of risk in individual countries in Europe? Which of them is leading? Is the same type of risk present in each country?	Same as above (SQ4-SQ13), analyzed by country
RQ3: Which Industry 4.0 opportunities determine the development of modern organisations in Europe?	<p>SQ14: Evaluation of opportunities for reducing unit costs through economies of scale enabled by Industry 4.0 technologies.</p> <p>SQ15: Evaluation of opportunities for reducing transaction costs through operational consolidation and technology integration.</p> <p>SQ16: Assessment of opportunities associated with ecosystem development via related products and services.</p> <p>SQ17: Evaluation of opportunities arising from accelerated inter-organisational and customer network expansion.</p> <p>SQ18: Assessment of opportunities linked to increased effectiveness through optimized network platform technology.</p> <p>SQ19: Evaluation of opportunities arising from the standardisation of production tools facilitated by new technologies.</p> <p>SQ20: Evaluation of opportunities arising from the standardisation of production tools facilitated by new technologies (duplicate question, recommend verifying).</p> <p>SQ21: Assessment of opportunities for improved alignment of supply and demand through technological advancements.</p>

Table 2 (cont.). Connection between research questions (RQ) and survey questions (SQ).

Research Question (RQ)	Corresponding Survey Question (SQ)
RQ4: What is the distribution of opportunities in individual countries in Europe? Which of them is leading? Is the same type of opportunity leading in each country?	Same as above (SQ14-SQ21), analyzed by country
RQ5: Are there opportunities that, if exploited, will minimize risks? Is it the same opportunity in each country?	Comparative analysis of responses between risks (SQ4-SQ13) and opportunities (SQ14-SQ21) by country

Source: own study.

5. RESEARCH RESULTS

Analyzing the test results, first of all, it should be noted that the distribution of responses is left-sided asymmetric. This suggests a generally high level of managerial awareness and sensitivity towards strategic risks within Industry 4.0 environments. But such a research group influences the analysis and the level of significance of risks and opportunities, which indicates that each risk and opportunity presented are significant at a given moment (exceeding the value of 3 or more on the rating scale). Taking this assumption into account for further analysis, the best statistical measure reflecting the intensity of risk and opportunity is the median. The median reflects the results most reliably and illustrates the intensity of a given phenomenon. Analyzing the results in this way allows you to analyze and present answers to the research questions.

1. Which Industry 4.0 risks determine the development of modern organisations in Europe?

In the conducted study, entrepreneurs indicated that the greatest risks were (Figure 4):

- standardising the tools of distribution,
- unit cost,
- market niche,
- network growth,
- business integrity,
- business flexibility vs process optimization.

Among the risks presented in the literature, those related to unit cost, market niche, and network growth are known, but the leading risk is standardising the distribution tools, which may indicate an area of uncertainty and fear of new things.

On the other hand, entrepreneurs are less concerned about the following types of risk:

- connecting supply and demand,
- transaction cost,
- ecosystem,
- network platform,
- standardisation of production tools.

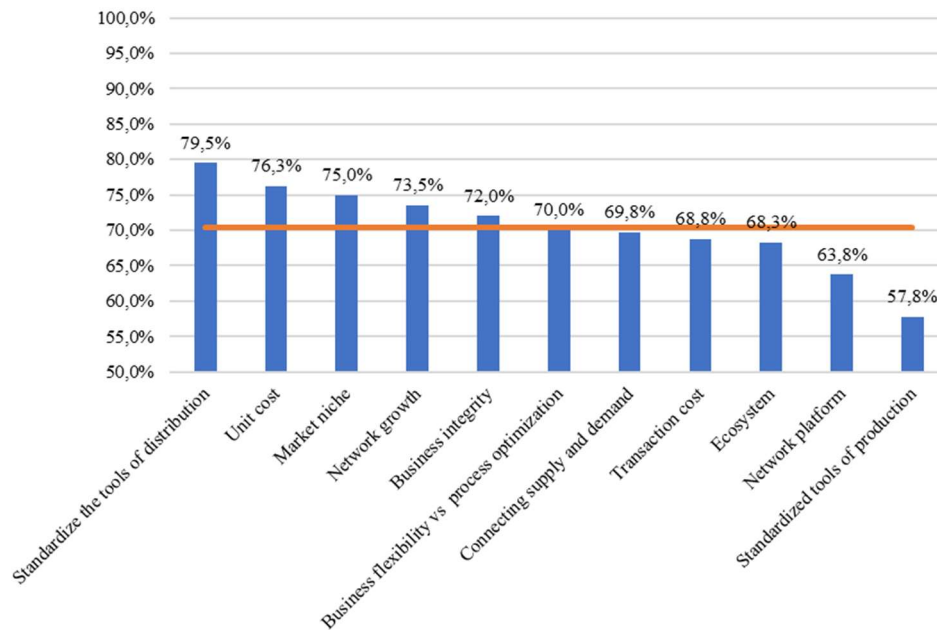


Figure 4. Risks determining the development of enterprises in Industry 4.0

Source: own study.

It is also possible to indicate a certain business logic related to knowledge of the issue and, at the same time, less concern and impact of risk data on the business aspects of the company. The point that verifies and divides the population into two areas is the average median, which in the case of risk is 70%. This dimension will also be used to build the Industry 4.0 risk and opportunity matrix. The threshold of 70%, representing the average median of responses, was used as a benchmark to categorize risks and opportunities. Values at or above this level indicate elements perceived by managers as highly significant and therefore critical for strategic decision-making in the context of Industry 4.0. Conversely, values below 70% reflect factors currently regarded as less impactful at the stage of the companies' development analyzed in this research.

2. What is the distribution of risk in individual countries in Europe? Which of them is leading? Is the same type of risk present in each country?

Analyzing the risk distribution across key countries (Table 3), we cannot identify the key risk for all countries. The ranking presented is varied. When analyzing the frequency of occurrence of a given risk for you in the first three priorities, you can notice that they most often indicate: unit cost, transaction cost, and business flexibility vs process optimization.

Table 3. Risk ranking per country

Rank position	Tested sample	France	Spain	Italy	Germany	Greece	Netherlands	Poland	Other
1	Standardized distribution tools	Unit cost	Unit cost	Transaction cost	Connecting supply and demand	Unit cost	Connecting supply and demand	Transaction cost	Business flexibility vs process optimization
2	Unit cost	Transaction cost	Transaction cost	Market niche	Network growth	Transaction cost	Standardized tools of production	Standardized distribution tools	Ecosystem
3	Market niche	Business flexibility vs process optimization	Business flexibility vs process optimization	Business integrity	Business flexibility vs process optimization	Ecosystem	Ecosystem	Market niche	Transaction cost
4	Network growth	Connecting supply and demand	Business integrity	Ecosystem	Ecosystem	Market niche	Network growth	Ecosystem	Connecting supply and demand
5	Business integrity	Market niche	Connecting supply and demand	Unit cost	Network platform	Network growth	Network platform	Network platform	Network growth
6	Business flexibility vs process optimization	Network platform	Standardized distribution tools	Network platform	Business integrity	Connecting supply and demand	Standardized distribution tools	Business flexibility vs process optimization	Network platform
7	Connecting supply and demand	Standardized distribution tools	Network growth	Network growth	Unit cost	Standardized tools of production	Business integrity	Business integrity	Business integrity
8	Transaction cost	Network growth	Market niche	Standardized distribution tools	Standardized distribution tools	Business flexibility vs process optimization	Transaction cost	Network growth	Unit cost
9	Ecosystem	Business integrity	Ecosystem	Standardized tools of production	Market niche	Business integrity	Business flexibility vs process optimization	Connecting supply and demand	Market niche
10	Network platform	Ecosystem	Network platform	Business flexibility vs process optimization	Transaction cost	Standardized distribution tools	Market niche	Standardized tools of production	Standardized distribution tools
11	Standardized tools of production	Standardized tools of production	Standardized tools of production	Connecting supply and demand	Standardised tools of production	Network platform	Unit cost	Unit cost	Standardized tools of production

Source: own study.

The differences that occur at each level in terms of materiality and country make it impossible to clearly determine which risk is material.

3. Which Industry 4.0 opportunities determine the development of modern organisations in Europe?

Summarizing the research results, it should be emphasized that opportunities are generally less visible in the research than threats. We can classify them as key opportunities (Figure 5):

- market niche,
- network platform,
- ecosystem,
- standardised distribution tools,
- network growth,
- connecting supply and demand,
- standardized tools of production,
- transaction cost.

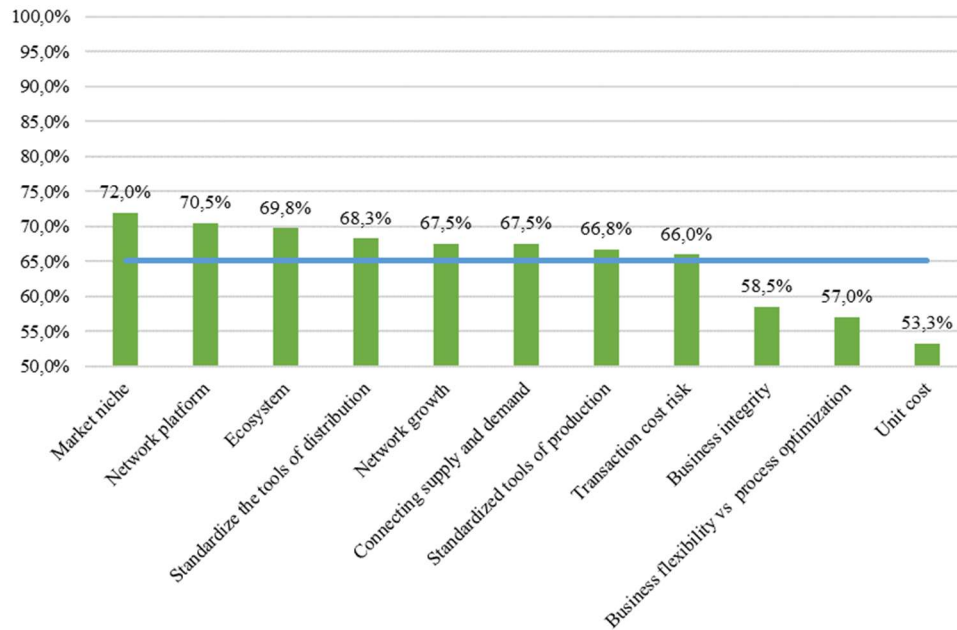


Figure 5. Opportunities determining the development of enterprises in Industry 4.0

Source: own study.

The research indicates the smallest opportunities that may influence the development of the company as:

- business integrity,
- business flexibility vs process optimization,
- unit cost.

The presented analysis indicates that the respondents do not clearly indicate the leading opportunities that may result from the implementation of Industry 4.0. This may be due to high uncertainty resulting from emerging risks. Uncertainty is a category in relation to which the probability of a specific situation cannot be determined due to the lack of information, and as such – it does not encourage enterprises to invest in implementing Industry 4.0 solutions.

4. What is the distribution of opportunities in individual countries in Europe? Which of them is leading? Is the same type of opportunity leading in each country?

In the case of opportunity analysis, it can be noticed that there is greater homogeneity in individual countries than in the case of risk. Entrepreneurs primarily point to opportunities such as network platform, standardising the tools of distribution, network growth, market niche, and standardised tools of production (Table 4).

Table 4. Opportunity ranking per country

Rank position	Tested sample	France	Spain	Italy	Germany	Greece	Netherlands	Poland	Other
1	Market niche	Business flexibility vs process optimization	Standardized distribution tools	Network platform	Business integrity	Connecting supply and demand	Standardized tools of production	Network platform	Standardized distribution tools
2	Network platform	Network growth	Market niche	Market niche	Ecosystem	Network platform	Network growth	Business flexibility vs process optimization	Standardised tools of production
3	Ecosystem	Standardized tools of production	Business integrity	Connecting supply and demand	Unit cost	Ecosystem	Standardized distribution tools	Standardized tools of production	Network growth
4	Standardized distribution tools	Standardized distribution tools	Network growth	Standardized distribution tools	Transaction cost	Market niche	Network platform	Connecting supply and demand	Market niche
5	Network growth	Connecting supply and demand	Connecting supply and demand	Unit cost	Network platform	Unit cost	Business flexibility vs process optimization	Ecosystem	Business integrity
6	Connecting supply and demand	Market niche	Transaction cost	Ecosystem	Standardized tools of production	Transaction cost	Business integrity	Market niche	Ecosystem
7	Standardized tools of production	Transaction cost	Network platform	Network growth	Network growth	Network growth	Ecosystem	Transaction cost	Unit cost
8	Transaction cost	Network platform	Standardized tools of production	Standardized tools of production	Market niche	Business integrity	Market niche	Standardized distribution tools	Connecting supply and demand
9	Business integrity	Unit cost	Ecosystem	Business flexibility vs process optimization	Standardized distribution tools	Standardized distribution tools	Connecting supply and demand	Business integrity	Business flexibility vs process optimization
10	Business flexibility vs process optimization	Ecosystem	Business flexibility vs process optimization	Business integrity	Connecting supply and demand	Business flexibility vs process optimization	Unit cost	Unit cost	Transaction cost
11	Unit cost	Business integrity	Unit cost	Transaction cost	Business flexibility vs process optimization	Standardized tools of production	Transaction cost	Network growth	Network platform

Source: own study.

An important observation is that entrepreneurs ranked first and second in the ranking indicated as many as two opportunities. This demonstrates the lack of a clear definition of what opportunities are crucial for the functioning of a business, while simultaneously highlighting the awareness among enterprises of the potential to utilize these opportunities.

5. Are there opportunities that, if exploited, will minimise risks? Is it the same opportunity in each country?

Referring to the mentioned frequency analysis and the ranking of risks and opportunities, the following relationships between given risks and opportunities can be identified (Table 5). Risks associated with standardising the tools of distribution and the opportunity market niche are in the same area of scalability effect – the long tail effect, which may result in the neutralisation of risks and opportunities or a logarithmic increase in the potential value provided to the client. However, to definitively determine this, further research should be conducted to verify this assumption. The same can be observed in the case of transaction cost in the area of risks and opportunities.

Table 5. Risks and opportunities in scalability strategy

Rank position	Risk	Opportunity	Scalability effect for risk	Scalability effect for opportunity	Status
1	Standardized distribution tools	Market niche	The long tail effect	The long tail effect	Potential neutral effect or logarithm effect of added value
2	Unit cost	Network platform	The economy of scale and experience curve effect	Network effect	Undefined conclusions, area for study
3	Market niche	Ecosystem	The long tail effect	The economy of scale and experience curve effect	Undefined conclusions, area for study
4	Network growth	Standardized distribution tools	Network effect	The long tail effect	Undefined conclusions, area for study
5	Business integrity	Network growth	Big data effect	Network effect	Undefined conclusions, area for study
6	Business flexibility vs process optimization	Connecting supply and demand	Big data effect	The long tail effect	Undefined conclusions, area for study
7	Connecting supply and demand	Standardised tools of production	The long tail effect	The long tail effect	Undefined conclusions, area for study
8	Transaction cost	Transaction cost	The economy of scale and experience curve effect	Economy of scale and experience curve effect	Potential neutral effect or logarithm effect of added value
9	Ecosystem	Business integrity	The economy of scale and experience curve effect	Big data effect	Undefined conclusions, area for study
10	Network platform	Business flexibility vs process optimization	Network effect	Big data effect	Undefined conclusions, area for study
11	Standardized tools of production	Unit cost	The long tail effect	Economy of scale and experience curve effect	Undefined conclusions, area for study

Source: own study.

From this perspective, we should consider what features a strategy based on the scalability effect may have, taking advantage of emerging opportunities and threats. On the one hand, this may be a risky strategy, but on the other hand, it may be quite effective in solving specific business problems. It can help to define a strategy by comparing risks and opportunities and then determining their potential by locating them in a matrix indicating action priorities.

6. Use of risks and opportunities as the basis of the scalability effect strategy – discussion of the results

Comparing the same risks and opportunities, a matrix can be built (Figure 6), presenting potential opportunities and threats as a navigation compass where entrepreneurs see the greatest potential to generate value for entrepreneurs. Therefore, the primary strategic risks and opportunities currently identified as having the highest potential for creating significant added value for organizations are: Standardised distribution tools (the long tail effect),

- market niche (the long tail effect),
- network growth (network effect).

Another group that gives a smaller bonus to the added value, but can significantly influence the company's activities are:

- ecosystem (economy of scale and experience curve effect),
- connecting supply and demand (the long tail effect),
- transaction cost (economy of scale and experience curve effect),
- network platform (network effect),
- standardized tools of production (the long tail effect).

The remaining risks are those areas that at this point do not bring the expected generation of added value in the form of positive business risk and opportunity, and belong to this group:

- business integrity (big data effect),
- unit cost (economy of scale and experience curve effect),
- business flexibility vs. process optimization (big data effect).

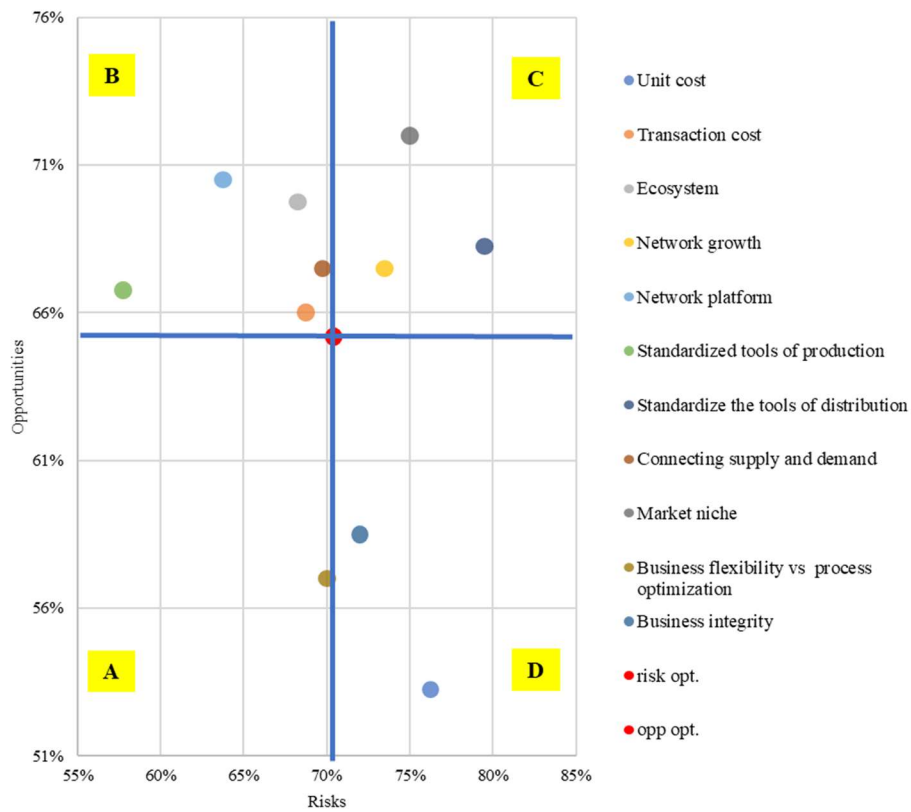


Figure 6. Industry 4.0 risk matrix for the surveyed sample of 400 managers
 Source: own study.

- Area A – defines low risk and low opportunity. The company should not focus on activities in this area; the return on investment is low, and the scalability strategy will probably not bring the expected benefits.
- Area B – defines low risk and high opportunity. The company should focus on activities in this area; the return on investment is relatively high with low risk. There is high added value in the implementation of technology and scalability strategy.
- Area C – defines high risk and high opportunity. The company should focus on activities in this area; the return on investment is very high but at high risk. There is a very high added value in the implementation of technology and scalability strategy; it allows you to gain a competitive advantage.
- Area D – defines high risk and low opportunity. The company should not focus on activities in this area; the return on investment is very low but with high risk. Scalability and technology may be a big threat to the company.

Such a defined tool may prove helpful in verifying the significance of a given risk in enterprises implementing Industry 4.0 technology. Additionally, it is worth emphasising that entrepreneurs are currently aware of generating advantage using the following actions: the long tail effect and the economy of scale and experience curve effect.

6. FINAL CONCLUSION

The presented analysis highlights that the study contributes to understanding the current managerial awareness regarding the emerging category of strategic risks specific to Industry 4.0, as well as the recognition of directly related opportunities.

The authors recommend future research to address the limitations identified in this study, particularly by increasing the sample size to achieve greater representativeness and by examining more thoroughly the varying intensity of Industry 4.0 risks across different contexts.

Additionally, the illustrative method used in the study, although effective in framing initial findings, should be further developed and refined for increased precision.

The main added value of the article is its verification of managerial awareness of strategic risks and opportunities associated with Industry 4.0, as well as proposing a practical tool – the Industry 4.0 Risk and Opportunity Matrix – to support strategic decision-making by prioritizing actions according to their potential value.

Future research is recommended to include a detailed analysis of specific Industry 4.0 technologies, identifying those perceived by entrepreneurs as generating the greatest risks and opportunities. Moreover, comparative studies focused on European regional variations, including analyses correlated with indicators such as the Digital Economy and Society Index (DESI), could provide valuable insights into region-specific priorities.

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CITIZENS' SATISFACTION WITH SELECTED ASPECTS OF URBAN LIFE

When looking at the development of civilization, it is worth assessing the quality of life of residents, but it should be noted that the concept of urban quality of life is not clearly defined in the literature, and measurements are carried out in various approaches. The aim of the paper is to assess the quality of life of the inhabitants of Szczecin and Koszalin by indicating their perceived level of satisfaction with selected areas and aspects of urban life. The article uses the results of own research conducted using the CATI and CAWI methods among 427 residents of Szczecin and Koszalin in 2021, as well as the literature on the subject. The data indicates that satisfaction levels of citizens of Szczecin and Koszalin are generally higher and more consistent in certain areas (green areas and safety) and lower with greater variability in others (e-office and attractiveness of real estate).

Keywords: smart city, citizens, quality of life.

1. INTRODUCTION

Quality of life is variously defined in the literature and is an interdisciplinary concept (Wnuk et al., 2013). In quality of life research, one can encounter both a descriptive understanding of this category and a value-based one. According to the descriptive approach, a distinction can be made between the objective and subjective side of quality of life, since aspects of quality of life have an objective dimension, but their evaluation depends on the subjective value system and feelings of the individual evaluating it, as well

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as the degree to which his or her own needs are satisfied and the level of aspiration (Petelewicz, Drabowicz, 2016). The concept of urban quality of life is all the more ambiguously defined, as well as measurements being carried out in a variety of approaches (Zadrożniak, 2016).

The aim of the paper is to assess the quality of life of the inhabitants of Szczecin and Koszalin by indicating their perceived level of satisfaction with selected areas and aspects of urban life. Areas of life such as the organization of transport, cultural events, green spaces, e-government activities, health care, access to education for children and young people, environmental protection, the local labor market, safety in the city and an assessment of the property market will be analyzed. The individual aspects will be described in detail in the methodology section.

This article draws on the results from own surveys conducted using CATI and CAWI methods among 427 residents of Szczecin and Koszalin in 2021, as well as the literature on the subject.

2. URBAN DEVELOPMENT AND QUALITY OF LIFE IN THE CITY – THEORETICAL CONSIDERATIONS

An important aspect of civilizational development is the development of cities (Rybicki, 1972; Huntington, 2005; Barczyk, 2020). In the last decade of the XX century and the beginning of the XXI century, changes in the development process of civilization and the impact of globalization have led to particular attention being paid to urban problems. Issues such as the objectives of urbanization, the principles that should guide contemporary urban planning, urban concentration processes, processes of excessive suburbanization around existing cities, trends towards the creation of metropolitan areas, problems of overcrowding, mega-cities, the types and scope of application of planning tools, or the shaping of optimal forms of urban space have been debated (Rogers, Power, 2000; Panerai et al., 2004; Albouy, 2008; Ferguson, Dickens, 2011; Marans, 2012; Cheshire, Hay, 2017). A particular issue was the identification of a new solution, i.e. alternative ways of living to the big cities (Szamańska, Biegańska, 2012; Frick, Rodriguez-Pose, 2018). In this case, the new currents concerning the issues of development and quality of life in cities have become: new urbanism, smart grow, or smart city, which on the one hand point to the necessity of urban development, but also consider as important the issues of measures in line with environmental protection, respect for the quality of life of citizens, ethical action, and fit these issues into the idea of sustainable development. Most smart city models focus on four main attributes – sustainability, quality of life, urbanization, and smartness – demonstrating how cities leverage technology and governance to enhance social, economic, and environmental conditions (Słupińska, Duda, Biercewicz, 2021; Duarte et al., 2024; Mierzejwska 2023, Vinkoczi et al., 2023). Thus, these ideas of urban development realize social and spatial values and ignore the model of accelerated urban development of new neighborhoods and cities (Keivani, 2009; Paszkowski, 2011; Chmiel, 2020; Wei et al., 2015; Ciepiewska, 2016; Winkowska et al., 2019; Satterthwaite, 2021; Duygan et al. 2022).

Quality of life can be described objectively and subjectively (Rogala, 2014; Borys, 2015). Objective quality of life represents

“a set of human living conditions, objective attributes of the natural world, objects and culture, and objectively assessed human attributes related to living standards

and social position. Among these objective determinants of quality of life is also the structure of the human organism and the level of functioning of its biological systems, i.e. health" (Sęk, 1993).

Quality of life in subjective terms, on the other hand, is

"the result of internal processes of valuing different spheres of life and life as a whole. It is a cognitive-experiential (emotional) category, and the subject is the most important, if not the only source of data from which the level of quality of life is inferred (Sęk, 1993).

For the purposes of this article, it should be mentioned that the concept of urban quality of life is not clearly defined and its measurement is still much debated. An important issue in the assessment of urban quality of life is the interpretation of data obtained from direct surveys conducted by various institutions. Therefore, the authors of this article proposed to supplement the data on urban residents' perceptions of quality of life by presenting their level of satisfaction with selected aspects of urban life. Aspects of the survey are described in detail in the section on the research procedure used.

3. METHODOLOGY

In 2021, the researchers conducted a preliminary survey employing two distinct interview methods, CATI and CAWI, on a random sample of 427 residents from Szczecin and Koszalin, the largest cities in Poland's West Pomeranian region. In the study, 225 respondents from Szczecin and 202 respondents from Koszalin took part.

The Wilcoxon rank sum test, Kruskal-Wallis rank sum test and Spearman's correlation matrix were used to analyze the data. Furthermore, primary data were gathered through a structured questionnaire that featured a ratio scale. Based on the methodology applied in the regional study, the chosen sample is deemed representative of the population in the West Pomeranian region (Bazarnik, Grabiński, Kąciak, 1992). This method enabled the authors to thoroughly examine potential satisfaction with various aspects of urban life among the residents of Szczecin and Koszalin. Ensuring the sample was representative was essential to accurately capture the analyzed aspects.

Since this study is a preliminary research investigation, the researchers primarily utilized inductive reasoning. As a result, subjective assessment of satisfaction and the making of inferences about the observed phenomena were concentrated based on the results of statistical hypothesis testing. To extrapolate the sample statistics, the researchers developed statistical hypotheses, enabling them to apply the Wilcoxon rank sum test and Kruskal-Wallis rank sum test.

The authors examined the satisfaction of selected aspects of urban life in two Polish cities: Szczecin (City 1) and Koszalin (City 2). The study aimed to assess satisfaction with various aspects of urban life transport (1), cultural events (2), green areas (3), e-office (4), healthcare (5), access to education (6), environmental protection (7), local labor market (8), safety (9) and the attractiveness of real estate (10) (Table 6 and Table 7). All the defined variables of the study are denoted with symbols. Table 1 explains the definition of the variable, the scale of measurement and the symbolic representation of the variable. Each question asks the respondent to rate their satisfaction on a scale from 0 to 100, 0 = no satisfaction at all and, 100 = maximum satisfaction. Moreover, RStudio R version 4.2.2

and Microsoft Excel were used for the statistical analysis and the primary data were collected according to the EU General Data Protection Regulation.

Table 1. Definition of the variable, the measurement scale and the symbolic representation

Definition of the variable	The measurement scale	Symbolic representation	Definition of the variable	The measurement scale	Symbolic representation
Satisfaction scores of transport in Szczecin	Ratio	C1 _a	Satisfaction scores of transport in Koszalin	Ratio	C2 _a
Satisfaction scores of cultural events in Szczecin	Ratio	C1 _b	Satisfaction scores of cultural events in Koszalin	Ratio	C2 _b
Satisfaction scores of green areas in Szczecin	Ratio	C1 _c	Satisfaction scores of green areas in Koszalin	Ratio	C2 _c
Satisfaction scores of e-office in Szczecin	Ratio	C1 _d	Satisfaction scores of e-office in Koszalin	Ratio	C2 _d
Satisfaction score of healthcare in Szczecin	Ratio	C1 _e	Satisfaction score of healthcare in Koszalin	Ratio	C2 _e
Satisfaction score of access to education in Szczecin	Ratio	C1 _f	Satisfaction score of access to education in Koszalin	Ratio	C2 _f
Satisfaction scores of environmental protection in Szczecin	Ratio	C1 _g	Satisfaction scores of environmental protection in Koszalin	Ratio	C2 _g
Satisfaction score of the local labor market in Szczecin	Ratio	C1 _h	Satisfaction score of the local labor market in Koszalin	Ratio	C2 _h
Satisfaction score of Safe City in Szczecin	Ratio	C1 _i	Satisfaction score of Safe City in Koszalin	Ratio	C2 _i
Satisfaction score of the attractiveness of the real estate in Szczecin	Ratio	C1 _j	Satisfaction score of the attractiveness of the real estate in Koszalin	Ratio	C2 _j

Source: Field survey 2021.

Referring to the aim of the paper, which is to assess the quality of life of the inhabitants of Szczecin and Koszalin by indicating their perceived level of satisfaction with selected areas and aspects of life in the city, the authors created a conceptual framework (Figure 1).

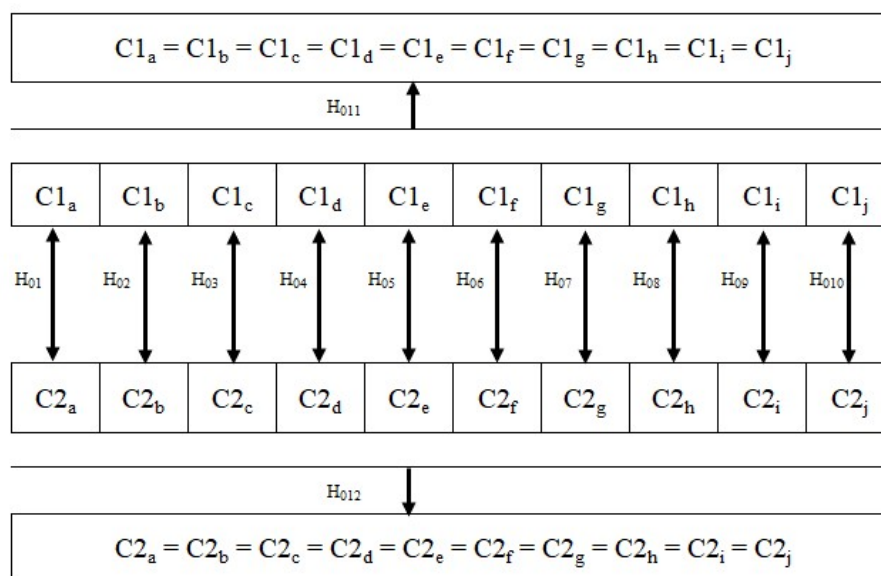


Figure 1. Conceptual Framework of the study

Source: Own collaboration.

The conceptual framework indicates differences in the evaluation of the level of satisfaction with various aspects of urban life in the analyzed cities. Accordingly, twelve statistical hypotheses were formulated for the analysis:

H_{01} : There is no difference in the transport satisfaction score of citizens from City 1 and the transport satisfaction scores of citizens from City 2.

H_{a1} : There is a difference in the transport satisfaction score of citizens from City 1 and the transport satisfaction scores of citizens from City 2.

H_{02} : There is no difference in the cultural events satisfaction score of citizens from City 1 and the cultural events satisfaction scores of citizens from City 2.

H_{a2} : There is a difference in the cultural events satisfaction score of citizens from City 1 and the cultural events satisfaction scores of citizens from City 2.

H_{03} : There is no difference in the green areas satisfaction score of citizens from City 1 and the green areas satisfaction scores of citizens from City 2.

H_{a3} : There is a difference in the green areas satisfaction score of citizens from City 1 and the green areas satisfaction scores of citizens from City 2.

H_{04} : There is no difference in the e-office satisfaction score of citizens from City 1 and the e-office satisfaction scores of citizens from City 2.

H_{a4} : There is a difference in the e-office satisfaction score of citizens from City 1 and the e-office satisfaction scores of citizens from City 2.

H_{05} : There is no difference in the healthcare satisfaction score of citizens from City 1 and the healthcare satisfaction scores of citizens from City 2.

- H_{a5}: There is a difference in the healthcare satisfaction score of citizens from City 1 and the healthcare satisfaction scores of citizens from City 2.
- H₀₆: There is no difference in the access to education satisfaction score of citizens from City 1 and the access to education satisfaction scores of citizens from City 2.
- H_{a6}: There is a difference in the access to education satisfaction score of citizens from City 1 and the access to education satisfaction scores of citizens from City 2.
- H₀₇: There is no difference in the environmental protection satisfaction score of citizens from City 1 and the environmental protection satisfaction scores of citizens from City 2.
- H_{a7}: There is a difference in the environmental protection satisfaction score of citizens from City 1 and the environmental protection satisfaction scores of citizens from City 2.
- H₀₈: There is no difference in the local labor market satisfaction score of citizens from City 1 and the local labor market satisfaction scores of citizens from City 2.
- H_{a8}: There is a difference in the local labor market satisfaction score of citizens from City 1 and the local labor market satisfaction scores of citizens from City 2.
- H₀₉: There is no difference in the safe city satisfaction score of citizens from City 1 and the safe city satisfaction scores of citizens from City 2.
- H_{a9}: There is a difference in the safe city satisfaction score of citizens from City 1 and the safe city satisfaction scores of citizens from City 2.
- H₀₁₀: There is no difference in the attractiveness of the real estate satisfaction score of citizens from City 1 and the attractiveness of the real estate satisfaction scores of citizens from City 2.
- H_{a10}: There is a difference in the attractiveness of the real estate satisfaction score of citizens from city 1 and the attractiveness of the real estate satisfaction scores of citizens from city 2.
- H₀₁₁: The median satisfaction scores of C1_a, C1_b, C1_c, C1_d, C1_e, C1_f, C1_g, C1_h, C1_i, C1_j are equal.
- H_{a11}: At least one of the median satisfaction scores of C1_a, C1_b, C1_c, C1_d, C1_e, C1_f, C1_g, C1_h, C1_i, C1_j is different from each other.
- H₀₁₂: The median satisfaction scores across the areas of C2_a, C2_b, C2_c, C2_d, C2_e, C2_f, C2_g, C2_h, C2_i, C2_j are equal.
- H_{a12}: At least one of the median satisfaction scores of C2_a, C2_b, C2_c, C2_d, C2_e, C2_f, C2_g, C2_h, C2_i, C2_j is different from each other.

4. CITIZENS' SATISFACTION WITH SELECTED ASPECTS OF URBAN LIFE – PRACTICAL APPROACH

Table 2 presents descriptive statistics for the satisfaction scores of citizens from Szczecin (City 1). It provides insights into the mean, median, variance, and standard deviation of satisfaction across various categories, highlighting key differences and similarities in citizen satisfaction levels.

The data presented in Table 2 illustrate that the highest mean scores belong to such aspects of urban life as green areas (82.90), safety (80.82), and transport (80.61), indicating greater citizen satisfaction in these areas. However, e-office (71.67) and attractiveness of real estate (73.00) show the lowest average satisfaction scores, suggesting areas of comparative lower satisfaction. The median satisfaction scores reflect similar trends, with green areas (89.00) and safety (88.00) being the highest, and e-office (74.00) and attractiveness of real estate (75.00) being the lowest. The e-office has the highest variance

(535.93) and standard deviation (23.15), and, green areas have the lowest variance (341.73) and standard deviation (18.49).

Table 2. Descriptive analysis – Satisfaction Scores of Citizens from the City 1 / Szczecin

<i>City 1 (n=225)</i>	<i>CI_a</i>	<i>CI_b</i>	<i>CI_c</i>	<i>CI_d</i>	<i>CI_e</i>	<i>CI_f</i>	<i>CI_g</i>	<i>CI_h</i>	<i>CI_i</i>	<i>CI_j</i>
Sample Mean	80.61	72.77	82.90	71.67	80.24	79.04	77.85	77.69	80.82	73.00
Sample Median	83.00	74.00	89.00	74.00	84.00	81.00	82.00	83.00	88.00	75.00
Sample Variance	358.66	469.36	341.73	535.93	474.24	405.61	488.83	483.10	483.11	535.11
Sample Standard Deviation	18.94	21.66	18.49	23.15	21.78	20.14	22.11	21.98	21.98	23.13

Source: Field survey 2021.

Table 3 presents descriptive statistics for the satisfaction scores of citizens from Koszalin (City 2).

Table 3. Descriptive analysis – Satisfaction Scores of Citizens from the City 2 / Koszalin

<i>City 2 (n=202)</i>	<i>C2_a</i>	<i>C2_b</i>	<i>C2_c</i>	<i>C2_d</i>	<i>C2_e</i>	<i>C2_f</i>	<i>C2_g</i>	<i>C2_h</i>	<i>C2_i</i>	<i>C2_j</i>
Sample Mean	73.97	72.97	82.56	71.91	81.91	80.68	77.04	81.35	82.58	73.14
Sample Median	76.00	75.00	85.00	74.00	87.50	83.00	78.00	83.50	85.50	74.00
Sample Variance	438.95	476.42	294.22	483.44	408.34	366.41	452.17	358.61	331.19	479.79
Sample Standard Deviation	20.95	21.83	17.15	21.99	20.21	19.14	21.26	18.94	18.20	21.90

Source: Field survey 2021.

According to the results shown in Table 3, the highest mean scores belong to such aspects of urban life as green areas (82.56), safety (82.53), and healthcare (81.91), indicating greater satisfaction in these areas. Yet, e-office (71.9) and cultural events (72.97) show the lowest average satisfaction scores, suggesting areas of comparatively lower satisfaction. The median satisfaction scores reflect comparable trends, with healthcare (87.50), safety (85.50) and green areas (85.00) being the highest, and e-office (74.00) and attractiveness of real estate (74.00) being the lowest. The e-office has the highest variance (483.44) and standard deviation (21.99), and, green areas have the lowest variance (294.22) and standard deviation (17.15).

Table 4 presents the results of the Wilcoxon rank sum test for ten statistical hypotheses. The test compares the satisfaction scores of two cities to determine whether the satisfaction scores of the two cities are similar or not.

According to the illustration of Table 4, the Wilcoxon rank sum test was conducted to determine whether there were differences in satisfaction scores for various aspects of urban life in citizens of Szczecin and Koszalin. Accordingly, the median score for the citizens' satisfaction with the transport in the Szczecin (Mdn = 83, IQR = 30) was significantly higher than the median score for citizens' satisfaction with the transport in the Koszalin (Mdn = 76, IQR = 27.25), $W=26968$, $p=.000$. Moreover, all other tested hypotheses indicate the p-value is greater than the alpha value, leading to the decision of fail to reject the null hypothesis. This means there is no significant difference between the satisfaction scores of other tested variables in Szczecin and Koszalin including satisfaction scores of

cultural events, satisfaction scores of green areas, satisfaction scores of e-office, satisfaction scores of health care, satisfaction scores of access to education, satisfaction scores of environmental protection, satisfaction scores of the local labour market, satisfaction scores of safe city, and the satisfaction score of the attractiveness of the real estate.

Table 4. Wilcoxon rank sum test results summary

<i>Hypothesis</i>	<i>W</i>	<i>p-value</i>	<i>Alpha</i>	<i>Observation</i>	<i>Decision</i>
H ₀₁	26968	0.00	0.05	p-value < alpha	Reject null
H ₀₂	22580	0.91	0.05	p-value > alpha	Fail to reject null
H ₀₃	23177	0.72	0.05	p-value > alpha	Fail to reject null
H ₀₄	22629	0.94	0.05	p-value > alpha	Fail to reject null
H ₀₅	21788	0.46	0.05	p-value > alpha	Fail to reject null
H ₀₆	21546	0.35	0.05	p-value > alpha	Fail to reject null
H ₀₇	23214	0.70	0.05	p-value > alpha	Fail to reject null
H ₀₈	23075	0.78	0.05	p-value > alpha	Fail to reject null
H ₀₉	22095	0.62	0.05	p-value > alpha	Fail to reject null
H ₀₁₀	22777	0.97	0.05	p-value > alpha	Fail to reject null

Source: Field survey 2021.

The Kruskal-Wallis rank sum test was used to determine if there are statistically significant differences between the medians of the satisfaction score in all the variables illustrated in the conceptual framework (Table 5).

Table 5. Kruskal-Wallis rank sum test results summary

<i>Hypothesis</i>	<i>chi-squared</i>	<i>df</i>	<i>p-value</i>	<i>alpha</i>	<i>Observation</i>	<i>Decision</i>
H ₀₁₁	71.156	9	0.000	0.05	p-value < alpha	Reject null
H ₀₁₂	84.251	9	0.000	0.05	p-value < alpha	Reject null

Source: Field survey 2021.

Descriptive statistics showed that Group C1_a had a median score of 83.00 (IQR = 30), Group C1_b had a median score of 74.00 (IQR = 30), Group C1_c had a median score of 89.00 (IQR = 28), Group C1_d had a median score of 74.00 (IQR = 34.50), Group C1_e had a median score of 84.00 (IQR = 28.50), Group C1_f had a median score of 81.00 (IQR = 32.50), Group C1_g had a median score of 82.00 (IQR = 34), Group C1_h had a median score of 83.00 (IQR = 29.50), Group C1_i had a median score of 88.00 (IQR = 28) and Group C1_j had a median score of 75.00 (IQR = 33.50).

According to the statistical hypothesis test for H₀₁₁, a Kruskal-Wallis H test indicated a statistically significant difference in scores between the groups, $\chi^2(9) = 71.156$, $p < .05$.

Post-hoc pairwise comparisons were conducted using Dunn's test with a Bonferroni correction to control for multiple comparisons. The results indicated that: Group C1_a vs.

group C1_j: the test statistic was $Z = 3.45$, the adjusted p-value was $p = .012 < (\alpha = 0.05/2 = 0.025)$; Group C1_a vs. group C1_b: the test statistic was $Z = 3.91$, the adjusted p-value was $p = .002 < (\alpha = 0.05/2 = 0.025)$; Group C1_a vs. group C1_d: the test statistic was $Z = 4.07$, the adjusted p-value was $p = .001 < (\alpha = 0.05/2 = 0.025)$; group C1_j vs. group C1_c: the test statistic was $Z = -4.80$, the adjusted p-value was $p = .00 < (\alpha = 0.05/2 = 0.025)$; Group C1_j vs. group C1_e: the test statistic was $Z = -3.90$, the adjusted p-value was $p = .00 < (\alpha = 0.05/2 = 0.025)$; Group C1_j vs. group C1_i: the test statistic was $Z = -4.21$, the adjusted p-value was $p = .00 < (\alpha = 0.05/2 = 0.025)$; Group C1_b vs. group C1_c: The test statistic was $Z = -5.26$, the adjusted p-value was $p = .00 < (\alpha = 0.05/2 = 0.025)$; Group C1_b vs. group C1_e: the test statistic was $Z = -4.36$, the adjusted p-value was $p = .00 < (\alpha = 0.05/2 = 0.025)$; Group C1_b vs. group C1_i: the test statistic was $Z = -4.67$, the adjusted p-value was $p = .00 < (\alpha = 0.05/2 = 0.025)$; Group C1_c vs. group C1_d: the test statistic was $Z = 5.42$, the adjusted p-value was $p = .00 < (\alpha = 0.05/2 = 0.025)$; Group C1_d vs. group C1_e: the test statistic was $Z = -4.51$, the adjusted p-value was $p = .00 < (\alpha = 0.05/2 = 0.025)$; Group C1_d vs. group C1_f: the test statistic was $Z = -3.39$, the adjusted p-value was $p = .01 < (\alpha = 0.05/2 = 0.025)$, and Group C1_d vs. group C1_i: the test statistic was $Z = -4.82$, the adjusted p-value was $p = .01 < (\alpha = 0.05/2 = 0.025)$, and the comparisons were statistically significant.

Descriptive statistics showed that Group C2_a had a median score of 76.00 (IQR = 27.25), Group C2_b had a median score of 75.00 (IQR = 30.25), Group C2_c had a median score of 85.00 (IQR = 30), Group C2_d had a median score of 74.00 (IQR = 31), Group C2_e had a median score of 87.50 (IQR = 30), Group C2_f had a median score of 83.00 (IQR = 30.25), Group C2_g had a median score of 78.00 (IQR = 35.25), Group C2_h had a median score of 83.50 (IQR = 27), Group C2_i had a median score of 85.50 (IQR = 29) and Group C2_j had a median score of 74.00 (IQR = 31.25).

According to the statistical hypothesis test for H_{012} , a Kruskal-Wallis H test indicated a statistically significant difference in scores between the groups, $\chi^2(9) = 84.251$, $p < .05$.

Post-hoc pairwise comparisons were conducted using Dunn's test with a Bonferroni correction to control for multiple comparisons. The results indicated that: Group C1_a vs. group C1_c: the test statistic was $Z = -4.02$, the adjusted p-value was $p = .001 < (\alpha = 0.05/2 = 0.025)$; Group C1_a vs. group C1_e: the test statistic was $Z = -4.18$, the adjusted p-value was $p = .000 < (\alpha = 0.05/2 = 0.025)$; Group C1_a vs. group C1_f: the test statistic was $Z = -3.35$, the adjusted p-value was $p = .01 < (\alpha = 0.05/2 = 0.025)$; Group C1_a vs. group C1_h: the test statistic was $Z = -3.72$, the adjusted p-value was $p = .00 < (\alpha = 0.05/2 = 0.025)$; Group C1_a vs. group C1_i: the test statistic was $Z = -4.28$, the adjusted p-value was $p = .000 < (\alpha = 0.05/2 = 0.025)$; Group C1_j vs. group C1_c: the test statistic was $Z = -4.27$, the adjusted p-value was $p = .000 < (\alpha = 0.05/2 = 0.025)$; Group C1_j vs. group C1_e: the test statistic was $Z = -4.43$, the adjusted p-value was $p = .000 < (\alpha = 0.05/2 = 0.025)$; Group C1_j vs. group C1_f: the test statistic was $Z = -3.60$, the adjusted p-value was $p = .007 < (\alpha = 0.05/2 = 0.025)$; Group C1_j vs. group C1_h: the test statistic was $Z = -3.97$, the adjusted p-value was $p = .001 < (\alpha = 0.05/2 = 0.025)$; Group C1_j vs. group C1_i: the test statistic was $Z = -4.53$, the adjusted p-value was $p = .000 < (\alpha = 0.05/2 = 0.025)$; Group C1_b vs. group C1_c: the test statistic was $Z = -4.47$, the adjusted p-value was $p = .000 < (\alpha = 0.05/2 = 0.025)$; Group C1_b vs. group C1_e: the test statistic was $Z = -4.63$, the adjusted p-value was $p = .000 < (\alpha = 0.05/2 = 0.025)$; Group C1_b vs. group C1_f: the test statistic was $Z = -3.80$, the adjusted p-value was $p = .003 < (\alpha = 0.05/2 = 0.025)$; Group C1_b vs. group C1_h: the test statistic was $Z = -4.17$, the adjusted p-value was $p = .000 < (\alpha = 0.05/2 = 0.025)$; Group C1_b vs. group C1_i: the test statistic

was $Z = -4.73$, the adjusted p-value was $p = .000 < (\alpha = 0.05/2 = 0.025)$; Group $C1_c$ vs. group $C1_d$: the test statistic was $Z = 4.86$, the adjusted p-value was $p = .000 < (\alpha = 0.05/2 = 0.025)$; Group $C1_d$ vs. group $C1_e$: the test statistic was $Z = -5.02$, the adjusted p-value was $p = .000 < (\alpha = 0.05/2 = 0.025)$; Group $C1_d$ vs. group $C1_f$: the test statistic was $Z = -4.19$, the adjusted p-value was $p = .000 < (\alpha = 0.05/2 = 0.025)$; Group $C1_d$ vs. group $C1_h$: the test statistic was $Z = -4.56$, the adjusted p-value was $p = .000 < (\alpha = 0.05/2 = 0.025)$; Group $C1_d$ vs. group $C1_i$: the test statistic was $Z = -5.12$, the adjusted p-value was $p = .000 < (\alpha = 0.05/2 = 0.025)$, and the comparisons were statistically significant.

Table 6 displays the Spearman's correlation coefficients for various satisfaction scores among residents of City 1 (Szczecin).

Table 6. Spearman's correlation matrix for satisfaction scores – City 1 / Szczecin

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$C1_a$ (1)	1.00	0.56	0.68	0.57	0.67	0.65	0.54	0.64	0.63	0.44
$C1_b$ (2)	0.56	1.00	0.62	0.68	0.64	0.64	0.62	0.57	0.56	0.47
$C1_c$ (3)	0.68	0.62	1.00	0.59	0.77	0.67	0.74	0.65	0.71	0.39
$C1_d$ (4)	0.57	0.68	0.59	1.00	0.59	0.64	0.62	0.56	0.56	0.52
$C1_e$ (5)	0.67	0.64	0.77	0.59	1.00	0.71	0.72	0.74	0.80	0.52
$C1_f$ (6)	0.65	0.64	0.67	0.64	0.71	1.00	0.67	0.72	0.65	0.55
$C1_g$ (7)	0.54	0.62	0.74	0.62	0.72	0.67	1.00	0.66	0.64	0.50
$C1_h$ (8)	0.64	0.57	0.65	0.56	0.74	0.72	0.66	1.00	0.71	0.60
$C1_i$ (9)	0.63	0.56	0.71	0.56	0.80	0.65	0.64	0.71	1.00	0.56
$C1_j$ (10)	0.44	0.47	0.39	0.52	0.52	0.55	0.50	0.60	0.56	1.00

$p < .05$

Source: Field survey 2021.

Most satisfaction scores according to respondents from Szczecin show moderate to strong positive correlations (0.56 to 0.80) with each other. The highest correlation is between healthcare ($C1_e$) and safety ($C1_i$) with a coefficient of 0.80, indicating a very strong relationship. Several satisfaction scores exhibit moderate correlations. For example, transport ($C1_a$) shows a strong correlation with green areas ($C1_c$) at 0.68 and a moderate correlation with the attractiveness of real estate ($C1_j$) at 0.44. Similarly, cultural events ($C1_b$) have strong correlations with e-office ($C1_d$) at 0.68 and a moderate correlation with the attractiveness of real estate ($C1_j$) at 0.47. Notably, the attractiveness of real estate ($C1_j$) has significant but moderate correlations with transport ($C1_a$), cultural events ($C1_b$), green areas ($C1_c$), and environmental protection ($C1_g$), suggesting these satisfaction aspects are somewhat related but not as strongly as others.

Several scores are highly correlated, suggesting that residents' satisfaction in one area is closely linked to satisfaction in others. For instance, satisfaction with the overall healthcare ($C1_e$) is highly correlated with satisfaction with various aspects of the system (green areas, local labor market, and safety). While most correlations are positive and moderate to strong, some relationships, such as those involving the attractiveness of real

estate (C1_j), are notably weaker (0.39 to 0.60), indicating that certain satisfaction factors have less influence on others.

Table 7 displays Spearman's correlation coefficients for various satisfaction scores among residents of City 2 (Koszalin).

Table 7. Spearman's correlation matrix for satisfaction scores – City 2 / Koszalin

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
C2 _a (1)	1.00	0.61	0.63	0.45	0.54	0.53	0.54	0.57	0.53	0.45
C2 _b (2)	0.61	1.00	0.59	0.49	0.59	0.53	0.52	0.47	0.59	0.43
C2 _c (3)	0.63	0.59	1.00	0.45	0.63	0.66	0.70	0.60	0.68	0.44
C2 _d (4)	0.45	0.49	0.45	1.00	0.46	0.39	0.47	0.45	0.45	0.46
C2 _e (5)	0.54	0.59	0.63	0.46	1.00	0.71	0.60	0.68	0.80	0.51
C2 _f (6)	0.53	0.53	0.66	0.39	0.71	1.00	0.60	0.66	0.69	0.43
C2 _g (7)	0.54	0.52	0.70	0.47	0.60	0.60	1.00	0.59	0.66	0.41
C2 _h (8)	0.57	0.47	0.60	0.45	0.68	0.66	0.59	1.00	0.74	0.55
C2 _i (9)	0.53	0.59	0.68	0.45	0.80	0.69	0.66	0.74	1.00	0.58
C2 _j (10)	0.45	0.43	0.44	0.46	0.51	0.43	0.41	0.55	0.58	1.00

p<.05

Source: Field survey 2021.

Most satisfaction scores show moderate to strong positive correlations (0.41 to 0.80) with each other. The highest correlation is between healthcare (C2_e) and safety (C2_i) with a coefficient of 0.80, indicating a very strong relationship. Several satisfaction scores exhibit moderate correlations. For example, transport (C2_a) shows moderate correlations with green areas (C2_c) at 0.63 and cultural events (C2_b) at 0.61. The local labor market (C2_h) has strong correlations with safety (C2_i) at 0.74 and healthcare (C2_e) at 0.68. Notably, e-office (C2_a) has significant but moderate correlations with most other aspects, indicating it has a distinct role but still influences other factors.

Similar to Szczecin, most satisfaction scores are interrelated, suggesting that residents' satisfaction in one area is closely linked to satisfaction in others. For example, access to education (C2_f) is highly correlated with healthcare (C2_e) at 0.71 and green areas (C2_c) at 0.66. The correlations involving the attractiveness of real estate (10) are consistently weaker (0.41 to 0.58), indicating it represents a distinct aspect of satisfaction that doesn't align as closely with other factors. While transport (C2_a) is moderately correlated with most other aspects, its correlation with e-office (C2_d) and attractiveness of real estate (C2_j) is weaker, suggesting these areas have more specific factors influencing satisfaction.

5. DISCUSSION

One of the elements of civilization development is the degree of advancement of urban life and urbanization of a specific area. From this point of view, it is possible to assess the quality and standard of life in each of the human settlements, starting from the smallest settlements, villages, through cities and towns, to large metropolises. Each of these places

has experienced civilization changes, and their inhabitants also benefit from the effects of these changes (Budner, 2008; Cesarski, 2014).

The aim of the article was to assess the quality of life of the inhabitants of Szczecin and Koszalin expressed in the form of opinions and satisfaction with selected elements of urban life. Returning to the aim of the study, it is important to point out the need to obtain the opinions of citizens' in order to assess the quality of life in cities. Research on quality of life sets out different interpretations of it, and uses a variety of tools and methods to measure it (Słaby, 2011; Sompolska-Rzechula, 2013). According to one of the many definitions, the quality of life consists of the following elements: wealth in terms of the material goods owned by people, health and well-being, security, both in the health dimension (danger to life) and in terms of loss of property (crime, natural disasters), and in the economic dimension (financial resources essential to life), the state of the natural environment, spiritual wealth in terms of access to education and culture in the broad sense, a sense of belonging to a local community, interpersonal relations and influence on decisions concerning individual and collective life (Kusterka, 2003). Each of the above-mentioned aspects of quality of life has an objective dimension, but the assessment of quality of life depends on the individual's subjective value system and feelings about the extent to which one's own needs and aspirations are satisfied (Borys, 2008; Rogala 2014).

This article examined residents' satisfaction levels in Szczecin and Koszalin regarding selected aspects of quality of life. Respondents were asked to express their opinions and rate their satisfaction with various elements of urban life. In both cities, access to green spaces and a sense of safety emerged as the most satisfactory aspects. The analysis indicates that transport satisfaction is the only aspect with a statistically significant difference between the two cities, emphasizing its importance in shaping daily urban experience. Studies carried out in Greek cities have also confirmed satisfaction with transport and its influence on urban experiences (Mouratidis et. al., 2023). While most satisfaction factors are interconnected within each city, certain areas – such as real estate attractiveness and e-office services – appear to operate more independently, reflecting the diverse needs of urban residents.

6. CONCLUSIONS

The aim of the article was to assess the quality of life of the inhabitants of Szczecin and Koszalin expressed in the form of their opinions and satisfaction with such elements of urban life as: the use of transport, organization and participation in cultural events by residents and visitors, availability and quality of recreational areas, as well as activities in the field of environmental protection, e-office operations, organization and accessibility of health care, opportunities for children and youth to benefit from education, functioning of the local labor market, level of safety in the city and assessment of the real estate market.

Overall, the data indicates that satisfaction levels of citizens of Szczecin and Koszalin are generally higher and more consistent in certain areas (green areas and safety) and lower with greater variability in others (e-office and attractiveness of real estate).

The Wilcoxon rank sum test results reveal that H_{01} is the only hypothesis with a p-value below the alpha level (0.05), indicating a significant difference in transport satisfaction scores between citizens from City 1 (Szczecin) and City 2 (Koszalin). For all other hypotheses (H_{02} to H_{010}), p-values exceed the alpha level, suggesting no significant differences between the compared groups. This highlights that, except for the transport

satisfaction scores, there are no notable differences in the measured parameters between the two cities.

The correlation matrix reveals that satisfaction scores among Szczecin residents are generally interrelated, with specific scores showing particularly strong associations. The variation in correlation strengths highlights both the interconnectedness and distinctiveness of different satisfaction aspects. The correlations involving the attractiveness of real estate are consistently lower compared to others, suggesting it represents a distinct aspect of satisfaction that doesn't align as closely with other factors.

The correlation matrix for Koszalin reveals that satisfaction scores are also generally interrelated, with specific scores showing particularly strong associations. Similarly to Szczecin, the differences in correlation strengths emphasize the interplay and uniqueness of various satisfaction dimensions. This indicates that while overall satisfaction in Koszalin is influenced by multiple factors, aspects like real estate attractiveness and e-office services have a more independent role. Moreover, the median satisfaction scores between the analyzed areas are significantly different in both cities.

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