Ekonomia — Wroclaw Economic Review 29/3 (2023)

Acta Universitatis Wratislaviensis No 4193

Ekonomia

Wroclaw Economic Review
29/3 (2023)

Pod redakcją
Wioletty Nowak i Katarzyny Szalonki

Edited by
Wioletta Nowak and Katarzyna Szalonka

Wydawnictwo Uniwersytetu Wrocławskiego

ISSN 0239-6661 (AUWr)
ISSN 2658-1310 (EWER)

Wersją pierwotną czasopisma jest wersja elektroniczna.
The online version of the journal is primary.

Wydawnictwo Uniwersytetu Wrocławskiego
50-137 Wrocław, pl. Uniwersytecki 15
tel. 71 3752474, e-mail: wydawnictwo@uwr.edu.pl

Wydawnictwo „Szermierz" sp. z o.o.
50-137 Wrocław, pl. Uniwersytecki 15
tel. 71 3752474, e-mail: sekretariat@wuwr.com.pl

Contents

Robert Kamiński, Robert Rosłoń, *A small garage on the sidelines of a corporation: Should innovative projects be isolated?* **7**

Barbara Kucharska, *Consumers of different generations towards innovative technologies in customer service in retail* **19**

Agnieszka Widawska-Stanisz, *Modern technologies and the management of sports and leisure buyer engagement* **35**

Małgorzata Fiałkowska-Filipek, Anna Dobrowolska, *Quality 5.0: Towards sustainable quality improvement in organizations* **49**

Magdalena Węglarz, Edyta Ropuszyńska-Surma, Joanna Zimmer, *Which companies among the SMEs operate in accordance with the Sustainable Development Goals* **63**

Joanna Zimmer, Magdalena Węglarz, Edyta Ropuszyńska-Surma, *Sustainable business models in SMEs: The customer's perspective* **81**

Katarzyna Walecka-Jankowska, Jagoda Mrzygłocka-Chojnacka, *Relationship between environmental innovation and sustainable outcomes: Empirical evidence from Denmark* **99**

Nataliia Petryshchenko, Iryna Azhaman, Nataliia Serohina, *Work in IT for women: The realities of Ukraine* **113**

Tatyana Oklander, Anastasiia Pandas, *Using digital tools in the context of female dominance in the real estate market* **127**

Aleksandra Sztuk, *Essential elements of a city offer addressed to digital nomads: The perspective of territorial marketing* **143**

Zofia Gródek-Szostak, Agata Niemczyk, Luis Ochoa Siguencia, Marcin Suder, Jarosław A. Handzel, *Strengthening digital transformation in adult education organisations* **157**

Iwona Czerska, *Functioning of healthcare entities as learning organisations in Poland on the example of Podlaskie voivodeship* **167**

Konrad Żak, *Medication use review as a service for pharmaceutical care: Conditions for implementation in pharmacy practice* **181**

Ewa Markiewicz, *Cohousing as a form of social innovation: Challenges in a new geopolitical situation in Poland* **195**

Ekonomia — Wroclaw Economic Review 29/3 (2023)
Acta Universitatis Wratislaviensis
No 4193

https://doi.org/10.19195/2658-1310.29.3.1

Robert Kamiński
ORCID: 0000-0002-3211-8279
Wrocław University of Science and Technology
robert.kaminski@pwr.edu.pl

Robert Rosłoń
National Centre for Nuclear Research
robert@roslon.net

A small garage on the sidelines of a corporation: Should innovative projects be isolated?

Date of submission: 26.06.2023; **date of acceptance:** 16.08.2023

JEL classification: management and quality studies

Keywords: project management, organisational culture, learning

Abstract

The article aims to attempt to answer the question of whether innovative projects should be isolated in an organisation. A critical analysis of the literature on the subject reveals a divergence of views on the proper placement of social or technological innovation projects. The research hypothesis formulated holds that the more conducive the innovative project team is to interact with the rest of the organisation and the norms and values within the team are oriented toward learning, the stronger the learning of the project team. The culture metaphor of an organisation was used to verify the research hypothesis. It has been assumed that project team learning means that project team members transform the norms and values previously adhered to in the organisational culture. On the basis of the survey results, it was impossible to accept the research hypothesis. Despite the increase in the intensity of the factors that foster interactions between teams implementing innovative projects and the rest of the organisation, team learning did not increase as originally expected.

1. Introduction

Numerous authors see project implementation as an enabler of organisational learning (Barker and Neailey, 1999; Huber, 1999; Schindler and Eppler, 2003;

Terzieva and Morabito, 2016). It means that, in order to adapt the organisation to changes in the environment, managers decide to implement projects in which – first, at the project team level – people adapt to new challenges and later the whole organisation learns from them on the basis of the experience they have gained. In project teams, the key to change is not just individual learning but the learning of the entire project team, which then, as mentioned above, translates into organisational learning. As Gil and Mataveli (2018) suggest, a project team learns when the individual or collective performance of project tasks continuously improves since procedures are improved, resources are better utilised and new knowledge is accumulated. This knowledge can then be transferred to other projects or activities of the organisation. As the cited authors note, although the content of the project may be temporary and new each time, the organisation of the project is the source and result of learning. In other words, as a result of changes and learning, project management processes and tools are improved, best practices are collected and the maturity of project management in an organisation increases over time. Thus, as a consequence of learning from the ongoing projects, what is developed is the knowledge regarding both new goods, services, or technologies and the project management processes themselves.

As might be expected, learning will occur especially in innovative projects. This is so because it is believed that project innovation determines the degree to which the project course of action deviates from the existing activities in the organisation (cf., for example, Griffin, 1997; Shenhar and Dvir, 2008; Kiełbus, 2011; Trocki, 2012; Kamiński, 2021). Thus, for instance, Shenhar and Dvir (2008) distinguish three levels of innovation: a derivative project, a platform-based project, and a breakthrough project. Each of these three levels of project innovation affects – to a different extent – the project management process based on nine different areas of the Project Management Body of Knowledge (PMBoK). The higher the innovation of the good or service, the more ambiguity there is at the beginning of the project, therefore the estimates are less accurate and the risks are higher. In such a case, more flexibility and creativity are needed to bring the project to a successful conclusion.

This different approach to implementing projects with various degrees of innovation affects the way they are positioned in the structures of a given organisation. A critical analysis of the literature on the subject reveals a divergence of views as to the proper placement of projects related to social or technological innovation (cf., for example, Trocki, 2009; Galbraith, 1999; Zgrzywa-Ziemak and Kamiński, 2009). Some scholars suggest a strong integration of the implemented project with the structures of the enterprise while others believe that in the implementation of innovative projects, it is more desirable to completely separate the project tasks from the structures of the institution. Therefore, this article aims to try to answer the question of whether innovative projects should be isolated. The culture metaphor of the organisation will be used to provide the answer to this question (Suł-

kowski, 2004). It has been assumed that learning in a project team means that its cultural norms and values have transformed from those of the previous organisational culture. This change is triggered not only by the learning of individuals who spur the team to change but also by interactions with – in this case – the remaining part of the organisation.

2. Theoretical framework of the research

The isolation of innovative projects in research and development activities has been observed for a long time. For example, as Hilmer and Donaldson (1997) noted, the purpose of R&D is to develop innovations and the scientists and engineers employed work on projects that can take many years to complete. Feedback takes a long time. Moreover, the nature of tasks does not make it easy to direct the work of the people hired. Employees working on R&D projects are highly skilled; they have a significant degree of independence and have irregular working hours, during which they perform their work at home or over the weekend. Typical is the atmosphere of tolerance and freedom, which should not limit anyone's creativity.

This desire to provide freedom and opportunity to engage in innovative projects is also pointed out by Hammer (1998) and Wozniak (Wozniak, Łokaj, 2009). Hammer observes that if organisations operate on the basis of paternalism, employ extensive control mechanisms, are bureaucratic, and have limited personal freedom, then all invention is lost in the maze of formal company rules. In such a case, creative thinking can only be developed outside of working hours. In the interview, Wozniak, the co-founder of Apple Inc. speaks "about a small garage on the sidelines of the corporation". In his view, corporate culture can hinder the development of ideas and a group of innovators should not be placed too deep in the organisational structure, i.e. they should not have too many hierarchical levels, superiors and decision-making dependencies above them. The management of an organisation need to understand that true innovation, which brings things so new that they are called revolutionary, is almost always created not in a company but in a home environment. It is created by young people who often work in their garages. This is why highly innovative organisations allow employees to dedicate 20% of their working time to develop their own ideas and projects independently.

On the other hand, Galbraith (1999), citing the differences between the operational organisation and the innovative one, points to the fact that in the case of the structure of the operational organisation, the problems of division of work, departmentalisation, leadership span, and distribution of authority are important while the design parameters of the innovative organisation consist of, among other things, *organisational differentiation* and preservation of the so-called *reserves*. *Organisational differentiation* means separating the initial innovation work from the operational organisation and its control. This allows both activities to run

simultaneously and prevents premature rejection of new ideas: *The less the dominant culture of the organisation supports innovation, the greater the need for separation. Often, this separation occurs naturally [...]. If a company wants to foster innovation, it can create reserves where innovation activities can occur as a matter of course* (Galbraith, 1999, 105).

Finally, Trocki (2009), when considering forms of project organisation, notes that for the implementation of highly innovative projects, it is desirable to separate project tasks from the structures of the institution and use the so-called pure project organisation. The project manager has the full organisational capacity necessary to manage the project and the assignment of employees to the project is also completely independent and unambiguous (Trocki, 2009). If learning is fostered by the presence of organisational slack, the negative phenomena of a matrix organisation, such as the involvement of its employees in multiple projects, the volatility of project teams or the desire to maintain strong synergies between projects, will not be present. It may be thought that a "pure" project organisation fosters the most conducive full focus on implementing an innovative project.

On the other hand, the fundamental reasons for not isolating innovative projects stem from learning at the team level, which is the result of interactions among people in the enterprise that promote the externalisation of individuals' knowledge, making it possible for this knowledge to flow and undergo verification (Zgrzywa-Ziemak and Kamiński, 2009). Consequently, one can speak of shared knowledge growing out of the knowledge of individuals but relating to the team or the entire organisation rather than to individual employees. Kasl et al. (1997) define team learning as the process through which a group creates knowledge for its members, for itself as a system, and for others. They identify three ways of learning within and by a team: fragmented, summative, and synergistic. In the case of synergistic learning, knowledge is created jointly by group members. Diverse perspectives are integrated toward thought patterns shared by all. This is not possible without teamwork, which allows new ideas to be presented freely and openly so that team members can benefit from newly acquired information. In summary, in synergistic learning (Zgrzywa-Ziemak and Kamiński, 2009):

– team members reformulate individual and collective views,
– the team becomes less isolated as information flows freely from and to it,
– experimentation both individually and in teams is frequent and bold,
– team members seek opinions that may be "uncomfortable" or challenging.

Since, as mentioned in the Introduction, project implementation is seen as an enabler of organisational learning, synergistic learning should apply to both the project team and the entire organisation. It is easy to see that this will not be possible without a free flow of information and the project team should not be isolated; it should be allowed to interact with the rest of the organisation in numerous ways. Such interactions will occur primarily (Barker and Neailey, 1999, Huber, 1999) in a matrix structure, when the project team is at the place of delivery of

project objects (such as being in constant contact with the customer), in project teams whose composition is interdisciplinary, when project teams are deliberately including people who are well-connected with others in social networks, bringing different ways of thinking and acting to the project team.

However, the learning of the project team initiated by the interactions described above will only be possible if it is supported by values that foster change (Kamiński, 2021). As Haffer and Glińska-Neweś (2013) claim, cultural values such as openness, willingness to experiment and improvise, team spirit based on trust, respect and cooperation, empowerment of employees, openness to change in an interactive, systemic learning process that occurs in the relationship with external stakeholders and – most importantly – in the mutual interactions among the organisation employees are of particular importance in the formation of a learning organisation.

Summing up the above considerations, the following research hypothesis was formulated: The more the interactions of the innovative project team with the rest of the organisation are fostered and the norms and values of the project team are conducive to learning, the stronger the learning of the project team.

3. Research methodology

In order to demonstrate the research hypothesis, the culture metaphor of organisations will be used, according to which organisations can be treated as cultures. They can be considered socially conditioned both at the level of social groups, ties, power mechanisms, and communication as well as at the level of their products, i.e., values, norms, and social patterns. This analogy is developed in the strand of organisational culture and cross-cultural management (Sułkowski, 2004). In such a metaphor, the project team will have its own norms and values. It can be treated as an organisational subculture, whose norms and values will be all the more different from the organisational culture, the more intensive the learning will be in the project team, which, while carrying out a unique project, will have to create and verify new ways of doing things (Kamiński, 2021). This is in line with, among others, the views of Schein (2017), who maintains that organisational culture results from learning while solving problems of external adaptation and internal integration. Thus, in order to verify the research hypothesis, it was assumed that the more differences regarding norms and values between the project team and the organisation, the stronger the learning in the project team. Seven dimensions of organisational culture were used to measure norms and values. They include (Hopkins, Hopkins and Mallette, 2005): employee autonomy, formalisation of activities, support provided to subordinates by a superior, identification of employees with either the project or the organisation, reward for performance, acceptance of conflicts among employees or teams, and acceptance of risk. So, in this case,

a ready-made model described by the cited authors (seven questions about organizational culture along with a five-point Likert scale) was used. To determine the strength of the project team's learning, a Student's t-test for dependent groups was conducted, which makes it possible to compare two variables measured in the same sample. This meant comparing the arithmetic mean of the values of each dimension of culture in the organization with the arithmetic mean of the values of these dimensions of culture in the project team. The presence of a statistically significant difference indicates the existence of project team learning. The project team's learning will be stronger the more dimensions (up to a maximum of seven possible) have this statistically significant difference. With one statistically significant difference, project team learning is weak, and with seven statistically significant differences, it is very strong. The absence of statistically significant differences, on the other hand, means that there is no project team learning.

In turn, the status of the project in the organisation, the dependence of project team members on project teamwork (understood as taking a salary for project work, tying one's career to project work, the length of time spent on project teamwork), and the number of methods of communication in the organisation were considered to be factors fostering interactions. These three factors (measured using a Likert scale) were combined into a single variable.

Finally, participation in development-oriented training, personal mastery, and motivating project team members for self-development and improvement were identified as factors that foster learning among project team members. Again, these three factors (measured using a Likert scale) were combined into a single variable.

The survey covered companies (from different industries) whose *core business* was repetitive in nature (their *core business* is not project realization) and in which project teams using classic project management methodologies (e.g., PRINCE2, PMI, IPMA) were active. The main reasons for selecting the traditional approach to project management have been identified as being, first and foremost, clearly defined project goals, a well-defined organisational structure or restrictiveness of management with regard to how key project processes are implemented (cf., for example, (Wyrozębski, 2007; Kopczyński, 2014)). Therefore, the questionnaire developed for the study was addressed to project managers of various enterprises (taking into account the industry, size, and form of ownership of the enterprise). However, only data from questionnaires meeting the limitations mentioned above were used to verify the hypothesis. The objects of the study were companies operating in Europe and the USA. In Europe, project managers available through LinkedIn were surveyed, as well as project managers who were met while working with industry or while taking postgraduate classes (in Poland, these were students of the Polish-American Business School at Wrocław University of Science and Technology, and in Germany, graduates of the Project Management

course at TU Dresden – IHI Zittau). The questionnaire addressed to project managers in Poland was written in Polish, and to other project managers in Europe in English. Primarily project managers from Poland, Germany, the UK, the Netherlands, and France participated in the survey via LinkedIn. In the US, however, the surveys were conducted through SurveyMonkey, a service that professionally implements surveys in companies. The requirements in connection with the survey were the same in the US as in Europe, both in terms of company characteristics and respondents.

The survey was conducted from December 2019 to January 2020. The study results were obtained from 106 project managers from companies operating in Europe and 281 from the USA. This gave a total of 387 surveys. Subsequently, 98 questionnaires were selected as those which describe projects that were identified by respondents as groundbreaking and – at the same time – those in which project teams were characterised by norms and values fostering learning.

4. Verification of the research hypothesis

Thus, in the case of the research hypothesis, the relationship between how conducive the project team's interactions with the rest of the organisation are and the learning of that team is considered. It is supposed to manifest itself in the number of differences with respect to the norms and values found in the project team compared to the rest of the organisation. It is presumed that the project team's interaction factors will be accompanied by strong project team learning. The learning of the project team should be weaker when the factors are not conducive to interactions with the rest of the organisation. As mentioned above, the status of the project in the organisation, the dependence of project team members on project teamwork, and the number of methods of communication in the organisation were considered factors fostering interactions. These three factors were aggregated into a single variable; two ranges of its values were identified to characterise innovative projects in which the project team's interactions with the rest of the organisation were fostered. The observations collected in the study were assigned to these two ranges, and the number of differences was calculated with respect to the norms and values (Table 1).

Based on the results, the research hypothesis cannot be accepted. This is because fostering the project team's interactions is associated with fewer, rather than more, differences in the values of the average culture dimensions, as originally expected. This means weaker learning for project teams, in which they are fostered to interact with the rest of the organisation, compared to project teams that are isolated. Thus, empirical results support the isolation of innovative projects.

Table 1. Fostering the interactions of the project team with the rest of the organisation and differences in mean values of culture dimensions in the dependent samples – the organisation and the project team

Dimensions of culture	Interactions are **not fostered**	Interactions are **fostered**
	n = 35	n = 63
	difference	difference
Employee autonomy	**0.600***	**0.460***
Degree of formalisation of activities	**–0.987***	0.246
Support provided to subordinates	0.229	**0.444***
Identification with the organisation/ project team	**0.600***	**0.704***
Reward for performance	–0.114	0.032
Acceptance of conflicts	0.029	0.143
Acceptance of risk	**0.514***	0.206
Number of statistically significant differences between the organisation and the project team	**4**	**3**

Note: * The difference in mean values is statistically significant at p = 0.05.

Source: the authors' own study.

The results of the study indicate that the team implementing an innovative project that is not isolated:

– either takes over the norms and values of the organisational culture, learns as a result of adapting to the organisation and creates few new norms and values specific to the project being implemented;

– or the organisational culture takes on certain norms and values of the project team but this would only be likely in the case of large projects and teams that can influence the entire organisation with their presence.

This will mean that in organisations whose *core business* consists of repetitive activities and, consequently, in organisations that are rather conservative in nature (core business activity does not involve unique projects), the number of interactions between the learning project team and the rest of the organisation should be limited to some extent. The isolation of an innovative project will limit the team's adoption of existing solutions and provide a basis for learning and developing new ways of doing things. However, this does not change the fact that isolating the team that implements an innovative project has its strengths and weaknesses, which both the organisation's management and the project sponsor should consider each time (Table 2).

Table 2. Strengths and weaknesses of isolating a team implementing an innovative project in a conservative organisation

Strengths	Weaknesses
– The day-to-day operations of the organisation do not interfere with the implementation of an innovative project and learning. – The isolation of the project allows obtaining a good insight into the situation and problems of the project, which fosters learning. – There is an opportunity for employees to focus on project tasks. – It is easier to manage the project because the manager has exclusive possession of all project resources (and can generate organisational slack). – It is easier to criticise existing solutions in order to come up with one's own ideas. – It is easier to combine new "project" knowledge with the existing "functional" knowledge of members of the project team because it takes place in isolated conditions. – There is an opportunity to better design and implement learning processes.	– They need to build or get used to a new team and a new work environment different from what employees are used to. – More project team members due to the desire to keep the representativeness of the team, which should be self-sufficient. – It is more difficult to exchange knowledge among projects; they become hermetic and – in each one – it is possible to "break open doors". – The project unit is treated as a foreign entity in the organisation. – There is greater resistance to change when the solution was created in "isolation" and is something foreign to the rest of the organisation members. – Possible problems with the authority of the project manager in the rest of the organisation (outside the project team). – The limited back office of the project team as it is generally impossible to shift full resources to the project.

Source: the authors' own study.

5. Conclusions

The above-discussed research, of course, has its weaknesses, which include, first and foremost, a focus on organisations whose *core business* involves repetitive activities rather than unique projects. This may mean that the answer to the question of whether innovative projects should be isolated depends on the nature of the organisation in which the project is implemented. The legitimate question, then, is whether innovative projects should also be isolated in the case of an innovative organisation. Indeed, in business practice, it can be seen that isolating the team implementing an innovative project in an innovative organisation is also justified and has its strengths. These include, for example:

– the inability to disorganise the process of creating a new good or service by not being able to weave additional threads and ideas into the project, often to the detriment of the scope and duration of the project;

– the stabilisation of project-specific and optimal management processes;

– no dilution of the responsibility for the tasks performed by focusing only on the tasks that fall within the scope of the project without the ability to perform tasks in other projects;

– focus on the basic scope of the project and the limitation of the work to its parameters without trying to get the best possible quality, which is not reflected in the requirements of the recipient;

– the increase in the motivation of the project team based on creating a project ethos.

Naturally, these strengths seem to offset to some extent the weaknesses associated with isolating an innovative project in an innovative organisation. They include:

– more difficult interactions with other functional areas outside the project and the need to work exclusively with employees assigned to the project;

– a more difficult exchange of knowledge among projects because they are hermetic and – in each – it is possible to "break open doors";

– a hindered flow of information and ideas, which would allow reducing project risks, taking advantage of opportunities or redefining the scope of the project early enough to take advantage of business opportunities arising at the organisation level.

Of course, a mere analysis of the strengths and weaknesses of isolating innovative projects in innovative organisations does not allow offering a clear recommendation on whether to do it or not. In order to be able to give a clear answer to the question posed in the title of the article, the authors would have to conduct further empirical research in the area under discussion, this time involving innovative organisations that, so to speak, make their daily living on projects.

References

Barker, M., Neailey, K. (1999). From individual learning to project team learning and innovation: A structured approach. *Journal of Workplace Learning*, 11(2), 60–67.

Galbraith, J.R. (1999). Projektowanie organizacji innowacyjnej. In P.F. Schlesinger, V. Sathe, L.A. Schlesinger, J. Kotter (eds.), *Projektowanie organizacyjne* (95–118). Warszawa: PWN.

Gil, A., Mataveli, M. (2018). Project management and learning: The learning project. In M. Otero-Mateo, A. Pastor-Fernandez (eds.), *Human Capital and Competences in Project Management* (45–69). London: IntechOpen.

Griffin, A. (1997). The effect of project and process characteristics on product development cycle time. *Journal of Marketing Research*, 34(1), 24–35.

Haffer, R., Glińska-Neweś, A. (2013). Znaczenie interpersonalnych relacji pracowników w organizacyjnym uczeniu się. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, 310, 193–202.

Hammer, M. (1998). Dusza nowej organizacji. In F. Hesselbein, M. Goldsmith, R. Beckhard (eds.), *Organizacja przyszłości* (41–47). Warszawa: Business Press.

Hilmer, F.G., Donaldson, L. (1997). *Jenseits der Management Mythen. Kontinuität statt Trendhopping.* Landsberg am Lech: Moderne Industrie.

Hopkins, W.E., Hopkins, S.A., Mallette, P. (2005). *Aligning Organizational Subcultures for Competitive Advantage: A Strategic Change Approach*. New York: Basic Books.

Huber, G.P. (1999). Facilitating project team learning and contributions to organizational knowledge. *Creativity and Innovation Management*, 8(2), 70–76.

Kamiński, R. (2021). *Subkultura zespołu projektowego*. Wrocław: Wydawnictwo Politechniki Wrocławskiej.

Kasl, E., Marsick, V.J., Dechant, K. (1997). Teams as learners: A research-based model of team learning. *The Journal of Applied Behavioral Science*, 33(2), 227–246.

Kiełbus, A. (2011). Zarządzanie innowacyjnymi projektami IT w odniesieniu do tradycyjnego zarzadzania projektami. *Czasopismo Techniczne. Mechanika*, 108(4), 219–226.

Kopczyński, T. (2014). Rola i kompetencje kierownika projektu w zwinnym zarządzaniu projektami na tle tradycyjnego podejścia do zarządzania projektami. *Studia Oeconomica Posnaniensia*, 2(9), 101–114.

Schein, E.H. (2017). *Organizational Culture and Leadership*. Hoboken: Wiley.

Schindler, M., Eppler, M.J. (2003). Harvesting project knowledge: A review of project learning methods and success factors. *International Journal of Project Management*, 21(3), 219–228.

Shenhar, A.J., Dvir, D. (2008). *Nowe spojrzenie na zarządzanie projektami*. Warszawa: APN Promise.

Sułkowski, Ł. (2004). Metafory w życiu organizacji. *Przegląd Organizacji*, 6, 7–10.

Terzieva, M., Morabito, V. (2016). Learning from experience: The project team is the key. *Business Systems Research Journal*, 7(1), 1–15.

Trocki, M. (2009). *Organizacja projektowa*, Warszawa: BIZARRE.

Trocki, M. (2012). *Podstawy zarządzania projektami*. Warszawa: Polskie Wydawnictwo Ekonomiczne.

Wozniak, S., Łokaj, A. (2009). Mały garaż na uboczu korporacji. *Magazyn HBRP*, 82/83.

Wyrozębski, P. (2007). Elastyczne podejście do zarządzania projektami. In S. Lachiewicz, M. Matejun (eds.), *Problemy współczesnej praktyki zarządzania* (151–152). Łódź: Wydawnictwo Politechniki Łódzkiej.

Zgrzywa-Ziemak, A., Kamiński, R. (2009). *Rozwój zdolności uczenia się przedsiębiorstwa*. Warszawa: Difin.

Ekonomia — Wroclaw Economic Review 29/3 (2023)
Acta Universitatis Wratislaviensis
No 4193

https://doi.org/10.19195/2658-1310.29.3.2

Barbara Kucharska
ORCID: 0000-0003-0669-3330
University of Economics in Katowice
barbara.kucharska@ue.katowice.pl

Consumers of different generations towards innovative technologies in customer service in retail

Date of submission: 23.06.2023; **date of acceptance:** 16.08.2023

JEL classification: L81

Keywords: modern technology, customer service, retail, consumer generation

Abstract

The aim of the paper is to identify the importance of innovative technologies used in retail during the pandemic for consumers and the willingness of different generations of consumers to use these solutions in the future. The article was prepared on the basis of the literature on the subject, research reports, websites of companies preparing or implementing modern technologies in retail, and the results of direct research conducted in 2022 using the online survey technique among 1,100 consumers.

The paper presents the issues related to the possibility of using modern technologies in the customer service process, specifically those that allow for even greater customer involvement in the purchasing process and increase their independence and self-service. A special emphasis was given to the self-service store, currently considered one of the greatest achievements ("milestones") in brick-and-mortar retail trade, which is crucial for the issues presented. The paper shows the results of direct research on selected elements of purchasing behavior of different generations of consumers that are related to the use of innovative solutions in retail trade and intentions to use these solutions in the future.

1. Introduction

The customer service process in retail enterprises posed a significant challenge during the pandemic. Legal regulations introduced during the epidemic threat and customers' concerns about their health (Dąbrowska, Janoś-Kresło, 2022) as

well as the safety of the shopping environment forced the introduction of solutions aimed at reducing the time spent by customers in commercial spaces or even enabling shopping without the involvement of staff. The introduction of changes in retail was dictated not only by the need to improve the safety of consumers and store staff, but also by the need to reduce the problem of lack of employees to serve customers and by the desire to reduce the company's commercial costs. Activities undertaken by retailers during the pandemic were aimed at ensuring high quality service and efficient communication with the client.

Innovative technologies in retail are the technologies aimed at increasing efficiency, reducing costs, and enhancing the customer shopping experience (Cervantes, Franco, 2020, 356). Modern technologies in retail allow for the seamless creation of specific, integrated physical and digital consumer experiences (known as "phygital consumption experience") in the customer service process (Johnson, Barlow, 2021, 2365–2385; Moravcikova, Kliestikova, 2017, 148–153). The key moments (the so-called milestones) in the use of modern technologies in retail trade include the introduction of e-commerce, self-checkouts, solutions for scanning products and making payments (scan as you shop), q-commerce and unmanned stores.

Taking up the issue of the paper was due to the desire to understand the causes and changes in customer service introduced by retailers during the COVID-19 pandemic and to know their present and future effects on the customer and retail. The purpose of the article is to identify the importance of innovative technologies used in retail during the pandemic for consumers and the willingness of different generations of consumers to use these solutions in the future.

The paper was prepared based on the literature on the subject, industry reports, and websites of companies designing or implementing innovative technologies in brick-and-mortar retail, as well as the results of direct research conducted in 2022 using the online survey technique among 1,100 consumers. The research concerned selected elements of consumer behavior related to the use of modern technologies while shopping, among others. The study included an equal representation of the BB, X, Y, and Z generations. The research proposed a thesis that consumers highly rate the usefulness of the examined solutions in improving the quality of customer service during the pandemic and will also use these solutions in the future, regardless of age. Consumers from Generation Z and Generation Y were found to have a higher tendency than Generation X and Generation BB to declare current use of these solutions and a willingness to use them in the future.

2. Innovative technologies in customer service

Customer service in retail encompasses a wide range of activities aimed at identifying and then fulfilling customer needs and meeting their expectations regarding

the availability of a suitable commercial offer in the right place and time at a price reflecting the relationship between the benefits offered and the costs of purchasing products. Customer service refers to providing appropriate sales methods and creating a system of communication with the customer. It relates to the tangible or intangible value-increasing activities which are related to products or services directly or indirectly to meet customer expectations (Kursunluoglu, 2011). The researchers are increasingly focusing on two dimensions of customer service from the consumer perspective – purchase convenience and social presence (Greval et al., 2019, 97). Forecasted and already observed changes in customer service, including those consisting of integrating sales and customer service in a brick-and-mortar store with an online store, contribute to increasing consumer independence when doing shopping and personalizing the commercial offer.

Modern technologies in customer service in retail should enable the creation of frictionless shopping experiences (Kotler, Stigliano, 2022) also in brick-and-mortar stores saturated with innovative solutions (Domański, 2020, 179). In accordance with consumer expectations, the service process should be smooth, dynamic, and uninterrupted (PwC, 2022; Nowoczesne technologie…, 2021), whereas the cost of learning to use modern solutions by the customer must be proportional to the benefits they derive from using them. Technologies can also enhance the personal involvement of the staff and the customer in the service process, i.e., support building a unique personalized shopping experience ("high-touch" reinforcement through "high tech").

From the perspective of restrictions caused by the pandemic, this was especially significant that by using modern technologies, time spent by the customer in the store could be reduced – especially the time needed to finalize the transaction. This is also important due to the fact that queuing to the checkout is perceived by buyers as one of the least satisfying, but at the same time, the most and longest remembered elements of the service process (Caballero et al., 1985; Bouraoui et al., 2019). The need to develop a solution to eliminate or reduce the waiting time and discomfort of the customer queuing to the checkout contributed to the popularization and continuous improvement of self-service checkouts and the self-service store (PwC, 2022). Activities undertaken by the retailers have been intensified during the pandemic. The most often mentioned key store technologies that increase the level of digitization of brick-and-mortar stores and improve the customer service during the pandemic include[1]:

– Contactless payments – the payment transaction does not require physical contact of the consumer's payment device with a physical terminal and physical

[1] A series of solutions utilizing modern technologies that improve the efficiency of store operations, including smart shelves (analysis of product display methods, real-time data transmission, reduction of costs related to shelf management, data source for analytical model, optimization of customer service processes) or electronic labels (reduction of informational errors regarding price, facilitating the work of the store personnel) (The TOP5…, 2018; Eksperci…, 2019).

client contact with banknotes, coins and other people's hands. This method of payment recommended by WHO allowed for the reduction of the risk of COVID-19 transmission. Because of COVID-19, contactless payment technologies have become a more favoured payment method in countries where these methods were not previously prevalent (Puriwat, Tripopsakul, 2021), also in Poland (Huterska et al., 2021).

– Self-checkout (SCO) is a system that "enables customers to place their merchandise on the counter and scan the items on their own, at the end of their shopping trip and after waiting in a checkout line" (Djelassi et al., 2018, 41). The importance of this solution has especially increased during the pandemic (Lorente-Martínez et al., 2022) (Wygoda…, 2022). According to the Global Market Insights study, by 2027 the value of the global self-service checkout market will be over 6.5 billion USD (Najpierw…, 2023).

– Virtual fitting rooms (smart mirrors) are solutions that use augmented reality in the customer service process (Scholz and Duffly, 2018, 11–23; Wedel et al., 2020, 443–465). They allow for simplifying and accelerating the process of buying clothes by scanning the customer's dimensions and appearance, and thus creating their virtual reflection. The customers create their own stylizations without having to try them on, and they receive information about the location of the selected product in the store. Smart mirrors also enable the testing of some cosmetics (Javornik et al., 2016). They can be located not only inside the store but also in the corridor of the shopping center.

– Smart carts – carts equipped with a camera, a barcode reader integrated with a mobile application, a touch screen, and scales – equivalents of online shopping carts, allowing for quick payment at the cash register or via the application.

From a pandemic perspective, unmanned store that allow for eliminating customer waiting time and create frictionless retail shopping experiences without the involvement of staff is a particularly important solution. It is an innovative convenience retail format that combines the brick-and-mortar store space with modern Internet technologies (mobile applications, payment systems, customer presence monitoring systems inside the store) (Kucharska, 2023, 25–42).

In the self-service store, the checkout zone employees have been replaced by solutions based on modern information technologies and purchases are made by the customer without the involvement of staff. Using a self-service store may require the customer to be involved at every stage of the purchase process, i.e., pre-transaction (installation of the application as part of the existing or new account/customer account, use of the customer's card, in the most innovative mobile stores also the possibility of recalling the store), transaction (barcode scanning with a smartphone) and post-transaction (manual completion of the transaction in the application). Most of the tasks taken over from the staff are conducted using artificial intelligence, i.e., an innovative method of authorization and payment for

purchases (e.g., customer face recognition, automatic product scanning, corridor scanning) (Schögel, Lienhard, 2020).

Self-service stores allow for more effective time management of purchases, which is a measure of evaluation of the level and scope of commercial services and a verifier of the organizational efficiency of the sales process. The solutions applied in the store are meant to accelerate the consumer's purchasing path (Kotler, Stigliano, 2022). However, the use of unmanned stores may be limited by consumer concerns resulting from the inability to use the assistance of the store staff (especially in the context of potential system or technology failure) and low trust in new, "unknown", technologies.

3. Research methodology

In order to identify selected changes observed in consumer behavior in retail during the pandemic, direct research was conducted using the online survey technique. The research technique was selected also considering its limitations, such as the declarative nature of the respondents' statements (Pacana et al., 2015). The research was performed in November 2022 among 1,100 registered users of the Ariadna National Research Panel. The socio-demographic profile of the people registered in the panel corresponds to the profile of Polish Internet users. The obtained data was analyzed using descriptive statistics with the use of IBM SPSS Statistics. The research was performed as part of the research project of the Department of Market and Consumption "The COVID-19 Pandemic as a Catalyst for Change – Enterprise and Consumer Perspectives".

As part of direct research, the following aspects were recognized:

– consumer opinions regarding changes in the use of modern technologies in retail during the pandemic;

– consumer opinions regarding the significance of selected solutions in retail based on modern information technologies in the context of improving the quality of customer service during the pandemic;

– consumer willingness to use solutions such as unmanned stores, self-service checkouts, virtual fitting rooms, online shopping, shopping on the phone, and cashless payments also in the future.

The particular context for the conducted research refers to the difference in technological experiences related to the Internet and the varying level of virtualization of consumer behavior among different generations. The conducted direct research included the statements of representatives of four generations of respondents (Baby Boomers, X, Y, Z). Considering the age criterion, they were equally represented in the surveyed sample. In the literature on the subject, the adopted age limits between generations are conventional and are a certain simplification (Katza, 2017, 170). There is no consensus on the precise dating of the generation and slight

differences exist in indicating border years (Berkup, 2014, 218). Nonetheless, age is one of the main factors that differentiates consumer behavior (Dąbrowska, 2006). People belonging to the same generation experience similar events, as well as they grew up in similar conditions and times (Deal et al., 2013). Identifying a generation may result from a shared historical and socio-cultural context in which a group of people functions (Lyons, Kuron, 2014).

Baby boomers (BB) are a generation of people born in the years 1946–1964, who used devices such as radio, television, and tape recorders for most of their lives. The modern technologies that emerged with the spread of the Internet were introduced to representatives of this generation when they were already experienced workers or after they retired (Frąckiewicz, 2018, 121).

Generation X (born in the years 1965–1979) includes people who have experienced technological transformation in their lives and grew up in times of rapid development of advanced technologies. They are generally comfortable with using innovative technologies, but they do not like to change the solutions they know from their youth. They are not as often engaged in social media as younger generations Y and Z (Gruchoła, 2020, 49).

Generation Y (born in the years 1980–1995) is a digital generation for whom IT technologies are natural and essential. They perceive it as an indispensable tool, a necessary link with the surrounding world for real and/or virtual participation in it. For representatives of the Y generation, the Internet is a space for sharing experiences and information (Zhang et al., 2017, 736; Bolton et al., 2013). They utilize modern technologies in every aspect of life.

For Generation Z (born after 1995), the virtual world is closer than the real one. Its representatives have been raised in conditions of almost unlimited access to technology, including the Internet, social media, smartphones, and applications. They do not know the world without access to the Internet – they are "immersed" in modern technologies, constantly being online, and using numerous functions of mobile devices (Frąckiewicz, 2018, Kall, 2015; Levickaite, 2010; Turner, 2015). The specificity of the purchasing behavior of the Y and Z generations is largely determined, among others, by the multi-channel access and unlimited availability of retail outlets, the availability of sources of financing purchases (interest-free instalment sales, credit cards, short-term loans) as well as a huge amount of information received through various media (Barska, 2018, 254–255; Bakewell, Mitchell 2003, 96–98).

The research proposed a thesis that consumers highly rate the usefulness of the examined solutions in improving the quality of customer service during the pandemic and will also use these solutions in the future, regardless of age. Consumers from Generation Z and Generation Y were found to have a higher tendency than Generation X and Generation BB to declare current use of these solutions and a willingness to use them in the future.

The research involved almost the same number of women and men. The respondents equally represented the age groups of 18–24, 25–39, 40–59, and 60–80 (25% in each age group). 46% of the respondents had a secondary education. Detailed characteristics of the respondents are included in Table 1.

Table 1. Demographic analysis

Characteristics of the respondents		Frequency	Percentage
Gender	Male	531	48.3
	Female	569	51.7
	Total	1,100	100.0
Age	18–24	275	25.0
	25–39	275	25.0
	40–59	275	25.0
	60–80	275	25.0
	Total	1,100	100.0
Subjective assessment of the financial situation of own household	Bad	26	2.4
	Very bad	121	11.0
	Average	628	57.0
	Good	289	26.3
	Very good	36	3.3
	Total	1,100	100.0
Education	Basic	45	4.1
	Basic vocational	115	10.5
	Secondary	506	46.0
	Higher	434	39.4
	Total	1,100	100.0
Number of persons in household	1	144	13.1
	2	368	33.4
	3	239	21.7
	4	223	20.3
	5 persons and more	126	11.5
	Total	1,100	100.0
Place of residence by number of inhabitants	Rural area	280	25.5
	City up to 50 K	275	25.0
	City from 51 to 200 K	265	24.0
	City over 200 K	280	25.5
	Total	1,100	100.0

Source: own study.

4. Consumers towards innovative solutions in retail – results of direct research

The limitation of interpersonal contacts enforced by the pandemic resulted in the search for ways to eliminate the need for customers to be present in the physical space. The availability of information about the offer, consultancy, the possibility of resolving complaints, and gathering customer feedback in the Internet space gained special importance. For many retail enterprises, this had been an underdeveloped or even neglected area of activity in the field of customer service.

During the research, almost three-quarters of consumers agreed with the statement that the pandemic contributed to the introduction of innovative solutions in retail (71.3%, with over 20% of the respondents strongly agreeing with it) and that it accelerated the introduction of solutions based on modern information technologies (71% and 22% respectively) (Table 2).

Table 2. Consumer opinions on the changes that have taken place in retail as a result of the pandemic (in %)*

Specification	1*	2	3	4	5	6	7
The pandemic has contributed to the introduction of innovative solutions in trade	1.6	2.4	4.0	20.7	24.2	25.0	22.1
The pandemic has accelerated the introduction of solutions based on modern information technologies in retail and services	2.1	1.9	4.5	20.5	23.1	25.9	22.0
The pandemic has increased the abilities of enterprises in the field of online sales and customer service	2.0	1.7	4.5	19.3	24.7	25.6	22.2

*Ratings were made on a scale from 1 – I completely disagree to 7 – I completely agree.

Source: own study.

The opinions of surveyed consumers from different generations are similar. Generation Y is the generation that least notices the introduction of changes by retailers as a result of the pandemic (Table 3).

Respondents believe that the pandemic has contributed to consumers using modern solutions in retail and services (70%, with 22% strongly agreeing). They also share the opinion that the pandemic has increased the online skills of consumers in terms of shopping, searching for information, or settling matters online (72.5%, with 23.6% strongly agreeing) (Table 4).

In the opinion of 72% of the respondents, consumers will continue to use the solutions in retail that emerged or developed during the pandemic. Additionally, 25.5% have no doubts about it, and declare full confidence in utilizing these solutions in the future.

Table 3. Different generations' consumer opinions on the changes that have taken place in retail as a result of the pandemic (average score)*

Specification	18–24	25–40	41–60	61–80	Total
The pandemic has contributed to the introduction of innovative solutions in trade	5.27	5.13	5.32	5.35	5.27
The pandemic has accelerated the introduction of solutions based on modern information technologies in retail and services	5.30	5.20	5.24	5.31	5.26
The pandemic has increased the abilities of enterprises in the field of online sales and customer service	5.29	5.22	5.32	5.31	5.29

*Ratings were made on a scale from 1 – I completely disagree to 7 – I completely agree.

Source: own study.

Table 4. Consumer opinions on changes in shopping behavior resulting from the introduction of modern retail solutions (in %)*

Specification	1*	2	3	4	5	6	7
The pandemic has contributed to the use of modern solutions in trade and services by consumers	1.6	2.2	4.3	22.1	22.9	25.4	21.5
The pandemic resulted in an increase in consumers' online skills (shopping, searching for information, handling matters)	1.3	2.0	3.5	20.7	22.2	26.7	23.6
Consumers will continue to use the solutions that emerged/developed during the pandemic	1.4	1.5	4.3	20.3	21.5	25.4	25.6
The pandemic has made the consumers not need face-to-face contact with the seller/ service provider	4.5	3.5	8.2	23.4	21.9	19.9	18.6

*Ratings were made on a scale from 1 – I completely disagree, 7 – I completely agree

Source: own study.

Although 60% of the respondents agree with the statement that the pandemic made the consumers not need face-to-face contact with the sellers/service providers, these opinions are rather moderate. At the same time, in the opinion of 16% of respondents, the pandemic has not eliminated the need for direct contact between customers and sales staff.

The opinions of surveyed consumers from different generations are similar (Table 5). However, respondents from the Baby Boomer generation agree slightly more with the opinion that the pandemic has contributed to the increase in consumers' online skills and their use of modern solutions in retail and services. On the other hand, the respondents from younger generations are more likely than others to believe that consumers do not need face-to-face contact with the sellers/ service providers.

Table 5. Opinions of different generations of consumers on changes in shopping behavior resulting from the introduction of modern retail solutions (average score)*

Specification	18–24	25–40	41–60	61–80	Total
The pandemic has contributed to the use of modern solutions in trade and services by consumers	5.28	5.14	5.24	5.32	5.24
The pandemic resulted in an increase in consumers' online skills (shopping, searching for information, handling matters)	5.37	5.30	5.27	5.47	5.35
Consumers will continue to use the solutions that emerged/developed during the pandemic	5.40	5.34	5.35	5.41	5.38
The pandemic has made the consumers not need face-to-face contact with the seller/service provider	5.04	4.92	4.82	4.78	4.89

*Ratings were made on a scale from 1 – I completely disagree to 7 – I completely agree.

Source: own study.

Consumers were asked to assess the significance of the selected solutions in improving the quality of customer service during the pandemic, including solutions that shorten the time spent in a retail outlet and reduce or even eliminate the need to contact the facility's staff, such as self-service checkouts, cashless payments, unmanned stores, or virtual fitting rooms.

Among the surveyed solutions, delivery to parcel lockers was most appreciated by consumers, with 41% of respondents strongly agreeing with the opinion that such deliveries helped mitigate the effects of the pandemic. Over two-thirds of the respondents believe that making purchases during the pandemic was especially facilitated by the possibility of making contactless payments (with over 27% strongly agreeing) and the use of self-service checkouts (almost 24% strongly agreeing) (Table 6). It should also be noted that the assessment of the importance of the examined solutions is also related to their availability in Poland. In the case of the least accessible ones (an unmanned store or a virtual fitting room), respondents most frequently expressed a neutral opinion.

All respondents, regardless of age, appreciated the significance of the presented solutions in mitigating the effects of the pandemic. However, it was primarily Generation Z and Generation Y consumers who rated them most highly (Table 7). Higher scores of younger respondents concerned all solutions, including shopping on the phone. The only solution that, according to the respondents, was not helpful in mitigating the effects of the pandemic were virtual fitting rooms, which resulted from the low availability of this solution.

The respondents were asked about their plans regarding the use of selected solutions. Three-quarters of the surveyed consumers declare that they will continue to use parcel lockers for deliveries and contactless payments in the future (respectively with 49% and 47% of respondents stating this decisively) (Table 8). They also expressed their intention to continue shopping online (with 40.5% de-

Table 6. The significance of selected solutions in the field of customer service in the context of mitigating the effects of the pandemic – consumers' opinions (in %)*

Specification	1	2	3	4	5	6	7
Delivery to parcel lockers	0.7	1.5	2.9	16.7	15.6	21.1	41.5
Online shopping	3.4	2.2	4.3	20.5	18.9	23.8	27.0
Contactless payments	4.5	2.8	3.3	20.5	18.6	22.8	27.5
Self-service checkouts	5.1	3.4	4.7	22.5	19.8	20.7	23.7
Touchless use of parcel lockers	4.0	1.1	6.2	24.7	18.5	21.1	24.4
Shopping on the phone	12.0	4.0	8.4	27.3	17.9	15.1	15.4
Unmanned stores	11.5	5.1	6.2	32.4	18.5	13.6	12.7
Virtual fitting rooms	21.6	11.4	10.3	31.9	12.1	6.9	5.8

* Ratings were made on a scale from 1 – definitely did not help to 7 – definitely helped.

Source: own study.

Table 7. Opinions of consumers of different generations concerning the significance of selected customer service solutions in the context of mitigating the effects of the pandemic (average score)*

Specification	18–24	25–40	41–60	61–80	Total
Delivery to parcel lockers	5.74	5.45	5.37	5.09	5.41
Online shopping	5.52	5.28	5.24	5.12	5.29
Contactless payments	5.44	5.13	5.21	5.19	5.24
Self-service checkouts	5.43	5.07	4.89	4.84	5.06
Touchless use of parcel lockers	5.13	4.94	4.89	4.76	4.93
Shopping on the phone	4.80	4.24	4.29	4.34	4.42
Unmanned stores	4.70	4.20	4.19	4.24	4.33
Virtual fitting rooms	3.64	3.34	3.32	3.15	3.45

*Ratings were made on a scale from 1 – definitely did not help to 7 – definitely helped.

Source: own study.

claring this decisively). Two-thirds of the respondents plan to use self-service checkouts, with 38% of consumers definitely declaring such plans. The low level of declarations regarding shopping on the phone and virtual fitting rooms may result from the limited availability of these solutions in retail in Poland.

Regardless of their age, the respondents intend to use the solutions included in the research (with the exception of virtual fitting rooms). However, this was more often declared by the respondents up to 60 years of age, especially the youngest. The interest in the possibility of shopping on the phone is expressed only by consumers aged 18–24.

Table 8. Consumers' willingness to use selected solutions in the field of customer service in the future – consumers' declarations (in %)*

Specification	1	2	3	4	5	6	7
Delivery to parcel lockers	3.4	2.0	3.4	14.4	12.2	16.1	48.6
Contactless payments	3.8	1.7	5.0	14.1	10.2	17.7	47.5
Online shopping	3.0	2.2	4.3	16.5	13.6	19.8	40.5
Self-service checkouts	5.2	2.4	4.7	17.0	13.5	18.8	38.2
Touchless use of parcel lockers	7.4	3.7	5.4	19.7	12.8	16.0	35.0
Unmanned stores	13.9	7.2	6.9	26.5	15.5	13.2	16.9
Shopping on the phone	17.6	9.2	8.7	22.6	15.7	11.3	14.8
Virtual fitting rooms	37.2	12.9	9.1	21.5	8.8	5.9	4.6

* Ratings were made on a scale from 1 – I have no intention of using them at all to 7 – I will definitely use them.

Source: own study.

5. Conclusions

The period of the COVID-19 pandemic has been difficult for retailers and consumers due to restrictions in the purchasing process. The advancement of modern technologies facilitated the development of innovative solutions designed to improve customer service, while the pandemic has accelerated the pace of implementing these solutions in brick-and-mortar retail spaces (Dębkowska et al., 2020). Some of them modified the finalization of the transaction (e.g., a self-service checkout), and some radically changed the terms of purchase and the customer service process (e.g., unmanned store). The advanced technologies have increased the independence and autonomy of the customer when shopping.

Especially important for retail companies is that consumers of all generations also declare their intention to continue using the studied solutions in the future. The end of the pandemic does not mean a return to pre-pandemic customer behavior in the retail space. Changes in purchasing behaviors seem to be irreversible. This is a real challenge for retail businesses, taking into account the necessity of implementing innovative solutions in retail outlets to increase the convenience of shopping and reduce the time spent on shopping – especially contactless payments and self-service checkouts. Convenient shopping conditions created with the use of solutions based on modern information technologies are crucial for customers (KPMG, 2017), being at the same time a source of competitive advantage for retail enterprises. In the future, solutions related to online shopping will continue to be important for customers, such as delivery to parcel lockers and touchless use of parcel lockers as well as in stationary trade. Stores that implement modern technologies achieve better financial results and increase the sales of their prod-

ucts (https://managerplus.pl/digitalizacja). The research also shows that although consumers appreciate the use of modern technologies in retail, they moderately believe that it is possible to limit or eliminate contact with staff in the customer service process in retail.

The factors that may favor the use of modern technologies in the customer service process include the further processes of trade concentration and globalization, increasing competition in the way commercial services are provided, consumer innovation, and their desire to be independent of the staff in the commercial space. Most of the surveyed consumers also believe that the pandemic has contributed to the implementation of innovative solutions in retail. In particular, generations Y and Z appreciated the possibility of making contactless payments and finalizing transactions at self-service checkouts during the pandemic. The pandemic had the greatest impact on the development of the BB generation's skills.

The research covered only adult generations of consumers with relatively extensive shopping experience before the pandemic; therefore, the Alpha generation was omitted. However, it should be emphasized that the Alpha generation is an active market participant, has significant purchasing power, and is a potential recipient of many marketing and technological activities, also in retail. The behaviour of this generation related to the use of modern technologies in retail should also be the subject of further research.

References

Bakewell, C., Mitchell, V. (2003). Generation Y female consumer decision-making styles. *International Journal of Retail & Distribution Management*, 31(2), 95–106. https://doi.org/10.1108/09590550310461994.

Barska, A. (2018). Millennial consumers in the convenience food market. *Management*, 22(1), 251–264. https://doi.org/10.2478/manment-2018-0018.

Berkup, S.B. (2014). Working with Generations X and Y in Generation Z period: Management of different generations in business life. *Mediterranean Journal of Social Sciences*, 5(19), 218–229. https://doi.org/10.5901/mjss.2014.v5n19p218.

Bolton, R., Parasuraman, A., Hoefnagels, A., Migchels, N., Kabadayi, S., Gruber, T., Komarova Loureiro, Y., Solnet, D. (2013). Understanding Generation Y and their use of social media: A review and research agenda. *Journal of Service Management*, 24(3), 245–267. https://doi.org/10.1108/09564231311326987.

Bouraoui, B., Eriksson, M., Mansjö, M., Thiel, A. (2019). *The Ever-Changing Store*. Retrieved April 20, 2023, from https://www.mckinsey.com/industries/retail/our-insights/the-ever-changing-store-taking-anagile-customer-centric-approach-to-format-redesign.

Caballero, M.J., Lumpkin, J.R., Brown, D., Katsinas, R., Werner, S. (1985). Waiting in line: A primary investigation. In D.M. Klein, A.E. Smith (eds.), *Marketing: The Next Decade. Proceedings of the Annual Meeting of the Southern Marketing Association* (46–49). Boca Raton: Florida Atlantic University.

Cervantes, A.V., Franco, A. (2020). Retailing technology: Do consumers care? *Spanish Journal of Marketing*, 24(3), 355–375. https://doi.org/10.1108/SJME-03-2020-0041.

Deal, J.J., Stawiski, S., Graves, L., Gentry, W.A., Weber, T.J., Ruderman, M. (2013). Motivation at work: Which matters more, generation or managerial level? *Consulting Psychology Journal: Practice and Research*, 65(1), 1–16.

Dąbrowska, A. (2006). Przemiany w strukturze konsumpcji i ich uwarunkowania. In M. Janoś-Kresło, B. Mróz (eds.) *Konsument i konsumpcja we współczesnej gospodarce*. Warszawa: SGH.

Dąbrowska, A., Janoś-Kresło, M. (2022). *Społeczna odpowiedzialność konsumenta w czasie pandemii. Badania międzynarodowe*. Warszawa: SGH Oficyna Wydawnicza.

Dębkowska, K., Kłosiewicz-Górecka, U., Leśniewicz, F., Szymańska, A., Święcicki, I., Ważniewski, P., Zybertowicz, K. (2020). *Nowoczesne technologie w przedsiębiorstwach przed, w trakcie i po pandemii COVID-19*. Warszawa: Polski Instytut Ekonomiczny.

Digitalizacja w handlu pozwala sprzedawać więcej. Retail – sektor, w którym technologia jest mózgiem, a klienci sercem. (2022, October 27). *Manager Plus*. Retrieved April 20, 2023, from https://managerplus.pl/digitalizacja-w-handlu-pozwala-sprzedawac-wiecej-retail-sektor-w-ktorym-technologia-jest-mozgiem-a-klienci-sercem-10202.

Djelassi, S., Diallo, M.F., Zielke, S. (2018). How self-service technology experience evaluation affects waiting time and customer satisfaction? A moderated mediation model. *Decision Support Systems*, 111, 38–47. https://doi.org/10.1016/j.dss.2018.04.004.

Domański, T. (ed.). (2020). *Strategie budowania marki i rozwoju handlu. Nowe trendy i wyzwania dla marketingu*. Łódź: PWE, Wydawnictwo Uniwersytetu Łódzkiego.

Eksperci nie mają wątpliwości. Nowe technologie mocno zmienią w tym roku handel detaliczny. (2019, January 21). *Money.pl*. Retrieved April 20, 2023, from https://www.money.pl/gospodarka/eksperci-nie-maja-watpliwosci-nowe-technologie-mocno-zmienia-w-tym-roku-handel-detaliczny-6340890402117761a.html.

Frąckiewicz, E. (2018). Pokolenie 60+ a pokolenie Z na rynku nowoczesnych usług bankowych. *Zarządzanie i Finanse*, 16(3), 121–134.

Greval, D., Noble, S.M., Roggeveen, A., Nordfält, J. (2019). The future of in-store technology. *Journal of the Academy of Marketing Science*, 48, 96–113. https://doi.org/10.1007/s11747-019-00697-z.

Gruchoła, M. (2020). Osoby starsze w świecie nowych mediów i technologii. *Teologia i Moralność*, 15(2), 47–64. https://doi.org/10.14746/tim.2020.28.2.03.

Huterska, A., Piotrowska, A.I., Szalacha-Jarmużek, J. (2021). Fear of the COVID-19 pandemic and social distancing as factors determining the change in consumer payment behavior at retail and service outlets. *Energies*, 14, 4191. https://doi.org/10.3390/en14144191.

Javornik, A., Rogers, Y., Moutinho, A.M., Freeman, R. (2016). Revealing the shopper experience of using a "magic mirror" augmented reality make-up application. In M. Foth, W. Ju, R. Schroeter, S. Viller (eds.), *DIS '16: Proceedings of the 2016 ACM Conference on Designing Interactive Systems* (871–882). New York: Association for Computing Machinery. https://doi.org/10.1145/2901790.2901881.

Johnson, M., Barlow, R. (2021). Defining the phygital marketing advantage. *Journal of Theoretical and Applied Electronic Commerce Research*, 16, 2365–2385. https://doi.org/10.3390/jtaer16060130.

Kall, J. (2015), *Branding na smartfonie*. Warszawa: Wolters Kluwer.

Kaufland zakończył test usługi K-Scan. Samodzielne skanowanie będzie dostępne w kolejnych sklepach. (2022, December 16). *Wiadomości spożywcze*. Retrieved April 26, 2023, from https://wiadomoscispozywcze.pl/artykuly/11024/kaufland-zakonczy-test-usugi-k-scan-samodzielne-skanowanie-bedzie-dostepne-w-kolejnych-sklepach/.

Kotler, P., Stigliano, G. (2022). *Retail 4.0. 10 zasad handlu detalicznego w erze cyfrowej*. Warszawa: PWE.

KPMG. (2017). *Disruptive Influences: Three Key Trends Transforming the Face of Retail*. Retrieved April 20, 2023, from https://assets.kpmg.com/content/dam/kpmg/xx/pdf/2017/10/disruptive-influences-trends-transforming-retail-web.pdf.

Kucharska, B. (2023). Sklep bezobsługowy jako innowacyjny format handlu detalicznego – perspektywa postpandemiczna. *Studia i Prace Kolegium Zarządzania i Finansów*, 188, 25–42.

Kursunluoglu, E.(2011). Customer service effects on customer satisfaction and customer loyalty: A field research in shopping centers in Izmir city – Turkey. *International Journal of Business and Social Science*, 2(17), 52–59.

Levickaite, R. (2010). Generations H, Y, Z: How social networks form the concept of the world without borders (the case of Lithuania). *Limes*, 3(2), 170–183. https://doi.org/10.3846/limes.2010.17.

Lorente-Martínez, J., Laguía, A., Navío-Marco, J., Rodrigo-Moya, B. (2022). Has COVID-19 changed interaction in brick-and-mortar stores? A study on self-checkouts. *The Retail and Marketing Review*, 18(1), 76–97.

Lyons, S., Kuron, L. (2014). Generational differences in the workplace: A review of the evidence and directions for future research. *Journal of Organizational Behavior*, 35(S1), 139–157.

Moravcikova, D., Kliestikova, J. (2017). Brand building with using phygital marketing communication. *Journal of Economics, Business and Management*, 5, 148–153. https://doi.org/10.18178/joebm.2017.5.3.503.

Najpierw kasy samoobsługowe a potem bramki antykradzieżowe. Czy Biedronka pójdzie tą drogą? (2023, June 21). *Dla Handlu*. Retrieved August 24, 2023, from https://www.dlahandlu.pl/detal-hurt/wiadomosci/najpierw-kasy-samoobslugowe-a-potem-bramki-antykradziezowe-czy-biedronka-pojdzie-ta-droga,122172.html.

Nowoczesne technologie w branży retail. (2021). *Galerie Handlowe*, 5, 61.

Pacana, A., Ostasz, G., Zatwarnicka-Madura, B. (2015). Dylematy wyboru metod badań marketingowych. *Modern Management Review*, 20(3), 171–181. https://doi.org/10.7862/rz.2015.mmr.43.

Puriwat, W., Tripopsakul, S. (2021). Explaining an adoption and continuance intention to use contactless payment technologies: During the COVID-19 pandemic. *Emerging Science Journal*, 5(1), 85–95. https://doi.org/10.28991/esj-2021-01260.

PwC. (2022). *Frictionless Retail: The Future of Shopping*. Retrieved May 20, 2023, from https://www.pwc.co.uk/industries/documents/frictionless-retail-the-future-of-shopping.pdf.

Scholz, J., Duffy, K. (2018). We are at home: How augmented reality reshapes mobile marketing and consumer-brand relationships. *Journal of Retailing and Consumer Services*, 44, 11–23. https://doi.org/10.1016/j.jretconser.2018.05.004.

Schögel, M., Lienhard, S.D. (2020). Cashierless stores: The new way to the customer? *Marketing Review St. Gallen*, 1, 888–897.

TOP5 technologii dla handlu – jak będzie wyglądał sklep w 2025. (2018, August 16). *Wiadomości Handlowe*. Retrieved April 25, 2023, from https://www.wiadomoscihandlowe.pl/artykul/top5-technologii-dla-handlu-jak-bedzie-wygladal-sklep-w-2025-r-1.

Turner, A. (2015). Generation Z: Technology and social interest. *The Journal of Individual Psychology*, 71(2), 103–113.

Wedel, M., Bigne, E., Zhang, J. (2020). Virtual and augmented reality: Advancing research in consumer marketing. *International Journal of Research in Marketing*, 37(3), 443–465. https://doi.org/10.1016/j.ijresmar.2020.04.004.

Wygoda nie podlega negocjacjom. Zyskują kasy samoobsługowe, zakupy online, etyczne marki. (2022, January 25). *Dla Handlu*. Retrieved August 24, 2023, from https://www.dlahandlu.pl/detal-hurt/wiadomosci/wygoda-nie-podlega-negocjacjom-zyskuja-kasy-samoobslugowe-zakupy-online-etyczne-marki,105277.html.

Zhang, T., Abound Omran, B., Cobanoglu, C. (2017). Generation Y's positive and negative eWOM: Use of social media and mobile technology. *International Journal of Contemporary Hospitality Management*, 29(2), 732–761. https://doi.org/10.1108/IJCHM-10-2015-0611.

Ekonomia — Wroclaw Economic Review 29/3 (2023)
Acta Universitatis Wratislaviensis
No 4193

https://doi.org/10.19195/2658-1310.29.3.3

Agnieszka Widawska-Stanisz
ORCID: 0000-0002-0609-6758
Czestochowa University of Technology
a.widawska-stanisz@pcz.pl

Modern technologies and the management of sports and leisure buyer engagement

Date of submission: 26.05.2023; **date of acceptance:** 03.10.2023

JEL classification: M31, O33, L83

Keywords: marketing, promotion, sports and leisure services, modern technology, buyer

Abstract

The market for sports and leisure services is constantly evolving. Polish consumers are more often interested in the offer of sports and leisure enterprises such as fitness clubs, water parks, gyms, or sports and leisure centres, recognising the importance of looking after their health and physical fitness. After a period of isolation during the COVID-19 pandemic, physical activity is even more frequently regarded as fundamental to maintaining health and fitness, harmony and balance in life. Currently, all fitness-related activities are classified as leisure time mega trends (e.g. work-life balance). Modern technologies are another noticeable trend, which is beginning to accompany people in physical activity as well. They help streamline the service delivery process and apply a personalised approach to the customer. We are not just talking about today's most popular social media, apps and activity monitoring devices. QR codes, geolocation, gamification, sports coaching, and others can be applied in business practice. The objective of the article was to show the specifics of the sports and leisure industry, characterise the dominant technological solutions and identify the opportunities they can provide for sports and leisure businesses. It was assumed that modern technologies could be complementary and successfully used both to promote physical activity itself and to build the commitment of buyers of services provided by such companies. The research used qualitative and quantitative methods, as well as literature analysis. As the analysis of the survey results and observation of the market has shown, modern technologies motivate participants of physical activity, while sports and leisure companies are beginning to recognise their advantages in promoting their services. The article emphasises the complementarity of solutions and their comprehensiveness, as well as possible implications in the service activity of sports and leisure enterprises. The result of the analysis is a proposal for a set of useful features and solutions dedicated to companies providing sports and leisure services. By applying the proposed solutions, these companies can become more innovative, while their customers will be more satisfied.

1. Introduction

In the last decade, we have seen a very rapid development of modern technology. More often, we are accompanied by modern devices, technologies, applications, and solutions in our professional and private lives, which are designed to make life easier. They help to carry out duties effectively and quickly, communicate, and provide access to information. Modern technology makes it possible to develop our passions, establish relationships, expand our knowledge, keep fit and healthy. At the same time, numerous studies point to the great importance of physical activity in people's lives (Czarnecki et al., 2022). Even minimal activity helps to maintain well-being, prevent obesity, diabetes, chronic circulatory problems, etc. Unfortunately, during the period of the pandemic, many people gave up physical activity and did not return to it after months of isolation, preferring a passive lifestyle (Drygas et al., 2021, 36) It has become a public health issue to look for solutions and health programmes that can allow people to build healthy habits and participate in physical activity. Physical activity in Poland has been analyzed for 20 years. There have been few studies that cover the entire population (GUS, 2021). K. Krzyżanowska and S. Wawrzyniak mention that the first study to assess the level of physical activity in Poland was the Large-Scale Study of the Health of the Population (WOBASZ). The study was conducted in 2002–2004 among 13,545 people aged 20–74. The questions concerned physical activity at work and in leisure time, as well as activity related to transportation. The mentioned studies only dealt with sports activity, participation in sports and recreational activities, and the forms of recreation taken. The level of physical activity was not assessed (Krzyżanowska and Wawrzyniak, 2020, 82). W. Drygas, M. Gajewska, and T. Zdrojewski highlight the insufficient level of physical activity in Poland as a public health threat and challenge (Drygas et al., 2021). M. Lenartowicz, Z. Dziubiński and K.W. Jankowski also tried to analyze how Polish participation in physical activity has changed in the last two decades. The authors note that there has been a positive increase in physical activity among Poles in the last 20 years. However, they also point to several worrying trends: Poles lack knowledge and habits about sports and recreation, there is a strong focus on individual sports and recreation activities among Poles, and there is insufficient use of the community potential of social sport. Despite the improving sports infrastructure, there is insufficient reach and a lack of proper functioning of non-commercial sports and recreation facilities (Lenartowicz et al., 2017, 208).

Sports and leisure companies are also facing the problem of people resigning from exercising and participating in fitness activities. According to research, participation in paid sports and leisure activities offered by companies (aerobics, fitness, yoga, gym workouts) is less popular than budget-friendly forms of exercise such as walking and cycling (Czarnecki et al., 2023, 154–155). People are spend-

ing more and more time using mobile devices, playing games, using apps, or simply exercising at home. Today's generations are very keen to use such solutions in everyday life. This raises the question of how and to what extent modern technologies can be used to build commitment and promote physical activity. How sports and leisure businesses can utilise the knowledge about buyers' methods of spending free time and their relationship to screen technology? Is it possible to set up programmes to build habits of being physically active, promote physical activity and, at the same time, meet the business objectives of sports and leisure service providers? The purpose of the article was to show the specifics of the sports and recreation industry, characterize the dominant technological solutions, and identify the opportunities that they can offer sports and recreation enterprises. This is because the assumption is that modern technological solutions can be complementary. They can be used successfully to promote both physical activity itself and the services provided by such companies.

2. The market for sports and leisure services

The sports and recreation services market in Poland has changed significantly in the last 20 years. As Z. Waśkowski notes, although sports and recreation activity has been the subject of research by scholars from both Poland and abroad (Das, Horton, 2016; Salmon, Owen, Crawford, Bauman and Sallis, 2003; Basińska-Zych, 2017; Żuryński, 2013; Maciąg, Kantyka, Prawelska-Skrzypek, 2018; Waśkowski and Jasiulewicz, 2017), it seems that the mechanisms that govern it still conceal many unrecognized rules and relationships (Waśkowski, 2023, 197). In the past, it could be observed that this was a very fragmented market covering small fitness clubs, gyms, or sports and leisure centres. Currently, the Polish market features several large chains offering a wide range of leisure and physical activity services and many micro-networks of fitness clubs. Among the most popular ones are Jatomi Fitness, Calypso Fitness Club, ZdroFit, CityFit. In recent years, facilities meeting various sophisticated customer needs have been appearing in large numbers, e.g. boutique fitness clubs, small intimate clubs for VIP customers (e.g. the Polish boutique club chain Harder) or women-only clubs (e.g. Mrs. Sporty).

According to the Central Statistical Office (GUS) data from 2021, there was a 51% increase in Poles' spending on sport and recreation compared to 2016 (GUS, 2021, 1). The structure of expenditure on sport and recreation is shown in Figure 1. Cycling was the most popular activity. This was followed by swimming, general exercise and fitness classes, playing football and aerobics, fitness and gymnastics (GUS, 2021, 2).

Observations have shown that the COVID-19 pandemic period accelerated changes in the sports and leisure market. One of the changes has undoubtedly been digitisation and digitalisation, or more broadly put, modern technologies. The need

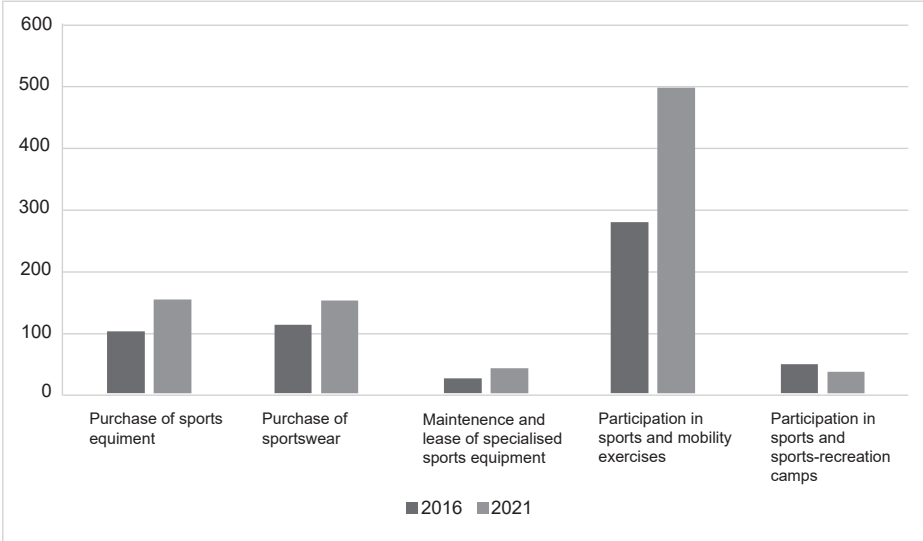

Figure 1. Expenditure on sports and physical recreation per household

Source: GUS (n.d.). *Uczestnictwo w sporcie i rekreacji ruchowej w 2021 r.*

to keep a distance between activity participants and trainers, the restrictions and policies of the government related to the pandemic, the need to eliminate jobs in clubs, and the search for savings are all factors that have impacted the wider use of modern technologies in the operation of such venues. Social media, which became a place for clubs to contact and exchange information with their members, online training that was available on Facebook, for example, themed groups, channels on YouTube, and all other places where video[1] could be streamed, allowed clubs to stay in business.

3. Modern technologies in marketing

The pandemic period has defined, changed, and re-evaluated the functioning of many industries. Currently, we can observe an incredible saturation of modern technologies. In virtually every area of today's life, modern tools accompany us. "Internet activities, such as browsing the World Wide Web (WWW), sending emails, posting on instant messaging and social networking sites, leave a digital footprint on the servers visited, and locally on the computer. Mobile devices are generating location traces, there is an increasingly improved ability to recognise people based on biometric characteristics, using a variety of monitoring systems, most commercial transactions also leave detailed digital data as a consequence,

[1] Video streaming – sharing content through streaming technology.

an increasing part of our private lives is being recorded digitally" (Wieczorkowski et al., 2022, 4). A report on the global digital market published in February 2023 provided interesting information. This report contains information dedicated to 250 countries worldwide, including Poland. "The total population of Poland in January 2023 was 41.48 million. In January 2023, there were 36.68 million internet users in Poland, including 27.50 million social media users and the internet penetration rate in Poland was 88.4% of the total population at the beginning of 2023. As the authors of the report show, there has been no noticeable decline in overall social media use, and in almost all countries social media use continues to grow" (Digital 2023: Poland, 2023) From the study, you can find out what the most popular social media in Poland are, what changes are taking place in this regard, how modern tools are evolving, and what advertising reach they have. In the area of sports and leisure services, modern media have also found their way. Fitness clubs communicate with their current and potential customers via websites, email, instant messaging, or social media. As A. Miotk points out, "one more trend (author's note: after the popularization of the Internet) had a very large impact on social media, which has been strongly marked in recent years. It is the emergence and development of smartphones that are no longer designed just for making voice calls, but primarily for browsing the web and using a variety of applications" (Miotk, 2017, 24). In the case of promoting physical activity and sports and leisure services, as Z. Gao mentions, the industry has adapted well to the daily technological life. The author identifies some of the most important tools for promoting physical activity. These include social media, mobile apps, GPS and GIS[2], smartphones and smartbands, virtual reality and video games like Playstation (Gao, 2017, 3). "Mobile technologies play a huge role in popularising a new view of marketing effectiveness. What is meant here is the 'marketing of the moment' approach, which involves reaching the right customer with the right offer at the right time, but a time counted not in days but in seconds" (Mazurek, 2018, 21). More often, sports and leisure businesses are looking for unconventional ways to reach customers and promote physical activity. Building, maintaining, and enriching customer relationships, which are the foundation of relationship marketing (Berry, Otto, Kotler, 2002), can be done in a variety of ways. Modern companies use a wide range of tools to capture the attention of buyers, complete the first transaction with them, and offer benefits that will help build their mutual relationships for as long as possible. One of the proposals is modern technology, including social media, mobile applications, multimedia sharing portals, messengers, blogs, forums, and others. "Their impact on business is not just a passing trend. In the context of the contemporary purchasing behaviors of internet technology users and the different roles they assume in social networks, such as experts, advisors, commentators, critics, customers, or sellers, the optimal use and integrated management of new media is the duty of the 21st

[2] GPS – Global Positioning System and GIS – Geographical Information System.

century entrepreneur, in the spirit of the principle 'where our customer is, so are we'" (Ratajczak et al., 2022, 104–105).

Network products are a solution that utilises modern technologies that can be successfully applied by companies providing sports and leisure services and other needs for health, fitness, and leisure activities. Urban Sports is one such product[3]. The offer includes access to gyms, sports, and leisure centres and wellness services in many European cities, such as Germany, France, Belgium, Spain, and Portugal. The network of partners and countries in which Urban Sports is available continues to grow. Today it offers access to 50 different activities provided by 10,000 partners. The Urban Sports network is a membership option with several packages available (S, M, L, XL). Customers can choose from exercises at local fitness clubs, gyms, pool activities, golf, skiing, dancing, yoga, team games, and more. Within the same card and membership, they can also use the services of partners in other countries. The availability of Urban Sports services is shown in the mobile app. All you have to do is select the country and city, along with the services offered in that city, and their availability will be searched for. Urban Sports also offers sports activities online, which proved to be a good solution during the pandemic. Existing customers can vary their physical activity depending on the weather, by choosing indoor or outdoor activities and, after the activity, enjoy spa services also as part of the Urban Sports card.

Poland, on the other hand, has the Multisport System, a product similar to Urban Sports, available throughout the entire country. In this case, the offer includes more than 38 types of sports activities to choose from in more than 4,000 clubs (650 cities in Poland). Urban Sports is targeted at both individuals and companies, while in the case of Multisport, the offer applies to companies with a minimum of five employees. Both Urban Sports and Multisport have applications to search for an offer or activity venue. Users can filter the database of venues by specific sports and activities, start times, opening hours of venues, depending on their needs and the package they have (Urban Sports) or the type of card (Multisport has cards for adults, including seniors, children, and students). These are not the only solutions using modern technologies. There are a number of facilities on the market that combine different possibilities, including the ability to browse and select offers, monitor training progress, and record achievements created for the needs of a specific sports and leisure enterprise. Fitness club management software is also available, e.g. eFitnes[4] or Gym Manager[5], that sports and leisure companies can purchase and implement with a choice of different features.

[3] Urban Sports, https://urbansportsclub.com/en/
[4] https://efitness.pl/mobile-app/
[5] https://gymmanager.io/

4. Methodology and results of the research

When analysing the changes taking place in the sports and leisure market, the question arose as to how and to what extent modern technology could be used to build engagement and promote physical activity. How can sports and leisure businesses utilise the knowledge about buyers' methods of spending free time and their relationship with screen technology? Is it possible to create programmes to build habits of being physically active, and at the same time, meet the business objectives of sports and leisure service providers? The purpose of the research was to diagnose the following:

1. The most important motivators for physical activity;
2. The key barriers in undertaking physical activity;
3. Current trends in physical activity;
4. The extent to which modern technologies are used in sports and leisure services and the opinions of participants in physical activity regarding them;
5. The role of the environment (family, friends, institutions, local government, media, state) in promoting physical activity.

The study adopts the following hypothesis: *It is assumed that modern technologies can be complementary in nature and can be successfully used both to promote physical activity itself and to build buyer commitment with the services provided by such companies.* The research utilising a diagnostic survey method was conducted in February 2023. The research tool was a survey questionnaire with 15 questions and personal details questions. A total of 98 people took part in the survey. Purposive non-random sampling using the "snowball" method was used. "In the snowball method, the researcher collects data relating to several members of a population that can be found, and then asks these individuals to provide the information needed to find other members of that population that they happen to know" (Sęk, 2015, 59). Participants in the study, who were physically active people, were provided with a link to a survey questionnaire available online. In addition, a link to the survey was circulated on the Internet (in thematic groups related to physical activity, e.g. Facebook, Instagram). Due to the narrow research sample, the results obtained should be treated as an introduction to further research regarding the application of modern technologies in the area of physical activity promotion and sports and leisure services. The results of the survey can be useful to both businesses and institutions involved in the promotion of physical culture.

The respondents included men (26%) and women (74%), mostly residents of cities with more than 200,000 inhabitants (40%), cities with 100,000–200,000 inhabitants (25%), and rural areas (20%). The age of the respondents varied. The largest group was people aged 21–30 with 30%, followed by people aged 41–50 years with 28% and people under 20 with 17%. Of those surveyed, almost all owned a smartphone (99%), used the internet several times a day (99%), and regular-

ly used mobile apps and social media (86%). The respondents declared that they practiced physical activity: at least once a week (26%), 2–3 times a week (38%), and daily (27%). The obtained results are shown in Figure 2. The high activity of the respondents results from the characteristics of the sample, as the questionnaire was made available online, as mentioned above, among people who are physically active.

Respondents indicated walking, exercising at home, cycling, gym, fitness, and team sports among the most popular forms of physical activity.

Respondents' motives in deciding to be physically active include the desire to feel better (62%), the desire to improve their health (62%), as well as the effect that can be achieved while looking after one's physical appearance (49%). The most frequently indicated barriers to undertaking physical activity were lack of time (39%), lack of motivation (33%), and lack of financial resources (15%). Other statements included location of the facilities (far from home), health conditions, and having to look after a child. According to the respondents, the most common reasons for a lack of interest in physical activity included excessive responsibilities, a passive lifestyle caused by long-standing habits, and a lack of ability to organise one's time.

When it comes to the most important trends in physical activity, respondents most often indicated modern technologies (including mobile apps) as well as personal trainer care. Fewer indications were given for home exercises and online workouts. The remaining responses are shown in Figure 2.

Another issue that was raised was respondents' opinions on modern technologies that motivate to undertake physical activity. Social media and physical activity

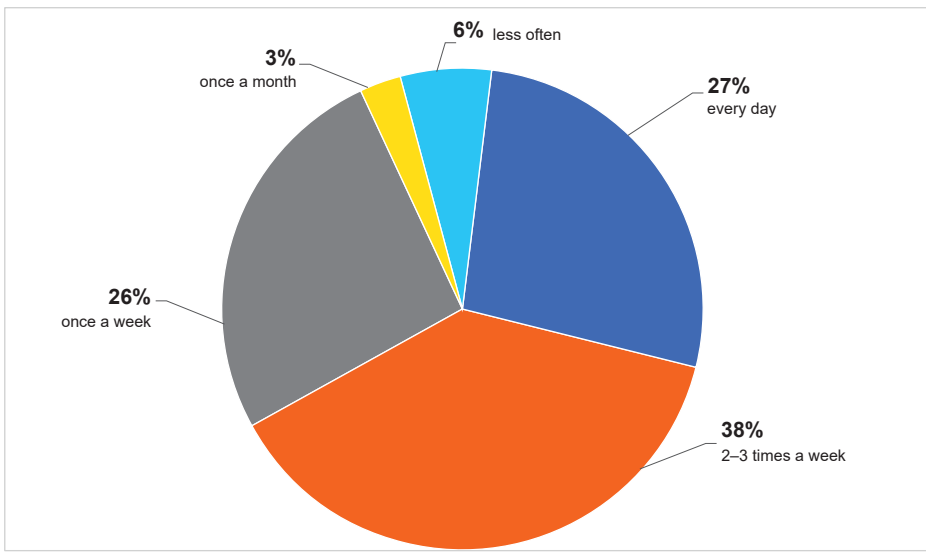

Figure 2. Frequency of physical activity by respondents

Source: prepared by the author based on research.

monitoring (e.g. by smartwatch or smartband) were most frequently mentioned. The remaining responses are shown in Figure 3.

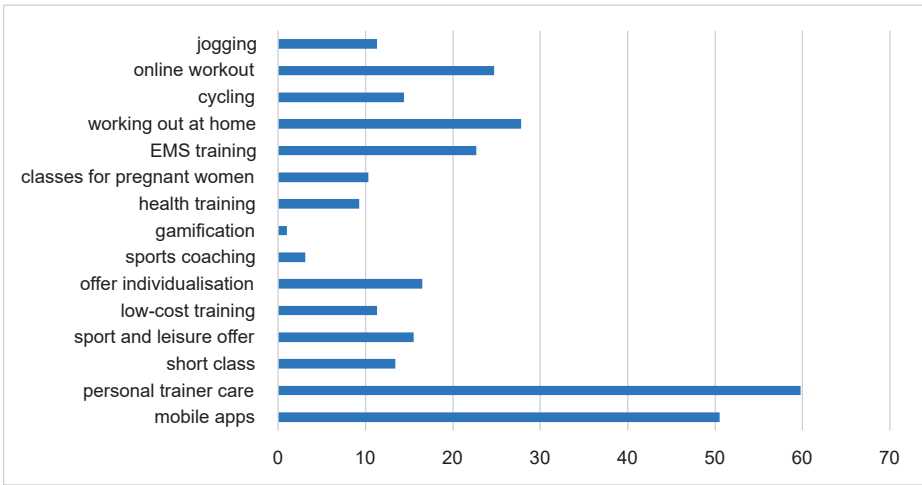

Figure 3. Trends in physical activity observed by respondents

Source: prepared by the author based on research.

Among the most popular high-tech solutions, apps such as Zepp Life[6] (formerly Mi Fit), the Pacer app[7] and available apps such as pedometer or Samsung Health app[8], as well as activity monitoring devices such as smartbands or smartwatches were indicated. According to the respondents, modern technologies provide support to the customer, i.e. they give quick access to the calendar, class schedule, etc. (26.3%), allow the customer to observe their training progress (25.3%), motivate the customer to be physically active (17.%), and assist with managing a club (13.7%). Only 11% of respondents indicated that people who want to exercise do not need to be assisted by technology (Figure 4).

Participants in the study also evaluated the impact of the environment on undertaking physical activity. According to respondents, promoting healthy habits and undertaking physical activity is the responsibility of ourselves and those around us (most notably parents and peers) – 59% and 66%, respectively. Responses such as the media (32%), the state (13.4%), and sports and leisure companies (12.4%) had significantly fewer indications.

[6] Zepp Life (formerly named Mi Fit) is an app that is used to connect the Mi Band (first or second generation) to a smartphone (https://www.dobreprogramy.pl/mi-fit,program,android,6628596656195713 online access on: 15 December 2022).

[7] Pacer – a free phone app that makes it possible to count steps, calories burned, distance and activity time.

[8] Samsung Health – an app dedicated to Samsung smartphone owners allowing them to manage and motivate their physical activity.

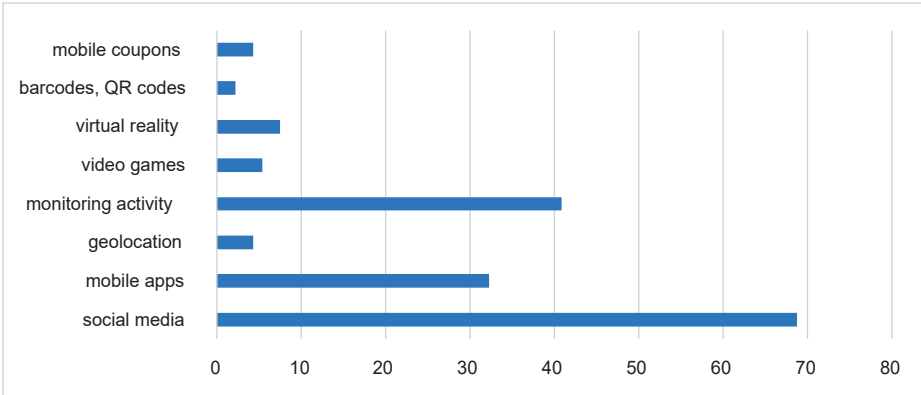

Figure 4. Modern technologies motivating individuals to undertake physical activity

Source: prepared by the author based on research.

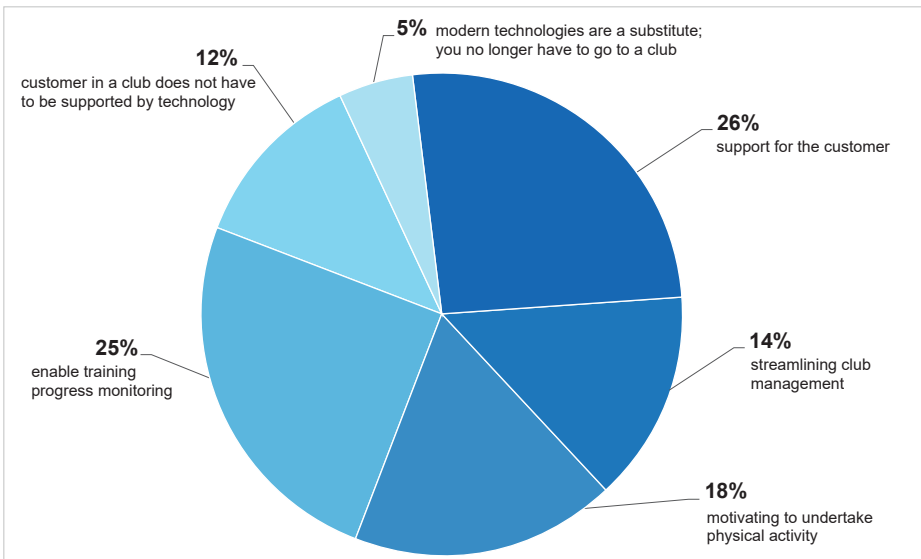

Figure 5. Evaluation of the use of modern technologies in the activities of sports and leisure clubs

Source: prepared by the author based on research.

5. Development perspectives for the market of sports and leisure services using modern technologies

According to the results of the survey, modern technologies already occupy an important place in people's lives today. They are also used in physical activity. The

assumptions of the study were confirmed. Modern technologies can be a motivator for physical activity, while sports and leisure businesses can use modern technology solutions to promote physical activity and their services and build long-term relationships with their customers. As the results of the survey and observation of the behaviour of purchasers of this type of services show, modern technologies can be effective in promoting the services of sports and leisure businesses if, in addition to supporting the customer in the form of access to a calendar, timetable and booking of services, they include elements that motivate and allow to monitor the effects of exercise. Already today, physical activity participants indicate mobile apps and modern technologies (second only to the personal trainer service and ahead of at-home/online workout) as the most noticed trends in the sports and leisure services market. In order to meet expectations of the customers, but also to respond to market changes, sports and leisure companies have a wide range of solutions at their disposal:

1. Using a smartwatch or a smartband can be the first step in exploring other ways to satisfy the need to be active, such as undertaking physical activity in sports and leisure facilities.

2. Fitness clubs using modern technologies should take into account the following features:

– managers being able to streamline club management;

– supporting the customer by providing the timetable, selection, and booking of classes;

– monitoring training progress;

– motivating activity through gamification elements, e.g. achievement tables for club members, publication of the results of the "club member of the month" competition, rewards (points, badges, challenges, etc.);

– the use of QR codes, e.g. to make it easier to enter a facility or to use promotional mobile coupons;

– geolocation to find club network facilities offering a particular type of sports activity;

– virtual reality, virtual trainer, virtual sports and leisure activities as cost reductions for the club and innovations in the offer to customers.

3. Utilising modern technologies, including mobile apps, for marketing activities. Mobile apps of sports and leisure companies can be a carrier of advertisements for products and services related to healthy lifestyles.

4. Customers can act as brand/club ambassadors by sharing positive feedback, as well as using tags[9], posting photos or stories of sports activities on social media and adding the location of the facility.

[9] Tags – keywords assigned to a specific piece of information, place, event.

5. Modern technology can be a tool contributing to building the habit of being physically active. Popular science content related to physical activity and broadly-defined healthy lifestyles (e.g. company blogs) can be published on club websites.

6. Social media can be used to publish information and conduct webinars or other engaging activities with wellness industry professionals. These activities will also help build a positive image of the company in the environment.

7. Modern technologies can be used to personalise messages sent to customers through geolocation (GPS and GIS mentioned above).

All of these suggestions can be used to manage a sports and leisure facility utilising modern technologies. Furthermore, the results of the survey showed the usefulness of modern technologies in promoting physical activity and building commitment of participants in sports and leisure activities.

6. Conclusion

In recent years, we can observe an increasingly strong impact of digital technologies on various aspects of our lives. Soon, the reality will belong to artificial intelligence. Such rapid and significant changes will also affect the sphere of leisure and the sports and recreation industry presented here.

Companies in the sports and recreation industry, like many others, operate in a changing environment. The task of managers will be to constantly monitor the market and react to changes taking place in it. It can also be noted that we are entering the "post-digital era", which means that the digital revolution has already taken place and the division into traditional and modern (digital) marketing has disappeared. In the sports and recreation industry, the creation, maintenance, and enrichment of participant engagement in activities will be accompanied by modern technologies.

References

Basińska-Zych, A. (2017). Współczesne modele organizacyjne sportu powszechnego i turystyki w Polsce oraz ich wpływ na samorządowe struktury zarządzania. *Zeszyty Naukowe Instytutu Polskiej Gospodarki Technologii i Społeczeństwa im. prof. Edwarda Taylora. Przedsiębiorczość i Prawo*, 1, 83–106.

Czarnecki, D., Skalski, D.W., Kowalski, D., Rybak, L., Gamma, T. (2022). Znaczenie aktywności ruchowej dla zdrowia człowieka. *Rehabilitation and Recreation*, 12, 98–104. https://doi.org/10.32782/2522-1795.2022.12.14.

Czarnecki, D., Skalski, D.W., Kreft, P., Kaszowska, M., Nikolenko, O. (2023). Aktywność fizyczna kobiet i mężczyzn w czasie wolnym od pracy. *Rehabilitation and Recreation*, 14, 151–157.

Das, P., Horton, R. (2016). Physical activity: Time to take it seriously and regularly. *The Lancet*, 388(10051), 1254–1255.

Drygas, W., Gajewska, M., Zdrojewski, T. (eds.). (2021). *Niedostateczny poziom aktywności fizycznej w Polsce jako zagrożenie i wyzwanie dla zdrowia publicznego. Raport Komitetu*

Zdrowia Publicznego Polskiej Akademii Nauk. Warszawa: Narodowy Instytut Zdrowia Publicznego, Państwowy Zakład Higieny.

Gao, Z. (ed.). (2017). *Technology in Physical Activity and Health Promotion*. London: Routledge.

GUS. (n.d.). *Uczestnictwo w sporcie i rekreacji ruchowej w 2021 r.* Retrieved February 4, 2023, from https://stat.gov.pl/files/gfx/portalinformacyjny/pl/defaultaktualnosci/5495/5/2/1/uczestnictwo_w_sporcie_i_rekreacji_ruchowej_w_2021_r.pdf.

Mazurek, G. (2018). Transformacja cyfrowa – implikacje dla marketingu. In B. Gregor, D. Kaczorowska-Spychalska (eds.), *Marketing w erze technologii cyfrowych*. Warszawa: PWN.

Kotler, P., Armstrong, G., Saunders, J., Wong, V. (2002). *Marketing. Podręcznik europejski*. Warszawa: PWE.

Krzyżanowska, K., Wawrzyniak, S. (2020). Tendencje zmian w zakresie aktywności fizycznej mieszkańców Polski. *Tourism and Regional Development*, 13, 79–89. https://doi.org/10.22630/TIRR.2020.13.7.

Lenartowicz, M., Dziubiński, Z., Jankowski, K.W. (2017). Aktywni Polacy: dwie dekady uczestnictwa w sporcie i rekreacji ruchowej. Próba wyjaśnienia zmian. *Kultura i Społeczeństwo*, 61(2), 195–210.

Maciąg, J., Kantyka, J., Prawelska-Skrzypek, G. (2018). *Zarządzanie jakością usług rekreacyjnych w mieście i gminie*. Kraków: Instytut Spraw Publicznych Uniwersytetu Jagiellońskiego.

Miotk, A. (2017). *Skuteczne social media. Prowadź działania, osiągaj zamierzone efekty*. Gliwice: OnePress.

Multisport System. (n.d.). Retrieved February 4, 2023, from https://www.kartamultisport.pl/.

Otto, J. (2004). *Marketing relacji. Koncepcja i stosowanie*. Warszawa: C.H. Beck.

Digital 2023: Poland. (2023, February 13). *Datareportal*. Retrieved February 14, 2023, from https://datareportal.com/reports/digital-2023-poland.

Salmon, J., Owen, N., Crawford, D., Bauman, A., Sallis, J.F. (2003). Physical activity and sedentary behavior: A population based study of barriers, enjoyment, and preference. *Health Psychology*, 22(2), 178–188.

Sęk, M. (2015). Dobór próby przy pomocy metody kuli śniegowej (*snowball sampling*). In B. Fatyga (ed.), *Praktyki badawcze* (59–76). Warszawa: Instytut Stosowanych Nauk Społecznych UW.

Ratajczak, K., Hołderna-Mielcarek, B., Śniadek, J. (2022). Nowe media w budowaniu relacji z klientami na rynku usług hotelarskich. *Studia Periegetica*, 40(4), 103–128.

Urban Sports. (n.d.). Retrieved February 4, 2023, from https://urbansportsclub.com/en/#intro.

Waśkowski, Z. (2023). Oczekiwania i preferencje konsumentów wobec dostępu do usług sportowo-rekreacyjnych. In A. Cholewa-Wójcik, J. Wiażewicz (eds.) *Współczesne wyzwania nauki i biznesu w turbulentnym otoczeniu* (197–208). Rzeszów: Oficyna Wydawnicza Politechniki Rzeszowskiej.

Waśkowski, Z., Jasiulewicz, A. (2017). Rola sportu i rekreacji fizycznej w kształtowaniu się kapitału społecznego mieszkańców regionu. *Handel Wewnętrzny*, 4, 279–289.

Wieczorkowski, J., Chomiak-Orsa, I., Pawełoszek, I. (2022). Big data w marketingu – narzędzie doskonalenia relacji z klientami. *Marketing i Rynek*, 29(1), 3–9.

Żuryński, R. (2013). Społeczno-ekonomiczne aspekty organizacji imprez sportowych. *Nauki Społeczne*, 2(8), 254–269.

Ekonomia — Wroclaw Economic Review 29/3 (2023)
Acta Universitatis Wratislaviensis
No 4193

https://doi.org/10.19195/2658-1310.29.3.4

Małgorzata Fiałkowska-Filipek
ORCID: 0000-0003-1694-0032
Wroclaw University of Science and Technology
malgorzata.fialkowska-filipek@pwr.edu.pl

Anna Dobrowolska
ORCID: 0000-0001-9562-7954
Wroclaw University of Science and Technology
anna.dobrowolska@pwr.edu.pl

Quality 5.0: Towards sustainable quality improvement in organizations

Date of submission: 26.05.2023; **date of acceptance:** 01.09.2023

JEL classification: M19

Keywords: Quality 5.0, Industry 5.0, Society 5.0, quality improvement

Abstract

The concept of Quality 5.0 in management sciences has emerged relatively recently. It is an attempt to respond to the limitations attributed to Quality 4.0, which focuses on industry and the use of advanced technologies mainly in production processes. Quality 5.0 goes beyond this framework and introduces an equally strong human and social factor. The article defines the concept of Quality 5.0 in relation to quality improvement in organizations and presents the author's conceptual model of Quality 5.0 as a sustainable concept for quality improvement. The proposed model consists of 12 attributes of Quality 5.0, divided into four categories: (1) Balanced Techno-Human Centric Management System: agile and aware leadership, real-time data decision making, continuous improvement; (2) Human: empowerment, creativity, diversity; (3) Process: integration, efficiency, flexibility; (4) Technology: analytics, connectivity, and scalability. In the Quality 5.0 model, the organization supports the Triple Bottom Line of Sustainable Development through value co-creation, problem-solving, cooperation, and innovation.

1. Introduction

The dynamically changing organizational environment, including the development of advanced technologies and the sensitivity to social and ecological values, has a direct and increasingly noticeable impact on the activities of organizations. Currently, organizations are paying greater attention to achieving Sustainable Development Goals (SDGs). In the context of management, managers are recognizing the consequences of their actions, not only in terms of potential economic benefits for shareholders, but also in terms of their impact on society and the environment. The changes occurring in the early 21st century have been referred to as the Fourth Industrial Revolution. The pandemic period reinforced the shift in this approach to a fifth industrial revolution that goes beyond strictly technocratic values such as efficiency and productivity to strengthening the role and contribution of industry in leading positive social transformations, while respecting the limits of planetary production.

The transformations that are taking place are reflected in the way quality is managed in organizations. The turn of the millennium, in the evolution of quality improvement, is the time of Total Quality Management (TQM), including the adaptation of concepts and methods such as Lean, Six Sigma, as well as the continued use of quality management standards and techniques. Researchers agree on four distinguishable stages in the evolution of quality improvement, which in the 20th century included: quality inspection, quality control, quality assurance, and quality management. Questions arise in the contemporary context: can we distinguish and name the current stage of quality improvement evolution, and how? Recent attempts to frame the prevailing paradigm refer to the concept of Quality 5.0.

The concept of Quality 5.0 (Q5.0) has emerged relatively recently in the field of management sciences, aiming to address the limitations associated with Quality 4.0 (Q4.0). While Q4.0 focuses on the utilization of advanced technologies, particularly information technology, in organizational production processes, Q5.0 surpasses this framework. It broadens the scope of organizational management to encompass social aspects, reshaping our perception of the relationship between social sustainability and organizational sustainability. Presently, researchers are actively working towards conceptualizing Q5.0, yet diverse and multidimensional perspectives persist. Considering the evolving state of knowledge in this domain, studies that identify the essential attributes of Q5.0 can provide valuable insights.

Accordingly, this paper aims to present research findings that define the concept of Q5.0 in the context of organizational quality improvement. Additionally, the authors introduce their conceptual model of Q5.0 as a sustainable approach for enhancing quality within organizations. The research methodology employed includes a critical review of relevant literature and logical inference tools.

2. Theoretical framework of the research

2.1. Quality 4.0: Taking advantage from the Fourth Industrial Revolution

In 2011, the term Industry 4.0 (I4.0) emerged to describe the observed trend within manufacturing companies, characterized by an increased utilization of new information technologies. These technologies include big data analytics, Internet of Things, cloud computing, additive manufacturing, artificial intelligence, blockchain, augmented reality, virtual reality, and cyber-physical systems (Kagermann and Wahlster, 2022; Ranjith Kumar et al., 2022). The emergence of I4.0 has sparked interest among researchers in various management domains, including services, logistics, healthcare, and quality management. These researchers have begun to explore the application of information (electronic) technologies within their respective areas of interest, leading to the emergence of terms such as Service 4.0, Logistics 4.0, and also Quality 4.0.

The term Quality 4.0 was first used in an American Society for Quality report in 2015 in the context of referring to the TQM area for the next stages of industry development and the I4.0 concept (ASQ, 2015; Radziwill, 2018). The first article published in 2016 in this field by Foidl and Felderer (2016) started a discussion on integration and the importance of Quality Management in the I4.0 context, as well as its success factors. In publications on Q4.0 that have since been published, the concept is understood in different ways:

– Q4.0 as the application of the new digital technologies indicated in I4.0 to improve processes, products, organization (ASQ, 2023); Radziwill, 2020; Sony et al., 2020, Sony et al., 2021). In this approach, there is no distinction between I4.0 and Q4.0.

– Q4.0 as an integral part of I4.0, necessary for I4.0 to be implemented (Radziwill, 2018; Küpper et al., 2019; Zonnenshain and Kenett, 2020).

– Q4.0 as an integration of TQM principles with new digital technologies (new technologies as a benefit element), primarily with evidence and data-based decision-making (Salimova et al., 2020; Zonnenshain and Kenett, 2020).

– Q4.0 as the digitalization of TQM and its effect on quality technology, processes, and individuals (Carvalho et al., 2021).

– Q4.0 as a concept for improving organizational culture, collaboration, and leadership through the use of new technologies (Jacob, 2017). Seen as an element of integrating new technologies with people management.

One significant model that has attempted to comprehensively define Q4.0 is the work of Jacob (2017). In this work, it is assumed that "Quality 4.0 isn't really a story about technology. It's about how that technology improves culture, collaboration, competency and leadership". Q4.0 does not replace traditional quality

management, but augments it with technological tools. The author identified three dimensions of Q4.0: people, processes, technology and, within these, there are 11 axes that describe the key elements of Q4.0: leadership, culture, compliance, management system, competency, collaboration, scalability, analytics, data, app development, connectivity (the connection between business information technology and operational technology) (Jacob, 2017).

In another Q4.0 model presented by Ranjith Kumar et al. (2022), the authors adopted three quality dimensions (people, processes, technology) and assigned to them Q4.0 attributes respectively: (1) People: leadership, culture, competency; (2) Processes: integration, management system, compliance; (3) Technology: data, analytics, connectivity, scalability. The first two dimensions (people and processes) build capabilities (called 4.0 capabilities), which include: real-time data management, interoperability, visualization, decentralization, agility, service orientation, integrated business process and sustainability. Technology-driven business models based on I4.0 technologies and 4.0 capabilities create the ability to cater to customer and societal requirements.

Despite the emergence of Q4.0 models that aim to integrate new digital technologies and enhance quality management, these models fail to consider the organization's environment and the societal demands prevalent in the current context of the climate crisis and planetary emergency. Q4.0, as defined by various researchers, primarily focuses on the application of digital technologies to improve processes, products, and the organization, without distinguishing it from I4.0. While some models emphasize the integration of quality management principles with new technologies, they neglect the urgent need to address deep social tensions and environmental concerns. The models fail to encompass the broader societal and environmental aspects necessary for a holistic approach to quality management in the face of the current challenges.

2.2. Society 5.0: Towards the Fifth Industrial Revolution

Society 5.0 (S5.0) is an evolutionary concept that builds upon the foundations of information societies (Societies 3.0) and knowledge societies (Societies 4.0). It envisions a society where digital technology, artificial intelligence, and automation are harnessed to promote social well-being and sustainable development (Deguchi et al., 2020, 4). In S5.0, advanced I4.0 information technologies are actively utilized not only in the industrial sector (production processes) but also in everyday life, healthcare, and various other domains. The primary focus is no longer solely on economic gains but on enhancing the benefits and convenience for every individual citizen. This concept emphasizes leveraging technology to create a society that prioritizes the welfare and needs of its members (EC, 2021, 9).

The concept of S5.0 emerged in Japan as a response to the country's challenges, including energy shortages, reliance on foreign imports, limited natural

resources, and an aging population. Recognizing the need for strategic changes, Japan sought to develop a new societal model. In 2016, the Fifth Science and Technology Base Plan was implemented, envisioning a transition from I4.0 to S5.0. Unlike I4.0, S5.0 places emphasis on people, society, and human relationships, prioritizing a human-centric approach. It is also known by names such as creative, imaginative, or super-intelligent society (Salgues, 2018, 1–3).

The transition to S5.0 brings about a shift in paradigms and beliefs. This new society moves away from economies of scale and a focus on efficiency in industries, towards value creation and problem-solving for the society as a whole. The detrimental environmental impacts of mass production and resource consumption are being replaced by a commitment to sustainability and environmental harmony. Values like diversity, decentralization, and resilience are gaining prominence. The concept of S5.0 is closely aligned with the United Nations' SDGs and the Triple Bottom Line framework (prosperity, people, planet) (Keidanren Policy and Action, 2018, 15–20).

In Europe, the concept of S5.0 has been adapted into a new industrial development strategy known as Industry 5.0 (EC, 2020, 7; EC, 2021, 9). The transformative model of Industry 5.0 (I5.0) reflects the societal and economic changes brought about by the COVID-19 pandemic. I5.0 was formulated to create an industrial system that possesses inherent resilience against future shocks and pressures, while fully embracing the social and environmental principles of the European Green Deal (EC, 2022, 7–11). The concept of I5.0 transcends the narrow focus on technological and economic growth inherent in the existing economic model, which revolves around extraction, production, and consumption. Instead, it presents a fresh perspective on growth, prioritizing human progress and well-being. This entails reducing and transitioning consumption patterns towards sustainable, circular, and regenerative forms of economic value creation, aiming for equitable prosperity. I5.0 is not simply a technological advancement; rather, it contextualizes the principles of I4.0 within the broader challenges of the modern world, aligning with the SDGs and S5.0 (EC, 2022, 6).

3. Research methodology

The research utilized a critical literature review as described by Snyder (2019). This approach is particularly useful when addressing new and emerging issues. Unlike a systematic literature review, it allows for the assessment, criticism, and synthesis of areas and theories that are not yet firmly established. Its main objective is to develop initial conceptualizations and theoretical models. Given that the concept of Q5.0 is in the early stages of being incorporated into the field, grounded theory was employed to construct the conceptual model (Glaser and Strauss, 2017).

An exploratory analysis of scientific publications in the Scopus database revealed a scarcity of articles focusing on the concept of Q5.0. Table 1 presents the

number of publications retrieved from searches using the terms "Quality 4.0", "Society 5.0", "Industry 5.0", and "Quality 5.0" within the TITLE-ABSTRACT-KEYWORDS field between 2017 and 2022. In comparison, a search using the same method for the term "Industry 4.0" yielded 26,292 scientific publications. Considering the paradigm shift, as mentioned in the theoretical section, a corresponding increase in the number of publications is also expected within the realm of Industry 5.0.

Table 1. Number of searches for the indicated terms in the Scopus database

	Quality 4.0	Society 5.0	Industry 5.0	Quality 5.0
2017	3	7	–	–
2018	3	16	2	–
2019	6	42	22	1
2020	16	100	41	3
2021	32	168	102	1
2022	67	181	404	–
Total	127	514	771	5

Source: own research as of July 4, 2023.

For the analysis, a Scopus database was utilized, acknowledging that some of the publications may address topics outside the field of management and quality. Specifically, the publications that delve into the subject of Q5.0 in the domain of management include Arsovski (2019), Deleryd and Fundin (2020), and Fundin et al. (2020). In addition, employing the snowball approach, the article by Frick and Grudowski (2023) found on Google Scholar was added. Publications that explore the evolution and future of concepts associated with quality management were also considered, such as Garvare and Johansson (2010), Dahlgaard-Park (2011), Weckenmann et. al. (2015), Siva et al. (2016), Carnerud and Bäckström (2021), and Wen et al. (2022). Additionally, publications referenced in the theoretical framework were consulted as a foundation for inference.

4. Results

4.1. Quality 5.0 as a new paradigm in the quality management evolution

The evolution of quality management in organizations has transitioned from traditional quality control-based approaches to the concept of Q5.0, reflecting a shift in the understanding of quality. Traditionally, quality was primarily focused on process control and eliminating defects. However, with the advent of I5.0, the integration of advanced technologies, resource limitations, and changing societal

expectations have prompted a change in the approach to quality management. In the present context, quality management extends beyond the confines of the organization and its immediate surroundings, encompassing broader social and environmental aspects.

Q5.0 represents a novel paradigm for enhancing quality, emphasizing the harmonious collaboration between technology and human resources to foster social value and sustainability. This entails leveraging advanced technologies like artificial intelligence, robotics, and data analytics to enhance processes, while actively involving employees, customers, and stakeholders in co-creating superior solutions. Unlike earlier stages of quality management, Q5.0 extends the scope of pro-quality endeavors to encompass the Triple Bottom Line, encompassing stakeholders' well-being, societal considerations, and environmental impact. Figure 1 illustrates the placement of the concept of Q5.0 within the overall evolution of quality management.

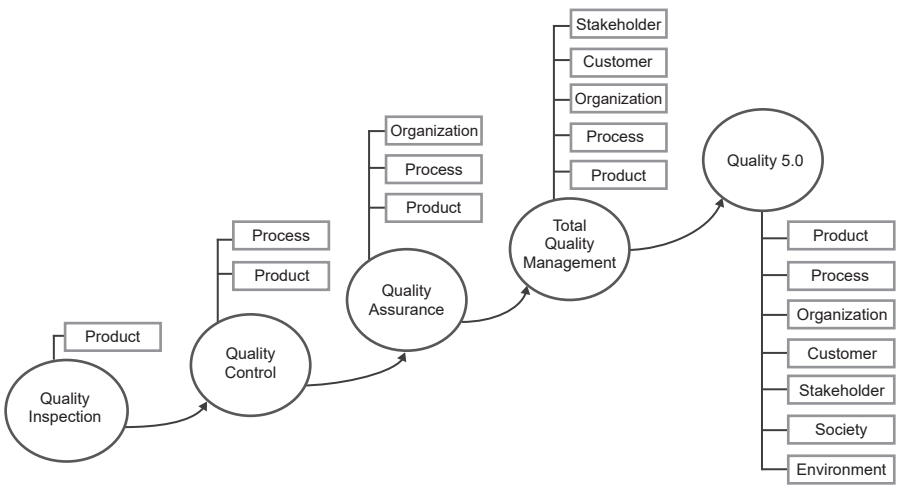

Figure 1. Quality 5.0 as a new paradigm in the quality management evolution

Source: own research.

Q5.0 is experiencing a broadening of its impact beyond the traditional domains of product, process, organization, and customer. In this new approach, organizations strive to establish connections and collaborations with all stakeholders. This includes actively engaging with the local community and the environment, considering their needs and expectations when conducting their operations. The essence of Q5.0 lies in promoting the creation of social value and sustainability. Consequently, organizations are expected to embrace social responsibility and demonstrate a commitment to environmental well-being. This entails incorporating SDGs, addressing environmental considerations, and fulfilling the responsibil-

ities associated with corporate social responsibility. By adopting these practices, organizations can contribute to the greater good and enhance their overall quality performance.

4.2. Quality 5.0 origins

Q5.0 emerged as an evolution of Q4.0, resulting from the integration of modern ideas related to I5.0 and S5.0, alongside the established principles of TQM as depicted in Figure 2. By blending the concepts of I5.0 and TQM, the Q5.0 framework harnesses advanced technologies like artificial intelligence, robotics, and data analytics to enhance the quality of products and services. Simultaneously, similar to TQM, it places significant emphasis on involving the entire organization, managing processes effectively, and considering diverse needs and requirements.

In this new paradigm, the notion of the customer expands beyond its traditional boundaries and encompasses all stakeholders with society at large and the environment. Q5.0 acknowledges the broader scope of impact and extends its focus to meet the needs and expectations of these diverse entities. By adopting the holistic approach, organizations can align their efforts with the interests of various stakeholders, as well as contribute to societal well-being and environmental sustainability.

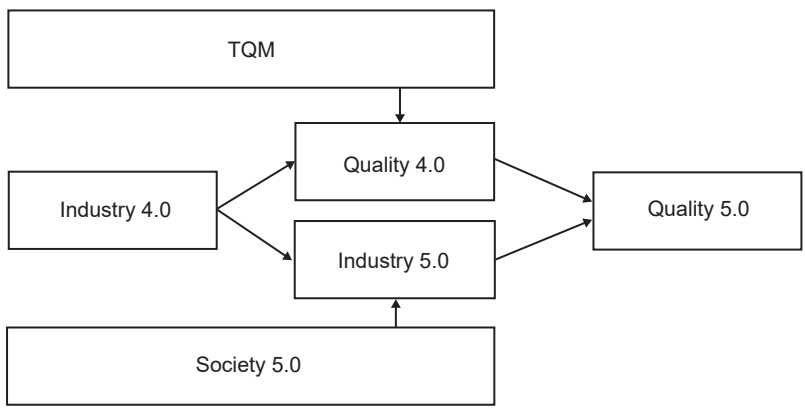

Figure 2. The origins of Quality 5.0

Source: own research.

Q5.0 embraces a Triple Bottom Line of SDGs that encompasses economic, social, and environmental dimensions. Unlike the technology-centric focus of I4.0, Q5.0 broadens its perspective to include human and social considerations. It recognizes the significance of human collaboration, creativity, and well-being along-

side the utilization of advanced technologies. The objective of Q5.0 is to generate value not only in economic terms but also in social and environmental realms.

4.3. Quality 5.0 conceptual model

The development of the Q5.0 conceptual model (Figure 3) was the outcome of a critical literature review, examining various sources in depth. The model illustrates the key attributes of Q5.0, focusing on four fundamental organizational components: the management system, people, technology, and processes. These components are interconnected and work in tandem within an organization's Quality Management System (QMS). Traditionally, the QMS responds to the demands and expectations of customers. However, in the context of Q5.0, the QMS extends its scope to encompass the requirements, expectations, and needs of not only customers and stakeholders but also local communities and the environment, embracing the Triple Bottom Line framework.

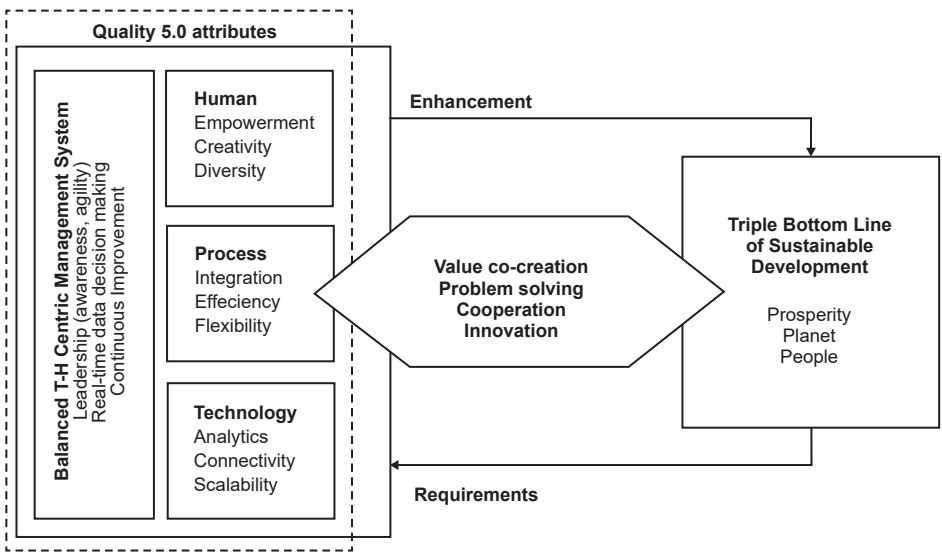

Figure 3. Quality 5.0 conceptual model

Source: own research.

The management system in Q5.0 is centered around maintaining a balance between technology and human aspects. It includes attributes such as leadership awareness and agility, enabling leaders to understand the impact of technological advancements and respond effectively. Real-time data decision-making ensures that decisions are based on up-to-date information. Continuous improvement is emphasized to drive organizational growth and enhance overall performance. The

human component of Q5.0 focuses on empowering individuals within the organization. It promotes creativity and diversity by providing an environment that encourages employees to contribute their unique perspectives and ideas. Empowerment initiatives enable individuals to take ownership of their work and contribute meaningfully to organizational goals. By prioritizing the well-being and development of people, Q5.0 aims to foster a positive and inclusive organizational culture. The process component of Q5.0 emphasizes integration, efficiency, and flexibility. Processes are designed to be seamlessly integrated, ensuring smooth flow and collaboration across different departments, functions, people, and technology. Efficiency allows organizations to minimize waste and optimize resource utilization. Flexibility is prioritized to adapt quickly to changing organizational environment conditions and stakeholder requirements, enhancing agility and responsiveness. Technology still plays a crucial role, supporting the organization's goals and objectives. Analytics enables data-driven decision-making, leveraging insights from large volumes of information. Connectivity ensures seamless communication and collaboration across various systems and stakeholders. Scalability allows organizations to grow and adapt their technological infrastructure as needed to meet changing demands.

The relationship between the Q5.0 components and Triple Bottom Line of SD is characterized by mutual enhancement. The results of QMS in the context of Q5.0 contribute to the achievement of SDGs, promoting prosperity, people's well-being, partnerships, a healthy planet, and peace. At the same time, SD goals set requirements for the Q5.0 components, serving as guiding principles for organizational practices. To strengthen this relationship, value creation is emphasized. Q5.0 encourages organizations to generate value for all stakeholders, but not only in terms of financial prosperity, but also in terms of societal welfare. Problem-solving is crucial to address the challenges and complexities associated with SDGs, fostering innovative approaches. Cooperation and collaboration across organizations, industries, and sectors are essential to create synergies and achieve sustainable outcomes.

5. Conclusions

The rapidly changing organizational landscape, driven by advancements in technology and a growing awareness of social and environmental values, has brought about a significant impact on organizational activities. Today, organizations are increasingly focused on achieving sustainable development goals and recognizing the consequences of their actions beyond economic benefits for shareholders. This shift has been represented in the field of quality management science in the concept of Q5.0.

Q5.0 recognizes the importance of harmonious collaboration between technology and human resources in achieving social value and sustainability. It leverages advanced technologies to improve processes while actively involving employees, customers, and stakeholders in the co-creation of solutions. Unlike previous stages of quality management, Q5.0 extends the scope of pro-quality activities to encompass the Triple Bottom Line, considering the well-being of stakeholders, societal considerations, and environmental impact. By adopting this holistic approach, organizations can contribute to the greater good, align with sustainable development goals, and enhance their overall quality performance. The proposed by authors conceptual model of Q5.0 outlines 12 quality attributes in four key organizational components: (1) Balanced Techno-Human Centric Management System: agile and aware leadership, real-time data decision making, continuous improvement; (2) Human: empowerment, creativity, diversity; (3) Process: integration, efficiency, flexibility; (4) Technology: analytics, connectivity, and scalability.

In conclusion, Q5.0 represents a paradigm shift in quality management, integrating advanced technologies with human-centric approaches and sustainable development goals. It expands the scope of quality to include social and environmental dimensions, fostering collaboration, innovation, and value creation. The conceptual model of Q5.0 provides a foundation for organizations to embrace this new paradigm and strive towards sustainable quality improvement. Further research and empirical studies are needed to fully explore and implement the principles and attributes of Q5.0 in various organizational contexts.

References

Arsovski, S. (2019). Social oriented quality: From Quality 4.0 towards quality 5.0. *Proceedings on Engineering Sciences*, 1(2), 397–404. https://doi.org/10.24874/PES01.02.037.

ASQ. (2015). *Future of Quality Report: Quality Throughout*. Retrieved May 26, 2023, from http://science.thomsonreuters.com.

ASQ. (2023). *Quality 4.0*. Retrieved May 26, 2023, from https://asq.org/quality-resources/quality-4-0.

Carnerud, D., Bäckström, I. (2021). Four decades of research on quality: Summarising, trendspotting and looking ahead. *Total Quality Management & Business Excellence*, 32(9–10), 1023–1045. https://doi.org/10.1080/14783363.2019.1655397.

Carvalho, A.V., Enrique, D.V., Chouchenea, A., Charrua-Santosa, F. (2021). Quality 4.0: An overview. *Procedia Computer Science*, 181, 341–346. https://doi.org/10.1016/j.procs.2021.01.176.

Dahlgaard-Park, S.M. (2011). The quality movement: Where are you going? *Total Quality Management & Business Excellence*, 22(5), 493–516. https://doi.org/10.1080/14783363.2011.578481.

Deguchi, A., Hirai, C., Matsuoka, H., Nakano, T., Oshima, K., Tai, M., Tani, S. (2020). What is society 5.0. In Hitachi-UTokyo Laboratory (ed.), *Society: A People-Centric Super-Smart Society* (1–24). Cham: Springer. https://doi.org/10.1007/978-981-15-2989-4_1.

Deleryd, M., Fundin, A. (2020). Towards societal satisfaction in a fifth generation of quality – the sustainability model. *Total Quality Management & Business Excellence*, 1–17. https://doi.org/10.1080/14783363.2020.1864214.

EC. (2020). *Enabling Technologies for Industry 5.0: Results of a Workshop with Europe's Technology Leaders*. Luxembourg: Publications Office. Retrieved May 26, 2023, from https://data.europa.eu/doi/10.2777/082634.

EC. (2021). *Industry 5.0: Towards a Sustainable, Human-Centric and Resilient European Industry*. Luxembourg: Publications Office. Retrieved May 26, 2023, from https://data.europa.eu/doi/10.2777/308407.

EC. (2022). *Industry 5.0, a Transformative Vision for Europe – Governing Systemic Transformations towards a Sustainable Industry*. Luxembourg: Publications Office. Retrieved May 26, 2023, from https://data.europa.eu/doi/10.2777/17322.

Foidl, H., Felderer, M. (2016). Research challenges of industry 4.0 for quality management. In M. Felderer, F. Piazolo, W. Ortner, L. Brehm, H.J. Hof (eds.), *Innovations in Enterprise Information Systems Management and Engineering* (121–137). Cham: Springer. https://doi.org/10.1007/978-3-319-32799-0_10.

Frick, J., Grudowski, P. (2023). Quality 5.0: A paradigm shift towards proactive quality control in industry 5.0. *International Journal of Business Administration*, 14(2), 51–56. https://doi.org/10.5430/ijba.v14n2p51.

Fundin, A., Lilja, J., Lagrosen, Y., Bergquist, B. (2020). Quality 2030: Quality management for the future. *Total Quality Management & Business Excellence*, 1–17, https://doi.org/10.1080/14783363.2020.1863778.

Garvare, R., Johansson, P. (2010). Management for sustainability: A stakeholder theory. *Total Quality Management*, 21, 737–744. https://doi.org/10.1080/14783363.2010.483095

Glaser, B.G., Strauss, A.L. (2017). *Discovery of Grounded Theory: Strategies for Qualitative Research*. New York: Routledge. https://doi.org/10.4324/9780203793206.

Jacob, D. (2017). *Quality 4.0 Impact and Strategy Handbook: Getting Digitally Connected Quality Management*. Cambridge, MA: LNS Research. Retrieved May 26, 2023, from https://members.lnsresearch.com/research-library/research-articles.

Kagermann, H., Wahlster, W. (2022). Ten years of industrie 4.0. *Science*, 4(3), 26. https://doi.org/10.3390/sci4030026.

Keidanren Policy & Action. (2018). *Society 5.0: Co-Creating the Future*. Retrieved May 20, 2023, from https://www.keidanren.or.jp/en/policy/2018/095_booklet.pdf.

Küpper, D., Knizek, C., Ryeson, D., Noecker, J. (2019). *Quality 4.0 Takes More Than Technology*. BCG. Retrieved May 26, 2023, from https://www.bcg.com/publications/2019/quality-4.0-takes-more-than-technology.

Radziwill, N. (2020). The quality 4.0 revolution: Reveal hidden insights now with data science and machine learning. In *Quality 4.0 Summit on Disruption, Innovation, and Change: Organizational Excellence in the Digital Age, Dallas, TX*.

Radziwill, N.M. (2018). Quality 4.0: Let's get digital: The many ways the Fourth Industrial Revolution is reshaping the way we think about quality. *Quality Progress*, 24–29. https://doi.org/10.48550/arXiv.1810.07829

Ranjith Kumar, R., Ganesh, L.S., Rajendran, C. (2022). Quality 4.0: A review of and framework for quality management in the digital era. *International Journal of Quality & Reliability Management*, 39(6), 1385–1411. https://doi.org/10.1108/IJQRM-05-2021-0150.

Salgues, B. (2018). *Society 5.0: Industry of the Future, Technologies, Methods, and Tools*. Hoboken: John Wiley & Sons.

Salimova, T., Vatolkina, N., Makolov, V., Anikina, N. (2020). The perspective of quality management system development in the era of Industry 4.0. *Humanities & Social Sciences Reviews*, 8(4), 483–495. https://doi.org/10.18510/hssr.2020.8447.

Siva, V., Gremyr, I., Bergquist, B., Garvare, R., Zobel, T., Isaksson, R. (2016). The support of quality management to sustainable development: A literature review. *Journal of Cleaner Production*, 138, 148–157. https://doi.org/10.1016/j.jclepro.2016.01.020.

Sony, M., Antony, J., Douglas, J.A. (2020). Essential ingredients for the implementation of Quality 4.0: A narrative review of literature and future directions for research. *The TQM Journal*, 32(4), 1754–2731. https://doi.org/10.1108/TQM-12-2019-0275.

Sony, M., Antony, J., Douglas, J.A., McDermott, O. (2021). Motivations, barriers and readiness factors for Quality 4.0 implementation: An exploratory study. *The TQM Journal*, 33(6), 1502–1515. https://doi.org/10.1108/TQM-11-2020-0272.

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, 333–339. https://doi.org/10.1016/j.jbusres.2019.07.039.

Weckenmann, A., Akkasoglu, G., Werner, T. (2015). Quality management: History and trends. *The TQM Journal*, 27(3), 281–293. https://doi.org/10.1108/TQM-11-2013-0125.

Wen, D., Sun, X., Yan, D. (2022). The quality movement: Where are we going? Past, present and future. *Total Quality Management & Business Excellence*, 33(1–2), 92–112. https://doi.org/10.1080/14783363.2020.1801342.

Zonnenshain, A., Kenett, R.S. (2020). Quality 4.0: The challenging future of quality engineering. *Quality Engineering*, 32(4), 614–626. https://doi.org/10.1080/08982112.2019.1706744.

Ekonomia — Wroclaw Economic Review 29/3 (2023)
Acta Universitatis Wratislaviensis
No 4193

https://doi.org/10.19195/2658-1310.29.3.5

Magdalena Węglarz
ORCID: 0000-0003-4201-7225
Wroclaw University of Science and Technology
magdalena.weglarz@pwr.edu.pl

Edyta Ropuszyńska-Surma
ORCID: 0000-0002-0163-8810
Wroclaw University of Science and Technology
edyta.ropuszynska-surma@pwr.edu.pl

Joanna Zimmer
ORCID: 0000-0003-3060-1432
Wroclaw University of Science and Technology
joanna.zimmer@pwr.edu.pl

Which companies among the SMEs operate in accordance with the Sustainable Development Goals

Date of submission: 26.07.2023; **date of acceptance:** 31.08.2023

JEL classification: D22, D81, L21, M14, Q01

Keywords: decision making, sustainable development, sustainable business model, SME, logit model

Abstract

The purpose of the article is to identify the factors that have a significant impact on the decision of SMEs to operate in accordance with the Sustainable Development Goals (SDGs). The identification was made on the basis of data collected in December 2022 during a survey of a sample of 303 SMEs from all over Poland. In order to identify the above-mentioned factors, the following were analyzed: type of business, industry to which the primary economic activity of the surveyed company is assigned, age of the company, type of ownership, scope of activity, organizational and legal form, number of employees, average annual net income. Correlation tests confirmed the hypotheses of the relationship between the number of employees and average annual net income and operation in accordance with the SDGs. Further verification of the relationship, performed using a logit model,

confirmed that average annual net income and industry are significant variables. There is a relationship between these variables and acting in accordance with the SDGs. The chance of making a decision by a company about operating in accordance with the SDGs increases as the average annual net income increases. The probability of operating in accordance with the SDGs is higher if the company operates in the following industries, i.a.: real estate activities, transportation, financial and insurance, construction, agriculture.

1. Introduction

The turbulent environment is compelling companies to act and adapt their business models in order to anticipate emerging trends. Adapting to changes in this environment requires a holistic approach that encompasses defining goals, strategy, and the business model (BM), necessitating the use of more comprehensive management models. In a holistic approach, equal consideration is given to the various elements that impact the operation of an enterprise. Consequently, the concept of a sustainable business model (SBM) or enterprise sustainability has emerged (Zgrzywa-Ziemak, 2019). A company pursues a policy of sustainable development (SD) when it simultaneously strives to achieve business goals, improves the quality of life for various stakeholder groups (e.g., employees, local community), and reduces negative environmental impact. Integrating the Sustainable Development Goals (SDGs) into company's operations leads to the creation of SBM, where SD policy is incorporated into all aspects of the BM.

Based on literature studies and secondary research, it can be observed that sustainability goals are being considered by large multinational companies. A study conducted in technology parks by the authors in 2019 (Ropuszyńska-Surma and Węglarz, 2022) indicated that among small and medium-sized enterprises (SMEs) and start-ups, there are companies that incorporate social and environmental aspects into their business models. The research has shown that the goals of most enterprises align with the conventional trend where an enterprise must first achieve minimum economic goals before pursuing social goals. This conclusion fits the Carroll's Pyramid of Corporate Social Responsibility (CSR) (1991). However, several companies in Poland set an example by prioritizing social goals, thereby serving as a precursor for change in the BM of Polish companies. While the surveyed entities pursue sustainability goals to some extent, the key question is whether these activities are merely a means to an economic goal or a reflection of the value system within the enterprise. The conducted research has provided a rationale for further investigation into SBMs in SMEs.

The following research question was formulated: If companies choose to be guided by sustainability goals in their operations, what factors have the biggest impact on the company's decision?

The subjects of the research are SMEs operating in various industries throughout the country. Enterprises that operate in accordance with the goals of the SD

and those that do or do not have measures of the degree of the policy of sustainable development implementation. The subject of the study is the data obtained through surveys.

The aim of the article is to identify the factors that have a significant impact on the decision of SMEs to act in accordance with the Sustainable Development Goals (SDGs).

We tested the following five hypotheses:

– H1: Type of business is associated with the decision to operate in accordance with the SDGs.

– H2: Industry in which the company operates is associated with the decision to operate in accordance with the SDGs.

– H3: Scope of activity of the company is associated with the decision to operate in accordance with the SDGs.

– H4: Number of employees is associated with the decision to operate in accordance with the SDGs.

– H5: Average annual net income is associated with the decision to operate in accordance with the SDGs.

2. Theoretical framework of the research

Since the 1970s, the topic of environmental and social responsibility has been discussed in literature. On this basis, new concepts have been created, e.g. the CSR (Davis, 1960 for Carroll, 1991, 39), the concept of Carroll's Pyramid (1991). A lot of independent regulators and legal regulations have been introduced in economic practice. The international organizations, e.g. the EU (Lisbon European Council, 2000; European Commission, 2010), the World Bank (1981), the UN (2000; 2015), ecological organizations (Meurs, 2012) promote the concept of SD. The millennium goals were formulated in line with this spirit. The UN published the 2030 Agenda for SD in 2015, and the EU plans and supports actions and investments in accordance with the SD policy. To achieve the global macroeconomic aims, the business must be conducted according to these aims. Thus, concepts of sustainable company, responsible or / and sustainable management were parallelly developed in the management science. Sustainability entails achieving a balance among the three pillars: economic, environmental, and social, instead of treating them as independent components. These pillars are intrinsically linked and interdependent, emphasizing the need to address them holistically (Lüdeke-Freund and Dembek, 2017).

We can separate some types of research related to these topics. They focus mainly on following the CSR aspects: (1) reasons why the business introduces the CSR and the SDGs (Cantele and Zardini, 2020); (2) barriers to the implementation of the CSR (Cantele and Zardini, 2020; Bocken and Geradts, 2020); (3) ways

of the SDGs implementation on different levels of management from strategical to operational (e.g. Berrone et al., 2023); (4) sustainable performances for companies (Lopez et al., 2022) and their stakeholders (Turker, 2009), environment (Shahzad et al., 2020). One of the benefits can be the improvement of reputation and other economic variables on the macro level which are important for governments (Lu et al., 2020). Other articles focus on environmental aspects, but they are not discussed in detail due to the article's volume.

Common investigation of the economic, environmental, and business aspects is reflected in the concept of the SBM. The term "sustainable business model" (SBM) has recently been associated with closed-loop BMs (Wells and Seitz, 2005), "Natural Capitalism" (Hawken et al., 2005), social enterprises (Grassl, 2012), Product Service Systems (PSS) (Tukker, 2004; Mont and Tukker, 2006), and new economy concepts, e.g. Blue Economy, (Pauli, 2010), circular economy, and sharing economy. The SBM is characterized by three specific features:

– the essence of SBM is to create value not only for customers, but also for stakeholders, society, and the environment (Abdelkaf and Täuscher 2016);

– SBMs also consider non-financial forms of value, such as social and environmental values (Bocken et al. 2014);

– SBMs also take into account so-called foregone value generated by negative social and environmental impacts (e.g., resource depletion and ungrained value from reusable elements in broken tools) (de Pádua Pieroni et al. 2018).

J. Elkington (1997) made a compelling argument that a BM should encompass social, environmental, and economic values to support SD. Building upon this idea, W. Stubbs and C. Cocklin (2008) were the first scholars to introduce the concept of SBMs, which emphasize the influence of sustainability goals on enterprise's actions and decisions, reflecting a more holistic approach to sustainability. Furthermore, R. Freeman (2010) emphasized the importance of providing social, environmental, and economic values to all stakeholders. As a result, sustainability should occupy a central position in the value proposition of business models. SBMs aim to create and deliver sustainable value to customers and all other stakeholders, while also generating economic value for the enterprise and its stakeholders. The majority of definitions proposed in the literature regarding SBMs, adopt a holistic perspective that recognizes the interconnectedness of value and stakeholders (Boons and Lüdeke-Freund, 2013; Geissdoerfer et al., 2018; Curtis and Mont, 2020). Consequently, this perspective has led to a redefinition of value, wherein the environment and society are considered integral stakeholders within the enterprise's business model. They are not only sources, but also targets for value creation (Schaltegger et al., 2016; Schoneveld, 2020).

The study of the SMB focuses on the following main issues: (1) the influence of the SBMs on social transition (Bidmon, Knab, 2018); (2) the kinds of SBMs (e.g. Matusiak, 2013); (3) the role of the SBM in the diffusion of new and clean technologies, social innovations, organizational forms, and technological advancements

in achieving the SDGs (Boons and Lüdeke-Freund, 2013; Bocken et al., 2014; Lüdeke-Freund et al., 2018); (4) the ways of creating, delivering, and capturing value, as well as altering its value proposition by companies possessing SBMs (Velter et al., 2020; J. Shakeel et al., 2020).

In the following part of our research, we would like to identify significant features of the Polish SMEs which have a significant impact on the decision of these companies to act in accordance with the SDGs.

3. Research methodology

The results presented in this article are a part of a wider study focused on SBM in Polish SMEs. The concept of this research is based on the Triple Layered Business Model Canvas proposed by Joyce and Paquin (2016). The research was conducted by a team from WUST[1] in December 2022 among 303 SMEs.

In order to collect data, a survey questionnaire (CAWI) was made including about 200 questions dedicated to business, environmental, and social layers, in accordance with the Canvas pattern. The first part of the questionnaire was metric. Taking into consideration this article's aim and its limited volume, only the metric is important. It consists of 8 questions which provide basic information (Table 6, column "Description") about the investigated SMEs, and two questions focus on following issues respectively: (1) whether the SMEs take into consideration the SDGs in their activities; (2) whether the SMEs have systems to measure the degree to which an SD policy is implemented. The term "sustainable development policy" was defined in the questionnaire.

Only managers or employees in managerial positions filled in the survey. Almost all of the questions from the metric were closed-ended. Only one was open-ended and one was semi-open. The column "Values" in Table 6 informs what options the respondents could choose from. Only one question – about the kind of business – was a multiple-choice question.

Enterprises were randomly selected from a nationwide Ariadna research panel and the sample is representative. Its structure, according to the main features, are presented in Section 4.1 of this article.

The data collected within the survey underwent a correlation analysis to understand the relationship between endogenous and exogenous variables (Table 6). This involved using the V-Cramer test to analyze the associations between variables. To confirm the observed relationships and identify which exogenous variables have a significant impact on the endogenous variable, the logit model (LM) was used, as the endogenous variable is dichotomous (binary). By using the LM, the aim was to identify the factors that significantly influence the decision-making process of

[1] The WUST research team: E. Ropuszyńska-Surma, M. Węglarz, J. Zimmer, K. Walecka-Jankowska, P. Kubiński and R. Kamiński.

SMEs to operate in alignment with the SDGs. This approach helps in understanding the factors that play a crucial role in such decision-making processes. To conduct the statistical analysis and build the LMs, the SPSS software and the Gretl program were used.

4. The research results: Identification of significant factors

4.1. Correlation analysis between variables

Analyzing the relationship between the type of business and operating in accordance with the SDGs, one can notice (Table 1) that the largest percentage of companies applying SD policy is among R&D companies, and the smallest is among service companies. However, when analysing these values in relation to the population as a whole, we no longer see a similar relationship. Total number of all companies is 303, but companies could mark different activities and not just one. Therefore, the values are greater than 100%.

Table 1. Companies operating in accordance with the SDGs by type of business

Type of business		R&D	Manufacturing	Commerce	Service	Other	Total
Is the company guided by sustainability goals in its operations?	Yes	14	44	44	100	2	178
	No	6	29	25	76	2	125
Total		20	73	69	176	4	303

Source: own study.

When considering the issue of scope of activity, there are no major differences between the groups when it comes to operating in accordance with the SDGs (see Table 2).

Table 2. Companies operating in accordance with the SDGs by scope of activity

Scope of activity		Local	Regional	National	International	Total
Is the company guided by sustainability goals in its operations?	Yes	41	26	80	31	178
	No	28	26	49	22	125
Total		69	52	129	53	303

Source: own study.

Taking the criterion of the number of employees (Table 3), it was noted that the largest number of companies using the SD policy is among companies with more than 150 employees and the smallest among companies with fewer than 10 employees.

Table 3. Companies operating in accordance with the SDGs by number of employees

Number of employees		Less than 10	10–49	50–149	150–249	Total
Is the company guided by sustainability goals in its operations?	Yes	68	53	37	20	178
	No	65	30	23	7	125
Total		133	83	60	27	303

Source: own study.

Dividing companies by volume of average annual net income (Table 4), it was noted that the higher the revenue, the greater the number of companies operating under SD goals. However, it is important to note the small size of the research sample for companies with the highest revenue.

Table 4. Companies operating in accordance with the SDGs by average annual net income

Average annual net income		Less than €2 million	€2–10 million	More than €10 million	Total
Is the company guided by sustainability goals in its operations?	Yes	98	56	24	178
	No	94	26	5	125
Total		192	82	29	303

Source: own study.

The Cramer V coefficient, which determines the level of relationship between two nominal variables, of which at least one takes on more than two values, was used to determine the relationship between the variables. Table 5 presents the results of statistical analysis related to the aforementioned variables. We tested all hypotheses, and statistical analysis confirmed all of them. But in case of H1 (type of business – commerce) and H2 (industry) significance level was 10% (in Table 5 this has been marked with one asterisk).

The result of the V-Cramer test indicates that there is no relation between operating in accordance with the SDGs and variables: age of the company, type of ownership, and type of business – research and development.

However the results of the V-Cramer test clearly indicate a significant relationship between the number of employees ($V = 0.408$ with p-value < 0.001) and operating in accordance with the SDGs. The greater the number of employees in a company, the greater the chance that the company will operate in accordance with its sustainability goals. Statistical analysis confirmed hypothesis (H4).

Statistical analysis confirms that hypothesis (H5) about the relation between average annual net income and operating in accordance with the SDGs can be accepted (V-Cramer coefficient = 0.366 with p-value < 0.001). Note that the greater annual net income, the greater number of companies operating in accordance with the SDGs.

Table 5. The results of V-Cramer coefficient for endogenous variable

	V coefficient	Significance
Type of business – Research and development	0.08	0.165
Type of business – Manufacturing	0.148**	0.01
Type of business – Commerce	0.099*	0.086
Type of business – Services	0.122**	0.034
Industry to which the primary economic activity of the company is assigned	0.287*	0.094
Age of the company	0.413	0.412
Type of ownership	0.092	0.463
Scope of activity	0.216**	0.003
Organizational and legal form	0.375***	<0.001
Number of employees	0.408***	<0.001
Average annual net income	0.366***	<0.001

Note: *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: own study.

Moreover there is a relationship between operating in accordance with the SDGs and organizational and legal form (V-coefficient = 0.375 with p-value < 0.001) and between scope of activity (V-coefficient = 0.216 with p-value = 0.003). It should be noted that both variables are nominal variables, with k variants. Statistical analysis showed that there may be some relationship between the variables, supporting the hypothesis (H3).

4.2. Logit model

The endogenous variable was determined by respondents' answers to a filter question on whether they are guided by sustainability goals in their actions. Since the endogenous variable is a dichotomous variable, the use of a LM was proposed for further analysis. The purpose of modeling a dichotomous variable is to predict the change in the probability $P(y_i = 1|X_1 = x_1, X_2 = x_2, \ldots, X_n = x_n)$ of deciding to act according to the SDGs caused by a change in the value of one of the explanatory variables (Gruszczyński, 2010, 54–55). An LM was built to investigate which of the explanatory variables has a significant effect on the explained variable and to confirm the observed relationships (see Section 4.1). An endogenous variable was defined as:

$y_i = 1$, when the company is operating in accordance with the SDGs,

$y_i = 0$, when the company does not act in accordance with the SDGs or does not know if it is following them.

Table 6 shows the exogenous variables used in the model to explain the endogenous variable, as well as their coding and sample percentage distribution. Exogenous variables are of different types, they are both binary, nominal, and ordinal variables.

Table 6. Description of exogenous variable

Variable	Description	Type of variable	Values	%
A1_r1	Type of business – Research and development	binomial	0=no; 1= yes	93.4 6.6
A1_r2	Type of business – Manufacturing	binomial	0=no; 1= yes	75.9 24.1
A1_r3	Type of business – Commerce	binomial	0=no; 1= yes	77.2 22.8
A1_r4	Type of business – Services	binomial	0=no; 1= yes	41.9 58.1
A1_r5	Type of business – Other	binomial	0=no; 1= yes	98.7 1.3
A2	Industry to which the primary economic activity of the company is assigned	artificial	1=manufacturing, 2=generation and supply of electricity, gas, steam, hot water, and air conditioning, 3=water supply, sewage, and waste management, 4=construction, 5=wholesale and retail trade, 6=transportation, warehouse management, and communications, 7=financial and insurance intermediation, 8=accommodation and food service, 9=information and communication, 10=real estate activities, 11=professional, scientific, and technical activities, 12=agriculture, 13=vehicle repair, 14=education, 15=healthcare and social assistance, 16=culture, entertainment, and recreation, 17=public administration, 18=other	7.9 0.7 2.3 14.2 17.2 5.9 4.0 4.3 8.6 4.0 14.9 2.3 1.7 2.0 3.6 1.0 1.3 4.3

A3	Age of the company	ratio	discrete	
A4	Type of ownership	artificial	1=private, 2=public, 3=cooperative, 4=private-public	81.2 8.2 5.3 5.3
A5	Scope of activity	nominal,1–4 scale, multi-variant	1=local, 2=regional, 3=national, 4=international	22.8 17.1 42.6 17.5
A6	Organizational and legal form	artificial	1=sole proprietorship, 2=foundation, 3=registered partnership, 4=professional partnership, 5=joint-stock company, 6=simple joint-stock company, 7=civil partnership, 8=association, 9=cooperative, 10=limited liability company, 11=other	44.9 1.3 5.0 2.3 6.9 4.3 5.0 3.3 2.6 22.1 2.3
A7	Number of employees	ordinal, 1–4 scale, multi-variant	1=less than 10, 2=10–49, 3=50–149, 4=150–249	43.9 27.4 19.8 8.9
A8	Average annual net income	ordinal, 1–4 scale, multi-variant	1=less than EUR 2 million, 2= EUR 2–10 million, 3= EUR 10–50 million, 4=more than EUR 50 million	63.4 27.1 7.9 1.7

Source: own study.

The question regarding the type of business was multiple-choice because a company can engage in various types of business, so the variables A1 are regressors (0–1). Explanatory variables such as A2 (Industry), A4 (Type of ownership) and A6 (Organizational and legal form) were converted into 0–1 regressors. The original nominal variable, with k variants, was transformed into k-1 artificial variables, and one of the variants was not introduced to the model, but is a reference group for other artificial variables (Górecki, 2010, 65–67). Accordingly, the following were taken as reference groups: in the case of type of business – A1_r5 – other, in the case of type of ownership – A4_4 – private-public, in the case of organizational and legal form – A6_11 – other. In the case of industry, A2_18 – other was initially adopted as the reference group; however, this was subsequently expanded to include a low-frequency, high-diversity thematic subgroup: A2_16 – culture, entertainment, and recreation.

When constructing the regression equation of the LM, all explanatory variables were included which, from the standpoint of the formulated hypotheses, can explain the behavior of the explained variable. The level of significance was 5%. The logarithm of reliability for the full model A with all variables is -178.5048.

The elimination of non-significant variables was done in several steps. The explanatory variables with the highest p-value (higher than 0.2) were removed from the model one by one. A total number of eliminated variables is 19. The logarithm of likelihood ratio for model B is -182.6613. The result of the likelihood ratio test confirmed that the aforementioned variables do not play a significant role in explaining the endogenous variable. The results of estimation of the logit model B are presented in Table 7.

Table 7. The results of estimation of logit model B

Variable	Coefficient	p-value	Significance level	Odds ratio
const	-2.5207	0.0001	***	
A2_1 manufacturing	1.7981	0.0138	**	6.0379
A2_2 generation and supply of electricity	2.5157	0.145		12.3756
A2_3 water supply, sewage, and waste management	1.9811	0.0566	*	7.2507
A2_4 construction	2.1371	0.0015	***	8.4748
A2_5 wholesale and retail trade	1.5547	0.0165	**	4.7338
A2_6 transportation	2.0196	0.0092	***	7.5350
A2_7 financial and insurance	2.6413	0.003	***	14.0312
A2_8 accommodation and food service	1.1025	0.1737		3.0116
A2_9 ICT	1.2383	0.0824	*	3.4497
A2_10 real estate activities	2.5400	0.0044	***	12.6793
A2_11 professional, scientific, and technical activities	1.0997	0.0887	*	3.0033
A2_12 agriculture	2.2473	0.0294	**	9.4618
A2_13 vehicle repair	2.9086	0.0219	**	18.3302
A2_14 education	1.5454	0.1475		4.6896
A2_15 healthcare and social assistance	1.9448	0.023	**	6.9919
A4_2_public ownership	0.9602	0.0606	*	2.6123
A6_4 professional partnership	-1.7115	0.0694	*	0.1806
A8 income	0.8607	<0.0001	***	2.3648

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: own study

Evaluation of collinearity among exogenous variables was done using the variance inflation factor (VIF). The obtained values of 1.062 to 3.54 confirm that there is no collinearity problem.

The McFadden R-square = 0.11. Confusion Matrix allows the determination of measures of model fit such as count R^2 and odds ratio (IS). The closer the count R^2 value is to 1, the better the fit of the model to the empirical data. The model performs well in predicting the phenomenon under study when count $R^2 > 50\%$ (Maddala, 2008). If IS>1, forecasting with the model is better than random forecasting (Kufel, 2013). For model B, the following values were obtained count $R^2 = 65\%$ and IS = 3.08.

$$countR^2 = \frac{n_{11}+n_{00}}{N} \cdot 100 = \frac{139+58}{303} \cdot 100 = 65\% \quad (1)$$

$$IS = \frac{n_{11} \cdot n_{00}}{n_{01} \cdot n_{10}} = \frac{139 \cdot 58}{39 \cdot 67} = 3.08 \quad (2)$$

Statistical significance was confirmed by the LM (Table 7) in the case of: A8 – income, A2 – industry (real estate activities, transportation, financial and insurance, construction, manufacturing, wholesale and retail trade, agriculture, vehicle repair, healthcare, and social assistance). The obtained results confirmed only hypotheses H2 and H5.

4.3. Significant factor analysis

We do not remove irrelevant variables because their removal floats the deterioration of the parameters of the obtained model. We identify variables that have a greater impact on decision-making to act in accordance with the SDGs. Using the LMs, odds ratios were determined, which is interpreted as a relative chance of occurrence of an event in a given subgroup in comparison with the reference group (Gruszczyński, 2010, 67–68).

Figure 1 shows the odds ratio of the decision to act in accordance with the SDGs by different subgroups of companies. The black line on Figure 1 and 2 represents an odds ratio of 1, which means that the probability of decision-making by particular subgroups is the same as the reference subgroup. The chance of making a decision to operate in accordance with the SDGs increases as the average annual net income increases, averaging 2.4 times.

The greatest chance of making a decision about operating in accordance with the SDGs is among companies in (1) financial and insurance intermediation industry (14.03 times greater than in the reference group), (2) real estate activities industry (12.68 times higher than in the reference group), (3) construction industries (8.47 times higher), (4) transportation industries (7.54 times higher).

Exogenous variables with the medium impact on the explanatory variable are: A2 – Industry (manufacturing; water supply, sewage, and waste management;

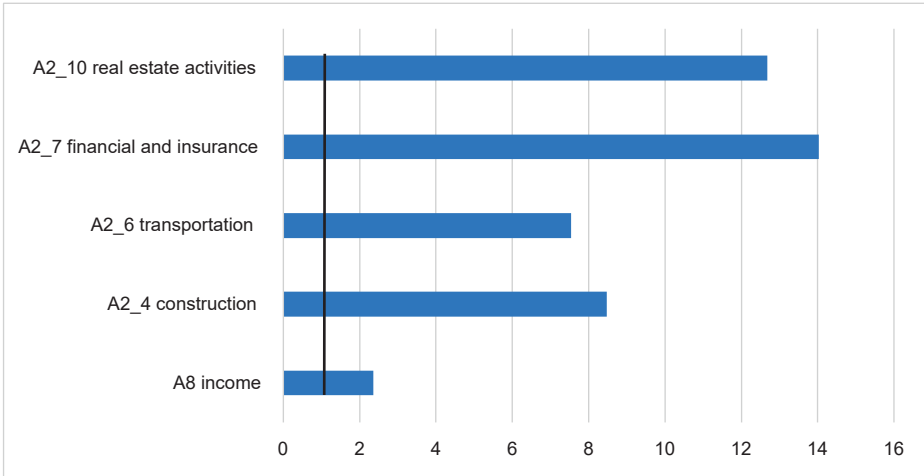

Figure 1. Odds ratio for exogenous variable with significant impact

Source: own study.

wholesale and retail trade; ICT; professional, scientific, and technical activities; agriculture; vehicle repair; healthcare and social assistance), A4 – Type of ownership (public). Figure 2 shows the odds ratio of the decision to act in accordance with the SDGs by various subgroups of companies. The interpretation of the odds ratio for Figure 2 is analogous as for Figure 1.

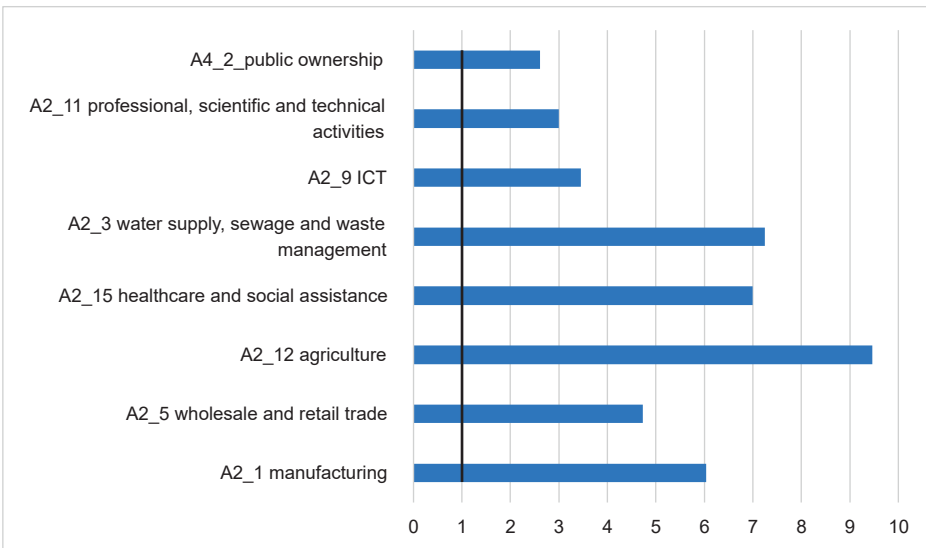

Figure 2. Odds ratio for exogenous variable with medium impact

Source: own study.

Exogenous variables with a negative impact on the explanatory variable are A6_4 professional partnership (see Table 7). Negative impact means that the probability of making decisions by particular groups is lower than for the reference subgroup. The fact that the company is a professional partnership reduces the chance of making a decision to act in accordance with the SDGs by 82% (the odds ratio is equal to 0.18).

5. Conclusions

This paper includes a verification of five hypotheses about the correlation between some characteristics of SMEs and the decision of SMEs to act in accordance with the Sustainable Development Goals (SDGs). These factors are as follows: type of business (H1), kinds of industries (H2), scope of activity (H3), number of employees (H4), average annual net income (H5). V-Cramer test was used to verify these hypotheses, and the logit model was used to confirm the observed relationship between the variables. The statistical analysis confirmed hypotheses H4 and H5. This means that there are relationships between the number of employees and the decision of SMEs to act in accordance with the SDGs (H4) as well as between the average annual net income and the decision of SMEs to act in accordance with the SDGs (H5). These results are similar to the opinion presented by Lu et al. (2020). They indicate that "the dominate of SMEs in industries does not always have positive impact on the penetration of CSR practices, as they have less financial and human resources and are always facing bigger competitions from the market" (Lu et al., 2020). The results of our research among Polish SMEs confirm statistically that the net income and the number of employees are important factors for acting according to CSR.

There is no statistical basis to confirm or reject the H1 and H2 hypotheses, but the V-coefficient results do not constitute a clear foundation to draw a conclusion about the correlation between the scope of activity and the decision of SMEs to act in accordance with the SDGs (H3).

The logit model confirms that the important factors are the following: net income, industry (real estate activities, transportation, finance and insurance, construction, manufacturing, wholesale and retail trade, agriculture, vehicle repair, healthcare and social assistance). The logit model confirmed H2 and H5.

The chance of deciding to act in accordance with the SD goals is greater if the company is in one of the following industries:

– financial and insurance (14.03 times higher),
– real estate activities (the chance is 12.68 times higher),
– agriculture (9.46 times higher),
– construction (8.47 times higher),

– transportation (7.54 times higher),
– healthcare and social assistance (6.99 times higher),
– manufacturing (6.04 times higher),
– wholesale and retail trade (4.73 times higher).

As the average annual net income of a company increases, its likelihood of operating in line with the SDGs also increases, with an average increase of 2.4 times. For public companies, the likelihood of making a decision to act in accordance with the SDGs is 2.61 times higher compared to private-public companies. On the other hand, if a company is a professional partnership, the chance of making a decision to act in line with the SDGs decreases by 82%.

According to Carroll's Pyramid the companies first achieve the economic responsibility, and next higher levels of responsibilities such as: legal, ethical, and philanthropic. All of them are related to the SBM. It seems that the results of our research dedicated to private businesses are in line with the Carrolls' Pyramid because the higher average net income of SMEs, the bigger the likelihood that they operate in accordance with the SDGs. The public companies are provided with funds usually – not huge, but more stable and secure than the private sector. A professional partnership is characterized by special competences and skills, and small-scale activities. They have strong relationships with employees, consumers, and other stakeholders and depend on them. To exist, they should take into consideration employees, consumers, and the environment. It seems that if they gain a higher income, they are more independent from the stakeholders. Maybe this is the reason for a negative correlation between the income and them operating in accordance with the SDGs. This statement needs deeper and wider research.

In Poland, we can observe a positive trend that not only huge corporations which are obligated to implement the SDGs, but also certain kind of the SMEs are operating in line with the SDGs. The open question is about the reasons. The SMEs in Poland, especially from the industries mentioned above, conduct their business adhering to the SDGs. There are SMEs from industries which influence the environment (e.g. transportation or agriculture industries), or have strong relationships with society and their clients (e.g. financial and insurance or healthcare and social assistance), as well as affect both these aspects, e.g. construction or real estate activities. Thus, it seems logical that they declare operating in line with the SDGs because they are forced by legislation or competition in the market, including the willingness to distinguish themselves, e.g. by reputation. This sentence could serve as inspiration for continuing our research.

The beneficiaries of the article could be researchers, students, and policymakers at regional, state, and international levels. For the last group of beneficiaries, the paper could be helpful in identifying entities needing support in implementing the SDGs.

References

Abdelkafi, N., Täuscher, K. (2016). Business models for sustainability from a system dynamics perspective. *Organization & Environment*, 29(1), 74–96.

Berrone, P., Rousseau, H.E., Ricart, J.E., Brito, E. (2023). How can research contribute to the implementation of sustainable development goals? An interpretive review of SDG literature in management. *International Journal of Management Reviews*, 25(2), 318–339. https://doi.org/10.1111/ijmr.12331.

Bidmon, C.M., Knab, S.F. (2018). The three roles of business models in societal transitions: New linkages between business model and transition research. *Journal of Cleaner Production*, 178, 903–916.

Bocken, N.M.P., Short, S.W., Rana, P., Evans, S. (2014). A literature and practice review to develop sustainable business model archetypes. *Journal of Cleaner Production*, 65, 42–56.

Bocken, N.M.P., Geradts, T.H.J. (2020). Barriers and drivers to sustainable business model innovation: Organization design and dynamic capabilities. *Long Range Planning*, 53(4), 101950. https://doi.org/10.1016/j.lrp.2019.101950.

Boons, F., Lüdeke-Freund, F. (2013). Business models for sustainable innovation: State-of-the-art and steps towards a research agenda. *Journal of Cleaner Production*, 45, 9–19.

de Pádua Pieroni, M., Pigosso, D.C., McAloone, T.C. (2018). Sustainable qualifying criteria for designing circular business models. *Procedia CIRP*, 69, 799–804.

Cantele, S., Zardini, A. (2020). What drives small and medium enterprises towards sustainability? Role of interactions between pressures, barriers, and benefits. *Corporate Social Responsibility and Environmental Management*, 27(1), 126–136. https://doi.org/10.1002/csr.1778.

Carroll, A.B. (1991). The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders. *Business Horizons*, 34, 39–48.

Curtis, S.K., Mont, O. (2020). Sharing economy business models for sustainability. *Journal of Cleaner Production*, 266, 121519. https://doi.org/10.1016/j.jclepro.2020.121519.

Elkington, J. (1997). *Cannibals with Forks: The Triple Bottom Line of 21st Century Business*. Oxford: Capstone Publishing.

European Commission. (2010). *Europe 2020: A Strategy for Smart, Sustainable and Inclusive Growth.* Brussels: European Commission.

Freeman, R.E. (2010). *Strategic Management: A Stakeholder Approach*. Cambridge: Cambridge University Press.

Geissdoerfer, M., Vladimirova, D., Evans, S. (2018). Sustainable business model innovation: A review. *Journal of Cleaner Production*, 198, 401–416. https://doi.org/10.1016/j.jclepro.2018.06.240.

Górecki, B.R. (2010). *Ekonometria podstawy teorii i praktyki*. Warszawa: Wydawnictwo Key Text.

Grassl, W. (2012). Business models of social enterprise: A design approach. *ACRN Journal Entrepreneurship Perspectives*, 1(1), 37–60.

Gruszczyński, M. (ed.). (2010). *Mikroekonometria. Modele i metody analizy danych indywidualnych*. Warszawa: Oficyna Wolters Kluwer.

Hawken, P., Lovins, A.B., Lovins, L.H. (2005). *Natural Capitalism: The Next Industrial Revolution Second*. New York: Earthscan.

Joyce, A., Paquin, R.L. (2016). The triple layered business model canvas: A tool to design more sustainable business models. *Journal of Cleaner Production*, 135, 1474–1486. https://doi.org/10.1016/j.jclepro.2016.06.067.

Kufel, T. (2013). *Ekonometria. Rozwiązywanie problemów z wykorzystaniem programu GRETL*. Warszawa: Wydawnictwo Naukowe PWN.

Lisbon European Council 23 and 24 March 2000: Presidency Conclusions.
Lopez, B., Rangel, C., Fernández, M. (2022). The impact of corporate social responsibility strategy on the management and governance axis for sustainable growth. *Journal of Business Research*, 150, 690–698.
Lu, J., Ren, L., Zhang, C., Liang, M., Abrhám, J., Streimikis, J. (2020). Assessment of corporate social responsibility performance and state promotion policies: A case study of the Baltic states. *Journal of Business Economics and Management*, 21(4), 1203–1224.
Lüdeke-Freund, F., Dembek, K. (2017). Sustainable business model research and practice: Emerging field or passing fancy? *Journal of Cleaner Production*, 168, 1668–1678. https://doi.org/10.1016/j.jclepro.2017.08.093.
Lüdeke-Freund, F., Carroux, S., Joyce, A., Massa, L., Breuer, H. (2018). The sustainable business model pattern taxonomy: 45 patterns to support sustainability-oriented business model innovation. *Sustainable Production and Consumption*, 15, 145–162. https://doi.org/10.1016/j.spc.2018.06.004.
Maddala, G.S. (2008). *Ekonometria*. Warszawa: Wydawnictwo Naukowe PWN.
Matusiak, B.E. (2013). Modele biznesowe na nowym, zintegrowanym rynku energii. Łódź: Wydawnictwo Uniwersytetu Łódzkiego, 116–175. https://doi.org/10.18778/7525-938-4.
Meurs, E. (2012). *Balancing Economic, Social and Natural Capital: The Contribution of Corporate Social Responsibility and the Role of Greenpeace in Creating Balance*. Enschede: University of Twente. Retrieved August 1, 2023, from http://essay.utwente.nl/61810/1/MSc_E_Meurs.pdf.
Mont, O., Tukker, A. (2006). Product-service systems: Reviewing achievements and refining the research agenda. *Journal of Cleaner Production*, 14(17), 1451–1560. https://doi.org/10.1016/j.jclepro.2006.01.017.
Pauli, G. (2010). *The Blue Economy: 10 Years, 100 Innovations, 100 Million Jobs. Report to the Club of Rome*. Taos: Paradigm Publications.
Ropuszyńska-Surma, E., Węglarz, M. (2022). *Social aspects in the business models of innovative enterprises – a case study*. Unpublished manuscript.
Schaltegger, S., Hansen, E.G., Lüdeke-Freund, F. (2016). Business models for sustainability: Origins, present research, and future avenues. *Organization and Environment*, 29(1), 3–10. https://doi.org/10.1177/1086026615599806.
Schoneveld, G.C. (2020). Sustainable business models for inclusive growth: Towards a conceptual foundation of inclusive business. *Journal of Cleaner Production*, 277, 124062. https://doi.org/10.1016/j.jclepro.2020.124062.
Shakeel, J., Mardani, A., Chofreh, A.G., Goni, F.A., Klemeš, J.J. (2020). Anatomy of sustainable business model innovation. *Journal of Cleaner Production*, 261, 121201. https://doi.org/10.1016/j.jclepro.2020.121201.
Shahzad, M., Qu, Y., Javed, S.A., Zafar, A.U., Rehman, S.U. (2020). Relation of environment sustainability to CSR and green innovation: A case of Pakistani manufacturing industry. *Journal of Cleaner Production*, 253, 119938. https://doi.org/10.1016/j.jclepro.2019.119938.
Stubbs, W., Cocklin, C. (2008). Conceptualising a "sustainability business model." *Organization and Environment*, 21(2), 103–127. https://doi.org/10.1177/1086026608318042.
Tukker, A. (2004). Eight types of product service system: Eight ways to sustainability? Experiences from SusProNet. *Business Strategy and Environment*, 13(4), 246–260.
Turker, D. (2009). Measuring corporate social responsibility: A scale development study. *Journal of Business Ethics*, 85(4), 411–427.
United Nations. (2000). *Resolution Adopted by the General Assembly: United Nations Millennium Declaration*. A/RES/55/2.
United Nations. (2015). *Resolution Adopted by the General Assembly on 25 September 2015: Transforming Our World. The 2030 Agenda for Sustainable Development*. A/RES/70/1.

Velter, M.G.E., Bitzer, V., Bocken, N.M.P., Kemp, R. (2020). Sustainable business model innovation: The role of boundary work for multi-stakeholder alignment. *Journal of Cleaner Production*, 247, 119497. https://doi.org/10.1016/j.jclepro.2019.119497.

Wells, P., Seitz, M. (2005). Business models and closed-loop supply chains: A typology. *Supply Chain Management: An International Journal*, 10 (3–4), 249–251.

World Bank. (1981). *World Development Report 1981*. New York: Oxford University Press. Retrieved June 20, 2023, from http://hdl.handle.net/10986/5964.

Zgrzywa-Ziemak, A. (2019). *Modele zrównoważenia przedsiębiorstwa*. Wrocław: Oficyna Wydawnicza Politechniki Wrocławskiej.

Ekonomia — Wroclaw Economic Review 29/3 (2023)
Acta Universitatis Wratislaviensis
No 4193

https://doi.org/10.19195/2658-1310.29.3.6

Joanna Zimmer
ORCID: 0000-0003-3060-1432
Wroclaw University of Science and Technology
joanna.zimmer@pwr.edu.pl

Magdalena Węglarz
ORCID: 0000-0003-4201-7225
Wroclaw University of Science and Technology
magdalena.weglarz@pwr.edu.pl

Edyta Ropuszyńska-Surma
ORCID: 0000-0002-0163-8810
Wroclaw University of Science and Technology
edyta.ropuszynska-surma@pwr.edu.pl

Sustainable business models in SMEs: The customer's perspective

Date of submission: 23.07.2023; **date of acceptance:** 24.09.2023

JEL classification: D, D8, D21, D81, L, L21, M1, M14, M19, Q01

Keywords: sustainable business model, sustainable development goals (SDG), SME sector, customer perspective, logit model (LM)

Abstract

The main purpose of the study is to identify the relationship between sustainability goals and measures of the degree of sustainable policy implementation, as well as the customer perspective as determined by the business model (BM) template of A. Osterwalder and Y. Pigneur. In the conducted research, the customer perspective takes into account five elements of the BM and each element was examined by several characteristics. The elements of the BM from the customer perspective are: customer segment, value proposition, distribution channels, customer relationships, and revenue. The study used the authors' survey questionnaire, in which respondents, who were enterprises in the SME sector, answered questions about their own BM divided into three layers – business, social, and environmental. The results were statistically analysed using SPSS STATISTIC 28 software and a logit model was developed to verify the significance of the relationship between the binary variables studied. 303 enterprises participated in the survey, 59% of which were enterprises guided

by sustainability goals (SGs) in their BMs. However, only 27% of those surveyed had measures of the degree of sustainable policy implementation.

The conducted research confirmed that acting in accordance with SGs is strongly related to customer-oriented elements of the business model, such as (1) customer segregation by sex or by level of environmental awareness, (2) value proposition – an environmental orientation, (3) distribution channels – direct sales online, (4) customer relationships through dedicated personal assistance or automated service based on personal customer profiles, (5) revenue – sales of products and services. Slightly different results were obtained for using measures of the degree of the SD policy implementation, where the highest correlation occurred for: (1) main customers – manufacturing entrepreneurs, (2) customer segregation by end-user experience or by level of involvement in socially important issues, (3) value proposition – strengthening democracy, (4) distribution channels – wholesale stores are run by partners, (5) customer relationships through self-service or automated service based on personal customer profiles or involving customers in the product development process, (6) revenue – rental/lease/leasing or licenses.

1. Introduction

The issue of sustainable development (SD) is now increasingly appreciated by society, so enterprises which do not act in accordance with SD may lose their competitive position (Zott, Amit and Massa, 2011, 1020), customers (Jansson, Nilsson, Modig and Hed Vall, 2017, 9), business partners or investors (Bocken and Geradts, 2020, 2). The pressure to integrate sustainability goals (SGs) into organizational operations is also coming from managers (Farias, Farias, Krysa and Harmon, 2020 4), who are looking for viable solutions which address the needs of organization stakeholders, e.g., reducing costs, implementing green solutions or finding ways to respect the environment. As a result, enterprises are thinking more often than before about how to adapt their business model (BM) to new sustainability challenges.

Integrating sustainable development goals (SDGs) into BM is a particular challenge for enterprises in the SME sector. Enterprises of this type often lack the financial resources, management capacity, knowledge, infrastructure, and employees to deal with the SD challenge (Macchion, Toscani and Vinelli, 2023, 564; Battistella, Cagnina, Cicero and Preghenella, 2018, 2). However, the flexibility of SME enterprises can facilitate the implementation of the SDGs (Cantele and Zardini, 2020, 130). The research reveals that these types of organizations are not as committed as large enterprises to integrating environmental and social aspects as strategic considerations into their BMs (Battistella et al. 2018, 2; Jansson et al. 2017, 10).

The authors conducted a systematic literature review of articles available on the EBSCO aggregation website in three stages:

1. Searching for articles in the databases using the keywords “sustainable business models”, “sustainable development and customer”, “sustainable business models and SMEs”, and the number of citations (most frequently cited articles) in several iterations.

2. Reading titles and abstracts to select relevant articles – about 350 articles.
3. Reading selected articles.

Despite many studies in the field of sustainable business models (SBM), a systematic review of it identified the following research gaps regarding: (1) Relatively small number of studies on the inclusion of SD objectives by enterprises from SMEs in BMs, and lack of such studies in Poland. (2) There is a lack of research covering the basic elements of the business activities of SMEs that directly affect customers and take into account the SDGs. (3) There is a lack of research to identify whether the SDGs are reflected in measures of the degree of sustainable policy implementation from a customer perspective. In this context, the purpose of the article is to identify the relationship between the objectives of sustainable development and measures of the degree of sustainable policy implementation and the customer perspective as determined by the BM template of A. Osterwalder, Y. Pigneur, and C. Tucci (2005), in enterprises from the SME sector operating in Poland.

2. Sustainable business models in enterprises from the SME sector

Incorporating SGs into BMs is a very timely and widely discussed topic, both in academia and the business community (e.g. Bocken and Geradts, 2020; Muñoz-Torres et al. 2019). "The common denominator of these works lies in the effort to understand how companies can nowadays rethink their business models by integrating them with the new principles of social and environmental sustainability" (Macchion et al. 2023, 565). However, few of these studies involve enterprises in the SME sector (Battistella et al. 2018, 4). Taking a macro perspective, it is enterprises in the SME sector that are key to sustainable development (Jansson et al. 2017, 70), because they have a significant impact on the local environment as well as local and domestic economy i.e. by creating workplaces. The SMEs are able to flexibly and quickly respond to changes in customer needs (Buffa, Franch and Rizio, 2018, 658).

Considering sustainability as part of new BMs is not just about adopting specific practices or initiatives, rather it is a transformation process which involves the entire organization. The following barriers to implementing SBMs can be identified in SMEs (Hillary, 2004): insufficient resources, lack of understanding of the benefits of implementing sustainability, negative attitudes, and organizational culture. F. Buffa, M. Franch and D. Rizio (2018) consider that problems with implementing SGs into BMs are due to the small size of these enterprises, and in particular the reluctance to implement innovation, the lack of a long-term strategy, or problems with accessing external financing for operations.

3. The customer's perspective in the business model

Sustainability is a concept that is contributing to the redefinition of BMs (Osterwalder et al. 2005, 1) due to the approach of enterprise customers, who are increasingly considering environmental and social aspects when making purchasing decisions. Customer in BMs is of particular importance (Wirtz, Gottel and Daiser, 2016, 24), because, according to Teece (2007, 1329), "the business model reflects a hypothesis about what customers want, and how an enterprise can best meet those needs, and get paid for doing so*"* (Zott et al. 2011, 32). This reflection of customer needs in BMs stems from the market orientation of enterprises, which boils down, according to Oakley (2011) to three basic elements: (1) putting customer needs first, (2) coordinating and planning marketing activities across the organization, and (3) focusing on the environment (Oakley, 2011, 1097; Janssons et al., 2017 72). Market-oriented enterprises will notice the sustainability needs of customers and the environment more quickly, and through their focus on these needs will be more likely to incorporate SGs into their operations (González-Benito and González-Benito, 2008; Janssons et al. 2017, 73). In conclusion, there are many studies in the literature proving that the customer perspective is important for the application of SBMs (e.g. Janssons et al. 2017, 73). Therefore, the authors of the study also focused on it.

In this study, the customer perspective of the BM was defined using the BM template of A. Osterwalder, Y. Pigneur and C. Tucci (2005). This perspective is composed of elements such as: customer segment, value proposition (VP), distribution channels, customer relationships, and revenues. The VP is the heart of the Canvas BM and it should be in keeping with the individual values of clients. It seems that not only economical, but also environmental aspects and the quality of life are important. The SMEs' MBs should follow this trend and focus on SDGs. Thus, two main research hypotheses were formulated. (1) H1: The customer-focused elements of the business model are associated with the decision to operate in accordance with the SD goals. (2) H2: The customer-focused elements of the business model are associated with measures of the degree of SD policy implementation. The customer-focused elements of the business model take into account five elements of the business model, which are: customer segment, VP, distribution channels, customer relations, and revenue. Therefore, each research hypothesis was decomposed into five sub-hypotheses.

4. Research methodology

The research used a proprietary survey questionnaire, in which respondents, representing enterprises in the SME sector, answered a series of questions about their

own BMs, divided into three layers – economic, social, and environmental – according to the Joyce's and Paquin's proposal (2016). The questionnaire was divided into four groups – metrics and the three layers mentioned above. Two metric questions were appropriately related to the hypothesis. The question: "Does your enterprise take into consideration the sustainable development goals in its activities?" was correlated with H1. To avoid misunderstanding, the sustainable development policy was defined in the questionnaire. The following question was linked with H2: "Are there systems to measure the degree to which a sustainable development policy is implemented (e.g. emission monitoring) in your company?"

In those questions, the respondents could choose one of three options: "yes", "no" or "I don't know". The researchers did not investigate those systems, thus the questions allow identifying only opinions, not facts.

The study was conducted in December 2022 by the research team from WUST[1]. The research sample included 303 SMEs (the survey was filled in by people in managerial positions) operating in Poland. Enterprises were randomly selected from a nationwide Ariadna research panel. Thus, the sample is representative. Its structure according to main business activities is as follows: production – 58%, commercial – 23%, service – 24%, and others – 1%.

The data collected in the study was analysed to find the relationship between endogenous and exogenous (explanatory) variables (Table 1) firstly by using Pearson's chi-square test. Then a logit model (LM) was used to confirm the relationships and to identify which exogenous variables have a significant impact on the endogenous variable. The significance level p is assumed to be 0.05.

As the endogenous variable is dichotomous (binary), the LM was appropriate for this analysis. By using the LM, the aim was (1) to identify the factors that significantly influence the decision-making process of SMEs to operate in alignment with SDGs; (2) to identify the factors that significantly influence the decision-making process of SMEs to use measures of the degree of SD policy implementation. The exogenous variables were grouped according to Canvas template (Table 1).

This approach helps in understanding the factors that play a crucial role in such decision-making processes. The statistical calculations were conducted using the STATISTIC 28 software and the Gretl program.

[1] The WUST research team: E. Ropuszyńska-Surma, M. Węglarz, J. Zimmer, K. Walecka-Jankowska, P. Kubiński, and R. Kamiński.

5. Research results

5.1. Goals and measures of sustainable development from the customer's perspective

The elements of a BM from a customer perspective according to the Canvas template are: B3 – customer segment, B4 – value proposition, B5 – distribution channels, B6 – customer relationships and B7 – revenue.

The chi-square independence test was conducted for all the variables (Table 1).

Table 1. The chi-square test results

		Operating in accordance with the SDGs			SD realization – measures		
Groups of variables	Description (Items)	Chi-square	df	p-value	Chi-square	df	p-value
B1 – key customer	Households				4.208	1	0.04
	Manufacturing entrepreneurs				10.005	1	0.002
B3 – customers' criteria	Gender	5.079	1	0.024			
	Education				6.557	1	0.01
	End-user experience				12.501	1	<0.001
	Geographic market				4.75	1	0.029
	Level of environmental awareness	12.433	1	<0.001	19.322	1	<0.001
	Level of involvement in socially important issues	6.969	1	0.008	14.566	1	<0.001
	Those who value their own and others' time	10.474	1	0.001	14.475	1	<0.001
	Valuing family-friendly values				7.204	1	0.007
	Value system				6.11	1	0.013
	Influence decisions on pro-social policy creation	7.898	1	0.005	6.942	1	0.008
	Influence decisions on the creation of pro-environmental policies				6.37	1	0.012
	Lack of criteria	5.733	1	0.017	11.701	1	<0.001

B4 – value proposition	Reliability of supply	14.723	4	0.005			
	Quality of delivery	26.666	4	<0.001	13.584	4	0.009
	Availability of products	24.79	4	<0.001	4.572	4	0.003
	Innovation of offerings	29.475	4	<0.001			
	Efficiency/effectiveness	20.968	4	<0.001			
	Convenience/usability	21.44	4	<0.001			
	Reduction of transaction risk	22.673	4	<0.001			
	Reduction of transaction costs	23.474	4	<0.001	11.907	4	0.018
	Customer orientation	17.662	4	0.001			
	Environmental orientation	74.494	4	<0.001	30.43	4	<0.001
	Product/service safety	32.167	4	<0.001			
	Developing innovative technologies	34.746	4	<0.001	19.247	4	<0.001
	Individualization of the offer	22.535	4	<0.001	13.305	4	0.01
	Stable price	15.009	4	0.005			
	Access to reliable information about the company's offer and activities	33.443	4	<0.001			
	Ensuring protection of personal data and privacy	24.714	4	<0.001	10.783	4	0.029
	Ability to secure data after product use / safe disposal	40.328	4	<0.001	16.202	4	0.003
	Creation of shared values	40.2	4	<0.001	15.604	4	0.004
	Creation of social capital	36.208	4	<0.001	30.059	4	<0.001
	Strengthening democracy	41.052	4	<0.001	26.952	4	<0.001
	Creating attitudes of sharing	32.459	4	<0.001	26.987	4	<0.001
B5 – distribution channels	We have direct sales	22.056	4	<0.001	31.345	4	<0.001
	We have direct online sales	19.906	4	<0.001	27.984	4	<0.001
	We have our own stores	18.257	4	0.001	25.83	4	<0.001
	We have partner stores	16.396	4	0.003	43.621	4	<0.001
	We have wholesale stores run by partners	18.129	4	0.001	50.731	4	<0.001

B6 – customer relationships	Personal assistance	21.665	4	<0.001			
	Dedicated personal assistance	23.215	4	<0.001			
	Self-service	19.003	4	<0.001	47.521	4	<0.001
	Automated service based on personal customer profiles	38.5	4	<0.001	47.986	4	<0.001
	Online user communities	22.414	4	<0.001	22.855	4	<0.001
	Co-creation – involving customers in the product development process	18.422	4	0.001	19.866	4	<0.001
B7 – revenues	Sales of products and services	10.846	4	0.028			
	Usage fee	36.42	4	<0.001	33.338	4	<0.001
	Subscription fee	13.985	4	0.007	28.118	4	<0.001
	Rental/lease/leasing	17.662	4	0.001	59.169	4	<0.001
	Licenses	18.902	4	<0.001	37.605	4	<0.001
	Brokerage fee	10.347	4	0.035	28.04	4	<0.001
	Advertising	17.56	4	0.002	26.262	4	<0.001

Source: own study.

In the case of the B3 variable, the test showed a statistical relationship of SDG with six variables in the segmentation category, and in the case of SD realization – measures with eleven variables. For variables B4, B5, B6, and B7 the test showed a statistical correlation of SDGs with all the variables analysed. In the context of SD realization – measures, variable B4 exhibited a correlation with twelve variables. Variable B5 displayed statistical dependence with measures across all variables, while for B6 there was statistical dependence with four variables and for B7 with six variables. These results required verification, which was done using a LM.

5.2. The customer-focused elements of BM

The LM was used to examine which variables have a significant impact on decisions to operate in accordance with the SDGs (model A), and which variables have a significant impact on decisions to use measures of the degree of the SD policy implementation (model B).

In model A, the endogenous variable was defined as:

$y_i = 1$, when the company operates in accordance with the SDGs;

$y_i = 0$, when a company does not act in accordance with the SDGs or does not know if it follows them.

In model B, the endogenous variable was defined as:

$z_i = 1$, when the company uses measures of the degree of SD policy implementation;

$z_i = 0$, when a company does not use measures of the degree of SD policy implementation or does not know if it follows them.

As explanatory variables, implemented in LMs (Table 2), the following were adopted: customer segment (variables B1 and B3), value proposition (B4), distribution channels (B5), customer relations (B6), and revenue (B7).

Table 2. The explanatory variables

Groups of variables	Description (Items)	Values
B1 – key customer	1. Households 2. Manufacturing entrepreneurs 3. Service entrepreneurs 4. Local government units 5. Others	0=no; 1=yes
B3 – customers' criteria	1. Retail and wholesale 2. Age 3. Gender 4. Education 5. End-user experience 6. Geographic market 7. Level of wealth 8. Level of environmental awareness 9. Social sensitivity 10. Level of involvement in socially important issues 11. Those who value their own and others' time 12. Valuing family-friendly values 13. Value system 14. Influence decisions on pro-social policy creation 15. Influence decisions on the creation of pro-environmental policies 16. Companies and individuals 17. Lack of criteria	0=no; 1=yes

B4 – value proposition	1. Reliability of supply 2. Quality of delivery 3. Availability of products 4. Innovation of offerings 5. Efficiency/effectiveness 6. Quality of products/services 7. Convenience/usability 8. Reduction of transaction risk 9. Reduction of transaction costs 10. Customer orientation 11. Environmental orientation 12. Product/service safety 13. Developing innovative technologies 14. Individualization of the offer 15. Stable price 16. Access to reliable information about the company's offer and activities 17. Ensuring protection of personal data and privacy 18. Ability to secure data after product use / safe disposal 19. Creation of shared values 20. Creation of social capital 21. Strengthening democracy 22. Creating attitudes of sharing	1–5 scale 1 = not at all 2 = rather not 3 = difficult to say 4 = almost yes 5 = fully
B5 – distribution channels	1. We have direct sales 2. We have direct online sales 3. We have our own stores 4. We have partner stores 5. We have wholesale stores run by partners	1–5 scale 1 = not at all 2 = rather not 3 = difficult to say 4 = almost yes 5 = fully
B6 – customer relationships	1. Personal assistance 2. Dedicated personal assistance 3. Self-service 4. Automated service based on personal customer profiles 5. Online user communities 6. Co-creation – involving customers in the product development process	1–5 scale 1 = not at all 2 = rather not 3 = difficult to say 4 = almost yes 5 = fully
B7 – revenues	1. Sales of products and services 2. Usage fee 3. Subscription fee 4. Rental/lease/leasing 5. Licenses 6. Brokerage fee 7. Advertising	1–5 scale 1 = not at all 2 = rather not 3 = difficult to say 4 = almost yes 5 = fully

Source: own study.

Entrepreneurs could choose several categories of main customers as well as several criteria for dividing customers. Therefore, the questions about customers were multiple-choice questions, so the variables B1 – key customer and B3 –

customers' criteria are regressors (0-1). The reference groups are B1_r1 – others segment, B3_r1 – the criterion for dividing customers into retail and wholesale, B4_r1 – key VP is reliability of supply, B5_r1 – channels are direct sales, B6_r1 – personal assistance for customers, B7_r7 – advertising.

In order to verify the formulated hypotheses for each customer-focused element of the BM, two LMs were constructed in which all explanatory variables were considered. So, ten regression equations of the LM were calculated. For each customer-focused element of the BM, the parameters of the LM were estimated, assuming the level of significance of 95%. As a result, two lists of variables were obtained which, from the standpoint of the formulated hypotheses, can explain the behavior of the explained variables.

5.2.1. Model A – SMEs' decision-making process to operate in accordance with SDGs

The results of the estimation of the parameters of model A are shown in Table 3. The table contains all variables that are significant, also those for which the level of significance was 0%. In the last column, the odds ratio was calculated, which is interpreted as the relative chance of an event occurring in a given group compared to a reference group. The calculated odds ratio values are independent from other variables. The variables that significantly influence the decision-making process of SMEs to operate in alignment with SDGs are marked with three *** and are presented in Figure 1.

With an assumed significance level all explanatory variables play a significant role in explaining the dependent variable. Therefore, the obtained results confirmed all sub-hypotheses of H1, stating that all customer-focused elements of the BM are associated with the decision to operate in accordance with the SDGs.

The greatest likelihood of deciding to act in accordance with SGs occurs in a company:

– which segregates customers by sex, or by level of environmental awareness, or by level of involvement in socially important issues, or according to their influence on pro-social policy creation decisions;

– whose key VP proposition is an environmental orientation;

– which conducts direct sales online;

– which maintains customer relationships through dedicated personal assistance or automated service based on personal customer profiles;

– whose main source of revenue is sales of products and services.

5.2.2. Model B – SMEs' decision-making process to use measures of the degree of the SD policy implementation

The results of the estimation of the parameters of model B are shown in Table 4. Also, for this model, the table includes not only the variables that are significant

Table 3. The results of estimation of logit model A

Variable	Coefficient	p-value	Significance level	Odds ratio
B3_r3_sex	1.3921	0.0352	**	4.0232
B3_r7_level of wealth	-0.6181	0.0880	*	0.5390
B3_r8_environmental awareness	1.8035	0.0200	**	6.0707
B3_r10_involvement in socially important issues	1.1127	0.0437	**	3.0427
B3_r11_who value their own time	0.6768	0.0812	*	1.9676
B3_r14_pro-social policy creation	1.7031	0.0332	**	5.4911
B4_r3_availability of products	0.4832	0.0544	*	1.6213
B4_r11_environmental orientation	1.0148	<0.0001	***	2.7587
B5_r2_direct online sales	0.2382	0.0067	***	1.2690
B6_r2_dedicated personal assistance	0.2907	0.0279	**	1.3374
B6_r4_automated service based on profiles	0.4175	0.0015	***	1.5181
B7_r1_sales of products	0.3370	0.0039	***	1.4007
B7_r2_usage fee	0.2080	0.0839	*	1.2313

Note: p – significance level, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: own study

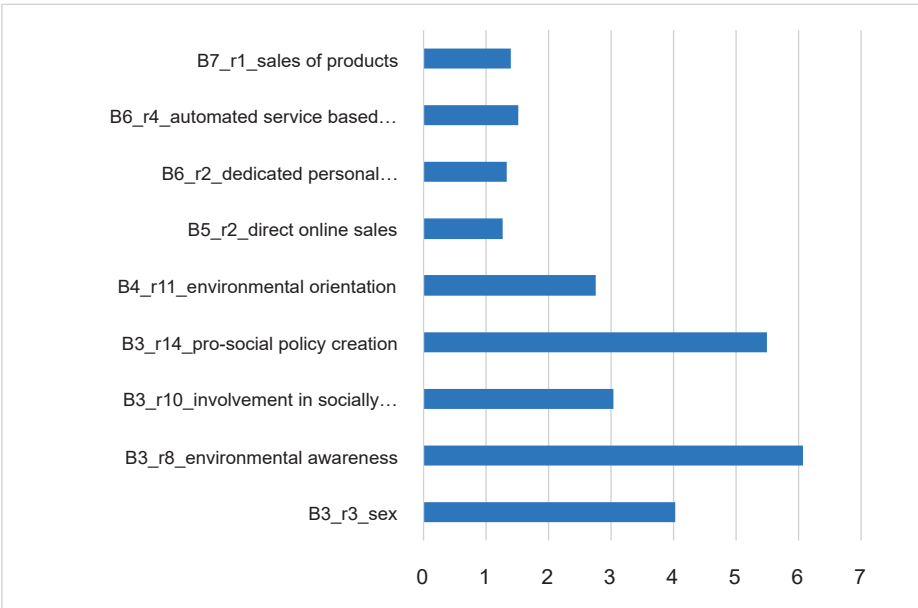

Figure 1. Odds ratio for exogenous variable with significant impact in model A

Source: own study.

but also those for which the level of significance was 90%. The variables that significantly influence the decision-making process of SMEs to use measures of the degree of the SD policy implementation are marked with three *** and are presented in Figure 3.

Table 4. The results of estimation of logit model B

Variable	Coefficient	p-value	Significance level	Odds ratio
B1_r2_manufacturing entrepreneurs	0.7351	0.0084	***	2.0856
B3_r4_education	0.9044	0.0861	*	2.4704
B3_r5_end-user experience	0.9324	0.0188	**	2.5405
B3_r8_environmental awareness	1.2549	0.015	**	3.5076
B3_r10_involvement in socially important issues	1.2852	0.0058	***	3.6155
B4_r2_quality of delivery	0.4710	0.0874	*	1.6016
B4_r4_innovation of offerings	0.4730	0.0898	*	1.6048
B4_r7_convenience/usability	-0.5251	0.0689	*	0.5915
B4_r11_environmental orientation	0.5175	0.0282	**	1.6778
B4_r13_developing innovative technologies	0.4776	0.0556	*	1.6122
B4_r15_stable price	0.5266	0.0507	*	1.6931
B4_r16_access to reliable information	-0.4905	0.0604	*	0.6123
B4_r17_ensuring protection of personal data	-0.4535	0.0762	*	0.6354
B4_r21_strengthening democracy	0.4743	0.042	**	1.6069
B5_r2_direct online sales	0.3030	0.0075	***	1.3539
B5_r5_wholesale stores run by partners	0.4222	0.0072	***	1.5253
B6_r3_self-service	0.3933	0.0016	***	1.4818
B6_r4_automated service based on profiles	0.4859	0.0019	***	1.6256
B6_r6_co-creation involving customers	0.3248	0.0331	**	1.3838
B7_r4_rental/lease/leasing	0.5468	<0.0001	***	1.7276
B7_r5_licenses	0.3233	0.029	**	1.3817
B7_r6_brokerage fee	0.2438	0.0928	*	1.2760

Note: p – significance level, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: own study

With an assumed significance level, all explanatory variables play a significant role in explaining the dependent variable. Therefore, the obtained results confirmed all sub-hypotheses of H2, stating that all customer-focused elements of the BM, such as: customer segment, VP, distribution channels, customer relations, and revenue are associated with measures of the degree of SD policy implementation.

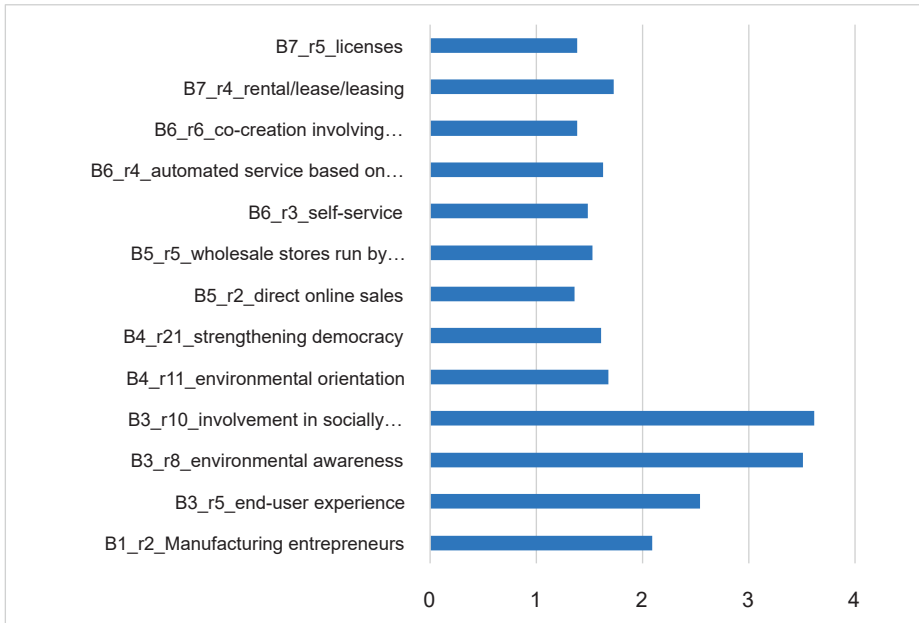

Figure 2. Odds ratio for exogenous variable with significant impact in model B

Source: own study.

The greatest likelihood of deciding to use measures of the degree of the SD policy implementation occurs in SMEs:

– whose main customers are manufacturing entrepreneurs;

– which segregate customers by end-user experience, or by level of environmental awareness, or by level of involvement in socially important issues;

– whose key VP is an environmental orientation or strengthening democracy;

– which conduct direct sales online or their wholesale stores are run by partners;

– which maintain customer relationships through self-service or automated service based on personal customer profiles or involve customers in the product development process;

– whose main source of revenue is rental/lease/leasing or licenses.

6. Conclusion

The existence of a relationship between SGs and measures of the degree of sustainable customer policy implementation defined by variables was examined: customer segment (variable B1 and B3), value proposition (B4), distribution channels (B5), customer relationships (B6), and revenue (B7). 59% of the surveyed SMEs were guided by SGs in their BMs, but only 27% of those surveyed had measures of the

degree of sustainable policy implementation. Both the SDG and measures of the degree of sustainable policy implementation are correlated with most of the items defining the customer perspective established from the BM template – hypotheses H1 and H2. The aforementioned relationships have been verified first with a statistical test and then with the LM. The results of the LM (see Table 3 and 4) showed that all explanatory variables play a significant role in explaining both endogenous variables (the SDG and measures of the degree of sustainable policy implementation). Therefore, there is a relationship between them and the endogenous variables. These results confirmed hypotheses H1 and H2.

6.1. Main conclusions

About 60% of surveyed SMEs attempt to meet the growing demands of customers and the environment in terms of sustainability and apply SGs in their BMs. However, only half of them also apply sustainability metrics, i.e., verify whether the set goals have been met. SMEs focused on customers and their growing environmental awareness (expressed, for example, through sustainable consumption and search for green offerings) apply both sustainability targets and performance measures. Dedicating an offer to customers focused on creating a pro-social policy (concerning solving social problems) or valuing their own and others' time makes it necessary to set SGs. The studied SMEs measure the degree of their SD policy implementation, keeping in mind the experience of the end participants (focus on user experience) as well as the "activist" type customers (people involved in social issues). Building the value of an enterprise's offerings on the wide availability of products/services is conducive to their setting SGs in their BMs. Measuring the extent to which sustainability policies are implemented in a BM is most often done when enterprises offer high-quality products, stable prices, innovation in their offerings (also based on technology development), and value in the form of strengthening democracy (civic activism). The research also showed that direct sales via the Internet is the most conducive channel for setting SDG and metrics in BMs. Sustainability metrics are also required when partner wholesalers need to control such cooperation. Enterprises whose customers expect relationships based on dedicated personal assistance and automated services with personal customer profiles are more likely to use SDG in their BMs. For measures of the degree of SD policy implementation, the analysis showed that enterprises are more likely to apply measures when they build and maintain relationships based on automated services with personal customer profiles, self-service and product co-creation opportunities. The SMEs generating revenue from direct sales and user fees are more likely to formulate SD goals in their BMs. For metrics, licenses, rentals, leases, and brokerage fees are important as revenue sources. In further work, it would be interesting to relate the results obtained to reporting standards of environmental, social, and corporate governance (ESG).

6.2. Limitations of research

Since 59% of respondents indicated that they are implementing the SDG, most of the exogenous variables related to sustainability are strongly related to the endogenous variable. Some of the relationships obtained were easy to predict. Less obvious are the results concerning measures of the degree of SD policy implementation.

References

Battistella, C., Cagnina, M.R., Cicero, L., Preghenella, N. (2018). Sustainable business models of SMEs: Challenges in yacht tourism sector. *Sustainability*, 10(10), 3437. https://doi.org/10.3390/su10103437.

Buffa, F., Franch, M., Rizio, D. (2018). Environmental management practices for sustainable business models in small and medium sized hotel enterprises. *Journal of Cleaner Production*, 194, 656–664. https://doi.org/10.1016/j.jclepro.2018.05.143.

Bocken, N.M., Geradts, T.H. (2020). Barriers and drivers to sustainable business model innovation: Organization design and dynamic capabilities. *Long Range Planning*, 53(4), 917–955. https://doi.org/10.1016/j.lrp.2019.101950.

Cantele, S., Zardini, A. (2020). What drives small and medium enterprises towards sustainability? Role of interactions between pressures, barriers, and benefits. *Corporate Social Responsibility and Environmental Management*, 27(1), 126–136. https://doi.org/10.1002/csr.1778.

Farias, G., Farias, C., Krysa, I., Harmon, J. (2020). Sustainability mindsets for strategic management: Lifting the yoke of the neo-classical economic perspective. *Sustainability*, 12(17), 6977. https://doi.org/10.3390/su12176977.

González-Benito, Ó., González-Benito, J. (2008). Implications of market orientation on the environmental transformation of industrial firms. *Ecological Economics*, 64, 752–762. https://doi.org/10.1016/j.ecolecon.2006.07.012.

Hillary, R. (2004). Environmental management systems and the smaller enterprise. *Journal of Cleaner Production*, 12, 561–569. https://doi.org/10.1016/j.jclepro.2003.08.006.

Jansson, J., Nilsson, J., Modig, F., Hed Vall, G. (2017). Commitment to sustainability in small and medium-sized enterprises: The influence of strategic orientations and management values. *Business Strategy and the Environment*, 26, 69–83. https://doi.org/10.1002/bse.1901.

Joyce, A., Paquin, R.L. (2016). The triple layered business model canvas: A tool to design more sustainable business models. *Journal of Cleaner Production*, 135, 1474–1486. https://doi.org/10.1016/j.jclepro.2016.06.067.

Macchion, L., Toscani, A.C., Vinelli, A. (2023). Sustainable business models of small and medium-sized enterprises and the relationships to be established within the supply chain to support these models. *Corporate Social Responsibility and Environmental Management*, 30(2), 563–573. https://doi.org/10.1016/j.heliyon.2023.e17109.

Muñoz-Torres, M.J., Fernández-Izquierdo, M.A., Rivera-Lirio, J.M., Escrig-Olmedo, E. (2019). Can environmental, social, and governance rating agencies favor business models that promote a more sustainable development? *Corporate Social Responsibility and Environmental Management*, 26(2), 439–452. https://doi.org/10.3390/su11030915.

Oakley, J.L. (2011). Bridging the gap between employees and customers. *Journal of Marketing Management*, 28, 1094–1113. https://doi.org/10.1080/0267257X.2011.617707.

Osterwalder, A., Pigneur, Y., Tucci, C.L. (2005). Clarifying business models: Origins, present, and future of the concept. *Communications of the Association for Information Systems*, 16(1), 1–25. https://doi.org/10.17705/1CAIS.01601.

Teece, D.J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319–1350. https://doi.org/10.1002/smj.640.

Wirtz, B., Gottel, V., Daiser, P. (2016). Business model innovation: Development, concept and future research directions. *Journal of Business Models*, 4(1), 1–28. https://doi.org/10.5278/ojs.jbm.v4i1.1621.

Zott, C., Amit, R., Massa, L. (2011). The business model: Recent developments and future research. *Journal of Management*, 37(4), 1019–1042. https://doi.org/10.1177/0149206311406265.

Ekonomia — Wroclaw Economic Review 29/3 (2023)
Acta Universitatis Wratislaviensis
No 4193

https://doi.org/10.19195/2658-1310.29.3.7

Katarzyna Walecka-Jankowska
ORCID: 0000-0002-2764-6763
Wroclaw University of Science and Technology
katarzyna.walecka-jankowska@pwr.edu.pl

Jagoda Mrzygłocka-Chojnacka
ORCID: 0000-0002-5404-4696
Wroclaw University of Science and Technology
jagoda.mrzyglocka-chojnacka@pwr.edu.pl

Relationship between environmental innovation and sustainable outcomes: Empirical evidence from Denmark

Date of submission: 01.08.2023; date of acceptance: 20.09.2023

JEL classification: O30, O31, O35, M14, M30

Keywords: business sustainability, environmental innovations, sustainable outcomes, management

Abstract

The purpose of the described research was to identify the impact of different types of environmental innovations on sustainable organizational performance of companies operating in Denmark. The research considered four types of environmental innovations: process, product, organizational and marketing and sustainable performance in three areas: economic, social, and environmental.

The research methodology involved a survey of 338 Danish companies, using a validated questionnaire, which provided data on their implementation of different types of environmental innovations and their sustainable performance in three basic areas: economic, environmental, and social. Three regression models were built to verify the theoretical relationship between different types of environmental innovations and sustainable performance.

The results showed that all four types of environmental innovations have a positive impact on sustainable performance. Detailed analysis showed that organizational innovations as well as process innovations support organizational performance in all three areas. The article also pointed out the limitations of the research conducted and directions for future research.

1. Introduction

In recent times, there has been an increasing complexity in the connection between corporate activities and the environment. This can be attributed to a growing recognition of the importance of environmental care and the understanding that companies have a negative impact on the environment through their operations. Consequently, there is mounting pressure to explore innovative solutions that can yield positive environmental effects. As a result, the relationship between eco-friendly innovations and the sustainable development of businesses has gained the attention of researchers and there is growing empirical evidence that this link exists and, at least in part, it is positive (Hermundsdottir and Aspelund, 2021).

In response to these challenges, companies are actively seeking new innovative approaches, devising novel business and management models, creating new services and products, and developing fresh production and marketing techniques that can safeguard and enhance environmental quality (Berry and Rondinelli, 1998; Savitz and Weber, 2006; UN, 2017; Walecka-Jankowska et al., 2017). This entails integrating environmental innovations into their operations, aiming not only for improved economic performance but also for positive social and environmental outcomes. These three dimensions – economic, social, and environmental – are the fundamental aspects of sustainable business outcomes (Ch'ng et al., 2021; Fernando et al., 2019; Larbi-Siaw et al., 2022; Tumelero et al., 2019; Wagner and Llerena, 2011). Therefore, this article focuses on the relationship between different types of environmental innovations (such as process, product, organizational, and marketing innovations) and sustainable outcomes (economic, social, and environmental). The article presents the findings of a survey conducted on 338 Danish companies to investigate the influence of environmental innovation types on organizational outcomes. The structure of the article is as follows: The first section provides a literature review, outlining the concepts of environmental innovation and its association with organizational performance. The second section describes the research methodology, research model, research hypotheses, and collected data. The study's results, highlighting the impact of environmental innovation types on organizational outcomes in Danish companies, are presented. Finally, the concluding section summarizes the research findings and proposes future research directions and organizational implications.

2. Theoretical framework of the research

2.1. Environmental innovations

Defining the term environmental innovation is not straightforward because of the lack of consensus among researchers on a common definition. In addition, there

is a lack of consensus on the term environmental innovation itself, with researchers using the terms "green", "eco", "environmental", "social", and "sustainability innovation" interchangeably as terms commonly used to describe innovations that reduce a company's negative impact on the environment and society (Díaz-García et al., 2015; Hermundsdottir and Aspelund, 2021; Schiederig et al., 2012; Tariq et al., 2017). Therefore, the authors of this paper use the term environmental innovation and, for the rest of the terms, assume that they can be treated interchangeably as synonyms.

Similar to other types of innovation, environmental innovations encompass various characteristics as proposed by OECD/Eurostat (2018). They can manifest as products, processes, services, or methods, including business models, and should address user needs while influencing the competitiveness of companies. The distinguishing feature of environmental innovations, as outlined in several definitions to varying degrees, is their environmental aspect. Most definitions explicitly emphasize their role in reducing negative environmental impacts compared to alternative approaches (Fernando et al., 2019; Garcia et al., 2019; Hahn et al., 2010). Some definitions also highlight additional facets of environmental innovation, particularly in relation to its purpose. As per OECD's assumptions (OECD, 2011), the purpose of environmental innovation encompasses changes in products and services, processes, marketing methods, as well as organizational and institutional aspects. Furthermore, this goal can be either technological or non-technological in nature. Technological changes are typically associated with product and process innovations, while non-technological changes pertain to marketing, organizational, and institutional innovations (Chan et al., 2016; OECD, 2011).

In essence, environmental innovations refer to the introduction of new and innovative solutions aimed at mitigating negative environmental impacts while addressing economic and social concerns (Melece, 2015). The inclusion of social issues is important because much of the current research related to sustainability innovation is that the term is often reduced to environmental improvements, turning it into a one-dimensional concept (Klewitz and Hansen, 2014; Seuring and Müller, 2008). However, sustainability is a broader concept and also includes social and economic aspects (Ben Arfi et al., 2018). Therefore, this article takes a more holistic approach, which is also called for by other researchers (Adams et al., 2016; Seuring and Müller, 2008). Thus, as written above, the authors of the article assume that environmental innovation refers to new and innovative solutions to mitigate negative environmental impacts while addressing economic and social issues, and includes both technological and non-technological changes, which can take various forms, such as product, process, and organizational or marketing methods. This conceptualization of environmental innovation aligns with the framework presented by OECD/Eurostat (2018) and serves as the basis for the research discussed in this article.

2.2. Environmental innovations and organizational outcomes

Environmental innovation plays a crucial role in facilitating the global shift towards sustainable development (Dogaru, 2020; OECD, 2009). However, many companies have yet to take sufficient steps towards this direction (Redman, 2018). The implementation of environmental innovations presents challenges, as the dual goals of achieving financial and environmental value create tension (Garcia et al., 2019). Moreover, uncertainty surrounds their organizational effects, and there can be high setup costs, particularly for technological eco-innovations (Hanelt et al., 2017). Consequently, empirical evidence is needed to demonstrate the impact of environmental innovations on firm performance.

Various studies provide evidence that environmental innovation positively affects both economic and environmental performance (Cheng et al., 2014; da Silva Rabêlo and de Azevedo Melo, 2019; Hermundsdottir and Aspelund, 2022; Nishitani et al., 2017; Rabadán et al., 2019; Rennings et al., 2006; Vargas-Vargas et al., 2010; Yurdakul and Kazan, 2020). Furthermore, the literature suggests that environmental innovation contributes to enhancing a company's competitiveness (Chen et al., 2006; da Silva Rabêlo and de Azevedo Melo, 2019), attracting financial investors (Doh et al., 2010), meeting consumer demand (Horbach, 2008), improving organizational capacity (Aschehoug et al., 2012), and even boosting employee engagement and productivity (Dögl and Holtbrügge, 2014).

However, implementing environmental innovations often involves research and development or changes in production technologies, which can be costly. It may also require modifications in supply chain management (Fraj et al., 2015), promotion of new products or services, adoption of new business models and practices, and employee education (Kok et al., 2013). As a result, investing in environmental innovation requires careful consideration of its impact on financial performance. The literature on this topic provides mixed results (Aldieri et al., 2020; Hermundsdottir and Aspelund, 2021, 2022; Jaggi and Freedman, 1992; Orlitzky et al., 2003; Porter, 1991; Song et al., 2017). According to a meta-analysis by Garcia et al. (2019) 55% of the studies show a positive association between environmental innovation and financial performance, 15% show a negative association, and 30% show a non-significant or nonlinear relationship. Lin and Zheng (2016) found that a positive relationship between environmental innovation and economic performance is observed only when a combination of economic, organizational, and environmental innovations yields positive effects. Similarly, Vasileiou et al. (2022) conclude that the profitability of environmental innovations increases when there are synergies between environmental innovations and other product and process innovations, as well as organizational innovations, particularly for companies-specific environmental benefits. However, for consumer-specific environmental benefits,

only organizational innovations contribute to enhanced profitability. Tang et al. (2018) demonstrated that both product eco-innovation and process eco-innovation positively affect company corporate performance and productivity. However, for product eco-innovation, consideration of both input costs and conversion costs, as well as consumer acceptance risks, is necessary. Successful environmental innovations that positively impact financial performance require adequate internal and external resources, including the development of green products, optimization of production processes, environmentally-friendly management practices, and the provision of services that cater to sustainability-conscious consumers (Lampikoski et al., 2014; Tseng et al., 2013). Therefore, companies must consistently invest in and improve their operations to avoid negative interactions that could affect their financial performance (Roper and Tapinos, 2016; Zhang et al., 2020). On the contrary, some studies and theoretical perspectives suggest that environmental innovation may have a negative impact on financial performance (Aguilera-Caracuel and Ortiz-de-Mandojana, 2013; Driessen et al., 2013). A study by Liu et al. (2011) even found a direct link between environmental innovation and higher costs. However, these findings contradict the results of (Przychodzen and Przychodzen, 2013; Santos et al., 2017). Rezende et al. (2019), on the other hand, propose that there is no significant relationship between environmental innovations and financial performance in the short term. However, in the long term, the success of such innovations is tied to a company's financial success, provided there are sufficient resources to implement and sustain them.

The previous analysis reveals a scarcity of research on how environmental innovations impact company performance by type. The existing studies mainly concentrate on organizational, product, and process innovations, neglecting the role of environmental innovation in marketing (Driessen et al., 2013). Vasileiou et al. (2022) propose that this might be due to researchers overestimating the significance of environmental innovation compared to other types, such as process, product, and organizational innovations. However, (Medrano et al., 2020) found that managers need to transform traditional marketing practices, which implies a relatively weak association with environmental innovation. In contrast, Kumar et al. (2013) explicitly state that environmental orientation and marketing innovation within companies are conflicting concepts.

Based on our literature survey, we found only one study examining the relationship between types of environmental innovation and sustainable business performance in the Malaysian technology industry. This study explores the impact of three types of environmental innovation (eco-processes, eco-products, and eco-organization) on three dimensions of sustainable business performance (economic, social, and environmental) (Ch'ng et al., 2021). The results indicate that only eco-organizational innovations have a direct and positive influence on economic performance, which aligns with findings in other studies, such as (Cheng et al., 2014; Liao, 2018). However, other types of innovation, such as eco-process

innovations (Tumelero et al., 2019) and product innovations (Boons et al., 2013; Driessen et al., 2013), as well as eco-process and eco-product innovations (Cai and Li, 2018), do not show a similar impact on economic performance. Regarding environmental performance, both eco-process and eco-product innovations demonstrate positive effects, consistent with prior research (Cai and Li, 2018; Liao, 2018). However, eco-organizational innovations do not directly contribute to improved environmental performance, as observed in Cheng et al. (2014). In terms of sustainable performance in the social dimension, the researchers did not find a direct impact from any of the types of environmental innovation analyzed. Notably, this study does not consider environmental marketing innovations.

3. Research methodology

This study is a part of wider research on relationships between different types of innovations and business sustainability conducted in Poland and Denmark. This paper concentrates on examining the impact of types of environmental innovation on organizational outcomes in companies operating in Denmark. The general research model in the context of the hypotheses presented above is presented in Figure 1 (the number of items measuring the variables is given in brackets).

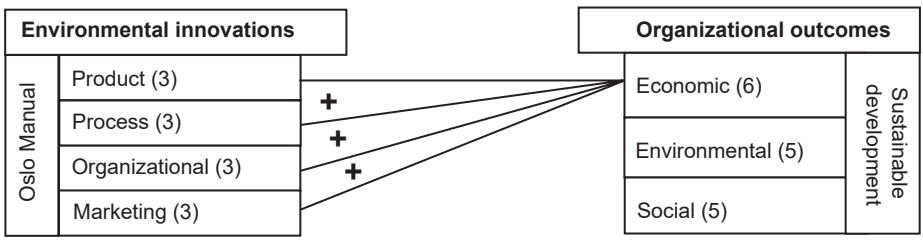

Figure 1. Relationship between environmental innovations and organizational outcomes

Source: own elaboration.

The study was conducted in late 2020 and early 2021, using a questionnaire (validated by the competent judges approach) that was intended to be appropriate for any companies regardless of size, activity profile, or affiliation with a branch of the economy. The respondents to whom the survey was directed (the services of two data collection companies were used) are senior managers with a broad view of the companies surveyed, i.e. CEOs, senior managers, quality managers (each respondent represented a different company). The general population consisted of companies operating in Denmark. As a result, 338 correctly completed surveys were obtained. The respondent profiles are presented in Table 1.

Table 1. The profile of respondents from Denmark

		Frequency	Percentage	Cumulative percentages
Valid	1 (up to 9 employees)	28	8.2	8.2
	2 (10–49 employees)	71	20.9	29.1
	3 (50–249 employees)	116	34.4	63.5
	4 (above 249 employees)	121	36.5	100.0
	Total	338	100.0	

Source: own elaboration.

In order to examine the relationship between the types of environmental innovations and organizational outcomes, the following key variables were defined separately for data collected in Denmark: four environmental innovations (based on the Oslo Manual typology): environmental product innovations (3 items), environmental process innovations (3 items), environmental organizational innovations (3 items), environmental marketing innovations (3 items), and three outcome variables based on sustainable development dimensions (based on Zgrzywa-Ziemak, 2019): economical outcomes (6 items), environmental outcomes (5 items), social outcomes (5 items). The reliability of variables (measured by the Alpha-Cronbach coefficient) is between 0.652 and 0.686 for innovation variables and 0.887–0.930 for outcomes variables), which indicates a high internal consistency and reliability in the measurement of particular variables.

4. Results

To verify the hypotheses describing the relationship between individual components of types of environmental innovations and organizational outcomes, statistical analyzes were carried out. First, a correlation analysis was conducted using Pearson's coefficient – which revealed significant relationships between all types of environmental innovations and the levels of sustainable outcomes. The results are presented in Table 2.

As a second step of statistical analyses it was decided to perform stepwise regressions. For different organizational outcomes three regression models were obtained. Those models seem to fit the data well (the equations are presented in Table 3). The best fit can be observed in the case of environmental outcomes – R^2 explains 48% of the variance in the dependent variable. When it comes to economic outcomes, the percentage of explained variance is 27%. However, in the case of social outcomes the lowest indicator can be observed, because only 12% of the model explains the variance of the dependent variable. The regression equations can be written as follows:

Table 2. Correlations (Denmark)

		Environmental product innovation	Environmental process innovation	Environmental organizational innovation	Environmental marketing innovation
Economic outcomes	Pearson correlation	0.184**	0.276**	0.313**	0.153**
	Relevance (bilateral)	0.001	0.000	0.000	0.005
	N	339	340	340	340
Environmental outcomes	Pearson correlation	0.127*	0.204**	0.233**	0.246**
	Relevance (bilateral)	0.020	0.000	0.000	0.000
	N	339	340	340	340
Social outcomes	Pearson correlation	0.112*	0.267**	0.309**	0.232**
	Relevance (bilateral)	0.040	0.000	0.000	0.000
	N	338	339	339	339

Source: own elaboration.

$$Y \text{ organizational outcomes} = b_0 + b_1 \times X_1 + b_2 \times X_2 + b_3 \times X_3 + b_4 \times X_4$$

*X_1 – Environmental product innovations, X_2 – Environmental process innovations, X_3 – Environmental organizational innovations, X_4 – Environmental marketing innovations.

Table 3. The regression equations

Economic outcomes (ECL OUT*)	$F(4.334) = 30.238$; $p<0.001$; $r^2 = 0.266$	$YECL\_OUT = 0.639 + 0.099 \times X_2 + 0.228 \times X_3 + 0.232 \times X_4$
Environmental outcomes (ENV_OUT*)	$F(4.334) = 76.590$; $p<0.001$; $r^2 = 0.478$	$YENV\_OUT = 0.131 + 0.220 \times X_1 + 0.228 \times X_2 + 0.236 \times X_3 + 0.223 \times X_4$
Social outcomes (SOC_OUT*)	$F(4.334) = 11.270$; $p<0.001$; $r^2 = 0.119$	$YSOC\_OUT = 0.974 + 0.114 \times X_2 + 0.156 \times X_3$

Source: own elaboration.

5. Discussion

Empirical research presented in this paper confirms that there is a relationship between environmental innovations and sustainable outcomes. If we take a closer look at these relationships, we will be able to observe which innovations are conducive to the various outcomes that make up an organization's sustainable performance. Economic outcomes are most influenced by process, organisational, and marketing innovations (presented in Figure 2). Very surprisingly, there is no significant relationship between product innovations and economic outcomes. Perhaps this is related to the environmental focus of these innovations.

In the case of environmental performance, the results were not surprising. All types of innovation are conducive to increasing these outcomes (presented in Figure 3).

In turn, only product and process innovations proved statistically significant for social outcomes, while organizational and marketing innovations were no longer (presented in Figure 4). The lack of a significant relationship between organizational innovations and social outcomes may be related to the fact that their goals are environmental. Although it is surprising that they do not have an impact on in-

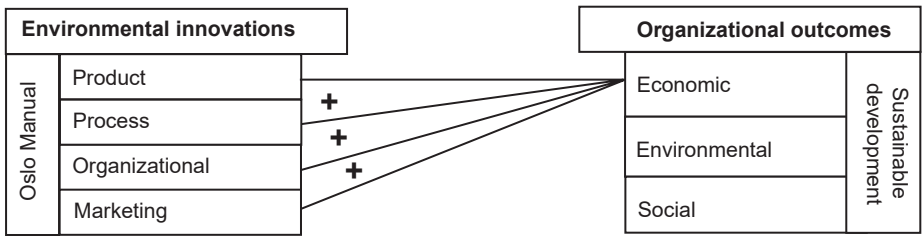

Figure 2. Relationship between environmental innovations and economic outcomes in Denmark

Source: own elaboration.

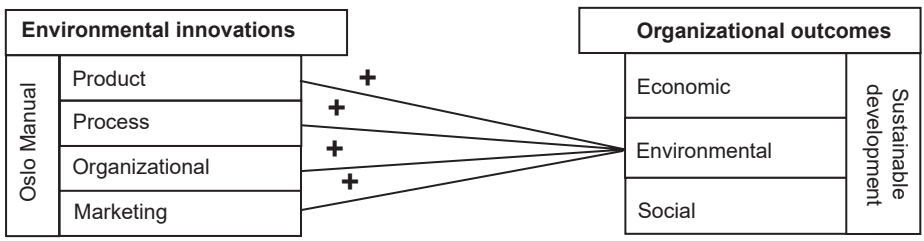

Figure 3. Relationship between environmental innovations and environmental outcomes in Denmark

Source: own elaboration.

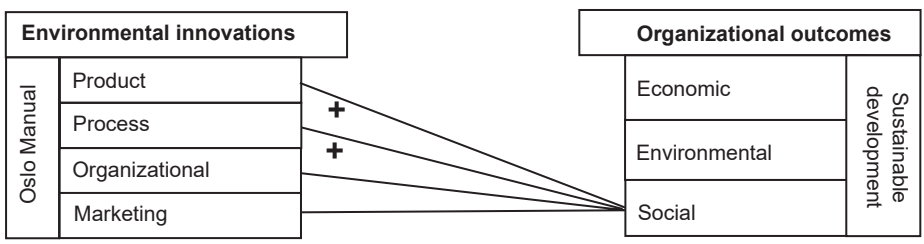

Figure 4. Relationship between environmental innovations and social outcomes in Denmark

Source: own elaboration.

creasing customer satisfaction, or the sense of satisfaction or security in employees. Similarly, the lack of a relationship between marketing innovations and customer satisfaction is surprising. It may be due, for example, to the inadequate information provided to customers about the steps taken in this regard.

6. Conclusions

To sum up, the results obtained, through a broad view, made it possible to use four types of environmental innovation and link them in the model to sustainable performance and clarify the relationship between them. Moreover, it seems crucial to take a systemic view of which innovations collectively build the model and note that process and organizational innovations appear as an element present in each of the models obtained. This is therefore an indication that organizational activities through processes should support product or marketing innovations to lead to sustainable results in the implementation of environmental innovations. Especially since organizational innovations can create support for process innovation implementations, they are most often implemented jointly. It is important to implement metrics to observe the change in various areas of sustainable organizational performance (e.g., related to reducing waste, reducing resource consumption, using renewable resources).

The presented study has some limitations, due to subjective measurement. In the future, an in-depth interview method could be used along with documentation studies, which would allow more objective results to be obtained. Moreover, increasing the size of the research sample and expanding the study to other countries will allow for generalization of the results, as the results obtained may be specific to companies operating in Denmark. Furthermore, examining the relationship between environmental innovation and exogenous contextual factors (e.g., dimensions of national cultures and macroeconomic indicators) and endogenous factors (e.g., age and size of the organization, culture, core values, leadership, management style, or organizational structure) would be of great interest. Likewise, considering the distinction between radical and incremental innovations and verifying whether other dimensions of sustainable performance will be influenced – would also be valuable.

Acknowledgments

The research was funded by an NCN project: Innovation of enterprise oriented on sustainable development (2019/03/X/HS4/01295).

References

Adams, R., Jeanrenaud, S., Bessant, J., Denyer, D., Overy, P. (2016). Sustainability-oriented innovation: A systematic review. *International Journal of Management Reviews*, 18(2), 180–205. https://doi.org/10.1111/ijmr.12068.

Aguilera-Caracuel, J., Ortiz-de-Mandojana, N. (2013). Green innovation and financial performance: An institutional approach. *Organization and Environment*, 26(4), 365–385. https://doi.org/10.1177/1086026613507931.

Aldieri, L., Makkonen, T., Paolo Vinci, C. (2020). Environmental knowledge spillovers and productivity: A patent analysis for large international firms in the energy, water and land resources fields. *Resources Policy*, 69, 101877. https://doi.org/10.1016/j.resourpol.2020.101877.

Aschehoug, S.H., Boks, C., Storen, S. (2012). Environmental information from stakeholders supporting product development. *Journal of Cleaner Production*, 31, 1–13. https://doi.org/10.1016/j.jclepro.2012.02.031.

Ben Arfi, W., Hikkerova, L., Sahut, J.M. (2018). External knowledge sources, green innovation and performance. *Technological Forecasting and Social Change*, 129, 210–220. https://doi.org/10.1016/j.techfore.2017.09.017.

Berry, M.A., Rondinelli, D.A. (1998). Proactive corporate environmental management: A new industrial revolution. *Academy of Management Executive*, 12(2). https://doi.org/10.5465/ame.1998.650515.

Boons, F., Montalvo, C., Quist, J., Wagner, M. (2013). Sustainable innovation, business models and economic performance: An overview. *Journal of Cleaner Production*, 45, 1–8. https://doi.org/10.1016/j.jclepro.2012.08.013.

Cai, W., Li, G. (2018). The drivers of eco-innovation and its impact on performance: Evidence from China. *Journal of Cleaner Production*, 176, 110–118. https://doi.org/10.1016/j.jclepro.2017.12.109.

Ch'ng, P.C., Cheah, J., Amran, A. (2021). Eco-innovation practices and sustainable business performance: The moderating effect of market turbulence in the Malaysian technology industry. *Journal of Cleaner Production*, 283, 124556. https://doi.org/10.1016/J.JCLEPRO.2020.124556.

Chan, H.K., Yee, R.W.Y., Dai, J., Lim, M.K. (2016). The moderating effect of environmental dynamism on green product innovation and performance. *International Journal of Production Economics*, 181, 384–391. https://doi.org/10.1016/j.ijpe.2015.12.006.

Chen, Y.S., Lai, S.B., Wen, C.T. (2006). The influence of green innovation performance on corporate advantage in Taiwan. *Journal of Business Ethics*, 67(4), 331–339. https://doi.org/10.1007/s10551-006-9025-5.

Cheng, C.C.J., Yang, C.L., Sheu, C. (2014). The link between eco-innovation and business performance: A Taiwanese industry context. *Journal of Cleaner Production*, 64, 81–90. https://doi.org/10.1016/j.jclepro.2013.09.050.

da Silva Rabêlo, O., de Azevedo Melo, A.S.S. (2019). Drivers of multidimensional eco-innovation: Empirical evidence from the Brazilian industry. *Environmental Technology*, 40(19), 2566. https://doi.org/10.1080/09593330.2018.1447022.

Díaz-García, C., González-Moreno, Á., Sáez-Martínez, F.J. (2015). Eco-innovation: Insights from a literature review. *Innovation: Management, Policy and Practice*, 17(1), 6–23. https://doi.org/10.1080/14479338.2015.1011060.

Dogaru, L. (2020). Eco-innovation and the contribution of companies to the sustainable development. *Procedia Manufacturing*, 46, 294–298. https://doi.org/10.1016/j.promfg.2020.03.043.

Dögl, C., Holtbrügge, D. (2014). Corporate environmental responsibility, employer reputation and employee commitment: An empirical study in developed and emerging economies. *Inter-*

national Journal of Human Resource Management, 25(12), 1739–1762. https://doi.org/10.1080/09585192.2013.859164.

Doh, J.P., Howton, S.D., Howton, S.W., Siegel, D.S. (2010). Does the market respond to an endorsement of social responsibility? The role of institutions, information, and legitimacy. *Journal of Management*, 36(6), 1461–1485. https://doi.org/10.1177/0149206309337896.

Driessen, P.H., Hillebrand, B., Kok, R.A.W., Verhallen, T.M.M. (2013). Green new product development: The pivotal role of product greenness. *IEEE Transactions on Engineering Management*, 60(2), 315–326. https://doi.org/10.1109/TEM.2013.2246792.

Fernando, Y., Chiappetta Jabbour, C.J., Wah, W.X. (2019). Pursuing green growth in technology firms through the connections between environmental innovation and sustainable business performance: Does service capability matter? *Resources, Conservation and Recycling*, 141, 8–20. https://doi.org/10.1016/J.RESCONREC.2018.09.031.

Fraj, E., Matute, J., Melero, I. (2015). Environmental strategies and organizational competitiveness in the hotel industry: The role of learning and innovation as determinants of environmental success. *Tourism Management*, 46, 30–42. https://doi.org/10.1016/j.tourman.2014.05.009.

Garcia, R., Wigger, K., Hermann, R.R. (2019). Challenges of creating and capturing value in open eco-innovation: Evidence from the maritime industry in Denmark. *Journal of Cleaner Production*, 220, 642–654. https://doi.org/10.1016/j.jclepro.2019.02.027.

Hahn, T., Figge, F., Pinkse, J., Preuss, L. (2010). Editorial trade-offs in corporate sustainability: You can't have your cake and eat it. *Business Strategy and the Environment*, 19(4), 217–229. https://doi.org/10.1002/bse.674.

Hanelt, A., Busse, S., Kolbe, L.M. (2017). Driving business transformation toward sustainability: Exploring the impact of supporting IS on the performance contribution of eco-innovations. *Information Systems Journal*, 27(4), 463–502. https://doi.org/10.1111/isj.12130.

Hermundsdottir, F., Aspelund, A. (2021). Sustainability innovations and firm competitiveness: A review. *Journal of Cleaner Production*, 280, 124715. https://doi.org/10.1016/J.JCLEPRO.2020.124715.

Hermundsdottir, F., Aspelund, A. (2022). Competitive sustainable manufacturing: Sustainability strategies, environmental and social innovations, and their effects on firm performance. *Journal of Cleaner Production*, 370, 133474. https://doi.org/10.1016/J.JCLEPRO.2022.133474.

Horbach, J. (2008). Determinants of environmental innovation: New evidence from German panel data sources. *Research Policy*, 37(1), 163–173. https://doi.org/10.1016/j.respol.2007.08.006.

Jaggi, B., Freedman, M. (1992). An examination of the impact of pollution performance on economic and market performance: Pulp and paper firms. *Journal of Business Finance & Accounting*, 19(5), 697–713. https://doi.org/10.1111/j.1468-5957.1992.tb00652.x.

Klewitz, J., Hansen, E.G. (2014). Sustainability-oriented innovation of SMEs: A systematic review. *Journal of Cleaner Production*, 65, 57–75. https://doi.org/10.1016/j.jclepro.2013.07.017.

Kok, L., Wurpel, G., Ten Wolde, A. (2013). *Unleashing the Power of the Circular Economy*. Amsterdam: IMSA Amsterdam.

Kumar, V., Rahman, Z., Kazmi, A.A. (2013). Sustainability marketing strategy: An analysis of recent literature. *Global Business Review*, 14(4), 601–625. https://doi.org/10.1177/0972150913501598.

Lampikoski, T., Westerlund, M., Rajala, R., Möller, K. (2014). Green innovation games: Value-creation strategies for corporate sustainability. *California Management Review*, 57(1), 88–116. https://doi.org/10.1525/cmr.2014.57.1.88.

Larbi-Siaw, O., Xuhua, H., Owusu, E., Owusu-Agyeman, A., Fulgence, B.E., Frimpong, S.A. (2022). Eco-innovation, sustainable business performance and market turbulence moderation in emerging economies. *Technology in Society*, 68, 101899. https://doi.org/10.1016/J.TECHSOC.2022.101899.

Liao, Z. (2018). Corporate culture, environmental innovation and financial performance. *Business Strategy and the Environment*, 27(8), 1368–1375. https://doi.org/10.1002/bse.2186.

Lin, B.C., Zheng, S. (2016). A new direction in environmental economics. *Journal of Economic Surveys*, 30(3), 397–402. https://doi.org/10.1111/joes.12166.

Liu, X., Dai, H., Cheng, P. (2011). Drivers of integrated environmental innovation and impact on company competitiveness: Evidence from 18 Chinese firms. *International Journal of Technology and Globalisation*, 5(3–4), 255–280. https://doi.org/10.1504/IJTG.2011.039767.

Medrano, N., Cornejo-Cañamares, M., Olarte-Pascual, C. (2020). The impact of marketing innovation on companies' environmental orientation. *Journal of Business and Industrial Marketing*, 35(1), 1–12. https://doi.org/10.1108/JBIM-10-2018-0319.

Melece, L. (2015). Eco-innovation and its development in Baltic states. *Management Theory and Studies for Rural Business and Infrastructure Development*, 37(3), 415–425. https://doi.org/10.15544/mts.2015.36.

Nishitani, K., Jannah, N., Kaneko, S. (2017). Does corporate environmental performance enhance financial performance? An empirical study of Indonesian firms. *Environmental Development*, 23, 10–21. https://doi.org/10.1016/j.envdev.2017.06.003.

OECD. (2009). *Sustainable Manufacturing and Eco-Innovation: Framework, Practices and Measurement*. Paris: The OECD Policy Brief.

OECD. (2011). *Better Policies to Support Eco-Innovation*. Paris: OECD Publishing.

OECD/Eurostat. (2018). *Oslo Manual 2018: Guidelines for Collecting, Reporting and Using Data on Innovation, 4th Edition*. Paris: OECD Publishing.

Orlitzky, M., Schmidt, F.L., Rynes, S.L. (2003). Corporate social and financial performance: A meta-analysis. *Organization Studies*, 24(3), 403–441. https://doi.org/10.1177/0170840603024003910.

Porter, M.E. (1991). America's green strategy. *Scientific American*, 264(4).

Przychodzen, J., Przychodzen, W. (2013). Corporate sustainability and shareholder wealth. *Journal of Environmental Planning and Management*, 56(4), 474–493. https://doi.org/10.1080/09640568.2012.685927.

Rabadán, A., González-Moreno, Á., Sáez-Martínez, F.J. (2019). Improving firms' performance and sustainability: The case of eco-innovation in the agri-food industry. *Sustainability*, 11(20), 5590. https://doi.org/10.3390/su11205590.

Redman, A. (2018). Harnessing the sustainable development goals for businesses: A progressive framework for action. *Business Strategy and Development*, 1(4), 230–243. https://doi.org/10.1002/bsd2.33.

Rennings, K., Ziegler, A., Ankele, K., Hoffmann, E. (2006). The influence of different characteristics of the EU environmental management and auditing scheme on technical environmental innovations and economic performance. *Ecological Economics*, 57(1), 45–59. https://doi.org/10.1016/j.ecolecon.2005.03.013.

Rezende, L. de A., Bansi, A.C., Alves, M.F.R., Galina, S.V.R. (2019). Take your time: Examining when green innovation affects financial performance in multinationals. *Journal of Cleaner Production*, 233, 993–1003. https://doi.org/10.1016/j.jclepro.2019.06.135.

Roper, S., Tapinos, E. (2016). Taking risks in the face of uncertainty: An exploratory analysis of green innovation. *Technological Forecasting and Social Change*, 112, 357–363. https://doi.org/10.1016/j.techfore.2016.07.037.

Santos, D.F.L., de Lima, M.M., Basso, L.F.C., Kimura, H., Sobreiro, V.A. (2017). Eco-innovation and financial performance at companies established in Brazil. *International Journal of Business and Emerging Markets*, 9(1), 68–89. https://doi.org/10.1504/ijbem.2017.080783.

Savitz, A.W., Weber, K. (2006). *The Triple Bottom Line: How Today's Best-Run Companies Are Achieving Economic, Social, and Environmental Success. And How You Can Too*. San Francisco: Jossey-Bass.

Schiederig, T., Tietze, F., Herstatt, C. (2012). Green innovation in technology and innovation management: An exploratory literature review. *R and D Management*, 42(2), 180–192. https://doi.org/10.1111/j.1467-9310.2011.00672.x.

Seuring, S., Müller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production*, 16(15), 1699–1710. https://doi.org/10.1016/j.jclepro.2008.04.020.

Song, H., Zhao, C., Zeng, J. (2017). Can environmental management improve financial performance: An empirical study of A-shares listed companies in China. *Journal of Cleaner Production*, 141, 1051–1056. https://doi.org/10.1016/j.jclepro.2016.09.105.

Tang, M., Walsh, G., Lerner, D., Fitza, M.A., Li, Q. (2018). Green innovation, managerial concern and firm performance: An empirical study. *Business Strategy and the Environment*, 27(1), 39–51. https://doi.org/10.1002/bse.1981.

Tariq, A., Badir, Y.F., Tariq, W., Bhutta, U.S. (2017). Drivers and consequences of green product and process innovation: A systematic review, conceptual framework, and future outlook. *Technology in Society*, 51, 8–23. https://doi.org/10.1016/j.techsoc.2017.06.002.

Tseng, M.L., Wang, R., Chiu, A.S.F., Geng, Y., Lin, Y.H. (2013). Improving performance of green innovation practices under uncertainty. *Journal of Cleaner Production*, 40, 71–82. https://doi.org/10.1016/j.jclepro.2011.10.009.

Tumelero, C., Sbragia, R., Evans, S. (2019). Cooperation in R & D and eco-innovations: The role in companies' socioeconomic performance. *Journal of Cleaner Production*, 207, 1138–1149. https://doi.org/10.1016/j.jclepro.2018.09.146.

UN. (2017). *Work of the Statistical Commission Pertaining to the 2030 Agenda for Sustainable Development*. A/RES/71/313.

Vargas-Vargas, M., Meseguer-Santamaría, M.L., Mondéjar-Jiménez, J., Mondéjar-Jiménez, J.A. (2010). Environmental protection expenditure for companies: A Spanish regional analysis. *International Journal of Environmental Research*, 4(3), 373–378.

Vasileiou, E., Georgantzis, N., Attanasi, G., Llerena, P. (2022). Green innovation and financial performance: A study on Italian firms. *Research Policy*, 51(6), 104530. https://doi.org/10.1016/J.RESPOL.2022.104530.

Wagner, M., Llerena, P. (2011). Eco-innovation through integration, regulation and cooperation: Comparative insights from case studies in three manufacturing sectors. *Industry and Innovation*, 18(8), 747–764. https://doi.org/10.1080/13662716.2011.621744.

Walecka-Jankowska, K., Zgrzywa-Ziemak, A., Zimmer, J. (2017). Innowacje zorientowane na zrównoważony rozwój z perspektywy różnych koncepcji zrównoważenia przedsiębiorstwa. In P. Kubiński (ed.), *Innowacje w biznesie: nowe modele i nowe praktyk* (63–81). Wrocław: Exante.

Yurdakul, M., Kazan, H. (2020). Effects of eco-innovation on economic and environmental performance: Evidence from Turkey's manufacturing companies. *Sustainability*, 12(8), 3167. https://doi.org/10.3390/SU12083167.

Zgrzywa-Ziemak, A. (2019). *Model zrównoważenia przedsiębiorstwa*. Wrocław: Oficyna Wydawnicza Politechniki Wrocławskiej.

Zhang, Y., Sun, J., Yang, Z., Wang, Y. (2020). Critical success factors of green innovation: Technology, organization and environment readiness. *Journal of Cleaner Production*, 264, 121701. https://doi.org/10.1016/j.jclepro.2020.121701.

Ekonomia — Wroclaw Economic Review 29/3 (2023)
Acta Universitatis Wratislaviensis
No 4193

https://doi.org/10.19195/2658-1310.29.3.8

Nataliia Petryshchenko
ORCID: 0000-0001-9172-9304
Odessa State Academy of Civil Engineering and Architecture
petrishchenkon@ogasa.org.ua

Iryna Azhaman
ORCID: 0000-0002-0245-1652
Odessa State Academy of Civil Engineering and Architecture
iryna.azhaman@ogasa.org.ua

Nataliia Serohina
ORCID: 0000-0001-8612-6429
Odessa State Academy of Civil Engineering and Architecture
serohina@ogasa.org.ua

Work in IT for women: The realities of Ukraine

Date of submission: 05.06.2023; **date of acceptance:** 30.09.2023

JEL classification: I24, J14, L86

Keywords: gender equality, IT in Ukraine, career of women in IT, stereotypes for women, public support

Abstract

The article presents a study conducted on gender equality in Ukraine in the field of information technology. The problem of gender inequality still exists throughout the world. The purpose of the article is to study the working conditions of women in IT, to discuss the possible use of stereotypes, and to identify the reasons for women's lack of interest in working in this field. Formally, there is no prohibition for women to work in the IT industry. However, there are a number of reasons in Ukraine that affect the possibilities of pursuing a career in this direction. The article analyzes the available statistical data and the results of a survey among representatives of the IT sector. It is worth noting the problem of data collection during the war in Ukraine. The importance of the sphere for the country's economy as a whole and the relevance, demand for specialists, as well as the ratio of women and men employed in this area are considered. Global trends in gender distribution in the field of IT were analyzed. The main stereotypes and situations that constitute obstacles for women

in this area are considered and the features inherent in Ukrainian society are also highlighted. Based on the statistical data of Ukraine the number and structure of female students, including foreigners, in recent years were analyzed. It was revealed that the structure of the gender ratio of men and women in education is changing with the formation of the labor market of Ukraine and the distribution by employment status. The ratio of working women and men is approximately the same, but the structure by employment status is different. In Ukraine the IT sector is largely based on individual entrepreneurs. Despite the martial law, the IT community is actively developing and new companies are being created. Training is actively carried out in paid and free courses. Surveys were conducted among students, and it was found that the beginning of a career in the field of information technology is already determined by certain stereotypes of society. Based on the conducted research, the structural gender relations in the field of IT and the main stereotypes that hinder the development of women in this area are analyzed. Recommendations for overcoming gender inequality in the field of IT in Ukraine are presented. Based on the information received, conclusions were drawn: the number of women and men studying technical and mathematical sciences in Ukraine is approximately the same. But in the future, in professional activities, women in many cases prefer to occupy weaker positions, leaving leading positions to men. The main reason for this dynamic is the generally accepted stereotypes and the actualization of the role of women in other areas.

1. Introduction

The rapid development of scientific and technological progress contributes to the ever-increasing acceleration of the rhythm of human life and society. Rapid changes and globalization of the economy are taking place, which requires very quick decisions. In turn, decisions cannot be made without the use of digital technologies. Digitalization and automation are being introduced and used everywhere, especially in business, because they speed up production processes, allow the use of machines and mechanisms in complex jobs and in places dangerous to human life. Despite the significant growth in the quantitative and qualitative aspect of IT specialists, the growth rate of demand for IT services exceeds the existing supply.

Accordingly, a significant growth rate in the demand for IT solutions leads to an increase in the need for specialists in this industry. At the same time, there is still a shortage of engineering specialists in the IT industry, while the complexity of IT projects and solutions is growing. This leads to the need for constant professional growth of specialists. The IT sphere is developing very actively, and even crises cannot stop the constant shortage of specialists in this field.

2. Theoretical framework of the research

The features of this industry mainly include the ability of people to think logically, to have the necessary knowledge, to be able to use it, high analytical skills, a propensity to find solutions, and creativity. If we talk about the game industry, then a number of employees must still have creativity, good imagination, and the ability to express their thoughts figuratively.

Thus, we can say that there should be no prerequisites for gender inequality in the field of IT, because everything depends only on the personal qualities of a person, his or her knowledge, skills, and experience. And women should feel absolutely confident in this area. Women can be just as experienced specialists, solve complex problems, and effectively distribute tasks as men. It was the same 50 years ago. The number of women programmers has grown exponentially. The very first program in the world was written by a woman, Ada Lovelace (1840s). Rose Barfield looked at the origins of computer programming in her article (Barfield, 2021) and noted that "Lovelace was also the first to suggest that computers could be more than just calculators. Grace Hopper developed LOW-MATIC, the first system that could convert plain English into computer code (1952)". Scientific researchers analyzed the field of information technology in the UK. Their findings show how the gender structure of IT influences women's careers in this field. The article also reveals the collective image of women in technical specialties, which makes it possible to analyze directions for reducing gender inequality (Kenny and Donelly, 2020).

Already in 2003, there was a decrease in the number of women in the field of IT. The analysis revealed problems in the realization of women's opportunities due to stereotypes (Nielsen, Hellens, Wong, 2000). The main ones are: beauty and intelligence are not compatible. Women have a special logic. Mathematics and engineering are male occupations. Also, among the factors of discrimination both in the world and in Ukraine, the most common are: sexism in employment, the gender pay gap, the glass ceiling, gender stereotypes, and prejudices. The results of studies on gender imbalance have shown that the problem exists not only in Ukraine. At the end of 2020 in Ukraine, the percentage of women in IT was almost 25%. However, it should be noted that there is a positive trend and more and more women are entering in this field.

Back in 1999, studies were conducted in the UK on the situation of women in the IT sector. The authors concluded that the IT industry does not exclude women, but does not make efforts to retain them (Panteli, Stack, Atkinson and Ramsay, 1999).

The authors of the article "Women in Engineering as a Research Topic: Past, Present, and Future" conducted an in-depth analysis of the literature on the topic of inequality of women in the field of engineering. Their findings support the thesis that the presence of women in science and technology will help prevent possible violations of women's rights and reduce gender inequality (Dabić, Vlačić, Obradović, Marzi and Kraus, 2021).

The study aims to identify factors that influence women's choice to develop a career in the IT field. The goals are to determine what exactly is decisive when deciding to work in one direction or another, and why women leave IT.

3. Research methodology

Official statistical information of Ukraine and other countries was used. General scientific methods were used – generalization, analysis, synthesis. A survey was conducted, the results of which were processed using the grouping method.

4. Main material

4.1. Gender structure in education in Ukraine

Analysis of statistical data shows that women in Ukraine receive higher education almost at the same level as men. At the beginning of the 2020–2021 academic year, the number of women was 606,945 or 53.2% of the total number of students. At the same time, 421,883 people or 50.8% study full-time (State Statistics…, 2023). You can also consider the number of foreign students who received higher education in Ukraine at the beginning of the 2020–2021 academic year. There is a completely different trend in this data. Among the total number of foreign students, which is 67,327 people, women make up a minority of 31.53% (21,226 people). By the end of their studies, the number of foreign female students is reduced to 29.71%. For comparison, in 2021, the total number of foreign students increased to 73,626 people, and the number of women among them reached 33.67%.

Among foreign students who graduated in 2021, women accounted for 30.23%. We consider these changes to be positive, the number of women is increasing and they can exercise their rights to education, even in another country. Based on statistical data, an analysis was made of the number of foreign students from different countries. The following trends of individual countries in sending students to study in Ukraine were noted:

– In 2020, the largest number of foreign students came from India – 16,888 people. Women among them accounted for 36.46%, and among those who graduated, the share fell to 34.64%. In 2021, the share of women in the total number of students from India rose to 38.87%, and on next year graduates decreased to 34.33%.

– The largest proportion of students from Lithuania are women – 80.56%. In addition, the majority of women also complete their studies – 94.12% of the total number of students. In 2021, the figures decreased slightly – to 72.41% and 85.19%, respectively. This may be due to the COVID-19 pandemic, which has limited the movement of students between countries of residence and study. However, if this did not affect the total number of foreign students, then in a number of countries it was the number of women who began studying in another country that decreased.

– The number of students coming from Maldives and Namibia was quite high. Among students from the Maldives, women accounted for 72.55% in 2020 and 71.43% in 2021, and among graduates, they accounted for 100% in 2020 and 50% in

2021. Namibia's performance in relation to female students in Ukraine was 69.44% and 70.97% of total students in 2020 and 69.66% and 50% in 2021, respectively.

There are, however, no female representatives from some countries among students in Ukraine. These countries include those of which few students want to get an education in Ukraine: Gabon (7 students), Bahrain (5 students), Central African Republic (1 student), Chile (3 students), Malaysia (2 students), South Sudan (3 students) (State Statistics…, 2023).

It should also be noted that, according to the statistics, women quite often enter and complete graduate school in technical and mathematical fields.

Table 1. Number of women graduates who completed their postgraduate studies in 2020 and 2021

	The number of postgraduate students – women who completed postgraduate studies			
	All persons		The number of persons who completed postgraduate studies (in %)	
	2020	2021	2020	2021
Total	295	178	70.2	50.7
Of which by field of science:				
Physical and mathematical sciences	12	8	60	32
Technical sciences	51	14	72.9	31

Source: compiled by the authors based on State Statistics.

In the structure of graduate students from other countries, women made up 32.5% of the total in 2020 and 33.81% in 2021. In the age group 23–25 years, this figure reaches 54%, but it decreases with age. PhD students (women) over the age of 50 accounted for almost 13% of the total. The analysis of the indicators of training of skilled workers in institutions of vocational education (vocational and technical) in 2021 was carried out. It can be concluded that the attractiveness of professions in this area is gradually increasing. During the year, the number of accepted students exceeded the number of those who completed the full course of study by almost 17%. However, the number of girls among the total number of students is 38.2%.

The structure of the gender ratio of men and women in education continues to change with the formation of the labor market of Ukraine and the distribution by employment status.

Upon admission, the percentage of women and men is the same. Even more women are graduating. However, an analysis of the distribution by technical areas shows that the largest proportion of women is in the chemical engineering and bioengineering area – 55%. Information technology and electronics, automation and electronic communications are not of significant interest to women when pursuing higher education.

Table 2. Training of specialists in higher education institutions at the beginning of the 2022/23 academic year by fields of knowledge (State Statistics…, 2023)

	The number of persons admitted to higher education institutions for the first time	Number of students	Of them women	% of women	The number of persons graduated from institutions of higher education	Of them women	% of women
Total	**245,089**	**1 052,871**	**530,206**	**50**	**273,119**	**149,215**	**55**
Mathematics and statistics	1,405	5,996	2,244	**37**	1,360	580	**43**
Information technology	26,758	102,561	17,574	**17**	20,284	3,680	**18**
Mechanical engineering	6,798	25,362	2,350	**9**	6,271	778	**12**
Electrical engineering	6,628	24,263	1,967	**8**	6,543	758	**12**
Automation and instrument building	3,669	15,079	1,784	**12**	3,798	578	**15**
Chemical engineering and bioengineering	1,675	8,394	4,648	**55**	2,193	1,335	**61**
Electronics, automation and electronic communications	2,985	11,108	1,259	**11**	3,019	407	**13**

Source: compiled by the authors based on State Statistics.

4.2. Employment in Ukraine: Men and women

Considering the structure of the employed population in Ukraine by gender. In general, the promotion of gender equality is part of a broad cultural transformation that changes the way traditional societies function and fosteres the development of democratic institutions. The affirmation of the value of gender equality ensures the self-realization of people, their right to education and contributes to the economic development of countries (Bidenko, Kyselova, 2017).

The issue of gender equality in the field of labor relations is quite relevant today and should include the following principles (Klymenko, 2021):

1. Equal opportunities and equal treatment of men and women in the field of employment;
2. Equal pay for work of equal value;
3. Improving the balance between work and family life of employees;
4. Equal approach to proposals in case of filling vacant positions.

In 2020, the World Economic Forum published the Global Gender Gap Report, in which Ukraine ranked 59th out of 153 countries (World Economic Forum, 2020). The rating is based on indicators of participation in the political life of the country The ratio of men and women in the highest positions in the state, the level and availability of education, access to medical care and its level, economic opportunities were considered. The annual dynamics of this indicator show positive changes, but in general it is still far from a good result. However, now in Ukraine, due to the martial law, many men were called to military service and there is a replacement of the personnel of many enterprises. Based on the statistical data of Ukraine, an analysis of the structure of the labor force by gender was made.

In Ukraine, the number of working women and men is approximately the same: women make up 47.44% and men – 52.56% of the workforce. But the structure by employment status is somewhat different. Among women, employees account for 85.9%, and among men – 81.7%. A large proportion of women employees may indicate a lower level of entrepreneurship and the desire to achieve their own goals in it. This may be due to the fact that, because of their social life, it is more difficult for women to bear responsibility specifically in entrepreneurship. Employment reduces the level of responsibility for the results of labor to an individual result, and in entrepreneurship it is responsibility for the overall final result. In addition, this leaves the woman with the opportunity for greater responsibility in other areas of life: family, health, development in addition to a working career. Among employers, women make up 0.9%, men – 1.8%. The share of self-employed men is higher than the share of women and amounts to 16.3%. Therefore, we can conclude that the number of men who independently determine and implement their businesses exceeds the number of women. This is partly due to the fact that women take care of a part of a man's life – family matters – which gives men the opportunity to direct their energies and freed up time to business. Also noteworthy is the difference in the performance of men and women in the category "Freelance family members". There are 22,000 women and 16,000 men in this category. The survey was conducted among women entrepreneurs (self-employed) in the Odessa region, which revealed the main fears when starting their own business: high risk of losing capital, difficulty of competition, lack of moral support for the family, possible difficulties in fulfilling family obligations. It should be noted that in Ukraine there is a fairly widespread opinion that women should mainly deal with household chores and raising children. Quite often, men take part in these processes to a lesser extent than women, regardless of the tasks performed. However, most of them perceive these cases more as helping their wives due to the fact that they do

Table 3. Employed population aged 15–70 in 2021 by gender and status in employment, excluding temporarily occupied territories (State Statistics…, 2023)

Index	2021	
	Quantity, number of persons	Proportion, %
Employed aged 15–70, total, number of persons	15,610	100.00
Females	7,406	47.44
– employed	6,362	85.9
– employers	67	0.9
– self-employed workers	955	12.9
– working in a family business	22	0.3
Males	8,204	52.56
– employed	6,703	81.7
– employers	148	1.8
– self-employed workers	1,337	16.3
– working in a family business	16	0.2

Source: compiled by the authors based on State Statistics

not have time to take care of all the processes at home and in the family, than as their part of the responsibility to ensure cohabitation.

Another fairly common stereotype that is present not only in Ukraine: A man provides for his family financially, so he does not have to perform many duties in the family. However, quite often a woman's share in the financial support of the family is not much less than that of a man, or corresponds to it. But such examples for society are an exception, not a proof of the unfair distribution of domestic duties. A positive component should also be noted: such injustice stimulates some women to start their own business, helps to define themselves as a self-sufficient person, and allows them to set higher goals and achieve better results. But a significant part of women take such situations for granted due to the lack of moral support in their endeavors from both relatives and society as a whole. In order for the situation to change, the views and norms of society must change, then women can be more confident in their strengths and capabilities.

4.3. Ukrainian women in the information technology industry

Gender stereotypes about the exact sciences and intellectual abilities, the incompatibility of beauty and abilities in the exact sciences are considered the basis for the decline in women's interest in STEM. Such stereotypes already operate at the stage of education: it is widely believed that women do not tend to study technical and mathematical specialties because of their inability to study the exact

sciences. However, analytical abilities, good memory, propensity to analyze and complexity of perception are not gender characteristics, but personal ones. The presence of examples confirming that women can also occupy a significant place in this area is perceived by most of society as an exception, not a confirmation. It is strange that women who refute it by personal example can be subject to such stereotypes. This is explained by the fact that they also consider themselves an exception, a person who has accomplished the almost impossible, and not just a talented and capable specialist in their specialty, of which there can be quite a lot. Such a trend can only be overcome by an increase in female specialists in technical and mathematical specialties. But this process cannot be fast.

In Ukraine, the IT sector is largely based on individual entrepreneurs. According to the statistics of Ukraine in 2019, the number of individual entrepreneurs in computer programming has increased significantly (about 11%) and ranks third among all categories. The growth rate of entrepreneurs in this industry is very high. Compared to 2017, the number of women entrepreneurs in this area has increased by 62%. Such a rapid increase in the indicator indicates a significant interest of modern women in realizing their opportunities in this area. The growth of this indicator is even higher than the general growth rate of individual entrepreneurs. Most of the women entrepreneurs in the information technology industry work in the direction of "Computer programming". Also, a fairly large part falls on analytical areas.

Research by Dou.ua employees showed that the number of women in the IT field is only 23%, and most often they work as developers, testers, designers, employees of analytical departments, etc. The median age of an IT specialist was 29 years in 2022 (28 years in 2020). Technical specialists are somewhat older than non-technical ones.

When considering the issue of gender balance, it should be noted that quite a lot of women work in non-technical and near-technical positions. In 2022, among technical specialists, 17% of women (in 2021 – 16%), among non-technical – 64% (Dou website, 2022). In the humanities, the largest share of women is in HR (90%), marketing (64%), technical writing (62%), design (46%) and sales (44%). However, over time, the gender distribution should even out (although not very rapidly), because among junior developers the number of women seems to be more optimistic – almost every seventh is a woman. In total, every third woman has the title of junior. The higher the professional level of a female specialist, the smaller their number in relation to men: at the level of senior specialist, there are already half as many women as men. Female developers are 11% in 2019 and 9% in 2022, and 38% each in 2019 among testers and Project Manager (PM), but in 2022 this figure dropped to 34% and 35% respectively (State Statistics…, 2023).

These data allow us to conclude that the beginning of a career in the field of information technology is already determined by certain stereotypes of society (society's gender prejudices about intelligence, abilities for the exact sciences). And

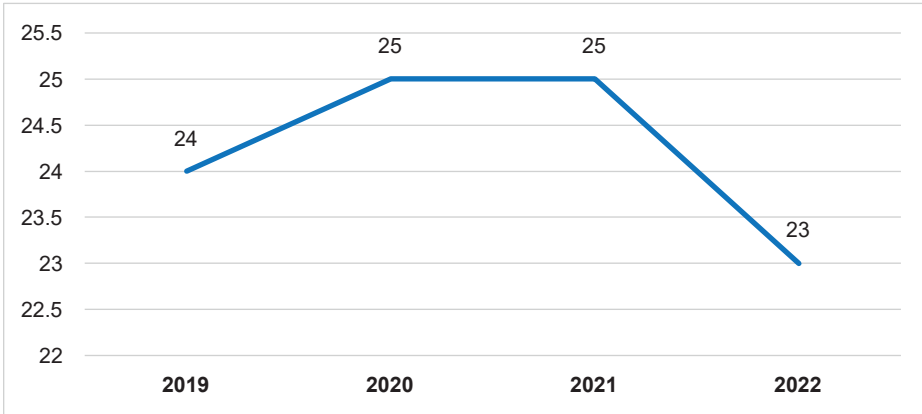

Figure 1. Dynamics of the number of women in the IT field for 4 years (in %)

Source: compiled by the authors according to the dou.ua website of the society of programmers.

the full development of their capabilities, reaching a certain level on the career ladder is also much more difficult for women than for men (taking care of children and home traditionally remains the responsibility of women, and therefore they simply do not have enough time to develop skills and competencies). Military operations in Ukraine further aggravated the situation (Figure 2). Many families were forced to move, experiencing difficulties with housing, material support, and working conditions. A significant part of the women left the country, many were forced to radically change their field of activity. Women's aspirations for self-development and change of profession have also significantly decreased. Many IT resources opened and made their training courses free of charge for residents of Ukraine, but the following became obstacles to using these opportunities: the lack of a financial cushion, the inability to have a main job, power outages.

In Ukraine, the number of women who work in technical positions is declining, especially at the senior level and above. Women are twice as likely as men to name an open-minded team as one of the reasons for choosing a career in IT – 39% versus 20%. The most popular roles among women are HR, QA, Software Engineer. Among students these are Junior Software Engineer, Software Engineer, Junior QA.

Women and men are almost equally interested in high salaries – 60% and 64% respectively. In general, among IT-specialists in Ukraine, 70% of juniors made their choice in favor of this activity precisely because of the high income (as one of the reasons), and among senior and lead such specialists – 53%.

Analysis of the companies active in the IT field shows that in 2020, compared to 2019, the share of product companies increased significantly – from 28 to 35%. The share of outsourcing is 45% (DOU, 2020). In recent years, there have been al-

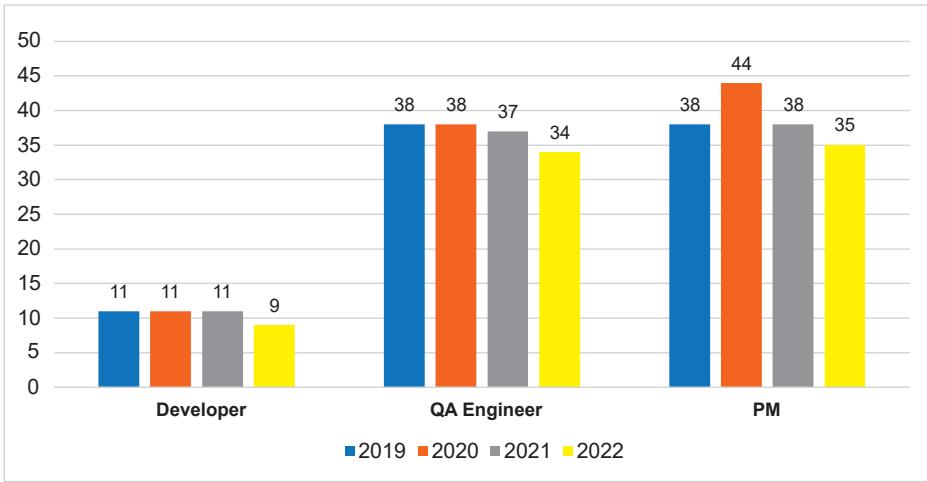

Figure 2. Dynamics of changes in the share of women in the total number of specialists (%)

Source: compiled by the authors based on data from the society of programmers (State Statistics…, 2023).

most no changes in the types of companies: 44% of specialists work in outsourcing companies, 35% in grocery, and 21% in start-ups. In outsourcing companies, the situation with gender balance is better – here the share of women reaches 28%. While in product companies and start-ups it is 23% and 22%, respectively.

87% of women in IT have a higher education diploma, compared to 82% of men. However, women are less likely to have higher education, which is associated specifically with programming – 41% (61% for men). Another 5% study in higher educational institutions. Most students among Game Developers (15%), Data Science (11%) and Security (9%) specialists, as well as developers (6%). Approximately 2% of IT professionals have a PhD, with higher numbers among Hardware Engineers (9%), Data Scientists (7%) and CTO/SEA (6%) (State Statistics…, 2023).

As for stereotypes of expectations from work in the IT field, research shows that the differences are not so significant for men and women. (Kuhn and Joshi, 2009).

Most of the women – Individual entrepreneurs in IT are concentrated in Kyiv, namely – 25%. This distribution occurred because Kyiv is the center of business activity and according to a study by the IT Ukraine association and the Good Regulation Office (BRDO), about half of the industry's companies are registered in Kyiv. Kharkiv, Dnipro, Lvov and Odessa, as traditional business regions, had rather large IT representations, therefore, these regions are also leading in terms of the number of female sole proprietors. According to a study by YouControl specialists, gradual growth also occurs in the western regions (Ucontrol, 2023):

– 43% in Volynskaya;
– 41% in Ivano-Frankivsk;
– 32% in Ternopil;
– 31% in Khmelnitsky.

There are two main reasons for these territorial shifts in the location of IT organizations. The first reason is the spread of business across all regions due to the natural development of the IT sector in Ukraine. The second reason is related to the war on the territory of Ukraine – entrepreneurs from the eastern regions, as well as potentially dangerous regions, are transferring their business to safer regions of the country. After the end of the war, the territorial distribution may again change due to the outflow of IT business to the former territories or those where doing business will be possible.

5. Conclusions

The study showed that the number of women studying technical and mathematical sciences in Ukraine is not inferior to the number of men. However, in their professional careers, women in many cases prefer to take on lower positions, allowing men to take the lead. The main reason for such dynamics is widely accepted stereotypes.

It should be noted that neither employers nor society address this problem. However, this is important for job seekers and limits women's rights to self-realization. Hidden infringement of rights based on gender, which has no tendency to be limited, is potentially dangerous for society. Since at any moment this trend can begin to grow progressively.

The influence of stereotypes on women leads to the fact that women consciously do not want to occupy higher positions in order not to take on such responsibility, even if this guarantees financial benefits. Exposure to the influence of public opinion, fear of possible condemnation by others, and the understanding of their inconsistency with the generally recognized image of a woman in society as a wife and mother, lead to the fact that a woman sacrifices her desires and talents, concentrating on those professions and positions that will maximize her time for housekeeping and family care. This stereotype is actively fed, therefore, in order to reduce the effect of its impact, it is necessary to change the attitude and norms of society in assessing women and their place in modern Ukrainian society, in understanding the rights and opportunities of women who go beyond the boundaries accepted now.

The influence of stereotypes on men is expressed in the fact that, as employers, they are consciously and unconsciously somewhat biased against hiring women in certain areas of the IT field. There is disbelief in the knowledge and abilities of a woman, doubts about her conscientiousness and dedication to work. As a result,

women's resumes are initially treated somewhat differently than men's, that is, signs of discrimination can be detected even before a real interview, which allows you to evaluate a specialist more fully than after reading the resume. There are ways to eliminate bias at the stage of application and resume review – "blind" review, which will give a more effective result if the employer focuses on the professional qualities and abilities of candidates. Moreover, if at this stage the applicants are at the same level, then in the same way "blindly" you can assign test tasks for professional suitability as an indicator of future results in work. In Ukraine this method is not widespread enough, which leads to deliberate bias in hiring.

Problematic issues remain regarding the ways and means of monitoring the situation when hiring. It is the task of the state to introduce and stimulate the use of methods that can balance the rights of men and women when hiring. It would also be necessary to express the position of gender equality more clearly.

References

Barfield, R. (2021). Computer programing: A brief history. *Bricsys*. Retrieved May 10, 2023, from https://www.bricsys.com/blog/computer-programing-a-brief-history.

Bidenko, Yu., Kyselova, V. (2017). Henderna polityka v Ukraini: skladnyi shliakh vid deklaratsii do pozytyvnykh dii [Gender policy in Ukraine: A difficult path from declarations to positive actions]. Retrieved May 10, 2023, from http://hvylya. net/analytics/society/genderna-politika-v-ukrayini-skladniyshlyah-vid-deklaratsiy-do-pozitivnih-diy. Html.

Cruz, C., Keefer, P., Scartascini, C., (2021). *The Database of Political Institutions 2020.* Washington, DC: Inter-American Development Bank Research Department. https://doi.org/10.18235/0003049.

Dabić, M., Vlačić, B., Obradović, T., Marzi, G., Kraus, S. (2021). Women in engineering as a research topic: Past, present, and future. *In IEEE Technology & Engineering Management Conference – Europe (TEMSCON-EUR)* (1–6). Dubrovnik: IEEE. https://doi.org/10.1109/TEMSCON-EUR52034.2021.9488596.

DOU. (n.d.). Retrieved May 10, 2023, from https://dou.ua/.

Kuhn, K., Joshi, K. (2009). The reported and revealed importance of job attributes to aspiring information technology: A policy-capturing study of gender differences. *The Data Base for Advances in Information Systems*, 40(3), 40–60.

Panteli, A., Stack, J., Atkinson, M., Ramsay, H., (1999). The status of women in the UK IT industry: An empirical study. *European Journal of Information Systems*, 8(3), 170–182. https://doi.org/10.1057/palgrave.ejis.3000326.

Kenny, E., Donnelly, R. (2020). Navigating the gender structure in information technology: How does this affect the experiences and behaviours of women? *Human Relations*, 73(3), 326–350.

Klymenko, M.V. (2021). Henderna rivnist u trudovykh pravovidnosynakh: pytannia sohodennia [Gender equality in labor relations: Today's issue]. *Aktualni problemy derzhavy i prava*, 90, 77–82.

Nielsen, S., Hellens, L., Wong, Sh. (2000). The women in IT project: Uncovering the pride and prejudices. In *Proceedings of the 6th Australian Women and Computing Workshop* (45–55). Brisbane: Griffith University.

State Statistics Service of Ukraine. (2023). Retrieved May 10, 2023, from https://www.ukrstat.gov.ua.

Ucontrol. (2023). Retrieved February, 15 2023, from https://youcontrol.com.ua.
World Economic Forum. (2020). World Economic Forum Annual Meeting. Retrieved from https://www.weforum.org/events/world-economic-forum-annual-meeting-2020.

Ekonomia — Wroclaw Economic Review 29/3 (2023)
Acta Universitatis Wratislaviensis
No 4193

https://doi.org/10.19195/2658-1310.29.3.9

Tatyana Oklander
ORCID: 0000-0003-3955-9808
Odessa State Academy of Civil Engineering and Architecture
oklander@odaba.edu.ua

Anastasiia Pandas
ORCID: 0000-0002-8364-4180
Odessa State Academy of Civil Engineering and Architecture
pandas@odaba.edu.ua

Using digital tools in the context of female dominance in the real estate market

Date of submission: 05.06.2023; **date of acceptance:** 30.09.2023

JEL classification: J50, L74, O18, R31

Keywords: real estate market, women, marketing activities, digital tools

Abstract

For society, women's work is an important reserve necessary for the effective development of production. Negative trends related to female employment have a detrimental effect on the country's demographic situation, as well as on social relations. Statistics show that it is women who experience the most problems in terms of career growth and professional development. The volume of job offers for women is characterized by a much narrower professional range, and the average salary level is lower. In addition, a woman's chances of losing her job are always higher than those of men. However, the digital economy provides new employment opportunities for women. Working in real estate combined with digital tools increases female employment and equalizes income levels between men and women. The purpose of the article is to study the state of use of digital tools in the field of real estate, as an important component of increasing the efficiency of the work of real estate agency personnel.

1. Introduction

In the last few decades, the industry has witnessed a significant increase in the number of women who have joined the workforce and become independent in their careers (Jonsson, 2022). Analyzing global employment trends in the real estate market, according to data, in 2021, 65% of those working in the real estate sector were women (Realtors, 2022). Women are particularly attracted to flexible working hours in real estate and opportunities spend more time with your family. According to Work.ua, excluding the IT sector, the highest levels of average salary in Ukraine are in real estate (Work.ua, 2022). The staff of real estate agencies in Ukraine is dominated by women. This is due to a number of reasons:

– Women are "professional" buyers, which allows better work with arguments in favor of the purchase.

– Women are better emotionally "attuned" to customers, so they work better with customer comments.

– A flexible working schedule in Ukrainian realities encourages women to choose work in the real estate sector.

– The advent of the Internet and digital tools increased the number of women employed in real estate.

Next, we will consider the state and trends in the development of the real estate market in Odessa and the opportunities that the digital economy provides for work in the real estate sector. The Internet is a highly effective communication tool for the promotion of real estate agencies, the task of which is to gain the trust of more customers. Every year, real estate agencies use Internet marketing tools more and more: they conduct advertising campaigns, sell products and services through websites, and develop social networks. The adoption of technologies such as data analytics, artificial intelligence, machine learning, and robotics transform operations (Piazolo and Dogan, 2021, 80). New digital technologies offer new solutions to increase the efficiency and productivity of real estate activities (Ionascu and Anghel, 2020, 372).

2. Study area

The Ukrainian e-commerce market and the Internet sector in general show high growth rates. The number of people who trust the Internet resources is increasing, analysts boldly predict that by 2040, 95% of all purchases in the world will be online.

Figure 1 presents the current situation in the world of e-commerce.

Therefore, the understanding that those companies that actively use the Internet in their activities receive a number of undeniable competitive advantages is becoming increasingly clear and tangible:

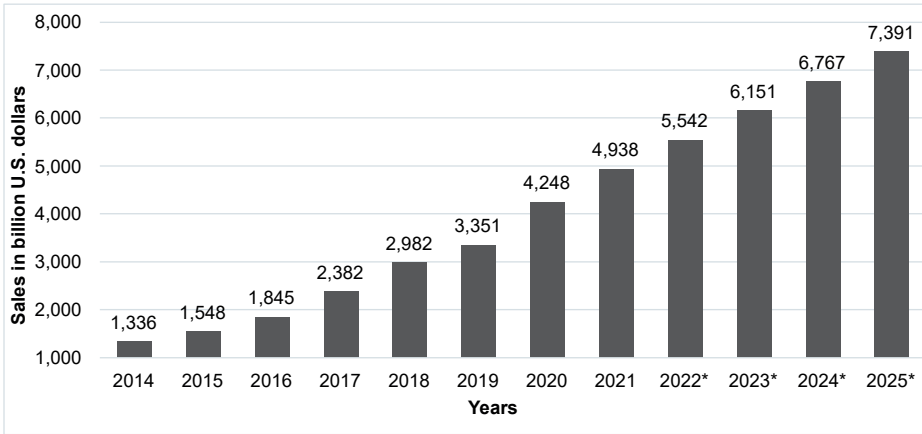

Figure 1. Dynamics of global sales volumes on the Internet for the period 2014–2023. Note: * 2022–2025 – forecast values

Source: Statista, https://www.statista.com/.

– New channels of interaction with consumers, the use of which is directly related to successful functioning in the future.

– Obtaining information about the target audience. An increase in the audience, including from other regions.

– Access to consumers who can only be found on the Internet (who did not notice offline advertising or saw it, but contacted the company only after studying the website).

– Increasing brand recognition.

– Reduction of customer service and retention costs.

Running a large-scale business in today's environment is difficult. After the full-scale invasion of Ukraine by the Russian Federation and the declaration of martial law, the real estate market fell by almost 80%. The demand dropped a lot, and the registers were closed. Gradually, this trend changed. Ukrainians are still interested in buying housing, but the requirements have changed a lot now.

Nowadays, the main requirement of apartment buyers is that the housing is located far from military infrastructure, airports, etc. The number of requests for housing outside the city also increased.

At the beginning of May, construction companies began to return to work. Experts have already observed the resumption of work at more than 400 residential complexes in the country: 65 construction sites were working in Kiev, and 45 in Odessa. In addition, work has restarted in Cherkasy, Dnipro, Zaporizhzhia, Poltava, Kremenchuk, and Uman.

3. Research methodology

The methodological and theoretical basis of research on the state of use of digital tools in the field of real estate was made by marketing research. In particular, the following was conducted:

– Research on the state of e-commerce in the world.

– Overview of price dynamics in the real estate sector.

– Analysis of the proportion of women in the staff of real estate agencies.

– Analysis of the main indicators of activity and formation of the rating of real estate agencies using the Google Maps service.

– Carrying out a technical audit of websites using the Marketing Grader service based on the following indicators: website and individual pages loading speed, performance, security, and usability of websites.

– Assessment of real estate agency activity in social networks.

4. Analysis of research results or scientific problem

4.1. Introduction to the research objects

For buyers, the choice of a real estate agency is a responsible step, which may affect the success of the purchase agreement or the search for an object. To analyze the use of digital tools in the work of real estate agencies in Odessa in 2022, we selected four agencies. The main selection criterion was the number of female agency employees. Those agencies where the share of female employees was higher than 80% were selected. The rating of these agencies was compiled according to the following criteria:

– Date of foundation of real estate agency.

– Work experience of realtors.

– Customer feedback and Google Maps rating.

– Real estate objects in the company's database.

– Informativeness of the site.

– Availability of additional services.

On the basis of these criteria, the agencies of Odessa were rated in the following order:

1. Real Estate Agency "First Realtor Company".

2. Real Estate Agency "Premier".

3. Real Estate Agency "Pivdennyy-Zakhid".

4. Real Estate Agency "Oleksandr-N".

Agency "First Realtor Company" – the proportion of female employees is 91%. It is one of the oldest on the Odessa market, was founded in the fall of 2002 and since then has been continuously providing real estate services to its clients

at a highly professional level. The company is improving its business by focusing on the needs of the client and the changes taking place in the market and society. During its existence, "First Realtor Company" has mastered the specifics of work in all segments of the real estate market.

From the list of objects in the agency's database for purchase and rent, you can find: apartments, industrial premises, offices, cafes, restaurants, plots of agricultural land, and many other types of real estate. They provide services for identifying investment opportunities, preparing investment proposals, and expert evaluation of any assets.

Agency "Premier" – the share of female employees is 82%. The company has also established itself as a successful real estate agency on the Odessa market. The date of establishment is considered to be January 12, 2009, since then many branches of the company were opened in all districts of Odessa, as well as near Chornomorsk. In this way, any client can access the office in a short time, which is also an advantage.

The company employs a large staff of female professionals with many years of experience in real estate. Specialists will be able to quickly solve the tasks of both the real estate direction (searching and offering a real estate object) and the legal one (verifying property documents and their history, preparing property documents for sale, preparing documents for a transaction, etc.).

Successfully solving the diverse tasks of clients, the company's employees have already won a strong reputation among the residents of Odessa and other regions. In the company's offices, the client is provided with many photo materials of the objects, their planning, and legal documents for the objects, which allow the client to choose a high-quality object while saving time. The "Premier" company cooperates with various state and private organizations whose activities are related to real estate.

Agency "Pivdennyy-Zakhid" – the share of female employees is 87%. The company has 25 branches in the city of Odessa and the region, the website presents more than 37,000 real estate objects of various types (residential and commercial premises), more than 1,800 successful deals on the purchase and sale of real estate have been conducted. Over a long period of work, "Pivdennyy-Zakhid" has established itself as a proven and reliable company in the market and rightfully entered the selection of real estate agencies.

A wide range of services is provided, including assistance in selling, buying, renting real estate, advertising residential complexes, legal advice, cost estimates, and many others.

"Oleksandr-N" – the share of female employees is 84%. The agency is one of the veterans of the Odessa market – it has been operating since 1994. In 2011, the company updated its logo, which is now designed in the form of a crystal, symbolizing purity (honesty), multifacetedness, and stability. Among the proposed

objects you can find: apartments, houses, new buildings, commercial real estate, and land plots for various uses.

4.2. Analysis of a digital tool – website

The paper analyzed the usability of selected real estate agencies' websites. We suggest starting the usability analysis with "First Realtor Company". Based on 86 customer reviews on the Google Maps service, the agency has a rating of 4.9 out of a maximum 5, not including many positive reviews on other resources. In fact, it indicates the high trust and successful deals concluded with the help of "First Realtor Company".

With the help of Marketing Grader service we will perform a technical audit of the website of the real estate agency "First Realtor Company", which aims setting measures to improve the performance of the web resource, promotion, and the sales increase.

The lowest indicator of the technical audit of the website "First Realtor Company" is productivity. Optimizing the website performance is critical to increase traffic, conversion rates, leads, and revenue. It is possible to make pages lighter by removing or compressing heavy content such as images and videos.

The next indicator in the technical audit is security. Users and search engines prefer secure websites. A secure website should be equipped with an SSL certificate and be free from threats. It would be appropriate to remove JavaScript libraries or update them with a security patch.

The optimal time for loading a website is 2–3 seconds, and the speed of loading the "First Realtor Company" website is 29.2 seconds. This error must be corrected quickly, because if the number of errors exceeds a certain threshold, there is a high probability that the search engine will apply a filter to the site, which will cause its position in search engines to deteriorate.

It is recommended to improve a website mobility by optimizing interactive elements (such as links and buttons) to be at least 8 pixels apart, at least 48 pixels wide and 48 pixels high so that mobile users can click on them.

Although the Internet speed of most providers in Ukraine exceeds 100 Mbit/s, and mobile operators are developing 5G, the issue of site loading speed remains relevant. This parameter has a significant impact on conversion, bounce rate, attendance, and other important business performance indicators. Because, other things being equal, users will choose the website that loads faster and does not make them wait. The design of the website is inextricably linked to the concepts of UX – the degree of ease of working with the site and UI – visual design. The design of the "First Realtor Company" website conveys information to users in the most pleasant and convenient way. Simple and clear design and structure of the website, the images containing a single proposal with high resolution and contrasting colors.

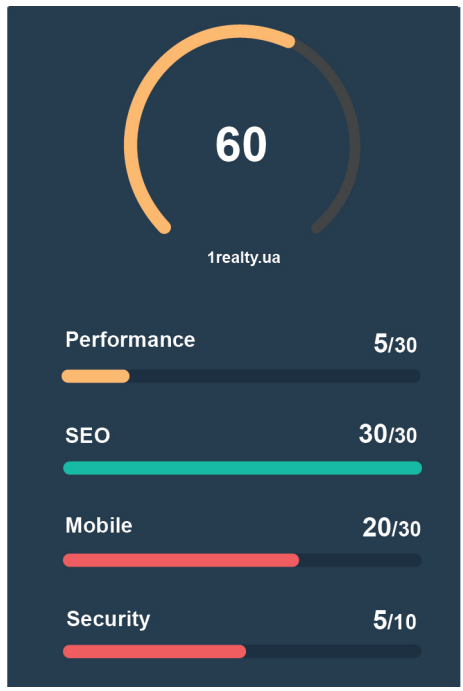

Figure 2. The results of checking the site of Real Estate Agency "First Realtor Company" using Marketing Grader

Source: authors' review based on Marketing Grader service.

One of the reasons why "visually light" websites are considered more beautiful is because low complexity doesn't require our eyes and brains to work as hard to decode, store, and process information. Real Estate Agency "First Realtor Company" does not have accounts (pages) in social networks. This is a significant miscalculation in the company's activities, since no Internet resource can match the popularity of social networks. With a competent approach, networks can be the most effective advertising field and the best assistant while promoting the services.

With the help of social networks, it is possible not only to strengthen the position of the company, but also to build it anew. This agency uses Viber, Telegram, WhatsApp to communicate with the audience.

Subsequently, with the help of the Marketing Grader service, a technical audit of other researched real estate agencies was carried out. The maximum positive assessment of the first three indicators is 30 units, the last one is 10, and the technical audit is 100 in total. The results of the technical audit are presented in Figure 3.

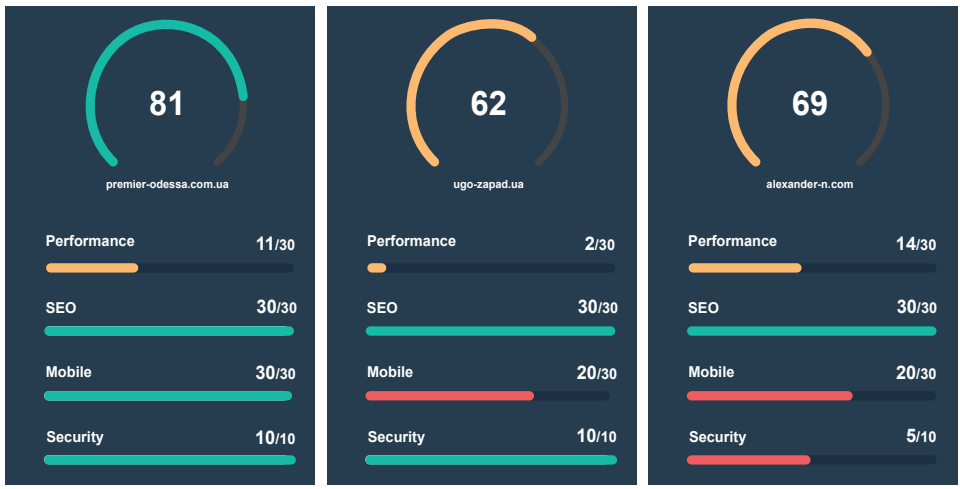

Figure 3. Results of the technical audit of Real Estate Agency "Premier", "Pivdennyy-Zakhid", "Oleksandr-N" in Odessa for 2022

Source: authors' review based on Marketing Grader service.

One of the key indicators of the technical audit is safety, the lowest in the company – "Oleksandr-N". This indicator is important for the real estate business, since the activity of the company depends quite significantly on information technologies (Oklander, 2018, 87). Hacking, data leakage, and failure of key systems lead to both financial and reputational costs. It is necessary to reduce risks by implementing basic information security processes in development, testing, and system administration.

The next low-rated indicator is productivity. We can assume that the low rate is related to the use of media content of the same format without optimization for different screen sizes (Figure 4).

In the next figure, we will check the loading speed of the websites and their individual pages using the Pingdom Website Speed Test service.

The worst indicator of the speed of loading the website and individual pages is the real estate agency "Pivdennyy-Zakhid" – 29.6 seconds, because according to Google, 53% of users leave the website if it does not load within 3 seconds. Also, the loading speed has been a ranking factor since 2010. The best, but not optimal, download result at "Oleksandr-N" was 10.1 seconds; "Premier" – 10.1 seconds. The general assessment of the technical audit in real estate agencies is almost the same – 60–70 units. The best indicator in "Premier" is 81.

At the stage of visual analysis of the site, we will pay attention to practicality, modernity, navigation and the use of emotional techniques.

Information on the web resources of the companies "Southern Zahid" and "Alexandr-N" is presented in Russian. Since on July 16, 2022, the next norms of the law "On ensuring the functioning of the Ukrainian language as a state" came

Figure 4. Loading speed of the website and individual pages of Real Estate Agency "Premier", "Pivdennyy-Zakhid", "Oleksandr-N" in Odessa for 2022

Source: authors' review based on Pingdom Website Speed Test.

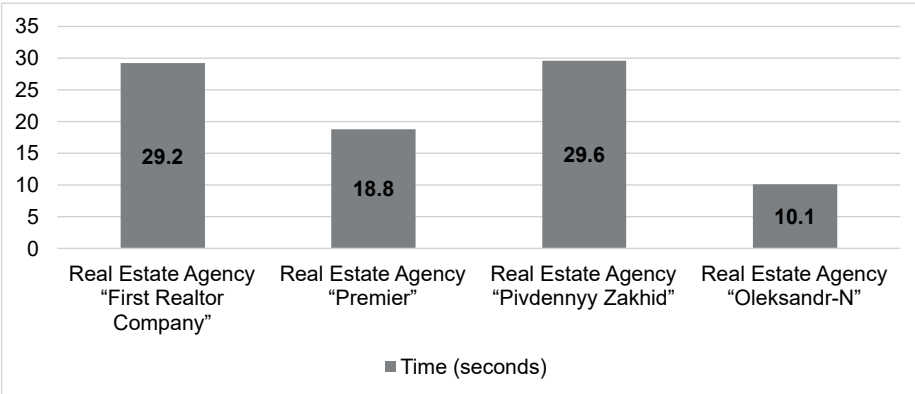

Figure 5. Summary diagram of site loading speed and individual pages of selected real estate agencies in Odessa for 2022

Source: authors' representation.

into force, which relate to the use of the language on the Internet and the language of computer program interfaces, the Ukrainian version should be the main one. Many Ukrainian companies have left the Russian-language version with the possibility of switching to it, but it is not a priority, as before. In this regard, it is necessary to instruct the programmer of these companies to make the Ukrainian version of the website the main one. This way, all users who visit the website will get to the Ukrainian version. The most important thing is to correctly translate the content and all blocks of the website, as well as to provide search engines with links to alternative versions of the pages. It is worth noting that only the website

of real estate agency “First Realtor Company” has an English version, which is a very useful advantage.

The websites of “Pivdennyy-Zakhid” and “Oleksandr-N” are similar in design. They both use a lot of “empty space” to avoid cluttering pages and posts. Empty white and light blue spaces help create open areas of the site and are not confusing to visitors. Overall, a cleaner aesthetic helps users easily find what they’re looking for as soon as they land on the site. Only “Pivdennyy-Zakhid” uses this design strategy to their advantage by directing users to the “Subscribe” or “Buy Now” buttons using white space.

The content of the web resources of “Pivdennyy-Zakhid” and “Oleksandr-N” is filled only with advertising texts that do not inspire trust in visitors. It is advisable to use reliable expert content, which fully presents all advantages and disadvantages of the company, encouraging cooperation. Google ranks high the websites with the highest quality content.

There is no navigation on the website of the company “Olexandr-N”, which creates a negative impression on the behavioral factors of visitors. The web resource of the real estate agency “Premier” is quite modern and convenient. The header and footer of the website are consistent to increase the company’s level of recognition. Consistently using the same headers and footers on your website is a great way to make an impression on your users. This is especially useful when the company logo is included in one or both of the site’s content areas. This important element of the project’s identity is key to creating brand recognition.

It’s important to have clear navigation and search features to help visitors find what they need. This site has dozens of pages, but it is easy for users to find what they need. Visitors come to the site for a reason, and if they can’t find what they came for, in most cases they simply leave the website. That is why clear navigation is necessary. In addition, the website search function can help you quickly find messages or pages anywhere on the site. Real estate agency “Premier” shares the history, mission and values of the brand to create a sense of trust and loyalty among users. This can give them an edge over the competition, as people are more likely to stick with brands that share their values.

Another great feature of the “Premier” website is easy access to the company’s contact information, such as address, phone number, and email. However, there is also a contact form that allows users to contact the company by filling out a short form.

This form is displayed in the sidebar of the website for quick access. In order to increase the number of conversions, the company simplified user conversion as much as possible. On every page of the site there are buttons: “Subscribe”, “Register” or “Buy now”. Buttons were added to the block editor without the need for a plugin or user code. It makes it easy to add actionable and converting elements for your mailing list, subscription.

During the research, it was found that the semantic core of web resources of Odessa real estate agencies has two features:

– Agencies work in the same region. This allows to localize and gather interested users. Supplement the core with relevant geo-dependent queries.

– There is a very high level of competition in this industry, so low- and medium-frequency queries are used as the basis of the semantic core.

4.3. Analysis of a digital tool – social networks

We will conduct a detailed review and analyze the level of activity of publications to determine the best in terms of content and usability of real estate agencies in social networks according to the following scale:

– 10 (high) – daily or several times a week.

– 5 (medium) – once a week.

– 1 (low) – once a month.

Table 1. Activity in social networks of real estate agencies in Odessa in 2022

Real estate agency name	Facebook		Instagram	
	Publications	**Active**	**Subscribers**	**Active**
Real Estate Agency "First Realtor Company"	–	–	–	–
Real Estate Agency "Premier"	375	1	215	5
Real Estate Agency "Pivdennyy-Zakhid"	1,900	10	300	5
Real Estate Agency "Oleksandr-N"	237	5	21,400	5
Average value	838		7,305	

Source: authors' review.

The largest number of subscribers at "Oleksandr-N" is 21,400. There is a high activity of publications of the studied companies on the Facebook social network, on average the largest number of subscribers on the Instagram network. As mentioned above, "First Realtor Company" ignores social networks, we consider this a mistake, because it is in social networks that the target audience spends several hours a day. It is appropriate to consider that social networks have gone beyond the limits of a local trend and turned into an essential item. The main reason lies primarily in the constantly growing number of social networks and their effectiveness.

With the help of the online tool (SimilarWeb), an analysis of traffic in social networks was carried out to determine the best in terms of content and usability of real estate agencies (Table 2).

Table 2. Comparison of social network traffic of real estate agencies in Odessa for 2022

Name	Traffic	Facebook	Instagram	You Tube	Viber	Telegram	Tik Tok	Others
Real Estate Agency "First Realtor Company"	4.1K	–	–	–	2.17%	1.89%	–	–
Real Estate Agency "Premier"	110.5K	41.85%	35.01%	2.91%	0.07%	1.11%	–	8.05%
Real Estate Agency "Pivdennyy-Zakhid"	60.0K	19.70%	67.42%	8.07%	4.70%	2.39%	–	4.30%
Real Estate Agency "Olek-sandr-N"	75.9K	64.90%	38.67%	–	5.09%	6.31%	–	3.19%
Average value		42.15%	47.03%	3.67%	3.00%	2.92%	–	5.18%

Source: authors' representation based on SimilarWeb.

The distribution of average traffic values in the form of a diagram is presented in Figure 6.

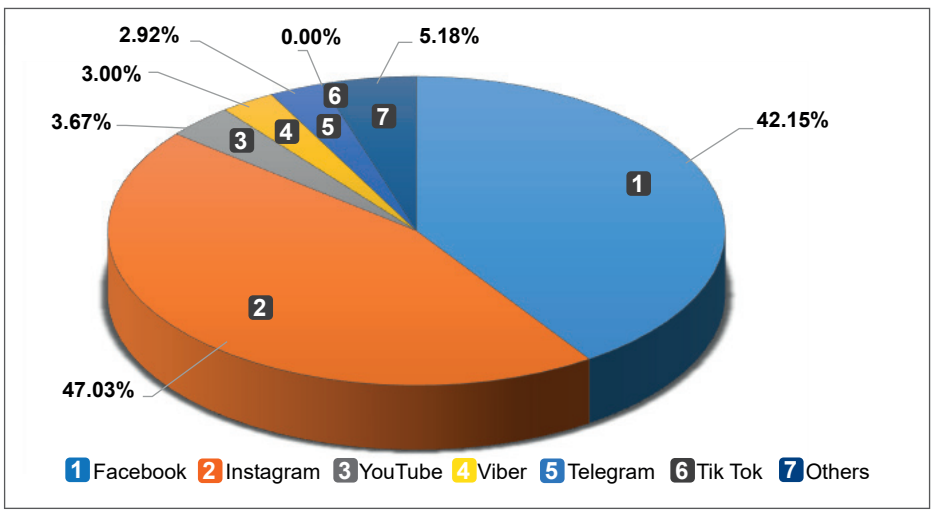

Figure 6. The distribution of average traffic values in social networks

Source: authors' representation.

5. Conclusions

Real estate agencies are a significant source of employment for women. The use of digital tools increases the efficiency of such companies and expands women's employment opportunities. Optimizing the digital toolset is therefore an important challenge for entrepreneurship in this sector.

Real estate agencies use a mixed ratio format of 50% commercial information and 50% useful content, which in turn almost equally divides the average traffic of effective published information between Facebook and Instagram social networks. It is also advisable to develop YouTube and Tik Tok for more engagement.

The direction of the content of social networks differs in terms of content from web pages, as it has a different format for presenting information. If the uniqueness of the text, its volume, presentation style plays a big role for the site, then for social networks the visual design comes to the fore. Graphical content is a priority here. In the same way as on websites, social networks use informative, entertaining and selling content. But the design format is shifted to visual and graphic features of perception.

It can be noted that we observe regular placement of publications in the Real Estate Agency "Pivdennyy-Zakhid" on the Facebook social network. Real Estate Agency "Premier" uses an outdated style of design of visual content, which has very poor engagement and activity of subscribers. The Real Estate Agency "Oleksandr-N" Instagram page attracts attention with high-quality content and professional photos.

The topic of real estate is very large and diverse, but the investigated companies are limited to thematic news columns and reviews of ready-made objects. It is necessary to increase the engagement of content using storytelling and pay special attention to video content.

So, first of all, modern conditions of the real estate market are globalizing and intensifying competition, and in order to maintain positions, companies need to use innovative information business technologies, in particular, effective Internet marketing. Secondly, the analysis of the usability of web resources and social networks made it possible to identify and evaluate the convenience of interaction with behavioral factors of users of Internet resources. It will be easier and more pleasant for the client to interact with those sites that take into account all current rules and standards of usability.

Communication with customers in social networks is a powerful tool for marketing research, namely working with reviews, studying purchasing demand and audience. Marketing research conducted online allows you to characterize the external environment, understand how the market is developing, evaluate consumer behavior and competitor strategies. In the process of research, it was found that some companies neglect this tool, although in order to effectively promote their

business in their space, it is necessary to constantly analyze the received information.

Online communication channels make it possible to be closer to the client, to satisfy the needs of the audience faster, to convey information in a convenient and understandable form. Today, this is the most effective medium of communication: through a PC, social networks or a smartphone. Such a portal will be intuitive, easy to use, and, accordingly, will contribute to the growth of the number of users, increase the level of search results, etc. All user factors work to improve the site, gradually bringing the fruits of success to its owners.

Therefore, trusted real estate agencies conduct and develop effective online advertising, regularly update and maintain it. This contributes not only to an increase in the company's profit, but also increases brand recognition and the stability of the company's operation.

References

Google Maps Platform. (2022). *Google Maps*. Retrieved December 18, 2022, from https://www.google.com/maps.

Ionascu, E., Anghel, I. (2020). Improvement of the real estate transparency through digitalisation. *Proceedings of the International Conference on Business Excellence*, 14(1), 371–384.

Jonsson, R. (2022). Women in real estate around the world. *Adfenix*. Retrieved January 19, 2022, from https://www.adfenix.com/post/women-in-real-estate-around-the-world.

Marketing Grader. (2022). *Marketing Analysis Tool*. Retrieved December 10, 2022, from https://marketing-grader.com/.

Oklander, M., Oklander, T., Yashkina, O., Pedko, I., Chaikovska, M. (2018). Analysis of technological innovations in digital marketing. *Eastern-European Journal of Enterprise Technologies*, 5(3), 80–91. https://doi.org/10.15587/1729-4061.2018.143956.

Pauli, K. (2014). *Gender Structures in the Real Estate Industry.* Stockholm: Universitetsservice US-AB.

Piazolo, D., Dogan, U.C. (2021). Impacts of digitization on real estate sector jobs. *Journal of Property Investment & Finance*, 39(2), 47–83. https://doi.org/10.1108/JPIF-09-2019-0125.

Pingdom. (2022). *Website Speed Test Service*. Retrieved December 18, 2022, from https://tools.pingdom.com/.

SimilarWeb. (2022). *Website Traffic Analytics*. Retrieved December 15, 2022, from https://www.similarweb.com/.

Statista. (2022). *Dynamics of Global Sales Volumes on the Internet for the Period 2014–2023*. Retrieved December 10, 2022, from https://www.statista.com/.

First Realtor Company. (2022). *Data about Real Estate Agency "First Realtor Company"*. Retrieved December 15, 2022, from https://1realty.ua/.

Premier. (2022*). Data about Real Estate Agency "Premier"*. Retrieved December 15, 2022, from https://premier-odessa.com.ua/ua.

Pivdennyy-Zakhid. (2022). *Data about Real Estate Agency "Pivdennyy-Zakhid"*. Retrieved December 15, 2022, from https://ugo-zapad.ua/.

Oleksandr-N. (2022). *Data about Real Estate Agency "Oleksandr-N"*. Retrieved December 15, 2022, from https://alexander-n.com/.

Realtors. (2022). *Women in Real Estate*. Retrieved December 10, 2022, from https://www.nar.realtor/women-in-real-estate.
Work.ua. (2022). *Data from Work.ua*. Retrieved December 1, 2022, from https://www.work.ua/.

Ekonomia — Wroclaw Economic Review 29/3 (2023)
Acta Universitatis Wratislaviensis
No 4193

https://doi.org/10.19195/2658-1310.29.3.10

Aleksandra Sztuk
ORCID: 0000-0002-1845-0363
Wroclaw University of Economics and Business
aleksandra.sztuk@ue.wroc.pl

Essential elements of a city offer addressed to digital nomads: The perspective of territorial marketing

Date of submission: 31.05.2023; **date of acceptance:** 08.09.2023

JEL classification: M31

Keywords: city marketing, city offer, digital nomads

Abstract

The digital nomad lifestyle has become one of the fastest-growing trends in the labor market in recent years. Digital nomads, people settling in a city as its residents for several months before changing their location again, are active consumers of the city's offer, which profits the host territorial unit. This specific group of customers requires designing a separate communication of the city offer, increasing the probability of choosing a given city as the next destination. The article aims to identify the significant elements of the city's offer from the perspective of digital nomads. These data were collected based on the literature (scoping review method) and then summarized. The author identified key aspects related to the expectations of nomads towards the destination and the barriers encountered during the stay.

1. Introduction

The changes in the modern world resulting from globalization, related to the development and availability of means of transport and digital technologies, have affected the popularity of a new trend in the labor market, which is digital nomadism (Fibingier, 2021). Individual issues also influence the growing popularity of digital nomadism: internal desire for higher individualization and the autonomy of action (Hannonen, 2020). Digital nomads are one of the newest and, at the same time, rapidly expanding external groups of city users who are active consumers of the city's offers while staying in a given destination. Nowadays, territorial units

compete by developing infrastructure, technology, acquiring various resources and stakeholders who invest their capital in the city. Therefore, a local government trying to attract nomads as customers and designing an offer to meet their expectations may increase the city's profitability and competitiveness. By settling in a given territorial unit, digital nomads share their knowledge and experience, support the tourism industry, can be one of the indicators for the development of the city, and additionally affect the reputation of the place because they spread the value and image of the city in the world among others, thus increasing awareness (Mladenović, 2016). As the latest research implies, digital nomads are exceptionally active on social media, promoting this lifestyle and thus popularizing the destinations they visit (Bonneau and Aroles, 2021).

Due to the relatively new but rapidly developing phenomenon of digital nomadism, it is necessary to identify and summarize the essential requirements and expectations of digital nomads toward destinations. Data on this subject can significantly increase the efficiency in designing and communicating the city's offer, influencing the decisions of digital nomads regarding the choice of the destination city.

In this paper, based on the review and summary of research, the author answers the question: What information should cities contain in their offers to increase the interest of digital nomads? In order to address this question, two additional should be answered: What are the expectations and needs of digital nomads regarding the destination, and what barriers do they face in destination cities? The explored phenomenon is referred to cities in the paper because research among digital nomads shows that the vast majority of them (95%) prefer cities to rural areas as their destination (Sztuk, 2023).

Remote work mode is not only one of the labor market trends, but also the future of the global labor market (Vagena, 2021), and the group of digital nomads is another target segment of the city that affects its profitability and development. It is predicted that within ten years, the number of digital nomads will exceed one billion (Hatalska, 2017). The COVID-19 pandemic has particularly stimulated the interest and popularity of testing the digital nomad lifestyle (De Almeida et al., 2021). The trend of remote and nomadic work is projected to increase in the post-pandemic period (Sztuk, 2022).

2. Theoretical framework of the research

Due to the relatively sudden but constantly rising growth of the phenomenon of digital nomadism, this group has aroused interest among scientists, who started researching various aspects of this lifestyle but ignored the issues supporting the development of host places (Gurvičius, 2021). Previous empirical research conducted in this community concerned, among others, identifying motivators to remain a digital nomad and adapting to destinations (Reichenberger, 2017), ethnographic

research on identity (Prester, Cecez-Kecmanovic, and Schlagwein, 2019), activities in the visited place (Thompson, 2019), and much on nomad lifestyle practices, e.g. (Green, 2020). Few studies focus on the typical marketing perspective of nomads as consumers of a territorial unit and on activities aimed at increasing interest in a given city. Nevertheless, some scientists have already identified empirical factors influencing the choice of location (Lhakard, 2022) or the choice due to the favorable environment for carrying out professional duties (Mladenović, 2016). In one of the latest scientific articles, the authors argue the need to implement messages useful for digital nomads into the branding strategy of cities (Silvanto, Ryan, 2023).

This paper aims to identify the information that should be included in their offers by destinations wishing to increase the likelihood of interest and acquisition of the target group of digital nomads. The author assumes that based on the analysis of more advanced research among nomads, it is possible to specify the characteristics of the place that they particularly desire, as well as the barriers in achieving goals related to the use of the city's offer and exploration of local culture. This procedure may allow for developing proposals for the necessary information a given territorial unit may use in communication. Also, it may positively impact its perception and, ultimately, the digital nomad's choice as the next destination. The paper describes the research method and the data collection technique. Next, digital nomads were characterized as consumers of the city's offer, also their expectations and possible barriers to using destinations' offer. Based on the literature review, essential information on destinations from the perspective of digital nomads was indicated.

3. Research methodology

In order to answer the research questions, the scoping review method was used. This type of literature review is recommended for new or newly developed research areas, especially when the descriptions in publications for the researched problem are dispersed (Ćwiklicki, 2020), which is the case of digital nomads in the context of place marketing. At various stages of the literature review, the paper's author noted new aspects relating to the requirements or barriers of destinations from the perspective of nomads, and the analysis of these threads was deepened, which is possible using the scoping review methodology.

In order to collect the research material in the form of secondary data, quantitative and qualitative research, and literature reviews, Scopus, Web of Science reviewed literature databases and the Google Scholar browser were used. The language of papers was limited to English and Polish, in the fields of sociology, geography, management, economics, and tourism, without applying the criterion of the year of publication. At the first stage of the scoping review consisting of collecting materials, the keyword "digital nomads" was used at the TITLE-ABS-KEY level, which brought 176 results in the database; 32 articles were selected after reviewing the abstracts. These were mainly ethnographic studies and research

defining the concepts of digital nomadism and nomad. Then, to cover the scope of the researched issues, the following keywords were used: "digital nomads place/city," giving 28 results in WoS and 22 in Scopus. Finally, the search was narrowed down to the following keywords: "digital nomads branding/place marketing," which gave only two results in WoS. Then, studies were reviewed in which digital nomads carried out activities in the destination, lifestyles, and difficulties were identified and described. Gradually, the researched literature was extended again with issues concerning such aspects as co-working places, establishing and maintaining social relations, residence permits, and work-life balance in the context of digital nomadism.

Articles were qualified for review based on the content of the abstract. Including materials from Google Scholar, 58 scientific papers were analyzed and two master's theses. Based on the synthesis of the collected data, chronologically progressing research in the literature on the digital nomads' requirements towards the features of the city was tabulated, and the most frequently appearing barriers related to the achievement of their own goals, presented by this group in empirical research, were listed. The scoping review ended with presenting the collected materials and a narrative proposal of crucial information about the city's offer addressed to digital nomads.

4. Digital nomads as consumers of the city's offer

4.1. Characteristics of digital nomads

To properly design the city's offer and present it using the proper communication channels, it is necessary to segment the recipients at the beginning properly: define and characterize individual groups.

According to the literature, digital nomads are a group of employees that is independent of location due to the opportunities related to flexibility and mobility offered by digital technologies (Jarrahi et al., 2019). Digital nomads constantly change their residence, living on the income obtained by working remotely. One of the most characteristic features of nomads is constant movement and change of location, where they stay on average for about 1–3 months (Tagliaferri, 2022). Because nomads do not inhabit a given location for an extended period (Schlagwein, 2018), it is not easy to estimate how many there are in the world. According to data, it is about 35 million (Tagliaferri, 2022).

In the case of digital nomads, the habit of traveling and a nomadic lifestyle is often so strong that they cannot imagine staying in a permanent place of settlement (Fibingier, 2021). The most common jobs performed by digital nomads (primarily freelancers) include programming, consulting, marketing, translation, and teaching. Many digital nomads are higher-income Westerners (Bonneau and Aroles, 2021). Most often, these are highly educated people (Green, 2020). The gender

division of digital nomads is proportional, and statistics show that nearly half of all nomads are people aged 30–39 (Digital Nomad Statistics, 2023). The results of empirical studies show that nearly 60% of nomads travel alone, and only 5% of them travel with a family member (Sztuk, 2023). Digital nomads are a community characterized by high entrepreneurship (Jarrahi et al., 2019). Digital nomads maintain relationships and close contact primarily with people who prefer a similar lifestyle, have similar priorities, and understand the need for freedom and discovery (Hannonen, 2020). Below (Figure 1) is a diagram presenting the distinguishing features that identify the segment of digital nomads.

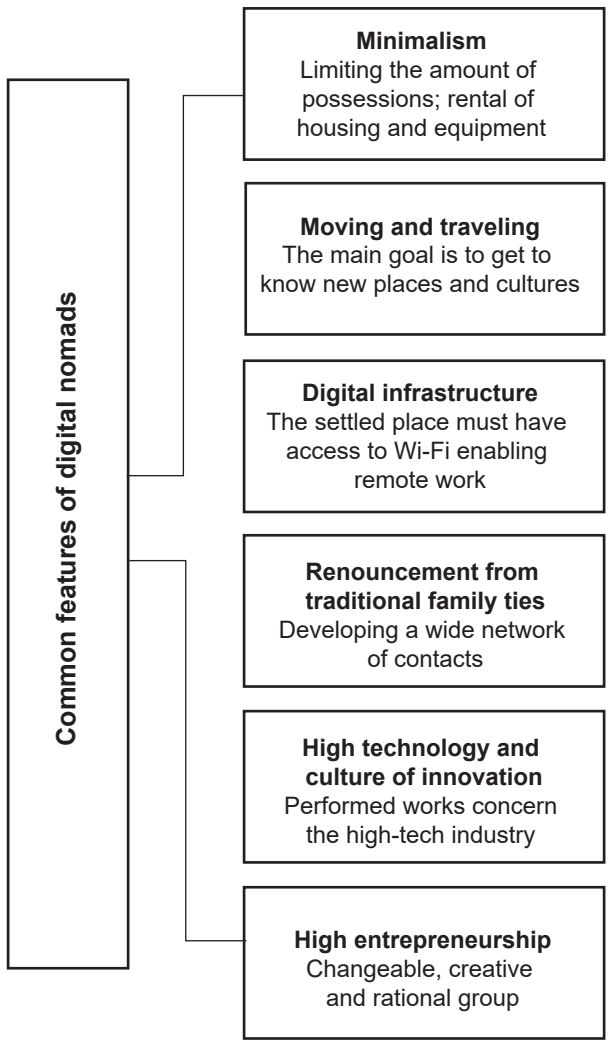

Figure 1. Common features of digital nomads

Source: own elaboration based on: Fibingier, 2021; Bartosik Purgat, 2018; Thompson, 2019.

Depending on the field studied, digital nomadism can be considered a cultural phenomenon, a new type of activity, a type of tourism, a mode of work, but most often, is perceived as a whole lifestyle (Hannonen, 2020; Reichenberger, 2017). Digital nomads can be incorrectly associated with tourists, remote workers, or expatriate workers. In terms of these groups and digital nomads, there are some similarities but also significant differences, so they should not be identified with the above three groups that use the city's resources differently. This is important from the perspective of further verification of their requirements and needs about the place and then designing separate marketing messages. The main difference between tourists and digital nomads is that tourists set specific dates for traveling (Nash et al., 2018) and are usually free from work. Digital nomads also see themselves as more "serious" and engaged in exploring visitors than traditional tourists. Digital nomads are distinguished from average remote workers by the unique value given to global travel, independence from the employer, and extreme mobility (Prester et al., 2019). When choosing a destination, they are not guided by political or economic reasons, as is the case with typical emigrant workers. Digital nomads choose a place based on issues related to getting to know but also rest, not because of the labor market (Müller, 2016).

4.2. Destination expectations

Although digital nomads, as typical consumers of the city's offer, are a poorly recognized problem from the marketing perspective, based on the research, it is possible to distinguish certain aspects relating to various spheres of their activity in the place of destination. The table below (Table 1) presents the attributes of a place presented by scientists as necessary from the perspective of digital nomads.

Analyzing the attributes of a place, which are necessary from the point of view of digital nomads, presented in the literature over the years, it can be seen that the development of research on the issue has contributed to better and broader recognition of their needs. From being perceived as a group of remote workers traveling the world, they have become a group of city users who also need a sense of belonging and security, and a community actively strengthening their identity.

In the majority of scientific papers devoted to the issue of digital nomadism, there is an aspect referring to the infrastructure of the work environment necessary to perform professional duties. Digital nomads often separate their workplaces from their residences, using dining facilities or coworking spaces. In some locations, an increased number of people of various origins working, e.g., in cafes with Wi-Fi access, can be observed (Rakhmadi, 2021). A places frequently used by digital nomads during their stay in a given destination are coworking spaces, which have been evolving for several years and now have a robust segment of potential users (Rakhmadi, 2021). Coworking spaces are fully and modernly equipped office

Table 1. Necessary features of the place from the perspective of a digital nomad

Author	Aim and research method	Place features
Mladenović (2016)	– Concept article – Determination of indicators that explain the place as attractive to work from the perspective of a nomad	– Place availability (public transport) – Enables a positive economic result (travel costs, maintenance permits) – IT infrastructure
Müller (2016)	– Literature review – Description of digital nomads as a research category	– Tourist offer – Cultural offer – Aesthetic values – Possibility of recreation and activity
Bartosik-Purgat (2018)	– Literature review – Presentation of digital nomadism as a trend on the labor market	– Internet access – Low maintenance costs – Overall attractiveness of the place
Appell (2021)	– Literature review – Strategy for the Canadian island towards digital nomads	– Coworking spaces – Developed and fast access to the Wi-Fi – Comfortable and equipped housing – Understandable visa policy
Orel (2021)	– Research note on the example of Thailand – Recognizing the hybridization of the hotel industry and adapting the city's infrastructure to digital nomads	– Access to urban space (allowing to discover the city and feel free) – Security (access to different resources) – Workplace infrastructure (spaces that allow to work and gain contacts in a foreign place)
Lhakard (2022)	– Qualitative research based on in-depth interviews with 11 nomads – Identifying the factors of migration to the destination city Chiang Mai	– Nature and culture – Workplace infrastructure (coworking spaces, fast Wi-Fi) – Size of the digital nomad community in the city

Source: own elaboration based on literature review.

spaces that enable business duties' free and comfortable performance. The idea behind coworking spaces is to provide high-standard equipment but also counteract the feeling of isolation in the case of work performed from home, help to separate work from home, increase creativity, and provide opportunities to establish interpersonal bonds. With the development of research, where digital nomadism was combined with coworking space, scientists show that this infrastructure is critical for nomads in a social and professional relationships context (Appell, 2021).

Due to the frequent change of location of digital nomads, as mentioned earlier, their possessions are limited to the minimum necessary, and they believe that "everything is temporary and nothing belongs to you" (Alkan Bala, 2021, 339). Therefore, apart from co-working spaces (available and used also by permanent residents of cities), accommodation facilities will play an important role – here, in particular, coliving spaces. What distinguishes these places from traditional rented accommodation is complete equipment, lower costs, shared spaces, and the pres-

ence of a manager who organizes various activities and supports the integration of temporary residents. This helps to minimize the feeling of loneliness; additionally, the presence of other nomads strengthens their sense of identity (von Zumbusch and Lalicic, 2020). Flats of this type are for short-term rentals, which is much easier than traditional rental accommodation and cheaper than short-term rented Airbnb facilities. Coliving offers, due to meeting the needs of both residential and those related to social contact and relationships, are popular among nomads (von Zumbusch and Lalicic, 2020).

Another aspect that recurs in research on digital nomads is the desire to develop a network of contacts with other nomads, which is aimed at sharing experiences and help, strengthening the sense of belonging and identity, and reducing loneliness. Some participate in conferences, meetings, and events organized for digital nomads, where they exchange experiences and strengthen their belonging to this community (Thompson, 2019). It is surprising to find in one of the latest studies that digital nomads attach more importance to social aspects than to natural and geographical values, looking for contacts of like-minded people in the place of their destination, which gives them a sense of comfort (de Loryn, 2022). Some consider relationships with other nomads as one of the priorities and reasons indirectly explaining the use of co-working spaces (Schlagwein, 2018). In empirical research involving interviews among digital nomads, the cities they inhabit (European and Asian cities were studied) were a good choice precisely because of the large and active group of digital nomads (Beaumont, 2019; Lhakard, 2022).

4.3. Barriers while staying at the destination

The main barrier to the free movement of digital nomads is the issue of stay policy: visas, residence permits, and access to health and education services. These issues before departure cause uncertainty (Cook, 2023). More countries, to attract nomads, are introducing visa facilities directly addressed to this group (Schlagwein, 2018). These changes are introduced due to the economic value that nomads bring with their stay (using touristic, cultural, gastronomic facilities, etc.). Visa policy addressed to digital nomads, specifying the length of legal stay (usually about a year), has already been introduced, among others, in Australia, Croatia, Estonia, Spain, and Indonesia; in other countries, tourist visas are most often used (Svobodová, 2022). Legal and political issues should be understandable, simplifying organizational and reducing the time associated with searching for and analyzing legal provisions regarding residence in a given country.

Another barrier in digital nomad destinations is establishing closer contacts, which is part of the general need to have and maintain entire networks of inter-

personal relationships, as outlined earlier. Attempts to socialize are often noticed with other nomads and locals and less with tourists (Alkan Bala, 2021). However, despite their attempts to delve into the culture of the destination and local community, digital nomads have problems establishing lasting bonds with residents, directly affecting their lack of feeling as part of the city (Beaumont, 2019). Their active attempts to establish contacts with the local community usually consist of casual social contacts, involvement in top-down social and charity campaigns, and even creating events (Mancinelli, 2020). The mode of work and frequent relocation make it challenging to establish lasting bonds, which results in a frequent sense of loneliness among nomads (Mancinelli, 2020); in particular, single nomads emphasize the importance of building relationships with the community in a given destination (Reichenberger, 2017). While destinations can mitigate these feelings by encouraging nomads to participate in various actions or organizing events targeted at nomads, the local community's attitude can be challenging to change, and the benefits in the form of economic development of the city, including local businesses, are not convincing enough. Local can feel the adverse effects of accepting digital nomads, e.g., overpopulation, resource consumption (Perkumiene and Pranskūnienė, 2019), and conflicts resulting from cultural differences (Capocchi et al., 2019

The next barrier may seem prosaic, but due to the repetition of the problem of the difficulty with maintaining a balance between work and leisure, raised in numerous studies among digital nomads, this aspect will be presented in more detail. Despite changing their location cyclically, the surveyed digital nomads strive for a calm lifestyle while performing their work and having routine activities (Beaumont, 2019). The balance between work and free time is essential to them as a highly autonomous group that values freedom. Among digital nomads, there are internal problems with time management and work-leisure balance (Green, 2020). Some nomads work long hours, depending on the day, and spend the following days as their free time (Bonneau and Aroles, 2021). The work of nomads ensures the continuity of financial resources and thus determines the maintenance of a lifestyle, which is also associated with some pressure. Constantly moving, choosing a destination, and then getting to know the place and adapting to the circumstances negatively affects not only work balance but also eating habits and hobbies, making it difficult to plan and carry out physical activities (von Zumbusch and Lalicic, 2020). Working for clients from different time zones makes it challenging for digital nomads to plan hours for rest while being in a completely new place, and the emotions associated with it negatively affect the focus on work. Daily activities and external services, such as laundry, hairdresser, and commercial facilities, take much more time due to the lack of knowledge of the area (Mouratidis, 2018).

4.4. Essential information about the city's offer addressed to digital nomads

The city's offer and how it communicates with its surroundings are components of visual identification, influencing the perception of the city (Szromnik, 2016). The image (individual perception) is an intangible resource affecting the city's competitiveness (Gosik and Żelazna-Jochim, 2018). Importantly and strategically, from a marketing point of view, the image of a place can be present in the minds of recipients who have never visited a given city (Lynch, 1960). This means that the perception of a place may be influenced by the received and collected information about it and not requires previous physical presence. In addition, the image has a simplifying and supporting function (Łuczak, 2002), which is most often manifested when choosing a city as a destination. Therefore, the offer and its communication are essential in increasing the city's competitiveness.

Although digital nomads are generally perceived as people focused on discovering the culture and identity of the places they visit regularly, the latest literature based on empirical research among nomads implies that they show needs not only related strictly to tourist attributes. The surprising result of the analysis is the socio-psychological aspect, which is the need for real interpersonal relationships with residents and other nomads residing in the place of destination. The desire to stay in touch with the city's residents makes it easier for them to achieve their goal, which is a more profound and better understanding of the culture and specificity of the destination, also giving them a sense of not being isolated from the place where they are staying. Expanding the network of contacts with other nomads results in exchanging experiences, strengthening the identity as a group, and giving support.

It was noticed that individual attributes of a given location could meet various identified needs of digital nomads at the same time, e.g.:

– the presence of coworking/coliving places: they provide digital infrastructure to perform duties and cheaper costs of living, but also allow separating work from home; they can help meet the need for contact;

– city events: introduce people to city culture and provide entertainment while facilitating contact with residents;

– residence regulations: informs about applicable regulations, and if presented transparently and in simple way, it can reduce the feeling of uncertainty;

– the presence of other digital nomads: proves the popularity of the destination and creates the opportunity to establish lasting bonds with people with similar values and priorities;

– city identification system: coherently designed, it is an element of the city's image, facilitates movement, and helps save time in a new location.

The above presented elements are considered vital information about the place from the perspective of digital nomads in light of research. Therefore, it is sug-

gested that cities use messages containing rational and emotional elements in marketing communication with digital nomads. Emotional communication emphasizes values in the message, not just focusing on facts or figures. The purpose of using emotional aspects is to evoke positive emotions and associations about the presented good (Kozłowska, 2012). A skillful combination of rational and emotional content in marketing communication affects the positive result of advertising, i.e., achieving the intended goals in the form of higher consumption (Makowski, 2022).

5. Conclusions

As Bartosik-Purgat (2018) noted a few years ago, along with the growing trend of digital nomadism, their needs, requirements, expectations, and behavior as city customers will evolve. This may be due to the ever-increasing number of digital nomads who create active communities in the place of their destination, striving, among others, to get to know the local culture of the visited place better. Although the two main pillars that describe digital nomads are geographic mobility and work using portable mobile devices (Mancinelli, 2020), there is much more to their needs as a group visiting and residing in the city.

This paper, based on the scoping literature review, collectively presents the main expectations of digital nomads, influencing the choice of a given city as a destination and satisfaction with the stay. As for the theoretical contribution to territorial marketing, only a few studies link the promotion and use of the city's offer with the segment of digital nomads. The juxtaposition of previous research and conclusions allows for systematizing existing knowledge about them in place marketing. As for the practical input, the paper also suggests a two-element message about the city, which may positively influence the willingness to choose a destination. The list of identified requirements concerning the destination allows for the development of an optimal urban offer and the use of more effective marketing communication toward digital nomads. The attractiveness of a given destination compared to other destinations may also manifest itself in marketing messages emphasizing the city's attitude to eliminating barriers to staying in a given place. Cities wishing to attract these specific customers should consider the perception of the city by the digital nomad community, their characteristics, and satisfaction opportunities. The inclusion by local authorities in city strategies to increase customers in the form of digital nomads can bring numerous benefits to the city, especially from the perspective of dynamic development and expansion of this group.

Future research may identify the most effective channels for distributing information about the city and communicating with digital nomads. It would be helpful to identify which sources of information they consider the most reliable and where they most often look for information about the destination.

References

Alkan Bala, H. (2021). Designing eco cities with the understanding of digital nomads. In S. Atay, G. Meriç, S. Uğur (eds.), *Present and Future Paradigms of Cyberculture in the 21st Century* (335–350). Hershey: IGI BOOKS.

Appell, C.R. (2021). *A Digital Nomad Strategy for Prince Edward Island*. Charlottetown: University of Prince Edward Island.

Bartosik-Purgat, M. (2018). Digital nomads: Entrepreneurship or new lifestyle? *Przedsiębiorczość i Zarządzanie*, 19(2), 259–266.

Beaumont, J. (2019). *Digital Nomads and Sense of Place: A Case Study of Lisbon*. Wageningen: Wageningen University.

Bonneau, C., Aroles, J. (2021). Digital nomads: A new form of leisure class? In J. Aroles, F.-X. Vaujany, K. Dale (eds.), *Experiencing the New World of Work* (157–177). Cambridge: Cambridge University Press.

Capocchi, A., Vallone, C., Pierotti, M. Amaduzzi, A. (2019). Overtourism: A literature review to assess implications and future perspectives. *Sustainability*, 11(12), 3303.

Cook, D. (2023). What is a digital nomad? Definition and taxonomy in the era of mainstream remote work. *World Leisure Journal*, 65(2), 256–275.

Ćwiklicki, M. (2020). Metodyka przeglądu zakresu literatury (scoping review). *Munich Personal RePEc Archive*, 104370, 53–68.

De Almeida, M.A., Correia, A., Schneider, D., De Souza, J.M. (2021). COVID-19 as opportunity to test digital nomad lifestyle. In *Proceedings of the 2021 24th IEEE International Conference on Computer Supported Cooperative Work in Design* (1209–1214). Dalian: IEEE.

Digital nomad statistics: How big is the nomad movement in 2023? (2023, April, 29). *Two Tickets Anywhere*. Retrieved May 6, 2023, from https://www.twoticketsanywhere.com/digital-nomad-statistics/.

Fibingier, E. (2021). Cyfrowy nomadyzm – nowy trend na rynku pracy. *Rynek Pracy*, 1–2, 19–31.

Gosik, B., Żelazna-Jochim, D. (2018). Tworzenie pozytywnego wizerunku miejsca będącego elementem strategii marketingowej miasta – na przykładzie Tomaszowa Mazowieckiego. *Zeszyty Naukowe Wyższej Szkoły Humanitas. Zarządzanie*, 3, 331–342.

Green, P. (2020). Disruptions of self, place and mobility: Digital nomads in Chiang Mai, Thailand. *Mobilities*, 15(3), 431–445.

Gurvičius, T. (2021). *The Connectedness of Digital Nomads with the Host Environment: Medellin, Colombia*. Utrecht: Utrecht University.

Hannonen, O. (2020). In search of a digital nomad: Defining the phenomenon. *Information Technology & Tourism*, 22, 335–353.

Hatalska, N. (2017). Wędrowcy. Raport o współczesnych nomadach. Retrieved May 2, 2023, from https://hatalska.com/wp-content/uploads/2017/02/Wedrowcy_RaportOWspolczesnychNomadach.pdf.

Jarrahi, M.H., Philips, G., Sutherland, W., Sawyer, S., Erickson, I. (2019). Personalization of knowledge, personal knowledge ecology, and digital nomadism. *Journal of the Association for Information Science and Technology*, 70(4), 313–324.

Kozłowska, A. (2012). Techniki perswazyjne oddziałujące na postawy konsumpcyjne. In A. Kozłowska (ed.), *Strategie komunikacji reklamowej z konsumentem* (97–113). Warszawa: Wyższa Szkoła Promocji.

Lhakard, P. (2022). Destination city for digital nomad's in Thailand: A case study of digital nomad community in Chiang Mai. *Journal of Humanities and Social Sciences Studies*, 4(1), 178–188.

Loryn, B. de. (2022). Not necessarily a place: How mobile transnational online workers (digital nomads) construct and experience "home." *Global Networks*, 22, 103–118.

Lynch, K. (1960). *The Image of the City*. Cambridge, MA: The M.I.T. Press.

Łuczak, A. (2002). Wizerunek miasta jako element strategii marketingowej. In T. Markowski (ed.), *Marketing terytorialny* (168–190). Warszawa: KPZK PAN.

Makowski, M. (2022). Percepcja treści telewizyjnego przekazu reklamowego. *Media Biznes Kultura*, 2(13), 55–78.

Mancinelli, F. (2020). Digital nomads: Freedom, responsibility and the neoliberal order. *Information Technology & Tourism*, 22, 417–437.

Mladenović, D. (2016). Concept of "figure of merit" for place marketing in digital nomadism ages. In D. Petranová, J. Matš, D. Mendelová, *Marketing Identity Conference 2016* (393–403). Trnava: Fakulta Masmediálnej Komunikácie.

Mouratidis, G. (2018). *Digital Nomads: Travel, Remote Work and Alternative Lifestyles*. Lund: Lund University.

Müller, A. (2016). The digital nomad: Buzzword or research category? *Transnational Social Review*, 6(3), 344–348.

Nash, C., Jarrahi, M.H., Sutherland, W., Phillips, G. (2018). Digital nomads beyond the buzzword: Defining digital nomadic work and use of digital technologies. In G. Chowdhury, J. McLeod, V. Gillet, P. Willett (eds.), *Transforming Digital Worlds: 13th International Conference, iConference 2018, Sheffield, UK, March 25–28, 2018, Proceedings* (207–217). Cham: Springer.

Orel, M. (2021). Life is better in flip flops: Digital nomads and their transformational travels to Thailand. *International Journal of Culture Tourism and Hospitality Research*, 15(1), 3–9.

Perkumiene, D., Pranskūnienė, R. (2019). Overtourism: Between the right to travel and residents' rights. *Sustainability*, 11(7), 2138.

Prester, J., Cecez-Kecmanovic, D., Schlagwein, D. (2019). Becoming a digital nomad: Identity emergence in the flow of practice. In *Fortieth International Conference on Information Systems 2019*. Munich.

Rakhmadi, R. (2021). Role of digital nomad in supporting tourism in Indonesia: Case study Bali. *Advances in Social Science, Education and Humanities Research*, 606, 143–148.

Reichenberger, I. (2017). Digital nomads: A quest for holistic freedom in work and leisure. *Annals of Leisure Research*, 21(3), 364–380.

Schlagwein, D. (2018). "Escaping the rat race": Justifications in digital nomadism. *Research in Progress Papers*, 31.

Silvanto, S., Ryan, J. (2023). Rethinking destination branding frameworks for the age of digital nomads and telecommuters: An abstract. In B. Jochims, J. Allen (eds.), *Optimistic Marketing in Challenging Times: Serving Ever-Shifting Customer Needs* (145–146). Cham: Springer.

Svobodová, D. (2022). Digital nomadism: Implemented policies. In *22nd International Joint Conference Central and Eastern Europe in the Changing Business Environment: Proceedings* (89–98). Praha: Oeconomica Publishing House.

Szromnik, A. (2016). *Marketing terytorialny. Miasto i region na rynku*. Warszawa: Wolters Kluwer.

Sztuk, A. (2022). Competitiveness of cities in the post-pandemic time: The perspectives of residents and tourists. *Ekonomia — Wroclaw Economic Review*, 28(3), 129–144.

Sztuk, A. (2023). Cities' attractiveness factors from the perspective of digital nomads. *Scientific Papers of Silesian University of Technology Organization and Management Series*, 174, 322–336.

Tagliaferri, C. (2022, January 24). 45+ exciting statistics about digital nomads in 2023. Retrieved April 24, 2023, from https://thinkremote.com/digital-nomad-statistics/.

Thompson, B.Y. (2019). The digital nomad lifestyle: (Remote) work/leisure balance, privilege, and constructed community. *International Journal of the Sociology of Leisure*, 2, 27–42.

Vagena, A. (2021). Digital nomads and tourism industry. *Academia Letters*, 765, 1–6.

Zumbusch, J. von., Lalicic, L. (2020). The role of coliving spaces in digital nomads' wellbeing. *Information Technology & Tourism*, 22, 439–453.

Ekonomia — Wroclaw Economic Review 29/3 (2023)
Acta Universitatis Wratislaviensis
No 4193

https://doi.org/10.19195/2658-1310.29.3.11

Zofia Gródek-Szostak
ORCID: 0000-0001-6283-6952
Krakow University of Economics
grodekz@uek.krakow.pl

Agata Niemczyk
ORCID: 0000-0002-5594-6296
Krakow University of Economics
niemczya@uek.krakow.pl

Luis Ochoa Siguencia
ORCID: 0000-0001-8515-0216
Jerzy Kukuczka Academy of Physical Education in Katowice
l.ochoa@awf.katowice.pl

Marcin Suder
ORCID: 0000-0001-6279-7359
AGH University of Kraków
msuder@agh.edu.pl

Jarosław A. Handzel
ORCID: 0009-0007-2554-1347
Academy of Applied Sciences in Nowy Sącz
jhandzel@ans-ns.edu.pl

Strengthening digital transformation in adult education organisations

Date of submission: 26.06.2023; **date of acceptance:** 27.09.2023

JEL classification: I24

Keywords: digital inclusion, digitisation, education, management

Abstract

Social inclusion is an important aspect of any society as it helps to create a sense of belonging and togetherness. It allows individuals to form meaningful relationships with others, while enabling them to make a meaningful contribution to their local communities. Social inclusion has many benefits that can help improve the well-being of both the included and the excluded. One of the benefits of social inclusion is increased access to resources such as education, healthcare, employment opportunities, and other basic needs that may be difficult or impossible for some people to access without community or peer support.

By providing these resources through community programmes like mentoring initiatives or job training, individuals are more likely to succeed than if they were left on their own without the help of others. Additionally, this support often leads to improved mental health outcomes due to increased self-esteem. Another benefit associated with social inclusion is the reduction of stigma around certain problems, such as poverty or homelessness, by promoting understanding between different social groups. When members of marginalised groups are able to participate fully in mainstream activities, they feel accepted despite their differences from the majority of society, leading to greater empathy on both sides.

This article presents experiences from the project Empower adult educators to support digital social inclusion 2022-1-PL01-KA220-ADU-000088404 [DigIN Project], which aims to improve the capacity of educators and adult education organisations to support them in becoming active users of technology.

1. Introduction

The digital divide has been the subject of much research in the context of, inter alia, information and communication technology (ICT) ownership, access to ICT, and the possession of skills and expertise required to use ICT to access information by older people (Chang et al., 2014; Gródek-Szostak et al., 2021; Nur Akarçay et al., 2021; Ochoa-Daderska et al., 2021a; Ochoa-Daderska et al., 2021b, Niemczyk et al., 2023). ICT accessibility often depends on ICT literacy. The public debate on the digital divide has been going on for almost thirty years (D'Alessandro and Dosa, 2001; Katz et al. 2001) seeking to improve the quality, access, and equity of ICTs and information, while empowering users from all socio-economic backgrounds.

A systematic literature review provides numerous definitions and conceptualisations of the phenomenon that constitutes the digital divide. DiMaggio and Hargittai (2001) describe five aspects of the digital divide, i.e.: equipment, autonomy of use, skills, social support, and the purpose for which the technology was used. Selwyn (2004), on the other hand, presented the digital divide in four stages: formal/theoretical access to ICT and content, effective access to and use of ICT and content, engagement with ICT and content, and outcomes or consequences. Van Dijk (2006) suggested a model consisting of four key aspects related to access: motivational aspect, access to materials, access to skills, and access to use. However, Barzilai-Nahon (2006) defined and proposed a digital divide indicator consisting of five elements: access to infrastructure, affordability, usage, social and governmental constraints/support, and socio-demographic factors. Rooksby et al. (2002)

proposed that governments should match funds with the private sector to adapt ICTs and that they should develop regional and distribution centres to facilitate access and monitor gaps in Internet access. Over the past three decades, governments across the Western world have attempted to bridge the digital divide through various initiatives and collaborations (Conrads et al., 2017; Eurydice, 2019).

The impact of the pandemic has led European Union countries into a deep recession and widened the digital divide. The European Commission recommended accelerating the much-needed digital transformation and prioritised investment in digital learning infrastructure and technology. While education providers focused on online learning, the quality of online pedagogy was not a priority. Hence, there is an urgent need to take action to improve the quality of instructional design and ensure that students achieve the desired learning outcomes (ET, 2020). This requires not only the education providers and staff to be subject experts, but also – and even more importantly – digitally competent.

This requires not only providers and staff to be digitally competent, but also – and even more so – strong tutoring and assessment skills are needed as well as the ability to be flexible and able to adapt to changing circumstances. The DigIN (Empower Adult Educators To Support Digital Social Inclusion) project, coordinated by Instytut Badan i Innowacji w Edukacji (Poland) in collaboration with Universitat Jaume I (Spain), S.A.F.E Projects (Netherlands), and Dalya (Türkiye), aims to develop, test, and implement an innovative digital education ecosystem to enable educators to create and share engaging adult learning activities. To this end, teachers and other adult education staff will develop digital skills and use appropriate teaching methods.

2. ICT in adult learning – theoretical framework of the research

Given the dynamic development of ICT and its widespread use in everyday life, especially by younger generations, measures are needed to address the digital exclusion of older people (Gródek-Szostak et al., 2021). Currently, research focuses on the existing and future role that ICTs can play in later life as a way to reduce social isolation and loneliness (Beacker et al., 2014; Damodaran et al., 2015; Sims et al., 2017). In addition, the research places particular emphasis on the goal of understanding the needs and requirements of older people, finding that intergenerational communication is important and acknowledging that for some having the skills and knowledge to understand how to access ICT is also an area that needs further exploration (Marston, 2019). Ihm and Hsieh (2015) note that access to ICT is significantly reduced at a later age compared to younger users.

According to the Hamburg Declaration (Medel-Anonuevo, 1998), adult education is a continuous formal/informal learning process whose subjects are ma-

ture people who undertake a given activity in order to acquire knowledge, improve their professional qualifications, and better understand the world. Developmental psychology distinguishes the so-called late adulthood (over 55–66 years), characterised by a decline in fluid (genetically innate) intelligence, while crystallised (social) intelligence remains constant and sometimes even increases. It is a stage of balance between the logical-reasoning sphere of cognition and the intuitive-emotional area (Harwas-Napierała, Trempała, 2001, 263).

An important trend in adult education that seems to be one of the fastest growing recently is the spread of non-formal and incidental education. This means the attainment of new competencies without the use of programmes run by education/training providers (without a teacher/instructor/trainer), through independent activities undertaken to achieve specific learning outcomes, and/or through unintentional learning (Vukovic, et al. 2022). The popularisation of this concept of adult learning is undoubtedly fostered by the development of the Internet and modern technologies, in particular social media and the clearly discernible Web 2.0 trend on the Internet. In addition to the Internet, the development of mobile technologies and tools plays a significant, supportive role in adult learning. Adult social learning can take place not only via popular websites such as Facebook, YouTube or Twitter, but also on various educational platforms, vortals, specialised discussion forums or by maintaining or regularly reading author blogs (Mikołajczyk, 2011). Thanks to the development of ICT, it has become possible to disseminate modern forms of adult education, such as e-learning, blended learning or m-learning (involving the use of mobile technologies in the educational process).

Adults are a heterogeneous group in terms of their ability and pace of learning, which is strongly influenced by previous experience and skills or previous education. It is this diversity that can sometimes, especially at the beginning of a training session, create a sense of confusion. Therefore, the trainer should be prepared to support the trainees in solving intellectual problems. He or she should also be knowledgeable about the changes a person undergoes during adulthood and be aware that, for training to be effective, the same teaching strategies and learning patterns cannot be applied to children and adults.

3. The project Empower adult educators to support digital social inclusion (DigIN) in the context of research methodology

The Empower adult educators to support digital social inclusion project (2022-1-PL01-KA220-ADU-000088404) is one of the systemic initiatives undertaken at the European and national level. The DigIN project aims to improve the competencies of social educators, social workers or volunteers as they are directly

involved in the digital transformation. Educators need better digital skills to adapt to digital education on the road to digital transformation. They also need digital competencies to create engaging courses, improve the quality of the existing material, and ensure that students achieve the desired learning outcomes.

Adults, on the other hand, need digital skills to access support services, medical appointments, social activities, and to stay safe online. They need accessible tools to understand their own level of digital competence and attractive courses to become digitally competent.

Adult education providers need initiatives that enable adults to become active users of technology so that adults can be socially and digitally included.

1. A toolkit for digital facilitators including a competency map supported by aids to enable engaging and active digital education.

2. A web-based application that enables adults to determine their level of understanding of digital and internet use, and provides advice on how to improve their online behaviour and become more digitally competent in the 5 DigComp areas.

3. DigIN Multi-Pack educational programmes aimed at helping adults aged 55+ become digitally competent in the following areas: information and data literacy, communication and collaboration, digital content creation, security and problem solving.

The project partners are: Research and Innovation in Education Institute [Instytut Badan i Innowacji w Edukacji, INBIE] (project leader, Poland), Dalya Ajans Reklam Tanitim Medikal Bilgisayar Bilisim Ve Promosyon Dekorasyon Ithalat Ihracat Ticaret Limited Sirketi (Turkey), S.A.F.E. Projects (Netherlands), Universitat Jaume I De Castellon (Spain).

A study aimed to identify the level of digital competencies of educators and the devices and software they use, as well as identify problems when using them, benefits, and initiatives. The pilot study was carried out in the Silesian Voivodeship (NUTS 2). In the next stages of the DigIN project implementation, research will be carried out in each of the partner countries.

4. Results obtained

The pilot study has been implemented in the Silesian region, Poland, and involved 50 educators whose activities focus on working with people over 55 years old (36%), people with physical or mental disabilities (26%), migrants or refugees (28%), unemployed or low-income people (34%), young adults (42%). The distribution of educators' levels of digital competence in their subjective assessment is shown in Figure 1.

Nearly 80% of respondents rated their level of competence as basic or intermediate with a similar distribution between the two response categories (40%

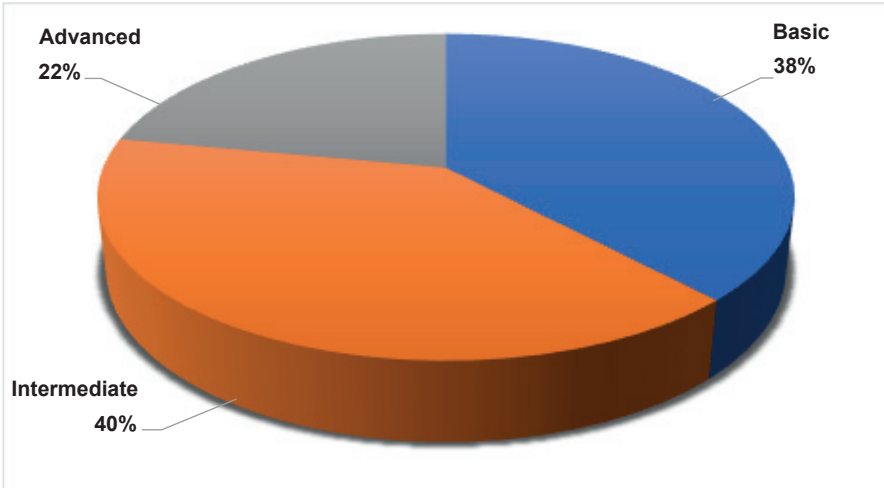

Figure 1. The level of digital competence

Source: own study.

medium, 38% low). Less than 1 in 4 rated their digital competencies as high. Thus, the results of the analysis suggest that educators do not rate their competencies very highly.

Educators surveyed were asked to answer a number of closed multiple-choice questions about the kind of devices and software they use, problems with using them, benefits and initiatives.

Figure 2 shows the distributions of responses in terms of the type of devices used, digital tools, and digital content.

The educators surveyed most often cited a smartphone (52%) and a desktop or laptop computer (48%) as their working tools. In contrast, 28% use a tablet in their activities. Among the digital tools used, social networks are the most popular (64%), while the fewest respondents (9 out of 50) use online learning applications. Among the types of digital content, two-thirds of the respondents indicated presentations, which was the most frequently indicated answer. In contrast, the smallest number of respondents (less than one in three) use games. The next set of questions dealt with the problems, risks, or challenges related to using a digital tool.

In terms of problems and difficulties encountered by the surveyed educators, the largest percentage of them (46%) indicated the lack of knowledge or skills to use digital tools and the lack of motivation or interest in using digital tools. Also, a significant percentage (38%) of respondents indicated the lack of confidence or security when using digital tools. The fewest number of people (slightly less than 20%) have a problem with the lack of adaptation or accessibility of digital tools to personal needs or preferences. Other statements in this question were indicated by between 20% and 30% of respondents.

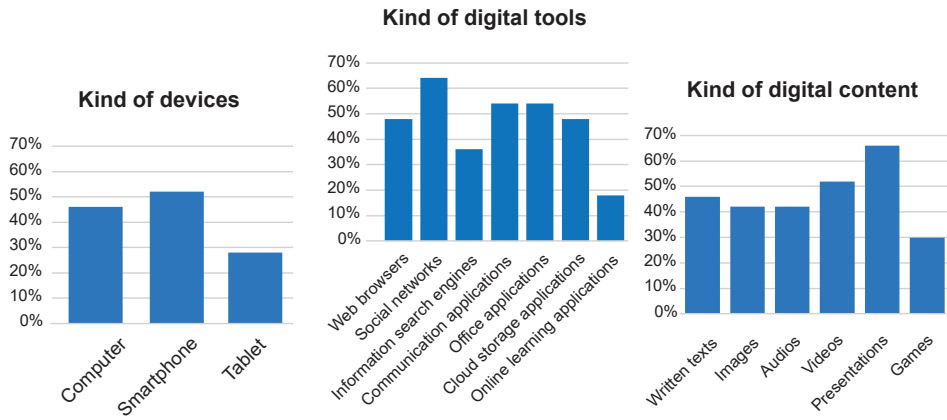

Figure 2. Distribution of responses in terms of kind of devices, digital tools, digital content

Source: own study.

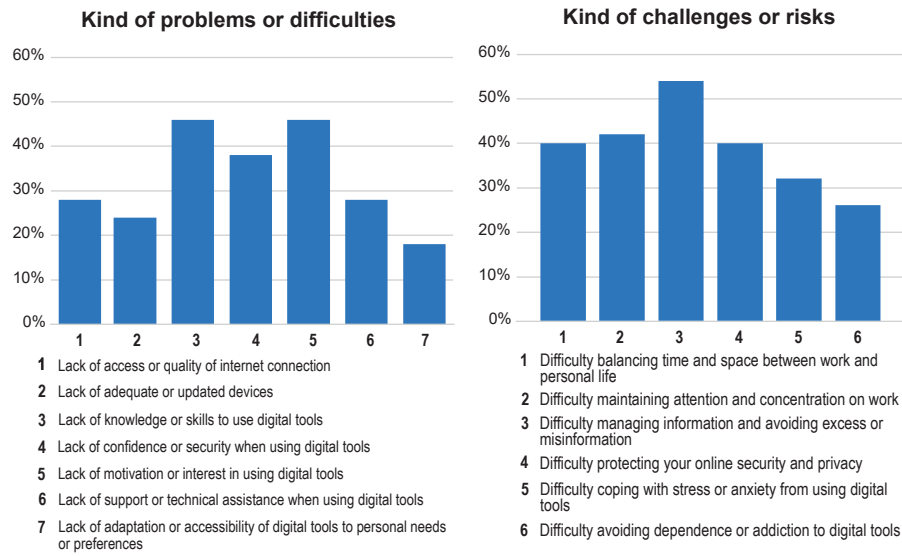

Figure 3. Distribution of responses in terms of problems or difficulties and challenges or risks

Source: own study.

In terms of the type of challenges or risks, by far the largest number of respondents (over 50%) indicated the difficulty managing information and avoiding excess or misinformation. The smallest percentage of educators surveyed have difficulty avoiding dependence or addiction to digital tools. The remaining responses in this category were answered by 32–42% of respondents.

The next two questions were about the benefits of digital tools and the needs and expectations associated with them.

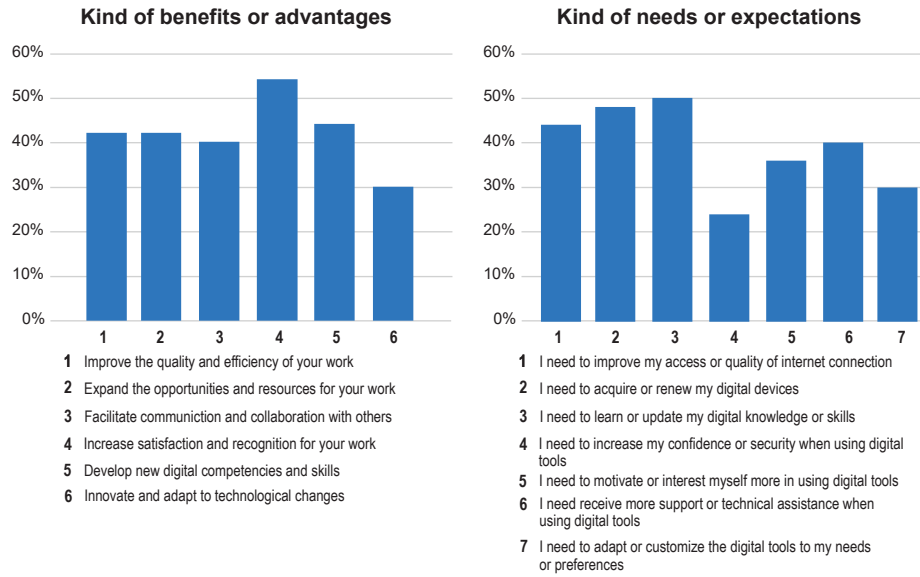

Figure 4. Benefits and needs arising from circular activities

Source: own study.

Over 50% of respondents cited "Increased satisfaction and recognition for your work" as a benefit gained through the use of digital tools. Being innovative and adapting to technological changes had the lowest response rate (at 30%). The remaining four responses were indicated by around 40% of respondents. When asked about their needs or expectations, the highest percentage of respondents (50%) indicated "I need to learn or update my digital knowledge or skills". Also respondents perceived a need to improve access or quality of the internet connection and acquire or renew digital devices. These responses were indicated by over 40% of respondents. The least number of people (less than one in four) from a palette of seven responses selected the need to increase their confidence or security when using digital tools. This means that these aspects are not as important when using digital tools.

5. Conclusions

The internet, social networks, digital media and other smart devices have transformed many aspects of everyone's personal, professional, and social lives in a relatively short period of time. However, there are still many people aged 65+ who largely lack the digital skills necessary to be fully active and participate in social and civic life. Statistics show that older people are most challenged in acquisition of digital skills and are most challenged socially with poverty or exclusion. The

pilot study showed, among other things, the need for intensive efforts to improve the competencies of adult educators. Admittedly, these are the results of a pilot study, but the preliminary results of an ongoing specific study – in the countries of the project partners – indicate the importance of the competence issue. It is important to support educators and teachers in integrating technology and adopting new teaching methods for the development of their students' competencies.

Acknowledgments

This publication was financed by a subsidy granted to the Krakow University of Economics. The desk research was carried out within the ERASMUS+ project "Empower adult educators to support digital social inclusion 2022-1-PL01-KA220-ADU-000088404" in collaboration with researchers from the Krakow University of Economics and Instytut Badan i Innowacji w Edukacji from Czestochowa.

References

Barzilai-Nahon, K. (2006) Gaps and bits: Conceptualizing measurements for digital divide/s. *The Information Society*, 22(5), 269–278. https://doi.org/10.1080/01972240600903953.

Beacker, R., Sellen, K., Crosskey, S., Boscart, V., Barbosa Neves, B. (2014). Technology to reduce social isolation and loneliness. In *Proceedings of the 16th international ACM SIGACCESS Conference on Computers & Accessibility – ASSETS'14*, 20–22.10.2014 (27–34). Rochester: ACM.

Chang, Y., Wong, S., Park, M. (2014). A three-tier ICT access model for intention to participate online a comparison of developed and developing countries. *Information Development*, 32(3), 226–242. https://doi.org/10.1177/0266666914529294.

Conrads, J., Rasmussen, M., Winters, N., Geniet, A., Langer, L. (2017). *Digital Education Policies in Europe and Beyond: Key Design Principles for More Effective Policies*. Luxembourg: Publications Office of the European Union. https://doi.org/10.2760/462941.

D'Alessandro, D.M., Dosa, N.P. (2001). Empowering children and families with information technology. *Archives of Pediatrics and Adolescent Medicine*, 155, 1131–1136.

Damodaran, L., Gilbertson, T., Olphert, W., Sandhu, J. (2015). Digital inclusion: The vision, the challenges and the way forward. *International Journal on Advances in Internet Technology*, 8, 78–92.

DiMaggio, P., Hargittai, E. (2001). *From the "Digital Divide" to "Digital Inequality": Studying Internet Use as Penetration Increases*. Princeton: Princeton University.

ET. (2020). *Education and Training 2020*. Retrieved March 20, 2024, from http://www.oidel.org/doc/Doc_colonn_droite_defaultpage/ET%202020%20RESUME.pdf

Eurydice. (2019). *Eurydice Brief: Digital Education at School in Europe*. Luxembourg: Publications Office of the European Union.

Gródek-Szostak, Z., Ochoa Siguencia, L., Niemczyk, A., Seweryn, R. (2021). Digital exclusion of elderly citizens: Polish experiences based on the project Adult Social Inclusion in a Digital Environment (ASIDE). *Ekonomia – Wroclaw Economic Review*, 27(4), 53–62. https://doi.org/10.19195/2658-1310.27.4.4.

Harwas-Napierała, B., Trempała, J. (eds.). (2001). *Psychologia rozwoju*, vol. 2. Warszawa: PWN.

Ihm, J., Hsieh, Y. (2015). The implications of information and communication technology use for the social well-being of older adults. *Information Communication and Society*, 18, 1123–1148.

Katz, J.E., Rice, R.E., Aspden, P. (2001). The Internet, 1995–2000: Access, civic involvement, and social interaction. *American Behavioral Scientist*, 45, 405–419.

Marston, H.R., Genoe, R., Freeman, S., Kulczycki, C., Musselwhite, C. (2019). Older adults' perceptions of ICT: Main findings from the Technology in Later Life (TILL) study. *Healthcare*, 7(3), 86. https://doi.org/10.3390/healthcare7030086.

Medel-Anonuevo, C. (1998). Gender and development. *Education and Training*, 6(2), 65–67. https://www.jstor.org/stable/4030347.

Mikołajczyk, K. (2011). Jak uczą się dorośli, czyli co powinien wiedzieć trener o specyfice kształcenia uczestników szkolenia. *E-mentor*, 2(39), 69–77.

Niemczyk, A., Szalonka, K., Gardocka-Jałowiec, A., Nowak, W., Seweryn, R., Gródek-Szostak, Z. (2023). *The Silver Economy: An Ageing Society in the European Union*. London: Routledge.

Nur Akarçay, Y., Ochoa Siguencia, L., Sanchez Garcia, J., Ochoa-Daderska, R., Velinov, E., Niemczyk, A., Gródek-Szostak, Z., (2021). *Adult Social Inclusion in a Digital Environment: Digital Social Inclusion. Report 4*, Częstochowa: Research and Innovation in Education Institute.

Ochoa-Daderska, R., Ochoa-Daderska, G., Nur Akarçay, Y., Velinov, E., Brozova, I., Sanchez Garcia, J., Gródek-Szostak, Z., Chęcińska-Kopiec, A., Szeląg-Sikora, A., Niemiec, M., Sikora, J., Niemczyk, A., Kotulewicz-Wisińska, K., Suder, M., Ochoa Siguencia, L. (2021a). *Adult Social Inclusion in a Digital Environment: Exchange of Good Practices*. https://doi.org/10.5281/zenodo.5516367.

Ochoa-Dąderska, R., Ochoa-Dąderska, G., Velinov, E., Brozova, I., Sanchez Garcia, J., Nur Akarçay, Y., Gródek-Szostak, Z., Szeląg-Sikora, A., Niemiec, M., Sikora, J., Niemczyk, A., Kotulewicz-Wisińska, K., Suder, M., Ochoa Siguencia, L. (2021b). *Best Practice Manual: Digital Competences Necessary for Developing ICT-Based Social Inclusion Initiatives/Services*. https://doi.org/10.5281/zenodo.5516369.

Rooksby, E., Weckert, J., Lucas, R. (2002). The rural digital divide. *Rural Society*, 12, 197–210.

Selwyn, N. (2004). Reconsidering political and popular understandings of the digital divide. *New Media & Society*, 6, 341–362.

Sims, T., Reed, A.E., Carr, D.C. (2017). Information and communication technology use is related to higher well-being among the oldest-old. *The Journals of Gerontology: Series B*, 72, 761–770.

van Dijk, J.A. (2006). Digital divide research, achievements and shortcomings. *Poetics*, 34, 221–235.

Vukovic, M., Ochoa-Daderska, R., Nur Akarcay, Y., Gródek-Szostak, Z., Niemczyk, A., Akilli, A., Ochoa Siguencia, L. (2022). *Situated Learning Methodology: Elders Learning English for Europe*. https://doi.org/10.5281/zenodo.6878059.

Ekonomia — Wroclaw Economic Review 29/3 (2023)
Acta Universitatis Wratislaviensis
No 4193

https://doi.org/10.19195/2658-1310.29.3.12

Iwona Czerska
ORCID: 0000-0002-9680-6695
Wroclaw University of Economics and Business
iwona.czerska@ue.wroc.pl

Functioning of healthcare entities as learning organisations in Poland on the example of Podlaskie voivodeship

Date of submission: 26.05.2023; **date of acceptance:** 06.09.2023

JEL classification: D83, L30, M00, P46

Keywords: healthcare entity, learning organization, Podlaskie voivodeship, hospital

Abstract

The article aims to present issues regarding learning organisations in the context of the functioning of healthcare entities as examples of such organisations in Poland. A literature review was conducted, and the research problem and two research questions were formulated for verification. The subject of the study is public healthcare entities functioning as learning organisations in Poland, using the example of the Podlaskie voivodeship. In order to gather literature for the article, the desk research method was used, using scientific databases: Google Scholar and ScienceDirect. The literature on the subject covers the years 2015–2023. Firstly, the literature was reviewed, defining a learning organisation. Next, methods and tools used in organisational learning were listed. Lastly, the validity of medical entities as learning organisations was discussed. The next part of the article presented therapeutic entities from Podlaskie voivodeship as learning organisations in 2016–2022. The general criteria of the "Learning Organization" Competition were presented, followed by a discussion on the awarded therapeutic entities. In the end, the limitations of the article were discussed, and conclusions and practical implications were formulated. It was emphasised that changing and responding to market trends is essential for modern health organisations to sustain themselves in a turbulent market. The ability to constantly improve knowledge and search for it is crucial here. Therefore, in healthcare entities such as learning organisations, constant access to knowledge, not strictly medical, is crucial for medical and administrative staff. Helpful in the pursuit of this knowledge accumulation are various methods and tools that support the organisational learning and experience process.

1. Introduction

The transformation of Poland's healthcare system has been taking place continuously for more than three decades. From the functioning of budgetary units in healthcare institutions to independent public healthcare institutions and medical entities (Pasowicz, 2012). The current shape of the health sector was also influenced by the coronavirus pandemic outbreak in 2020, which significantly accelerated the digital transformation of the entire industry (Marx and Padmanabhan, 2020; Wahab and Saad, 2022).

The hitherto dominant management model for the public sector, including the health sector, is gradually transitioning from traditional to a client/patient approach (Frączkiewicz-Wronka and Dyaczyńska, 2012). The learning organisation, considered the main or even the only factor that gives a company a competitive advantage, is an "organisation of the future" capable of continuous self-improvement (Trzcieliński, 2007). In the literature, a learning organisation is an ideal entity that is an expected image of the organisation from two points of view – management and ordinary employees acting in unison to improve the organisation and its position in the marketplace (Skowron, 2017). This ideal entity of the future as a new type of enterprise is referred to as an "anti-structured" or "structureless" system that is constantly changing and in constant turmoil (Jóźwiakowski, 2016).

This paper aims to synthesise the knowledge about learning organisations and the functioning of healthcare entities as examples of such organisations in Poland by reviewing the literature on the subject. The research problem is to determine whether there are examples of healthcare entities functioning as learning organisations in the Polish healthcare system. In order to verify the research problem, the following research questions were formulated:

1. What elements are emphasised by current health learning organisations in Poland?

2. What methods and tools are used by today's health learning organisations?

The subject of consideration is public healthcare entities functioning as learning organisations in the health market in Poland on the example of Podlaskie voivodeship.

2. Theoretical framework of the research

A learning organisation is defined as an organisation that is self-learning and, at the same time, encourages its employees to participate in the learning process. In such an organisation, the key factors are accessible and open information and its system, encouraging employees to be proactive, opportunities for development, and the spirit of learning (Dobrzinskiene et al., 2022). A learning organisation allows individual and team learning to expand the personnel's knowledge and skills

to maximise and optimise organisational performance (Faizal Iylia Mohd Ghazali et al., 2015). Such an organisation is seen in this sense as experimental, flexible, able to respond quickly to changes in its environment and processes, and impacting the external environment (Örtenblad, 2018).

A learning organisation is based on open communication, risk-taking and knowledge management. The learning process in this type of organisation must move from individual to collective, from organisational to inter-organisational and vice versa, causing changes in behaviour (Vainauskienė and Vaitkienė, 2022).

A learning organisation represents an entity that enables stakeholders to expand their capabilities and achieve common organisational goals (Aggestam, 2006; Githuku et al., 2022; Kaziemierska et al., n.d.; Senge, 2006). One of the main goals of a learning organisation is to build a culture of organisational learning (Gagnon et al., 2015). However, knowledge sharing across work environments and time differs from simply sharing information, as people need support in interpreting each other's perspectives and negotiating a new, shared one (Stefanelli, 2001).

Many methods can be used in a learning organisation, which include CRM (Customer Relationship Management), SCRM (Social Customer Relationship Management) (Alamsyah et al., 2021); TQM (Total Quality Management) (Murray and Chapman, 2003; Paraschivescu, 2013); EBM (Evidence-Based Medicine) (Crites et al., 2009); coaching and mentoring (Gerlach, 2021; Westcott and Rosser, 2023); Kaizen (Franke, 2016a; Terziovski et al., 2000); strategic alliance (Serrat, 2017); benchmarking (Kuźmicz, 2015; Węgrzyn, 2018); outsourcing (Trzcieliński, 2007); reengineering (Franke, 2016b; Juras, 2010); workflow system (Franke, 2016b; Rao, 2012); strategic scorecard (Banaszyk and Lewandowska, 2003; Chodyński et al., 2007; Porębski, 2012); MRP (Material Requirements Planning) (Pałucha, 2012).

The concept of the learning organisation in healthcare has a solid ethical basis in improving health by understanding optimal care delivery processes and improving long-term outcomes (Friedman and Rigby, 2013). Medical entities are particularly predestined to implement modern knowledge management concepts and organisational learning processes due to their strong dependence on the human factor (Dyaczyńska, 2013). Knowledge management strategy in this entity should focus on the following activities: promoting innovation in management and treatment, shaping organisational culture, developing and transferring best management and treatment practices, and reducing treatment and organisational costs (Karkowski and Korczak, 2016).

3. Research methodology

The author used the desk research method to gather information about the functioning of healthcare entities as learning organisations. The following combinations

of keywords and Boolean operators were used in the literature search: ("healthcare entity" OR "medical entity" OR "medical facility" OR "treatment facility) AND "learning organisation". The author used the following professional databases to gather relevant scientific literature: Google Scholar and ScienceDirect. During the analysis, the author studied scientific articles, industry literature, and electronic sources from 2000–2023, with a preponderance in 2015–2023. Complementing the collected literature was searched in the databases above for the following keywords, each time in combination: "given keyword" AND "learning organisation": CRM, Customer Relationship Management, SCRM, Social Customer Relationship Management, TQM, Total Quality Management, EBM, Evidence-Based Medicine, coaching, mentorship, Kaizen, strategic alliance, benchmarking, outsourcing, reengineering, workflow system, strategic scorecard, MRP, Material Requirements Planning. The author used the above databases to collect the literature for the purpose of this article and the research problem.

4. Healthcare entities as learning organisations in 2016–2022 – the example of Podlaskie voivodeship

Since 2015, the Voivodeship Labor Office in Białystok and the Bialystok University of Technology have awarded prizes to the best employers applying the principles of "organisational learning" in the "Learning Organization" Competition. The purpose of the competition is to promote employers from the Podlaskie voivodeship who are distinguished by the following characteristics and activities: investing in the development of employee competencies; orientation towards knowledge and competency management of employees; flexible organisational structure; implementation of personnel strategy; an organisational culture that stimulates pro-development behaviour; implementation of activities aimed at the development of their employees, increasing the efficiency of their organisation while stimulating learning of business partners. The competition is aimed at companies from the SME sector, large companies, and the public sector employers (Wojewódzki Urząd Pracy w Białymstoku, 2022). The competition covers only entities operating in the Podlaskie voivodeship. Hence, it is not nationwide, making it impossible to compare such entities with other voivodeships.

The general criteria for evaluating employers within the competition framework include five areas of functioning of a learning organisation: information about the organisation, personnel policy, continuing education of employees, good practices in knowledge transfer within the organisation, and orientation to organisational learning. Winners of the competition in each category, in addition to a diploma, receive the right to use the title "Learning Organization" for one year from the date of presentation of awards (Wojewódzki Urząd Pracy w Białymstoku, 2022).

Table 1 summarises healthcare entities from the Podlaskie voivodeship that won awards and prizes in 2016–2022 in the "Public Sector" category of the "Learning Organization" competition. In 2015, no healthcare entity was recognized as a learning organisation.

Table 1. Summary of distinguished healthcare entities from Podlaskie voivodeship as learning organisations in 2016–2022

Year	Entity name	Place
2022	PCK Independent Municipal Hospital in Białystok	Laureate
	Dr. Ludwik Rydygier Regional Hospital in Suwałki	Distinction
	Specialist Psychiatric SP ZOZ in Suwałki	Distinction
2021	Nursing Home[1] in Mścichy	Distinction
2019	Dr. Ludwik Rydygier Regional Hospital in Suwałki	Distinction
	SP ZOZ Voivodeship Emergency Unit in Białystok	Distinction
2018	Dr. Ludwik Rydygier Regional Hospital in Suwałki	Distinction
	SP ZOZ Voivodeship Emergency Unit in Białystok	Distinction
2017	Dr. Ludwik Rydygier Regional Hospital in Suwałki	Laureate
	Voivodeship Emergency Unit SP ZOZ in Suwałki	Distinction
2016	Dr. Ludwik Rydygier Regional Hospital in Suwałki	Distinction

Source: own compilation based on: Szpital Wojewódzki im. dr. Ludwika Rydygiera w Suwałkach, 2022; Wojewódzki Urząd Pracy w Białymstoku, 2017, 2018, 2019, 2020, 2021, 2022.

5. Discussion

Table 1 shows that healthcare entities representing the Podlaskie voivodeship are slowly beginning to function as learning organisations. At the beginning of the competition, this type of institution was missing from the group of distinguished entities. However, since 2016 and every subsequent year (except 2020), public healthcare units already appear on the list. This situation shows a growing awareness of the functioning of learning organisations that can also successfully be medical entities. Hospitals dominate, and one of them – is the Dr. Ludwik Rydygier Regional Hospital in Suwałki, which is a featured entity in the annual competition.

[1] The nursing home did not have the status of a therapeutic entity in 2021, and from 2022, regardless of the organizational form in which it operates, it can apply to the governor for entry in the register of entities performing therapeutic activities (Beker, 2022). The nursing home will be able to undertake therapeutic activities after fulfilling the following conditions for carrying out therapeutic activities (Wykowski, 2022): having appropriate premises and equipment, employing medical professionals, using medical devices, and concluding a liability insurance contract in connection with the operation of the treatment entity. If an institution decides to carry out therapeutic activity consisting in providing outpatient health services to its residents, the cost of hiring personnel will be financed by the National Health Fund – according to the draft amendments to the Law on Social Assistance and the Law on Medical Activity (Wójcik, 2022).

The featured facility (Nursing Home in Mścichy) in 2021 should be no surprise due to the coronavirus pandemic, but it lacks a hospital as the first point of contact for the infected. This situation may be due to the overload of the hospital system during this challenging period and the facility's inability and unwillingness to compete. Noteworthy is that as many as three treatment entities were recognised as learning organisations in 2022. Among them, a psychiatric hospital appeared, which may indicate the search for specialised help during the pandemic and the competition jury's appreciation of efforts in this direction.

In addition to the hospital and nursing home, the table lists an emergency unit. Other medical entities are missing. This situation may be related to the COVID-19 pandemic, as these entities performed and continue to perform critical functions in helping the infected. Secondly, according to the Voivodeship Labor Office in Białystok (Polish: Wojewódzki Urząd Pracy w Białymstoku), as many as 37 medical entities were deleted from the register kept by the Podlaskie voivodeship in 2022, 18 entities in 2021, 20 entities in 2020, 22 entities in 2019, 39 entities in 2018, 21 entities in 2017, 20 entities in 2016, 16 entities in 2015, 17 entities in 2014, 29 entities in 2013 and 52 entities in 2012 (Podlaski Urząd Wojewódzki w Białymstoku, n.d.). Two hundred ninety-one medical entities in Podlaskie voivodeship were deleted in 2012–2022. Among the deleted entities, the predominant ones were non-public ZOZs, clinics and dental clinics, family doctor clinics, clinics and specialised clinics, psychotherapy centres, rehabilitation clinics, medical centres, and nursing services. There were no hospitals, nursing homes or emergency units among the deleted entities.

The article's author noted that the two types of medical entities in the tabulated list, namely hospitals and nursing homes, are considered total institutions. This situation is because this type of organisation creates for the people associated with it – employees and patients – a separate world, governed by its laws and separated from the rest of society by more or less tight barriers. Such total institutions are characterised by isolation from the outside world (expressed through symbols); imposed external control, group-based nature of activities, strictly scheduled time for individual tasks/procedures/treatments, lack of separation of work, sleep and rest areas; the constant presence of other people; two-part management; control of resources, information and mobility (Domaradzki, 2018). In doing so, it should be noted that the concept of a total institution and describing a psychiatric hospital with this category, for example, refers to how it operates, its staff and patients, not the forms of treatment or mental illness itself (Żółtowski, n.d.). Nursing homes as total institutions have been highlighted by various researchers (Borowski, 2013; Kosiorek, 2012; Zbyrad, 2012, 2014). It would be appropriate to ask whether an entire organisation can be a learning organisation simultaneously. An analysis of Table 1 shows that it most certainly can. In addition, examples of such organisations are known in the literature, for example, a school (Fura, 2007; Gajda and Gaudy, 2012; Jurczak, 2017; Rabiej, 2013; Raszewska-Skałecka, 2021),

police (Łuczak, 2013; Rzeczkowska, 2018), care and educational facilities (Przywojska, 2014; Wolan, 2004).

The following management systems implemented by the assessed healthcare entities should be indicated as part of the "management by quality" tool. Firstly, (Samodzielny Szpital Miejski im. PCK w Białymstoku, 2022) and Dr. Ludwik Rydygier Regional Hospital in Suwałki has standardised management systems by ISO standards: ISO 9001:2015 Quality Management System, ISO 27001:2017 Information Security Management System, and Hospital Accreditation Programme. These hospitals meet quality and information security requirements and comply with accreditation standards. In addition, the Primary Health Care of the Dr Ludwik Rydygier Regional Hospital in Suwałki was awarded an accreditation certificate by the Minister of Health on June 13th 2023, thus confirming compliance with the accreditation standards for primary care. These standards relate to critical areas of the services provided, including patient safety, comprehensiveness of care, health education, and the quality of medical records. Such an accreditation certificate is held by approximately 2% of POZ facilities across Poland (Szpital Wojewódzki im. dr. Ludwika Rydygiera w Suwałkach, 2023). Secondly, Specialist Psychiatric SP ZOZ in Suwałki has received ISO 9001:2015 certification, which confirms that the hospital applies a management system that complies with the requirements of the international standard (Okoniewska, 2018). Thirdly, (Samodzielny Publiczny Zakład Opieki Zdrowotnej Wojewódzka Stacja Pogotowia Ratunkowego w Białymstoku, 2022) and (Wojewódzka Stacja Pogotowia Ratunkowego w Suwałkach, 2022) have ISO 9001:2015 as part of their quality policy.

In conclusion, using the example of the Podlaskie region, it can be deduced that public medical entities are slowly beginning to function as learning organisations. On the one hand, the coronavirus pandemic disrupted medical institutions' organisational learning process. On the other hand, it highlighted the characteristics necessary for the functioning of such entities in the face of the global health crisis, which was recognised in the "Learning Organization" Competition.

6. Limitations

The article contains several limitations. First, only articles indexed in databases were used in the analysis: Google Scholar and ScienceDirect, which may have resulted in the omission of valuable items on the issues under consideration. Second, the literature search in the databases above used specific word combinations using Boolean operators, which could have distorted or narrowed the search for relevant items. Electronic sources were used for the issues covered to supplement the literature analysis. Third, the focus was exclusively on public healthcare entities and, in addition, representing only the Podlaskie voivodeship – due to the scope of the

competition and the availability of information on the functioning of these entities as learning organisations.

7. Conclusions and practical implications

In today's reality, everything changes quickly, whether it is in economic, social, or business areas. The guarantor of an organisation's survival in a turbulent market is the ability to change and adapt to current trends. People employed in organisations need to keep up with the knowledge necessary to perform their tasks, because few skills can be acquired "forever". In addition, the coronavirus pandemic has highlighted transformative competencies as a guarantor of staying, regardless of age, in the job market. These competencies can help manage professional, social, economic, or financial uncertainty. The above conclusions also apply to medical professionals employed by healthcare entities. Hence, these types of facilities also need to be ready for change and respond quickly to emerging opportunities or chances coming from the environment.

The article's purpose, which was to synthesise the knowledge about learning organisations and the functioning of medical entities as this type of organization in Poland, has been achieved. As part of verifying the research problem, it was established that medical entities function as learning organisations in the Polish healthcare system. Due to the narrowing down to the Podlaskie voivodeship, the accumulated knowledge on this subject does not allow broader coverage of this issue. It suggests a research gap exists in this area. Concerning the research questions posed, the current health learning organisations in Poland, i.e. the healthcare entities from the Podlaskie voivodeship awarded in the "Learning Organization" Competition, emphasise management and leadership, development of employees and their competencies, and organisational culture and structure. Modern learning organisations in the healthcare sector use various methods and tools in their operations, including CRM/SCRM, or (social) customer relationship management; management by quality; evidence-based medicine; coaching and mentorship; Kaizen; benchmarking; outsourcing; reengineering; workflow system; strategic scorecard, as well as material requirements planning.

In modern organisations' changing environment and organisational culture, the ability to continuously deepen and search for knowledge is paramount. Therefore, in healthcare entities as learning organisations, continuous access to knowledge, not strictly medical, is extremely important for medical and non-medical staff. Various methods and tools to support the learning and experience process help seek and explore this knowledge. However, about public healthcare providers, additional consideration must be given to the legal regulations regarding the required competencies necessary for the provision of services by medical personnel. In the case of paramedics, these are compulsory periodic training in cardio-

pulmonary resuscitation at the ALS level by the guidelines of the Polish Resuscitation Council; in the case of nurses and midwives, these are specialist, qualification and specialisation courses by the framework programmes of the Centre for Postgraduate Training of Nurses and Midwives. In addition, it should be noted that the public healthcare entities indicated in the article are, in most cases, not the organisers of the training but only receive support from external entities.

Several practical implications have been developed based on a review of articles, industry positions and electronic sources. First, to benchmark good practices as learning organisations among healthcare entities in Poland, it would be appropriate to expand the scope of the "Learning Organization" competition to other voivodeships. Secondly, knowledge of the said Competition is impossible without marketing; hence, it would be necessary to inform and encourage companies and employers in the public sector to participate in a nationwide promotional campaign. Thirdly, among healthcare entities, it would be necessary to build awareness of a learning organisation from the ground up – to start a series of training courses for medical and administrative staff, with particular attention to the benefits/values for all stakeholders in the process. Finally, since the biggest challenge in knowledge management is to share knowledge, it would be necessary to motivate employees and create a suitable "climate" and atmosphere for sharing acquired information among colleagues.

References

Aggestam, L. (2006). Learning organisation or knowledge management – which came first, the chicken or the egg? *Information Technology and Control*, 35(3), 295–302. Retrieved December 6, 2022, from https://www.researchgate.net/publication/237554540.

Alamsyah, A., Peranginangin, Y., Nurhadi, G. (2021). Learning organization using conversational social network for social customer relationship management effort. *ArXiv Preprint*. https://doi.org/10.48550/arXiv.2103.06051.

Banaszyk, P., Lewandowska, A. (2003). Strategiczna karta wyników jako instrument organizacji uczącej się. *Zeszyty Naukowe / Akademia Ekonomiczna w Poznaniu*, 36, 9–14.

Beker, D. (2022). *DPS podmiotem leczniczym, ale nie obligatoryjnie*. Gazeta Prawna. Retrieved December 27, 2022, from https://serwisy.gazetaprawna.pl/samorzad/artykuly/8490486,dps-podmiotem-leczniczym-ale-nie-obligatoryjnie.html.

Borowski, A. (2013). Social welfare houses as a total institution. *International Letters of Social and Humanistic Sciences*, 4, 70–74. https://doi.org/10.18052/www.scipress.com/ILSHS.4.70.

Chodyński, A., Jabłoński, A.S., Jabłoński, M.M. (2007). *Strategiczna Karta Wyników (Balanced Scorecard) w implementacji założeń rozwoju organizacji*. Kraków: Krakowskie Towarzystwo Edukacyjne – Oficyna Wydawnicza AFM.

Crites, G.E., McNamara, M.C., Akl, E.A., Scott Richardson, W., Umscheid, C.A., Nishikawa, J. (2009). Evidence in the learning organisation. *Health Research Policy and Systems*, 7(1), 1–13. https://doi.org/10.1186/1478-4505-7-4.

Dobrzinskiene, R., Pauriene, G., Melnychuk, D., Mohelnytska, L., Sahachko, Y. (2022). Effective management of a learning organisation: Creating opportunities for informal learning.

Independent Journal of Management & Production, 13(3), 36–57. https://doi.org/10.14807/ijmp.v13i3.1892.

Domaradzki, J. (2018). *Szpital jako instytucja społeczna*. Poznań: Uniwersytet Medyczny im. Karola Marcinkowskiego w Poznaniu.

Dyaczyńska, K. (2013). Konceptualizacja pojęcia organizacji uczącej się w publicznych jednostkach ochrony zdrowia. *Studia Ekonomiczne*, 169, 29–41.

Faizal Iylia Mohd Ghazali, M., Ahmad Kassim, N., Hakim Khalib, L., Nurjufri Jaafar, M., Ariff Idris, M. (2015). Conceptualizing learning organization towards sustaining learning organization's performance. *International Journal of Academic Research in Business and Social Sciences*, 5(1), 147–154. https://doi.org/10.6007/IJARBSS/v5-i1/1411.

Frączkiewicz-Wronka, A., Dyaczyńska, K. (2012). Proces uczenia się o interesariuszach w publicznym podmiocie leczniczym. *Zdrowie Publiczne i Zarządzanie*, 10(3), 177–188. https://doi.org/10.4467/20842627OZ.13.019.1167.

Franke, E. (2016a). Kaizen jako metoda ciągłego doskonalenia, służąca do pozyskiwania wiedzy w organizacji uczącej się. *Zeszyty Naukowe. Organizacja i Zarządzanie / Politechnika Śląska*, 87, 93–103.

Franke, E. (2016b). Rodzaje wiedzy i źródła jej pozyskiwania we współczesnym przedsiębiorstwie w aspekcie organizacji uczącej się. *Zeszyty Naukowe. Organizacja i Zarządzanie / Politechnika Śląska*, 87, 105–118.

Friedman, C., Rigby, M. (2013). Conceptualising and creating a global learning health system. *International Journal of Medical Informatics*, 82(4), e63–371. https://doi.org/10.1016/J.IJMEDINF.2012.05.010.

Fura, B. (2007). Szkoła jako ucząca się organizacja. *Annales Universitatis Mariae Curie-Skłodowska. Sectio H. Oeconomia*, 41, 215–227.

Gagnon, M.P., Payne-Gagnon, J., Fortin, J.P., Paré, G., Côté, J., Courcy, F. (2015). A learning organisation in the service of knowledge management among nurses: A case study. *International Journal of Information Management*, 35(5), 636–642. https://doi.org/10.1016/J.IJINFOMGT.2015.05.001.

Gajda, J., Gaudy, A. (2012). Wiedza jako elementarny zasób organizacji uczącej się. *Przegląd Naukowo-Metodyczny "Edukacja Dla Bezpieczeństwa"*, 5(3), 167–175.

Gerlach, R. (2021). Coaching in human resource management in organisation. *Szkoła – Zawód – Praca*, 22, 13–26. https://doi.org/10.34767/SZP.2021.02.01.

Githuku, G.K., Kinyua, G., Muchemi, A. (2022). Learning organization culture and firm performance: A review of literature. *International Journal of Managerial Studies and Research*, 10(2), 38–50. https://doi.org/10.20431/2349-0349.1002005.

Jóźwiakowski, P. (2016). Organizacja ucząca się – pomysł na konkurencyjność rynkową. *Zeszyty Naukowe Uczelni Jana Wyżykowskiego. Studia z Nauk Społecznych*, 9, 329–340.

Juras, B. (2010). Współczesne zarządzanie a opieka zdrowotna. *Pielęgniarstwo Polskie*, 1(35), 53–55.

Jurczak, A. (2017). Szkoła jako organizacja ucząca się w dobie reform oświatowych. *Biblioteka Współczesnej Myśli Pedagogicznej*, 6, 43–56.

Karkowski, T.A., Korczak, K. (2016). *Zarządzanie wiedzą w ochronie zdrowia z wykorzystaniem wybranych rozwiązań ICT*. Warszawa: Wolters Kluwer.

Kaziemierska, I., Lachowicz, I., Piotrowska, L. (n.d.). *Idea organizacji uczącej się. Kluczowe założenia*. Warszawa: Ośrodek Rozwoju Edukacji.

Kosiorek, M. (2012). Dom pomocy społecznej jako instytucja totalna. In R. Szczepanik, J. Wawrzyniak (eds.), *Opieka i wychowanie w instytucjach wsparcia społecznego: diagnoza i kierunki rozwoju*. Łódź: Wydawnictwo Akademii Humanistyczno-Ekonomicznej.

Kuźmicz, K.A. (2015). Benchmarking in university development towards a learning organisation. *International Journal of Contemporary Management*, 14(2), 89–101.

Łuczak, J. (2013). Polska Policja jako publiczna organizacja ucząca się. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, 310, 366–376.

Marx, E.W., Padmanabhan, P. (2020). *Healthcare Digital Transformation: How Consumerism, Technology and Pandemic Are Accelerating the Future*. New York: Productivity Press. https://doi.org/10.4324/9781003035695.

Murray, P., Chapman, R. (2003). From continuous improvement to organisational learning: Developmental theory. *The Learning Organization*, 10(5), 272–282. https://doi.org/10.1108/09696470310486629/FULL/XML.

Okoniewska, M. (2018). Suwałki: szpital psychiatryczny z certyfikatem ISO. *Prawo.pl*. Retrieved September 5, 2023, from https://www.prawo.pl/zdrowie/suwalki-szpital-psychiatryczny-z-certyfikatem-iso,261532.html.

Örtenblad, A. (2018). What does "learning organisation" mean? *Learning Organization*, 25(3), 150–158. https://doi.org/10.1108/TLO-02-2018-0016.

Pałucha, K. (2012). Nowoczesne metody w zarządzaniu przedsiębiorstwem. *Zeszyty Naukowe Politechniki Śląskiej. Organizacja i Zarządzanie*, 60, 259–279.

Paraschivescu, A.O. (2013). Qualitics and the quality approach. *Economy Transdisciplinarity Cognition*, 16(2), 37–42.

Pasowicz, M. (2012). Wprowadzenie. In M. Pasowicz (ed.), *Zarządzanie podmiotami leczniczymi – bezpieczeństwo pacjentów i sposoby ograniczania ryzyka szpitali* (7–9). Kraków: Krakowskie Towarzystwo Edukacyjne – Oficyna Wydawnicza AFM.

Podlaski Urząd Wojewódzki w Białymstoku. (n.d.). *Wykaz podmiotów leczniczych wykreślonych z rejestru prowadzonego przez Wojewodę Podlaskiego*. Retrieved December 27, 2022, from https://www.gov.pl/web/uw-podlaski/wykaz-podmiotow-leczniczych-wykreslonych-z-rejestru-prowadzonego-przez-wojewode-podlaskiego.

Porębski, D. (2012). Koncepcja Strategicznej Karty Wyników dla nowoczesnego polskiego szpitala. In I. Rudawska, E. Urbańczyk (eds.), *Opieka zdrowotna. Zagadnienia ekonomiczne* (386–403). Warszawa: Difin.

Przywojska, J. (2014). *Nowe zarządzanie i governance w pracy socjalnej*. Warszawa: Centrum Rozwoju Zasobów Ludzkich.

Rabiej, L. (2013). Szkoła jako organizacja ucząca się. *Przedsiębiorczość i Zarządzanie*, 14(13), 329–334.

Rao, M. (2012). Overview: The social life of KM tools. In M. Rao (ed.), *Knowledge Management Tools and Techniques: Practitioners and Experts Evaluate KM Solutions* (1–56). London: Routledge. https://doi.org/10.4324/9780080478869.

Raszewska-Skałecka, R. (2021). E-administracja w rozwoju usług edukacyjnych – szkoła jako organizacja "ucząca się". In R. Kusiak-Winter, J. Korczak (eds.), *Ewolucja elektronicznej administracji publicznej* (43–56). Wrocław: E-Wydawnictwo. Prawnicza i Ekonomiczna Biblioteka Cyfrowa. Wydział Prawa, Administracji i Ekonomii Uniwersytetu Wrocławskiego. https://doi.org/10.34616/23.21.010.

Rzeczkowska, K. (2018). Metody zwalczania agresji wobec funkcjonariuszy Policji w świetle opinii społecznej. In E. Żywucka-Kozłowska, A. Szczechowicz, K. Rzeczkowska (eds.), *Problemy współczesnego świata. Zagadnienia wybrane* (37–49). Olsztyn: [Uniwersytet Warmińsko-Mazurski w Olsztynie. Wydział Prawa i Administracji].

Samodzielny Publiczny Zakład Opieki Zdrowotnej Wojewódzka Stacja Pogotowia Ratunkowego w Białymstoku. (2022). *System jakości*. Retrieved September 5, 2023, from http://www.wspr.bialystok.pl/?page_id=16810.

Samodzielny Szpital Miejski im. PCK w Białymstoku. (2022). *System zarządzania jakością – Certyfikat ISO 9001:2022*. Retrieved September 5, 2023, from https://www.szpitalpck.pl/certyfikat-iso-90012009/.

Senge, P.M. (2006). *The Fifth Discipline: The Art and Practice of the Learning Organization*. New York: Doubleday/Currency.

Serrat, O. (2017). Learning in strategic alliances. In O. Serrat, *Knowledge Solutions: Tools, Methods, and Approaches to Drive Organisational Performance* (639–647). Singapore: Springer. https://doi.org/10.1007/978-981-10-0983-9_71.

Skowron, Ł. (2017). *Uczenie się klienta w warunkach zmian rynkowych*. Lublin: Politechnika Lubelska.

Stefanelli, M. (2001). The socio-organisational age of artificial intelligence in medicine. *Artificial Intelligence in Medicine*, 23(1), 25–47. https://doi.org/10.1016/S0933-3657(01)00074-4.

Szpital Wojewódzki im. dr. Ludwika Rydygiera w Suwałkach. (2022). *Organizacja ucząca się 2022*. Retrieved December 27, 2022, from https://szpital.suwalki.pl/pl/organizacja-uczaca-sie-2022/.

Szpital Wojewódzki im. dr. Ludwika Rydygiera w Suwałkach. (2023). *Poradnia Podstawowej Opieki Zdrowotnej z akredytacją Ministra Zdrowia*. Retrieved December 27, 2022, from https://szpital.suwalki.pl/poradnia-podstawowej-opieki-zdrowotnej-z-akredytacja-ministra-zdrowia/.

Terziovski, M., Howel, A., Sohal, A., Morrison, M. (2000). Establishing mutual dependence between TQM and the learning organisation: A multiple case study analysis. *The Learning Organization*, 7(1), 23–32. https://doi.org/10.1108/09696470010313650.

Trzcieliński, S. (2007). Review of some ideas and methods of lean management. In S. Trzcieliński (ed.), *Agile Enterprise: Concepts and Some Results of Research* (12–17). Madison: IEA Press.

Vainauskienė, V., Vaitkienė, R. (2022). Challenges to the learning organisation in the context of COVID-19 pandemic uncertainty: Creativity-based response. *Creativity Studies*, 15(2), 332–347. https://doi.org/10.3846/CS.2022.15109.

Wahab, S.M.A.A., Saad, M. (2022). Digital transformation acceleration in health sector during COVID-19: Drivers and consequences. *Journal of Business and Management Sciences*, 10(4), 164–179. https://doi.org/10.12691/jbms-10-4-1.

Węgrzyn, M. (2018). Zarządzanie finansami organizacji świadczących usługi medyczne. In M. Dobska (ed.), *Zarządzanie podmiotem leczniczym* (189–229). Warszawa: PZWL Wydawnictwo Lekarskie.

Westcott, L., Rosser, E.A. (2023). Coaching and mentorship for successful leadership. In E. Rosser, C. Wood (eds.), *Leading and Managing in Contemporary Health and Social Care* (153–164). Mumbai: Elsevier Health Sciences.

Wójcik, K. (2022). *DPS jak przychodnia. Będzie mógł wykonywać działalność leczniczą*. Rzeczpospolita. Retrieved December 27, 2022, from https://www.rp.pl/zdrowie/art36682481-dps-prawie-jak-przychodnia-bedzie-mogl-wykonywac-dzialalnosc-lecznicza.

Wojewódzka Stacja Pogotowia Ratunkowego w Suwałkach. (2022). *System jakości*. Retrieved September 5, 2023, from https://www.wsprsuw.pl/system-jakosci/.

Wojewódzki Urząd Pracy w Białymstoku. (2017). *Wyniki konkursu "Organizacja ucząca się 2016*." Retrieved December 27, 2022, from https://wupbialystok.praca.gov.pl/-/4087244-wyniki-konkursu-organizacja-uczaca-sie-2016-.

Wojewódzki Urząd Pracy w Białymstoku. (2018). *Wyniki konkursu "Organizacja ucząca się 2017."* Retrieved December 27, 2022, from https://wupbialystok.praca.gov.pl/-/6208699-wyniki-konkursu-organizacja-uczaca-sie-2017-.

Wojewódzki Urząd Pracy w Białymstoku. (2019). *Wyniki konkursu "Organizacja ucząca się 2018."* Retrieved December 27, 2022, from https://wupbialystok.praca.gov.pl/-/8550924-wyniki-konkursu-organizacja-uczaca-sie-2018-.

Wojewódzki Urząd Pracy w Białymstoku. (2020). *Wyniki konkursu "Organizacja ucząca się 2019."* Retrieved December 27, 2022, from https://wupbialystok.praca.gov.pl/-/11124639-wyniki-konkursu-organizacja-uczaca-sie-2019-.

Wojewódzki Urząd Pracy w Białymstoku. (2021). *Wyniki konkursu "Organizacja ucząca się 2021."* Retrieved December 27, 2022, from https://wupbialystok.praca.gov.pl/-/16485195-wyniki-konkursu-organizacja-uczaca-sie-2021-.

Wojewódzki Urząd Pracy w Białymstoku. (2022). *Konkurs "Organizacja ucząca się 2022."* Retrieved December 27, 2022, from https://wupbialystok.praca.gov.pl/441.

Wojewódzki Urząd Pracy w Białymstoku. (2022). *Regulamin konkursu "Organizacja ucząca się 2022."* Retrieved January 2, 2023, from https://wupbialystok.praca.gov.pl/documents/102984/18817761/Regulamin%20Organizacja%20ucz%C4%85ca%20si%C4%99%202022.pdf/bb8cc1e1-12ac-4319-8017-d6032b191156.

Wolan, T. (2004). Placówka opiekuńczo-wychowawcza typu resocjalizacyjnego jako organizacja ucząca się przez doświadczenie (syndrom zmiennych badawczych sprawności organizacyjnej). *Chowanna*, 1, 164–188.

Wykowski, J. (2022). *DPS jak podmiot leczniczy: zawrze umowę z NFZ, udzieli świadczeń*. Puls Medycyny. Retrieved December 27, 2022, from https://pulsmedycyny.pl/dps-jak-podmiot-leczniczy-zawrze-umowe-z-nfz-udzieli-swiadczen-1155492.

Zbyrad, T. (2012). Instytucje opieki totalnej jako forma zniewolenia i kontroli nad człowiekiem potrzebującym pomocy – na przykładzie domów pomocy społecznej. *Roczniki Nauk Społecznych*, 40(2), 51–69.

Zbyrad, T. (2014). *Od instytucji totalnej ku demokratycznej? Domy pomocy społecznej w Polsce*. Kraków: Wydawnictwo Naukowe Uniwersytetu Pedagogicznego.

Żółtowski, M. (n.d.). *Szpital psychiatryczny jako instytucja totalna*. Forum Psychiatryczne. Retrieved January 4, 2023, from https://www.psychiatria.pl/artykul/szpital-psychiatryczny-jako-instytucja-totalna/27672.

Ekonomia — Wroclaw Economic Review 29/3 (2023)
Acta Universitatis Wratislaviensis
No 4193

https://doi.org/10.19195/2658-1310.29.3.13

Konrad Żak
ORCID: 0000-0002-2632-9782
John Paul II University in Biała Podlaska
k.zak@dyd.akademiabialska.pl

Medication use review as a service for pharmaceutical care: Conditions for implementation in pharmacy practice

Date of submission: 31.05.2023; **date of acceptance:** 29.08.2023

JEL classification: D22, I12, L21, M31, O32

Keywords: medication use review, pharmaceutical care, community pharmacy, pharmacy services, management

Abstract

Pharmaceutical care is an aggregated pharmaceutical service based on an innovative approach towards the patient's pharmacotherapy process. It was introduced into the Polish pharmaceutical law system in 2008, but it was not until the end of 2020 that the list of activities included in this innovative health service was clarified. The delayed initiation of pharmaceutical care means that implementation procedures are lacking, making it difficult to fully implement it into pharmacy practice. The initiating service for pharmaceutical care in pharmacy practice is the medication use review (MUR), which, combined with the pharmacotherapy assessment, has the task of detecting and solving patients' drug-related problems and thus ensuring safety in the pharmacotherapy process. Such important objectives for medication use review face organisational barriers that make its effective implementation difficult and practically impossible, limiting the scope of pharmaceutical care to the consultative aspect in practice. The aim of the article is to present the implementation conditions of medication use reviews in Polish pharmacy practice, which helped to identify the conditions for effective implementation of pharmaceutical care. Achieving the research objectives requires the use of a variety of research methods. To identify the conditions for effective implementation of medication use reviews, the method of analysis of legal acts was used. Apart from that, the analysis of literature and the method of examination of documents were also implemented, which made it possible to determine whether the Polish pharmaceutical law system creates conditions for effective provision of this service in pharmacy practice. The method of observation (*the mystery shopper*) was also used to indicate the territorial (subjective scope) scope of the provision of medication use review and to identify barriers to their implementation in Polish organisational

and legal realities. All the methods applied made it possible to determine to what extent pharmacist shortages in the pharmacy limit the implementation process. The results of the study were subjected to statistical analysis.

1. Introduction

The system of pharmaceutical law defines in detail the conditions for practising the profession of pharmacist by specifying the objectives around which all the service activity of pharmacists is focused – protection of the patient's health and protection of public health. The aforementioned objectives are achieved by the pharmacist through the provision of pharmaceutical care, the provision of pharmaceutical services, and the performance of professional tasks and activities (Act on the Pharmaceutical Profession, 2020, Article 4(1)). Placing pharmaceutical care at the forefront of the activities in question is a deliberate effort by the legislator to emphasise its key role in pharmacy practice, carried out as part of the social public health system. Separating pharmaceutical care as a health service provided by a pharmacist and constituting a documented process of cooperation between a pharmacist and a patient and a doctor, and optionally with representatives of other medical professions, oriented towards ensuring proper supervision of the course of individual pharmacotherapy of a patient, obliges the body running a pharmacy to create organisational conditions enabling its professional implementation.

Pharmaceutical care comprises a number of activities precisely defined by the legislator such us: providing pharmaceutical consultations, performing medication use reviews with pharmacotherapy assessment, taking into account the patient's drug-related problems, developing an individual pharmaceutical care plan, taking into account the patient's drug-related problems performing diagnostic tests, and issuing prescriptions in continuation of a medical order (Act on the Pharmaceutical Profession, 2020, Article 4(2)). Despite such a detailed indication of the scope of activity, the potential of pharmaceutical care is not fully exploited due to the concerns of pharmacists, resulting from an imprecise and inconsistent pharmaceutical law system. The lack of implementing regulations for the Act on the Pharmaceutical Profession, which clarifies the division of competences of individual healthcare professionals in the process of individual pharmacotherapy of a patient, makes a significant number of pharmacists unwilling to assume the burden of responsibility for the patients' health and life for fear of a possible escalation of patients' claims, which may lead to legal consequences for the pharmacist and can incur compensation for the pharmacy.

The provision of medication use review (MUR), together with pharmacotherapy assessment that takes into account a patient's drug-related problems, is an aggregate service initiating pharmaceutical care, which faces organisational problems at the implementation stage. These are related to the time-consuming

administrative and documentary steps involved in obtaining information from the patient on his or her health status and the medicines used, as well as the obligatory collection of personal data. The lack of an IT system that would allow this information to be automatically entered, collected, processed, and updated in the pharmacy means that these activities require additional pharmacists to be seconded to administrative activities, which entails additional costs for the pharmacy to employ additional staff.

2. Theoretical aspect of the research

2.1. Pharmaceutical care

Medication use review is the service of pharmaceutical care, which was first defined in 1975 and included all activities involved in the preparation and dispensing of medicines (Mikeal et al., 1975, 567–574). The procedural aspect of pharmaceutical care was recognised in 1980 when the feedback mechanism was introduced into its definition (Brodie, Parish and Poston, 1980, 276–278). The subjective role of the pharmacist in the process was noted in 1987 when the responsibilities of the pharmacist to the patient were defined with a remark that only the pharmacist is able to provide professional supervision of the pharmacotherapy process (Hepler, 1987, 369–385). The synthesis of pharmaceutical care was made in 1990 as a result of its identification with the responsible practice of pharmacotherapy aimed at achieving specific outcomes that improve the patient's quality of life, which included: curing the disease, eliminating or reducing the patient's symptoms, stopping or slowing the disease process, and preventing the disease or its symptoms (Hepler and Strand, 1990, 539). The procedural dimension was based on the pharmacist's co-operation with the patient and other professionals in designing, implementing, and monitoring the therapeutic plan by performing three main functions: identifying, solving, and preventing medication-related problems. The comprehensiveness of Ch. Hepler's and L. Strand's definition made it the first widely accepted foundation for initiating work on the professional management of a patient's pharmacotherapy process.

The development of a definition of pharmaceutical care was the result of years of work to define the role of the pharmacist in the patient healthcare system. Reducing his or her role solely to that of a "drug giver" represented the untapped potential of the pharmacist as a professional (McCormack, 1956, 308–315). The pharmacist should not be reduced to a salesman's role, but should be guided by patient welfare and accuracy (Wardwell, 1963; Penna, 1965, 584–586). For this reason, there began to be calls for an increase in the professional responsibility of pharmacists (Linn and Davis, 1973, 502–508). This would be done by increasing

the emphasis on education in effective communication with the patient to initiate the construction of a system of supervision of the use of medicines (Apple, 1967, 474). An important role in this system would be played by government authorities, whose responsibilities would include increasing safety guarantees in the process of providing pharmaceutical services (Knapp et al., 1969, 502).

In the Polish reality, the first systemic works describing the advantages of pharmaceutical care referred to the basic characteristics of this health service (Łazowski, 2005). This led to a redefinition of the catalogue of pharmaceutical services, to which pharmaceutical care was classified in 2008. From then on, the focus began to shift to profiling the activities that initiate pharmaceutical care, with a particular focus on the documentation aspect (Skowron, 2008, 6–7; Skowron et al., 2010, 393–402). Implementation conditions and benefits for patients and pharmacies have also been presented in relation to the ways in which quality competes (Szalonka, 2011) and the need for effective physician-pharmacist collaboration (Waszyk-Nowaczyk, Simon and Szukalska, 2013, 262–265), as well as the advantages of technological support for pharmaceutical care (Merks et al., 2013, 408–416).

The medical-pharmaceutical dimension of pharmaceutical care is extremely important from the point of view of the public health effectiveness of the patient's healthcare system. It has been characterised in terms of pharmacist-pharmacist collaboration in the supervision of pharmacotherapy of a patient with diabetic foot syndrome (Olczyk, Pluta and Tomasik, 2009, 338–349), a geriatric patient (Neumann-Podczaska, Wieczorowska-Tobis and Grześkowiak, 2014, 126–130), a patient with asthma (Rysiak et al., 2018, 184–188), and an oncology patient (Bryła et al., 2019, 164–171). Comprehensive coverage of the medical-pharmaceutical aspect of pharmaceutical care referred to symptom identification, disease entity diagnosis and treatment (Rutter, 2018), patient orientation in pharmacotherapy management (Cippole, Strand and Morley, 2012), and ways to implement pharmaceutical care in pharmacy practice (Alves da Costa, van Mil and Alvarez-Risco, 2019).

2.2. Implementation of pharmaceutical care into the Polish pharmaceutical law system

The definition of pharmaceutical care was introduced into the system of Polish pharmaceutical law as a result of the amendment to the Regulation of the Minister of Health of 22 March 2007 on continuous training of pharmacists employed in pharmacies and pharmaceutical wholesalers (Regulation of the Minister of Health, 2007, § 2(1)(1)). In the aforementioned regulation, pharmaceutical care was understood as "the pharmacist's participation in ensuring the correct course of pharmacotherapy aimed at curing, eliminating or alleviating the symptoms of a disease, halting or delaying a pathological process or preventing a disease". In a normative

act with the rank of law, the definition of pharmaceutical care appeared as a result of the amendment of the Act on Chambers of Pharmacy (Act amending the Act on Chambers of Pharmacy, 2008, art. 1 item 2). It was made more specific and defined as "a documented process in which the pharmacist, in cooperation with the patient and the doctor and, if necessary, with representatives of other medical professions, supervises the correct course of pharmacotherapy with a view to achieving its specific effects improving the patient's quality of life". Pharmaceutical care acquired its current shape as a result of the enactment of the Pharmaceutical Profession Act in 2020, which shows that its provision is assigned to the pharmacist and not the pharmacy (Zimmermann, 2021, 50). It is regarded as a "health service provided by the pharmacist and constituting a documented process in which the pharmacist, working together with the patient and the patient's treating physician and, if necessary, with representatives of other health professions, ensures the correct course of individual pharmacotherapy" (Act on the Pharmaceutical Profession, 2021, Article 4(2)).

2.3. Medication use review – the significance and basic characteristics

Medication use review with pharmacotherapy assessment, taking into account the patient's drug-related problems, is a service provided as part of pharmaceutical care, but not defined in the pharmaceutical law system. It is aimed at detecting and solving drug-related problems, and ensuring safety in the pharmacotherapy process (Act on the Pharmaceutical Profession, 2020, Article 4(2)(2)). Such an objective set by the legislator requires that the person who provides this newly introduced service has specialised knowledge. Therefore, it can only be provided by a pharmacist who has the relevant competence and practical experience in working with an individual patient. This is intended by the legislator to guarantee that the patient receives the maximum therapeutic benefit (Drozd, 2021, 60).

Medication use review is aimed at people taking more than one medicine, i.e. patients being treated for chronic diseases. Its purpose is to obtain the following information from the pharmacist: how many professionals the patient is being treated by, how he/she is using the medication, and whether he/she perceives a correlation between pharmacotherapy and improvement in health and quality of life. In practice, the medication use review is based on the identification of drug-related problems, which could be pharmacotherapy inefficacy and adverse drug events. The reasons for the drug-related problem could be drug-drug and drug-food interactions, patient's nonadherence to therapeutic recommendations, or improper professional recommendations. The essence of MUR is to ensure the safety and effectiveness of pharmacotherapy. In addition to this, it should take into account the cost-effectiveness of pharmacotherapy on the basis of an analysis of the patient's

individual drug requirements, in order to counteract the waste resulting from excessive patient stockpiling.

Medication use review and prescription intervention (PI) are services performed by qualified pharmacists who identify a problem in a prescription or conduct an annual interview with patients with identified polypharmacy over an extended period of time (Merks, Świeczkowski and Jaguszewski, 2018). As a new service provided as part of pharmaceutical care, medication use review can be performed in Poland on the basis of the guidelines of the Polish Pharmaceutical Society, which include, among others: selected legal aspects of conducting a medication use review, stages of performing a medication use review, rules for qualifying a patient for a medication use review, rules for conducting a pharmacist interview, analysing data and determining interventions, and preparing a report for the prescriber and patient (Drozd et al., 2023). The medication use review in daily practice can also be implemented by taking into account case studies prepared by professionals, including templates and charts to facilitate the process of obtaining information from the patient and documenting it (Neumann-Podczaska and Wieczorowska-Tobis, 2022)[1].

3. Methodology of the study

3.1. The aim and methodology of the empirical study

The aim of this article is to present the implementation conditions of medication use reviews in Polish pharmacy practice, which allows us to determine the conditions for effective implementation of pharmaceutical care. The realisation of the research objectives requires the use of a variety of research methods. To identify the conditions for effective implementation of medication use reviews, the method of analysis of legal acts was used, as well as the analysis of literature and the method of document research, which allowed to determine to what extent the Polish pharmaceutical law system creates conditions for effective provision of this service in a general pharmacy. The analysis included the Pharmaceutical Law Act (Journal of Laws 2022, item 2301) and the Pharmaceutical Profession Act (Journal of Laws 2021, item 1873), as well as the *Guidelines of the Polish Pharmaceutical Society for the conduct of health care provision – medication use review* (Drozd et al., 2023).

[1] Support for the pharmacist in the implementation of the social mission of protecting public health can be campaigns implemented by non-governmental organizations, such as the "Refill the medicine cabinet" campaign aimed at seniors, who take the most medicines. This campaign includes live and virtual educational activities based on periodic publication of materials promoting the campaign. During specially organized events, the organization helps anyone willing to clean out their medicine cabinets (Obywatele Zdrowo Zaangażowani).

The mystery shopper (observation) method was used to indicate the territorial (subjective) scope of medication use reviews and to identify barriers to their implementation in Polish organisational and legal realities. Participatory and non-participatory observations were used for this purpose. This made it possible to determine the extent of medication use reviews conducted and to identify how pharmacist shortages in the pharmacy limit the implementation process. The results of the study were subjected to statistical analysis. A statistical measure based on a correlation table was used for this purpose with the application of the Cramer convergence coefficient.

3.2. Selection, characteristics of the research sample, and research procedure

The research procedure was based on the opinions of pharmacy professional staff (pharmacists), including owners and managers of general pharmacies (questionnaire method), and on the observation of their behaviour during daily work (*the mystery shopper* method). The target-quota selection of the research sample for the implementation of the empirical study was carried out on the basis of the following selection criteria:

– selection of general pharmacies located in Poland based on the criterion of administrative division, allowing the study to be carried out in three provinces, selected on the basis of:

– one of the highest values of the indicator of population per one pharmacy (Pomeranian Province: 3558),

– one of the lowest population per pharmacy (Lublin Province: 2766),

– the highest number of general pharmacies registered and operating (Masovian Province: 1619);

– conducting surveys on a sample of at least 20% of general pharmacies registered and operating in a given province.

For the purpose of the analyses, reference was made to statistical data published by the Central Statistical Office and the Statistical Office of Kraków (Główny Urząd Statystyczny and Urząd Statystyczny w Krakowie, 2022, Table 76). The study was carried out in the morning, in the afternoon (after 4 p.m.) and at weekends (Saturday and Sunday) to identify entities with inadequate pharmacist staffing. The percentage of pharmacies surveyed is shown in Table 1.

During the implementation of the empirical study (April–May 2023), it was possible to achieve the assumed level of conducting research on a sample of at least 20% of general pharmacies registered and operating in the territory of a given province. This was due to the specificity of the adopted research method – observation conducted according to *the mystery shopper* methodology (*the mystery shopper* method).

Table 1. Number of pharmacies selected for the survey

Category / Unit of administrative division	Pharmacies			Pharmacist			Pharmacy without a pharmacist	
	L_{aw}	**L_{ab}**	% (1)	L_{fw}	L_{fb}	% (2)	**L_{abf}**	% (3)
Masovian Province	1619	**330**	2038	3961	**150**	3.79	**180**	54.55
Pomeranian Province	663	**148**	22.32	1725	**69**	4.00	**79**	53.38
Lublin Province	737	**156**	21.17	1672	**71**	4.25	**85**	54.49
Total	3019	**634**	21.00	7358	**290**	3.94	**344**	54.26

L_{aw} – number of pharmacies in the province; L_{ab} – number of pharmacies participating in the survey; L_{fw} – number of pharmacists in the province; L_{fb} – number of pharmacists taking part in the survey; L_{abf} – number of pharmacies without a pharmacist; % (1) – percentage of pharmacies in relation to the number of pharmacies in the province; % (2) – percentage of pharmacists in relation to the number of pharmacists taking part in the survey; % (3) – percentage of pharmacies without a pharmacist in relation to the number of pharmacies taking part in the survey. A pharmacy without a pharmacist identifies an entity in which, during the empirical study, there was no pharmacist during the working hours of the pharmacy, which is a violation of Article 92 of the Pharmaceutical Law.

Source: compiled from own research.

3.3. Results of the empirical study

The analysis of the legal acts – the Pharmaceutical Law Act (Journal of Laws, 2022, item 2301) and the Pharmaceutical Profession Act (Journal of Laws, 2021, item 1873) – has made it possible to identify the catalogue of pharmaceutical services permitted to be provided in a pharmacy. The legislator in the Pharmaceutical Law defined a pharmacy as "a public health care facility where authorised persons provide, in particular, pharmaceutical services referred to in paragraph 2" (Pharmaceutical Law, 2001, Article 86(1)). The use of the phrase "in particular" indicates the possibility of pharmaceutical care referred to in Article 4(2) of the Act on the Pharmaceutical Profession, the provision of pharmaceutical services referred to in Article 4(3) of that Act and the performance of professional tasks which are specifically indicated in that Act in Article 4(4)(1), (2), (4) to (10) and (13) to (16) (Pharmaceutical Law, 2001, Article 86(2)). The reference to the Pharmaceutical Profession Act is intended to clarify the types of activities that can be carried out in a pharmacy.

In paragraph 1 of Article 4 of the Act on the Pharmaceutical Profession, the legislator indicated the purpose of the pharmacist profession, which is to protect the health of the patient and to protect public health, and the scope of activities, limiting it to providing pharmaceutical care referred to in paragraph 2, providing pharmaceutical services referred to in paragraph 3, performing the professional tasks referred to in paragraph 4, and performing the activities referred to in para-

graph 5. The medication use review together with the assessment of pharmacotherapy, taking into account the patient's drug-related problems, has been qualified as an activity falling within the scope of pharmaceutical care (Act on the Pharmaceutical Profession, 2022, Article 4(2)(2)). The legislator, in singling out this activity, indicated only the purpose of its performance – detecting and solving drug-related problems and ensuring safety in the process of pharmacotherapy, without specifying in detail the forms and principles. The forms and principles in question have been defined in the *Guidelines of the Polish Pharmaceutical Society for the conduct of health services – medication use review* (Drozd et al., 2023, 11–62). The analysis of the literature and the method of document examination selected with regard to the specificity of the Polish public health system indicate that the following types of medication use review can be performed: simple review (without patient participation), intermediate review (with and without patient participation), and advanced review (Drozd et al., 2023, 12–13). Medication use review according to the *Guidelines of the Polish Pharmaceutical Society for the conduct of health services – medication use review* constitutes a service provided in a process aspect, as it consists of 10 consecutive stages (Drozd et al., 2023, 29):

− STAGE 1: collection of data for analysis,
− STAGE 2: identification of drug-related problems,
− STAGE 3: identification of causes of drug-related problems,
− STAGE 4: development of a proposal to solve the detected drug-related problems,
− STAGE 5: preparation and issuance of a report to the physician,
− STAGE 6: preparation and issuance of a report for the patient,
− STAGE 7: development of educational materials for the patient,
− STAGE 8: development of a post medication use review management plan,
− STAGE 9: document the activities performed as part of the medication use review,
− STAGE 10: determine the anticipated effects of the medication use review and its impact on the patient's health status.

The categorisation of a pharmacist-led medication use review as a pharmacy practice activity links it to the pharmacist and not to the entity where this service is provided (community pharmacy, hospital ward, long-term care facility in which the patient is cared for on a permanent or intermittent basis, a primary care practice, an outpatient specialist care practice in which the patient is cared for in relation to his or her chronic condition, a pharmaceutical care practice, a community nurse's practice, in a coordinated care situation). Therefore, there may be a significant limitation in the implementation of medication reviews in those entities where there is a shortage of pharmacists.

The empirical study using the observation method (*the mystery shopper)* involved 290 pharmacists and 344 pharmacy technicians employed in 634 general pharmacies operating in three provinces (Masovia, Pomerania, Lublin). The possi-

bility of conducting medication use reviews in three organisational forms (at the counter, in a separate position within the dispensing room, and in a separate room) in relation to pharmacist staffing is presented in Table 2.

Table 2. Pharmacy medication use review versus pharmacist presence

No.	Province / Category	Masovia			Pomerania			Lublin			Overall		
		AF $\frac{Tak}{Nie}$	ABF $\frac{Tak}{Nie}$	χ^2_{Yates} / C_{xy}	AF $\frac{Tak}{Nie}$	ABF $\frac{Tak}{Nie}$	χ^2_{Yates} / C_{xy}	AF $\frac{Tak}{Nie}$	ABF $\frac{Tak}{Nie}$	χ^2_{Yates} / C_{xy}	AF $\frac{Tak}{Nie}$	ABF $\frac{Tak}{Nie}$	χ^2_{Yates} / C_{xy}
1	Carrying out drug screening at the checkout counter (window)	2	0	0.71	2	0	0.66	2	0	0.71	6	0	5.15
		148	180	B	67	79	B	69	85	B	284	344	0.09
2	Carrying out a drug review in a dedicated station in the dispatching room	2	0	0.71	1	0	0.00	1	0	0.01	4	0	2.83
		148	180	B	68	79	B	70	85	B	286	344	0.07
3	Conducting a drug review in a separate room	1	0	0.01	0	0	0.00	0	0	0.00	1	0	0.01
		149	180	B	69	79	B	71	85	B	289	344	B
4	Conducting a drug review (in total)	5	0	4.06	3	0	1.66	3	0	1.76	11	0	11.15
		145	180	0.11	66	79	B	68	85	B	279	344	0.13
		150	180		69	79		71	85		290	344	

	Weak (low) dependency [01–03]
B	No statistically significant relationship (value $\chi^2_{Yates} < \chi^2_{0,05,1}$)
	Ambiguous decision, with a different, theoretically acceptable level of significance $\alpha = 0.1$, value $\chi^2_{0,1,1} = 2.7055$; for $\chi^2_{Yates} \in \langle 2{,}7055, n \rangle$ the correlation relationship is significant

AF – pharmacy staffed by pharmacists; ABF – pharmacy without a pharmacist; $\chi^2_{0,05,1} = 3.8415$.

Source: compilation based on own research.

The observation method using *the mystery shopper* methodology does not allow for a detailed determination of the stages of the medication use review, as analytical activities can be performed without the presence of a patient. Therefore, it is only possible to indicate whether medication use reviews are performed in a given pharmacy (participant observation supported by relevant queries), but the type of medication use review cannot be precisely determined.

4. Conditions for the implementation of medication use reviews in pharmacy practice – analysis of the study results

The implementation of medication use reviews in pharmacy practice is a major challenge for the pharmacy provider and professional staff. Increasing the responsibility of the pharmacist in the management of the patient's pharmacotherapy is a step in the right direction. However, such measures should be linked to an appropriate education system in pharmacy studies while supporting a system of continuing professional development based on specialisation training, qualification courses, and postgraduate studies. Medication use review as a pharmaceutical service is provided as a part of the pharmacist's pharmaceutical care, based on the pharmacist's collaboration with the patient's treating physician and, if necessary, with representatives of other health professions. For this reason, it is important to precisely allocate and demarcate responsibilities among the designated medical professions, which should be done within the system of medical and pharmaceutical law. The lack of legal regulations in this regard is an element that hinders the implementation of pharmaceutical care in pharmacy practice (Żak, 2018, 76–77).

The professional preparation of the pharmacist is facilitated by the precisely prepared guidelines of the Polish Pharmaceutical Society, which fill the cognitive and legal gap in the education system and the pharmaceutical law system. Despite this, performing medication use reviews in community pharmacies together with pharmacotherapy assessment, taking into account the patient's drug-related problems, may encounter implementation difficulties due to:

− Shortage of pharmacists – 54.26% of the pharmacies surveyed do not have enough pharmacists employed, which in practice precludes the performance of medication use reviews and pharmaceutical care in these entities (the performance of medication use reviews and pharmaceutical care is linked to the pharmacist's profession and not the place where this service is provided).

− The need to allocate space and prepare an adequately equipped workstation, together with the allocation of additional pharmacists for the practical implementation of the medication use review – documenting the process is time-consuming (requiring the dedication of approximately 1–1.5 hours per person) and cost-intensive, as it requires additional costs related to the preparation and equipping of the consultation workstation (e.g. costs related to the allocation of space for the workstation, the purchase of a computer with appropriate software and licence fees, and the costs of employing additional pharmacists, which may be difficult due to staff shortages in the labour market).

− Lack of connection with the reimbursement system, resulting in the transfer of the entire cost of organising a drug review to the pharmacy entrepreneur (es-

timated cost of performing a drug review is PLN 150–160 per patient – Waligórski, 2022).

− Lack of widespread interest on the part of patients – low demand generating a low supply of such services – medication use reviews can be observed in 1.74% of the public pharmacies surveyed.

Analysing the results of the empirical study, it should be noted that the low percentage of pharmacies performing medication use reviews (1.74%) is due to pharmacists waiting for the results of the government's medication use review pilot programme and for the concretisation of implementation recommendations and the projection of tangible benefits for pharmacies, based on a system of various incentives. The lack of a government support system for pharmacists may significantly delay the full implementation of medication use reviews in pharmacy practice. Comprehensive implementation of medication use reviews with pharmacotherapy assessment, taking into account the patient's drug-related problems, can improve safety in the pharmacotherapy process by minimising or even eliminating adverse drug interactions, thereby significantly reducing the number of hospitalisations associated with polypragmasy.

5. Conclusions

The practical implementation of medication use reviews in a community pharmacy is a major challenge for the pharmacy authority due to the high implementation costs. These are related to the need to reorganise the work of the pharmacy, as professional implementation of medication use reviews requires preparation of a consultation position (point) and allocating an adequate number of pharmacists to consultations, which may require additional staff. Despite these limitations, conducting medication use reviews together with pharmacotherapy assessment, taking into account the patient's drug-related problems, can bring tangible benefits to the pharmacy in the future, related to optimising competitive capabilities as part of building a competitive advantage. This is because pharmacy customers, in the process of choosing a particular facility, are guided by the possibility of receiving additional services related to the management of their drug therapy (Brooks et al., 2007, 4–27). The low interest in the practical implementation of medication use reviews in pharmacy practice has to be justified by the initiation of the pilot programme and waiting for its results.

The effective implementation of medication use reviews in pharmacy practice should be periodically examined not only using *the mystery shopper* methodology, but also with the support of diagnostic survey methods. This will help to identify implementation barriers and make suggestions for optimisation measures. Without the implementation of medication use reviews in pharmacy practice, it will not be possible to implement pharmaceutical care effectively. In doing so, it should be

emphasized that pharmaceutical care and the involvement of pharmacists are essential for improving the efficiency of the healthcare system.

References

Act of 6 September 2001. Pharmaceutical Law, Journal of Laws of 2001, No. 126, item 1381, as amended.

Act of 10 January 2008 amending the Act on Chambers of Pharmacy, Journal of Laws of 2008, No. 47, item 273.

Act of 10 December 2020 on the Pharmaceutical Profession, Journal of Laws 2021, item 97, as amended.

Apple, W.S. (1967). Pharmacy's new Rx evolution. *Journal of the American Pharmaceutical Association*, 7(9), 474–484.

Alves da Costa, F., Mil, J.W.F. van, Alvarez-Risco, A. (2019). *The Pharmacist Guide to Implementing Pharmaceutical Care*. Cham: Springer International Publishing.

Brodie, D.C., Parish, P.A., Poston, J.W. (1980). Societal needs for drugs and drug related services. *American Journal of Pharmaceutical Education*, 44(3), 276–278.

Brooks, J.M., Klepser, D.G., Urmie, J.M., Farris, K.B., Doucette, W.R. (2007). Effect of local competition on the willingness of community pharmacies to supply medication therapy management services. *Journal of Health and Human Services Administration*, 30(1), 4–27.

Bryła, A., Burkacka, M., Budnik-Szymoniuk, M., Harężlak, T., Merks, P. (2019). Opieka farmaceutyczna nad pacjentem onkologicznym. *Farmacja Polska*, 75(3), 164–171.

Cipolle, R.J., Strand, L., Morley, P. (2012). *Pharmaceutical Care Practice: The Patient Centered Approach to Medication Management*. New York: The McGraw-Hill Companies.

Drozd, M. (2021). Art. 4. [Wykonywanie zawodu farmaceuty]. Teza 20. In A. Zimmermann (ed.), *Zawód farmaceuty. Komentarz praktyczny.* Warszawa: Wolters Kluwer.

Drozd, M., Skowron, A., Karolewicz, B., Bułaś, L., Machalska, J., Dymek, J., Gołda, A., Jachowicz, M. (2023). *Wytyczne Polskiego Towarzystwa Farmaceutycznego dotyczące prowadzenia świadczenia zdrowotnego – przegląd lekowy.* Warszawa: Polskie Towarzystwo Farmaceutyczne.

Główny Urząd Statystyczny, Urząd Statystyczny w Krakowie. (2022). *Zdrowie i ochrona zdrowia w 2021 r. Aneks tabelaryczny.* Warszawa, Kraków: Główny Urząd Statystyczny.

Hepler, C.D. (1987). The third wave in pharmaceutical education and the clinical movement. *American Journal of Pharmaceutical Education*, 51(4), 369–385.

Hepler, C.D., Strand, L.M. (1990). Opportunities and responsibilities in pharmaceutical care. *American Journal of Hospital Pharmacy*, 47(3), 533–543.

Knapp, D.A., Wolk, H.H., Knapp, D.E., Rudy, T.A. (1969). The pharmacist as a drug advisor. *Journal of the American Pharmaceutical Association*, 9(10), 502–505.

Linn, L.S., Davis, M.S. (1973). Occupational orientation and overt behavior: The pharmacist as drug adviser to patients. *American Journal of Public Health*, 63(6), 502–508.

Łazowski, J. (2005). *Podstawy opieki farmaceutycznej w teorii i praktyce aptecznej.* Warszawa: Wydawnictwo Farmapress.

McCormack, T.H. (1956). The druggists' dilemma: Problems of a marginal occupation. *American Journal of Sociology*, 61(4), 308–315.

Merks, P., Szczęśniak, K., Fedorowicz, O., Olszewska, A., Jakóbczyk, P., Kozłowska-Wojciechowska, M. (2013). Robotyzacja w aptece jako czynnik wspierający w prowadzeniu pełnej opieki farmaceutycznej. *Farmacja Polska*, 69(7), 408–416.

Merks, P., Świeczkowski, D., Jaguszewski, M. (2018). *Przegląd lekowy – definicja, zakres oraz znaczenie usługi dla współczesnej praktyki aptecznej w Polsce. Część pierwsza*. Aptekarz Polski. Retrieved May 13, 2023, from https://www.aptekarzpolski.pl/opieka-farmaceutyczna/przeglad-lekowy-definicja-zakres-oraz-znaczenie-uslugi-dla-wspolczesnej-praktyki-aptecznej-w-polsce/.

Mikeal, R.L., Brown, T.R., Lazarus, H.L., Vinson, M.C. (1975). Quality of pharmaceutical care in hospitals. *American Journal of Hospital Pharmacy*, 32(6), 567–574.

Neumann-Podczaska, A., Wieczorowska-Tobis, K. (2022). *Przegląd lekowy w świetle nowej Ustawy o zawodzie farmaceuty. Studium przypadków. Część 1*. Warszawa: Grupa Farmacja.net.

Neumann-Podczaska, A., Wieczorowska-Tobis, K., Grześkowiak, E. (2014). Opieka farmaceutyczna w geriatrii – założenia programu. *Farmacja Współczesna*, 7, 126–130.

Obywatele Zdrowo Zaangażowani. (n.d.). *Przewietrz Apteczkę!* Retrieved August 18, 2023, from https://www.obywatelezz.pl/projekt/przewietrz-apteczke/.

Olczyk, M., Pluta, R., Tomasik, G. (2009). Opieka farmaceutyczna nad pacjentem z zespołem stopy cukrzycowej. *Farmacja Polska*, 65(5), 338–341.

Penna, R.P. (1965). Control of over-the-counter medication through reclassification. *Journal of the American Pharmaceutical Association*, 5(11), 584–586.

Regulation of the Minister of Health of 22 March 2007 amending the Ordinance on continuous training of pharmacists employed in pharmacies and pharmaceutical wholesalers, Journal of Laws of 2007, No. 47, item 273 (Act not in force).

Rutter, P. (2018). *Opieka farmaceutyczna. Objawy, rozpoznanie i leczenie*. Wrocław: Edra Urban & Partner.

Rysiak, E., Bogdańska, E., Osińska, M., Kazberuk, A., Dębczyński, M., Turlewicz, M., Kierdylewicz, R. (2018). Opieka farmaceutyczna w astmie. *Farmacja Polska*, 74(3), 184–188.

Skowron, A. (2008). Opieka farmaceutyczna – jak zacząć? *Aptekarz Polski. Pismo Naczelnej Izby Aptekarskiej*, 27(5e), 6–7.

Skowron, A., Polak, W., Polak, S., Polak, M. (2010). Dokumentowanie opieki farmaceutycznej z wykorzystaniem bazy FONTIC. *Farmacja Polska*, 66(6), 393–402.

Szalonka, K. (2011). *Opieka farmaceutyczna w ochronie zdrowia Polaków*. Warszawa: Wydawnictwo Naukowe PWN.

Waligórski, Ł. (2022). *Jaka powinna być wycena przeglądów lekowych? "Rekomendujemy kwotę 150–160 zł"...* mgr.farm. Retrieved May 4, 2023, from https://mgr.farm/aktualnosci/jaka-powinna-byc-wycena-przegladow-lekowych-rekomendujemy-kwote-150-160-zl/.

Wardwell, W.I. (1963). Limited, marginal, and quasi-practitioners. In H.E. Freeman, S. Levine, L.G. Reeder (eds.), *Handbook of Medical Sociology*. Englewood Cliffs: Prentice Hall.

Waszyk-Nowaczyk, M., Simon, M., Szukalska, B. (2013). Opieka farmaceutyczna płaszczyzną współpracy lekarza i farmaceuty. *Nowiny Lekarskie*, 82(3), 262–265.

Zimmermann, A. (2021). Art. 4. [Wykonywanie zawodu farmaceuty]. Teza 3. In A. Zimmermann (ed.), *Zawód farmaceuty. Komentarz praktyczny*. Warszawa: Wolters Kluwer.

Żak, K. (2018). Opieka farmaceutyczna czy profesjonalne doradztwo? Bariery wdrażania opieki farmaceutycznej w Polsce. *Ekonomia – Wroclaw Economic Review*, 24(4), 65–81. https://doi.org/10.19195/2084-4093.24.4.5.

Ekonomia — Wroclaw Economic Review 29/3 (2023)
Acta Universitatis Wratislaviensis
No 4193

https://doi.org/10.19195/2658-1310.29.3.14

Ewa Markiewicz
ORCID: 0000-0001-7600-054X
Adam Mickiewicz University
ewa.markiewicz@amu.edu.pl

Cohousing as a form of social innovation: Challenges in a new geopolitical situation in Poland

Date of submission: 29.05.2023; **date of acceptance:** 11.08.2023

JEL classification: O35, Q01, R31

Keywords: cohousing, social innovation, social integration

Abstract

This article addresses the topic of cohousing, understood as a form of housing that promotes a lifestyle that places greater emphasis on social cohesion and creates conditions to ensure that all residents have the opportunity to meet basic social needs. In this view, cohousing coincides with the concept of social innovation. The aim of the article is to present the idea of cohousing as an example of social innovation and an attempt to determine its significance in the process of integration of Ukrainian citizens in Poland after February 24, 2022. The paper is theoretical in nature, and the method of analyzing foundational data was applied, which included publications, reports and research on the problem addressed. In the first part, the issue of social innovation was presented, the idea of cohousing was presented and its features as a form of social innovation were pointed out. The second part highlighted the importance of cohousing in the integration process of Ukrainian citizens in Poland after February 24, 2022. The results of the research showed that within the framework of the available solutions for the current situation, it is worth reaching for new forms of cohousing that enable active inclusion of people with refugee experience in decision-making processes and foster closer neighbourly contacts, neighbourly control, a sense of security and opportunities for social support.

1. Introduction

Social innovation, which is the main focus of the author's considerations, is largely not oriented towards economic utility, but focuses primarily on the value system

and is therefore referred to when an idea is implemented to solve a specific social problem (Kesselring and Leitner, 2008). The new geopolitical situation following the outbreak of war in Ukraine, associated with the influx of large numbers of refugees into Poland, has presented our country and Polish society with unprecedented challenges in terms of new problems centred on migration policy. This policy can be defined as the totality of instruments and policy actions and decisions designed and/or made by state authorities with regard to migration processes and their participants (Kulesa, 2017). At the same time, as Łodziński and Szoner (2023, 7) rightly point out, the resulting "new" migration policy in Poland can be described "in terms of 'institutional bricolage'", filling the void left by the absence of this policy in earlier years, related to the necessity of solving migration problems on an urgent basis". Within its framework, it became an important task to define the conditions for the settlement of Ukrainians, including the establishment of rules within the housing policy. However, the established system of housing assistance for refugees was mainly based on ad hoc and short-term measures, and refugees were largely hosted by private individuals[1], which is related to the phenomenon of private "housing sponsorship" (Grzymała-Kazłowska et al., 2022), which largely avoided the creation of special refugee centres for Ukrainians. In addition to the basic problems related to the issue of housing for refugees such as discrimination against migrants in the housing market, difficulties in accessing rental housing or housing instability, efforts to integrate newcomers into local communities have also become an important challenge. These new migration problems can become a catalyst for innovative actions.

2. Theoretical framework of the research

Dick Urban Vestbro and Lisa Horelli (2012) define cohousing as housing with shared spaces and shared amenities for residents. It is a bottom-up, non-institutional housing model with an emphasis on a healthy balance of personal, family and community life (Meltzer, 2005). In cohousing, a balanced causality-community model of social perception applies. On the one hand, cohousing meets the individual needs of the residents, as private spaces offer the opportunity to rest from others on their own terms (a response to the rise of individualisation and the rise of diverse consumer attitudes and behaviours). On the other hand, cohousing responds to the problems of modern society, its alienation and isolation (Krokfors, 2012), and satisfies the need for increased interpersonal contact. The idea of cohousing originated in Denmark, and then spread to Europe and the United States.

[1] Data at the end of April 2022: 38% – flat of Poles, private persons (living with and without a host), 23% living together with friends/family from Ukraine, 19% independently rented flat, 7% hotel/hostel/guest house (*Nowy dom*…, 2022)

Currently, cohousing is most popular in Denmark, Sweden, the Netherlands, the United States, and Canada.

In order to analyse cohousing as an example of social innovation, a compilation of its characteristics was made from the point of view of the indigenous elements that, according to the literature, should be present for a practice to be recognised as socially innovative (Drucker, 1992; Staszel, 2019; Kwaśnicki, 2015; Westley, 2008; Pol and Ville, 2008; Moulaert et al., 2005) (Table 1).

Table 1. Cohousing as a form of social innovation

Social innovation characteristic	Cohousing, characteristics
Social need/solution of a specific social problem	– individualism/loneliness (integration of privacy and community – the causality-community model of social perception,) – ageing population problem (inefficiency of national healthcare systems) – housing problems (inefficiency of national housing policies) – migration problems (inefficiency of national migration policies) – problem of discrimination against women (e.g., women's cohousing, multi-generational cohousing) – problem of discrimination based on sexual orientation (e.g., gay male cohousing, multi-generational cohousing) – environmental crises (sustainable housing) – economic crises (sustainable construction)
Novelty	– a high degree of participation by community members, which implies the participation of future residents in the planning, design, organisation and management of the habitat – a wide range of shared products and services (sharing economy) – the shared space within cohousing is not created through interaction and social bonds due to spatial proximity, but the reverse is true: it is the space (which does not yet exist) that gives rise to the interaction and social bonds of the community, which are formed in order to create this space
More effective, and more efficient than existing solutions	– economic benefits (sharing the cost of ownership, sharing the space management costs) – social benefits (increased social cohesion made possible by a Common House, sense of community, reduced isolation of the excluded, the sense of being in control of one's own life, health benefits: improved physical and mental health and consequently improved the quality of life) – environmental benefits (sustainable construction, working towards a reduced ecological footprint through, among other things, lower energy and water consumption, sharing products and services, growing fruit and vegetables, raising small livestock, reducing the waste burden on the environment and more rational space management) – cohousing as a response to the inefficiencies of national policies on housing, health, migration, etc.

Increasing people's capacity to act, e.g., by creating new roles and relationships	– participation of future residents in the planning, designing, organising and managing of the habitat (e.g., developing team-building and leadership skills) – sharing knowledge and skills within the community (including, for example, an opportunity for retirees to find meaning and purpose as neighbours, mentors, and grandparents in a supportive and caring environment)
Excluded groups (integration and stimulation of activity)	– senior cohousing – women's cohousing – cohousing for homosexuals – multi-generational cohousing (including for people with disabilities and low income) – cohousing for immigrants (integration of host and guest)
Better use of funds and resources/mutuality	The idea of cohousing coincides with the assumptions of the sharing economy in terms of sharing: – space (Common House) – objects and equipment (shared lawnmower, washing machines, bicycles, cars) – skills (mutual assistance e.g., plumber, carpenter, bookkeeping, or childcare services) – community management responsibilities
Prosumption	A high degree of participation by community members, involving future residents in the planning, designing, organising, and managing the habitat
Grassroots activities	– bottom-up, non-institutional housing model – social entrepreneurship
Community management/social inclusion	– open or hybrid common space (offering services to the local community) – involvement of residents outside the community (building local social capital)

Source: own study.

By putting together the common features of cohousing and social innovation, it can be considered that in both cases we are dealing with activities undertaken for social benefit and aimed at solving important social problems. Cohousing can be a response to new social needs, especially in the search for new forms of socialisation in which a sustainable model of agency-communitarianism applies. Cohousing implies social participation and enhances society's creativity and capacity for action (e.g., through the creation of new roles and relationships), and increases opportunities for better use of resources (economic and environmental benefits). Indeed, the idea of cohousing coincides with the principles of the sharing economy in terms of sharing space, objects and equipment, but also in terms of the ability to help each other. In addition, it is directed at high-demand groups (e.g., the elderly, people of lower economic status, women or people with disabilities). Examples include the GenerationenWohnen multigenerational cohousing in Switzerland, which was set up to improve the quality of life of older people and people with disabilities by preventing loneliness and strengthening their autonomy, and

to promote solidarity between generations by encouraging different generations to exchange services and resources with each other. Another example is the Hope Meadows cohousing in the US, which was established to create a welcoming and safe environment for seniors to age in place in a multi-generational integrated setting, and to provide social security for families adopting children from foster care (LAB 60+, 2018). In addition, cohousing often provides a more effective and efficient (than previously applied) solution to social needs (a solution to the problems of an ageing population, inefficiencies in national healthcare systems, national housing policies or refugee policies). Consequently, cohousing improves people's well-being (both material and non-material). The revolutionary principle of treating future community members in cohousing as prosumers who actively participate in the overall process of creating and operating a shared space (from designing to space management) teaches co-governance and gives a sense of influence. This can consequently, in addition to improving the capacity of society to act, also strengthen the involvement of residents outside the community (increased social engagement). Cohousing as a form of social innovation can also be an important element in the process of community governance at the local level. By opening up their communal spaces, they can stabilise urban neighbourhoods and have a positive impact on social inclusion, due to the range of services they offer that are open to local communities (more: Markiewicz, 2023).

3. Research methodology

The paper is theoretical in nature, the method used was that of the analysis of the foundational data, which included publications, reports and research on the problem addressed. Websites of individual cohousing communities were also an important source.

4. The importance of cohousing in the integration process of Ukrainian citizens in Poland

After the outbreak of war in Ukraine in February 2022, almost 8.9 million people from Ukraine arrived in Poland in a short period of time. As a result, for the first time in history, the size of the population of our country exceeded 40 million, and Poland thus became the second country in the world (after Turkey) with the largest number of refugees (the percentage of foreigners residing in our country reached almost 8% of the population) (Łodziński, Szoner, 2023). The massive influx of war refugees forced the Polish authorities to take quick action to accommodate them and, at least temporarily, integrate them into our society. These included measures concerning the conditions of settlement, including (of particular interest to the au-

thor) measures within the framework of housing policy. It became a major challenge to adapt the form of assistance to the specifics of the Polish housing system and the cultural and social values of the host country of migrants. As Łodziński and Szoner (2023) rightly point out, Ukrainian refugees are the closest to the imagined "ideal refugee", as they were primarily women and children fleeing the immediate danger of war (and additionally "white Europeans") and, thanks to the social (economic migration-related) and online networks created earlier, Ukrainian citizens were perceived by members of our society as familiar, with a similar historical and cultural (linguistic) background. However, despite the unimaginable upsurge and social effort in the initial period of the influx of Ukrainian refugees and the aforementioned cultural convergence, over time concerns arose in Polish society about, among other things, the loss of priority in access to public services (health, education, care) (Sadura and Sierakowski, 2022). The new situation we have had to face has highlighted problems that also affect Polish citizens in this regard. This includes access to the housing market. In view of the limited possibilities of funding housing for refugees (the housing policy for refugees was based on private "housing sponsorship"), there was a need to look for alternative ways to solve the problem that arose. A number of debates on the challenges of systemic support for newcomers resulted in a series of guidance and recommendation documents. They also concerned the housing market, where among the available solutions for the current housing situation of Ukrainians, the need to reach for new forms of housing is necessary (e.g. Biała księga, 2022; Milert, Nowak and Sroka, 2022; Solga, Kubiciel-Lodzińska, 2022). Alternative housing solutions, such as cohousing, are worth considering. It should meet the basic living needs of newcomers and serve as a way to counteract social exclusion of these groups and integrate the migrants into the host society. In the process of social integration, which is a multifaceted process, both the group of newcomers and the host society should be taken into account. Actions directed at the receiving society should primarily focus on building trust in newcomers and reducing fears that may relate to competition on the labour market, overloading public systems, and threats to safety (e.g., illnesses or illegal introduction of dangerous substances to Poland). Actions targeting migrants should primarily concern providing them with adequate assistance: psychological, medical, psychosocial and social.

Table 2 indicates the features of cohousing relevant to the integration process, together with their characteristics and the parties benefiting from them. Cohousing can be treated as social networks (migration networks), i.e. systems of interpersonal ties linking migrants and hosts, which can be a source of social capital (Massey et al., 1993). The resources available in networks (tangible and intangible) foster integration in multiple dimensions (economic, social, psychological), with the greater the heterogeneity of the network, the greater the so-called "network effect" and the possibility to access potential resources (Lin, 2002). Social networks enable the formation of networks of social support, which has been recognised as "a buffer

against the negative effects of life stress and critical, traumatic or simply difficult events directly burdening both the individual and his/her environment, hence its great importance in the course of migration" (Kozielska, 2015, 80). In accordance with the principle of network heterogeneity, the author assumed that cohousing is formed by both incomers (Ukrainians) and residents of the host country (Poles).

Table 2. Features of cohousing relevant to the social integration process of migrants

Feature	Characteristics	Benefits for immigrants	Benefits for the host country
Provides a space for mutual knowledge and integration	Within the communal spaces of the so-called Common House, the opportunity to establish personal relationships, friendships, camaraderie, strengthening the sense of security and togetherness, and consequently minimising the emotional and mental disorders associated with moving out of the country and newcomers.	✓	✓
Provides an opportunity to feel empowered	Proactively involving the person with a migration and refugee experience in decision-making processes at the local level. As experience from long-standing humanitarian and refugee crises has shown, there is a high risk that if refugees are not treated as agents and subjects, they will become dependent on external assistance (*Konsekwencje społeczne…*, 2022). It is therefore important to support the self-organisation process of people with migration and refugee experience and to harness their potential to create solutions to specific social challenges.	✓	✓
Provides an opportunity to share resources (tangible and intangible)	Cohousing can help reduce the cost of living by sharing certain spaces or everyday objects, which is especially important for migrants who often have limited financial resources. Social benefits include mutual help and support (e.g., cooperation in caring for children, the elderly or the sick or, so important in this case, learning each other's language), the possibility to spend time together, to cook meals, which seems particularly important in the context of the demographic characteristics of refugee families. Such arrangements thus foster closer neighbourly contacts, neighbourly control, a sense of security, and opportunities for social support. Cohousing also enables new resources and opportunities to be developed, e.g., by operating service or retail outlets in the cohousing space. Thus, it can be a more effective, efficient solution (than existing ones) to refugee housing policy.	✓	✓

Reduces the isolation of excluded people	Social integration and stimulation of activity create a sense of belonging to a community, empower and increase the acceptance of newcomers by the host population, thus strengthening the social fabric.	✓	✓
Enables demand for public services to be reduced	Social benefits – including health benefits (improved physical and mental health and consequently the quality of life), result in refugees being able to place fewer demands on local health and social services, reducing concerns about the availability of these services in the host society.	✓	✓
Contributes to the activation of civil society	A high degree of participation by community members, which means their involvement in the planning, designing, organising and managing of cohousing in practice enables members to develop team-building and leadership skills and encourages greater democratic participation at a wider level.	✓	✓
Provides an opportunity to test innovative solutions	Cohousing can be an inspiration for solving the housing problems of Polish citizens and is an opportunity to test some target solutions for when refugees leave cohousing settlements, and can serve people from Poland, e.g., those facing homelessness or lack of care after the death of their parents or carers.		✓

Source: own study.

Despite the indicated opportunities offered by cohousing in terms of integration of Ukrainians with Poles, it is also worth characterising the limitations in terms of the use of this form of housing, which include above all the lack of experience in the use of this form of housing and legal solutions on the Polish market facilitating the realisation of such a form of housing and the low level of development of civil society, and thus the capacity for bottom-up initiatives. The special nature of cohousing for immigrants also requires the participation of the state aid in its organisation and management.

Also crucial to the success of cohousing are the appropriate criteria for selecting cohousing residents. First of all, the cohousing communities created should not be based only on a group of incomers (Ukrainians), but should be formed by both hosts and incomers to our country, according to the principle of heterogeneity of the community. Otherwise, such spaces (the resulting social ghettos of sorts), due to the homogeneity of users, may become the embodiment of xenophobia and negate the idea of place as a platform for potential social interaction and integration of newcomers into the host society. Additionally, due to the fact that Poland already had a very large Ukrainian diaspora before the war, the "new" refugees can quite effectively function in our country, remaining in contact almost exclusively

with other Ukrainians. This also does not support integration processes. Secondly, the criteria for selecting Ukrainians as potential cohousing residents should go beyond financial factors. This is because it is risky to build cohousing for financially dependent people, as this can lead, as experts point out, to problems of social exclusion and stigmatisation. Criteria should increase the chance of building a financially self-sufficient, diverse, and resilient community.

The authors also point out the risks associated with the participatory model of cohousing community management, in which most of the responsibilities are carried out by residents, emphasising the need for local governments to support members of this type of community to ensure their sustainability (*Konsekwencje społeczne…*, 2022). For this reason, it is important to create cohousing communities where residents are not just visitors to our country.

Due to the specific nature of cohousing for migrants, it is necessary to involve various actors (including the stakeholders themselves, i.e. Ukrainians) in its organisation and management, in which the state should play a key role (at least in the initial period). Policies to support cohousing can consist, for example, of subsidising rent or helping refugees to become active in the labour market, according to their professional (often specialised) qualifications, which gives them the chance to earn more and pay for housing. Another form of assistance for cohousing residents can be the creation of so-called assisted housing within them. Such solutions are particularly important not only because of the financial instability of Ukrainians, but also from the point of view of the dependent, sick, or incapacitated among the newcomers.

5. Conclusions

Effective integration in the new geopolitical situation in which Poland finds itself requires above all the creation of a platform, a place where it will be realised. A cohousing community may be such a platform, assuming that the resulting community is made up of both outsiders (Ukrainians) and insiders (Poles). Cohousing as a form of social innovation is, in this case, a new solution to a specific social problem – the migration problem. This alternative form of residence provides a space for Ukrainians and Poles to get to know each other, gives the opportunity to share resources (mutual benefits: social, economic, and environmental), and gives the newcomers a sense of empowerment, reduces the isolation of the excluded, enables a reduction in the demand for public services by its residents, contributes to the activation of civil society, and provides an opportunity to test innovative solutions on the Polish market.

Finally, it should be noted that cohousing should be considered as a long-term solution. This is because it requires a number of actions (and the involvement of many entities due to the nature of this type of cohousing) in order to function prop-

erly on the Polish market, where there is not yet much experience with the application of this form of residency (also in terms of appropriate legal regulations). However, the situation we are facing may become a catalyst for change in terms of innovative, alternative forms of residence, which may also be successfully used as a solution to other problems (apart from migration) faced by our country, such as housing problems of Poles (inefficiency of national housing policies), the problem of an ageing society (inefficiency of national healthcare systems), or problems related to the economic and environmental crisis. The above-mentioned opportunities give hope that refugees will feel that they are fully-fledged members of their host communities, ready to take action to become independent of external assistance (including the state assistance), which will also have a positive impact on the host society's sentiments regarding anti-immigration and xenophobic attitudes. Living together on a daily basis in an open, friendly environment with a "community" character will strengthen intercultural interactions, build trust, and result in an open society and a stronger social fabric.

References

Biała księga. Wyzwania systemowego wsparcia uchodźców na poziomie lokalnym i krajowym. (2022). Wrocław: Samorządowy Okrągły Stół. Retrieved May 12, 2023, from https://www.batory.org.pl/wp-content/uploads/2022/06/Okragly_stol_Biala-ksiega_www_S.pdf.

Drucker, P.F. (1992). *Innowacja i przedsiębiorczość. Praktyka i zasady.* Warszawa: Państwowe Wydawnictwo Ekonomiczne.

Fundacja Laboratorium Architektury 60+ (LAB 60+). (2018). *Przegląd zagranicznych praktyk dotyczących organizowania społeczności lokalnej, budowania kontaktów, więzi sąsiedzkich, miksu społecznego, a także cohousingu. Rozwiązania wykorzystane w Niemczech, Szwajcarii, Danii, Szwecji, Austrii oraz w Stanach Zjednoczonych i we Włoszech*. Retrieved October 12, 2022, from http://centrumwiedzy.org/wp-content/uploads/2017/07/DW_Raport_Zadanie-1_Przegl%C4%85d-zagranicznych-praktyk_FINALNY.pdf.

Grzymała-Kazłowska, A., Stefańska, R., Ziółkowska, P. (2022). Learning from refugee sponsorship: How to host refugees fleeing from Ukraine to Poland? *CMR Spotlight*, 5(40). Retrieved May 12, 2023, from https://www.migracje.uw.edu.pl/wp-content/uploads/2022/05/Spotlight-MAY-2022.pdf.

Kesselring, A., Leitner, M. (2008). *Soziale Innovationen in Unternehmen. Studie, erstellt im Auftrag der Unruhe Privatstiftung.* Wien: ZSI. Retrieved May 12, 2023, from http://www.zsi.at/attach/Soziale_Innovation_in_Unternehmen_ENDBERICHT.pdf.

Konsekwencje społeczne i psychologiczne rozwiązań mieszkaniowych dla osób uchodźczych z Ukrainy, Unia Metropolii Polskich im. Pawła Adamowicza. (2022, September). Retrieved May 12, 2023, from https://metropolie.pl/fileadmin/news/2022/10/raport_Konsekwencje_spoleczne__UMP.pdf.

Kozielska, J. (2015). Migracyjna sieć rodzinnego wsparcia. Kazus młodzieży migracyjnej. In A. Regulska, U. Dudziak (eds.), *Transformacja i jej implikacje dla współczesnej rodziny* (71–89). Pułtusk, Warszawa: Humanistyczna Akademia.

Krokfors, K. (2012). Co-housing in the making. *Built Environment*, 38(2), 309–314.

Kulesa, A. (2017). W stronę konceptualizacji polityki migracyjnej jako szczegółowej polityki państwa: definicja i pole badawcze. *Studia z Polityki Publicznej*, 4(16), 87–103. https://doi.org/10.33119/KSzPP.2017.4.4.

Kwaśnicki, W. (2015). Innowacje społeczne – nowy paradygmat czy kolejny etap w rozwoju kreatywności człowieka? In W. Misztala, G. Chimiak, A. Kościanski (eds.), *Obywatelskość wobec kryzysu: uśpieni czy innowatorzy?* Warszawa: Wydawnictwo IFIS PAN.

Lin, N. (2002). *Social Capital: A Theory of Social Structure and Action*. Cambridge: Cambridge University Press.

Łodziński, S., Szoner, M. (2023). *Polityka migracyjna "bez polityki". Antynomie tworzenia polityki migracyjnej w Polsce w okresie 2016–2022*. Retrieved May 12, 2023, from https://www.migracje.uw.edu.pl/wp-content/uploads/2023/02/CMR-WP-130-188.pdf.

Massey, D.S., Arango, J., Hugo, G., Kouaouci, A., Pellegrino, A., Taylor, J.E. (1993). Theories of international migration: A review and appraisal. *Population and Development Review*, 19(3), 431–466.

Markiewicz, E. (2023). Społeczny wymiar zamkniętej przestrzeni rekreacyjnej – przykład cohousingu. *Studia Peregietica*, 42(2), 1–23. https://doi.org/10.58683/sp.381.

Meltzer, G. (2005). *Sustainable Community: Learning from the cohousing model*. Victoria, BC: Trafford Publishing.

Milert, M., Nowak, K., Sroka, B. (2022). *Raport o stanie polskich miast. Mieszkalnictwo i polityki społeczne. Kwestia mieszkaniowa a kryzys uchodźczy. Wspólne wyzwania i rozwiązania dla równoważenia sektora mieszkalnictwa w Polsce.* Instytut Rozwoju Miast i Regionów. Retrieved May 12, 2023, from https://obserwatorium.miasta.pl/wp-content/uploads/2022/05/Kwestia_mieszkaniowa_a_kryzys_uchodzczy_raport.pdf.

Moulaert, F., Martinelli, F., Swyngedouw, E., Gonzalez, S. (2005). Towards alternative model(s) of local innovation. *Urban Studies*, 42, 1969–1990.

Nowy dom czy chwilowy azyl? Sytuacja uchodźców z Ukrainy wnioskujących o numer PESEL w 12 największych polskich miastach pod koniec kwietnia 2022 r. (2022, September). Centrum Analiz i Badań Unii Metropolii Polskich im. Pawła Adamowicza. Retrieved May 12, 2023, from https://metropolie.pl/fileadmin/news/2022/09/Nowy_dom_czy_chwilowy_azyl_raport_z_badania.pdf.

Pol, E., Ville, S. (2008). *Social Innovation: Buzz Word or Enduring Term?* University of Wollongong. Retrieved October 12, 2022, from https://core.ac.uk/download/pdf/36990485.pdf.

Sadura, P., Sierakowski, S. (2022). *Polacy za Ukrainą, ale przeciw Ukraińcom. Raport z badań socjologicznych*. Warszawa: Krytyka Polityczna.

Solga, B., Kubiciel-Lodzińska, S. (2022). *Raport z realizacji badania pn. Problemy i wyzwania w zakresie integracji imigrantów w województwie opolskim. Perspektywa cudzoziemców.* Politechnika Opolska. Retrieved May 12, 2023, from https://www.opolskie.pl/wp-content/uploads/2023/03/Raport-z-realizacji-badania-Perspektywa-cudzoziemcow.pdf.

Staszel, A. (2019). Innowacje społeczne w Polsce oraz szanse ich rozwoju na tle innych państw. *Ekonomia Społeczna*, 1, 13–21.

Westley, F. (2008). *The Social Innovation Dynamic: Social Innovation Generation*. Waterloo: University of Waterloo.

Vestbro, D.U., Horelli, L. (2012). Design for gender equality: The history of co-housing ideas and realities. *Built Environment*, 38(3), 315–335.

Wydawnictwo
Uniwersytetu
Wrocławskiego

Wydawnictwo Uniwersytetu Wrocławskiego
pl. Uniwersytecki 15
50-137 Wrocław
wydawnictwo@uwr.edu.pl

wuwr.eu
Facebook/wydawnictwouwr