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Innovation strategies used by companies in Poland during the pandemic

Katarzyna Koziół-Nadolna*

University of Szczecin, Institute of Management, Cukrowa 8, 71-004 Szczecin, Poland

Abstract

Since 2020, the global economy has been dominated by the global outbreak of the SARS-CoV-2 virus causing the disease COVID-19. The outbreak of the pandemic was an external threat to companies, which had an impact on their innovation strategy. On the other hand, for some companies, the pandemic is an opportunity for development. The global crisis, dynamic socio-technological changes, combined with globalization, cause a dizzying pace of change, there is no permission for failure in enterprises – you have to act and to do so effectively. One of the possible ways is to adapt/implement an innovation strategy.

The basic hypothesis in this paper is the claim that during the pandemic, the surveyed companies did not significantly limit their innovative activities and used an offensive strategy. The aim of the article is to identify the innovation strategies used in enterprises before and during the pandemic. In order to achieve the assumed goal, the article uses deductive inference, critical analysis of the subject-related literature and the in-depth interview (IDI).

The research results presented in the article enrich the knowledge about innovative activities of enterprises during the pandemic. Innovation strategies used by enterprises before the pandemic (in 2016-2019) and during its duration (2020-2022) were identified. To summarise the research carried out, it can be stated that before the pandemic, respondents most often pointed to the offensive strategy, independent and market creation, during the pandemic to the offensive strategy, recruitment and independent. Enterprises that were innovative before the pandemic and applied innovation strategies did not stop doing so during the pandemic.

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* Katarzyna Koziół-Nadolna
E-mail address: Katarzyna.Koziol-Nadolna@usz.edu.pl
1. Introduction

The companies are and want to be innovative – innovation is a must for every modern company. Innovations are an opportunity, the foundation of future profit, competitive advantage and give a real perspective of long-term development. Modern enterprises are focused on the intangible value of the organization focused in the employee: his knowledge, skills and experience and multiplied in a professionally cooperating, well-organized and goal-oriented team. In a knowledge-based economy, it is intellectual capital that creates the market value of the enterprise and provides it with a competitive advantage, although it is based on the synthesis of individual personal characteristics, knowledge and experience of employees. Man plays a key role in the innovation process [1, 2]. It is therefore important for companies to have innovation strategies that determine what and how innovations will be created in the enterprise. Strategies are subject to constant changes, it depends on the internal situation in the company (innovative potential) and opportunities and threats arising from the environment. Since 2020, the global economy has been dominated by the global outbreak of the SARS-CoV-2 virus causing the disease COVID-19. The outbreak of the pandemic was an external threat to companies, which had an impact on their innovation strategy. On the other hand, for some companies, the pandemic is an opportunity for development. The global crisis, dynamic socio-technological changes, combined with globalization, cause a dizzying pace of change, there is no permission for failure in enterprises – you have to act and to do so effectively. One of the possible ways is to adapt/implement an innovation strategy. With a well-defined strategy, the company can control and manage innovations in the enterprise [3, 4]. The economic crisis resulting from the COVID-19 pandemic is an unprecedented event for the global economy. Although the world was also struggling with the financial crisis over a decade ago, it did not affect Polish entrepreneurs to such an extent. One of the ways to improve the condition of the enterprise is to introduce innovations. Innovation in an organisation can be viewed from different perspectives. A distinction can be made between the material and the functional nature of innovation. In the first case, the term innovation refers to products or provided services, or the organisation of the production process, while in the second one, the entire process is emphasised, starting from the creation, design, implementation of an innovation and ending with its adaptation (i.e. the innovation process). Therefore, one can focus on the innovation process, the place where it occurs and the actors involved in it: individuals, companies, organisations and networks as well as the relationships that connect them. The role of institutions, organisations and actors in this process at international, national and regional levels and in different sectors can be discussed [5, 6, 7, 8].

Innovative companies are less affected by adverse changes in the environment, as they have very well-developed adaptability, which is crucial in the event of sudden changes in the environment.

It becomes necessary to include innovation in the overall concept of business management. The strategy and the set of actions defining it have a significant impact on the scope and speed of innovations [9]. As a result, the strategy is the foundation for the company's success, because its essence is, m.in, to create a unique character of the company. That is why it is so important to be aware that the created innovation strategy results from the company's development strategy, or at least co-creates it. The innovation strategy also defines how the selection of different types of innovation activities, e.g. improving radical innovations, can support the implementation of the company's business strategy. Companies that implemented innovative activities even before the occurrence of adverse changes in the environment and had certain innovation strategies, can more easily adapt to new conditions, try to change the threats from the environment into development opportunities, and after their disappearance, quickly return to the path of growth and development of the company. The basic hypothesis in this paper is the claim that during the pandemic, the surveyed companies did not significantly limit their innovative activities and used an offensive strategy. The aim of the article is to identify the innovation strategies used in enterprises before and during the pandemic. This paper is organized as follows: first, the research context and literature analysis; the second part describes the methods and materials and finally the results and discussion.

2. The essence of the innovation strategy and its types - a review of the literature

When defining strategy, Mintzberg [10] argues that strategy is a plan that has a consciously intended course of action and guidelines for dealing with a situation. If a company wants to innovate, it needs a plan in the form of a precise course of action to generate innovation.

The innovation strategy concerns innovative processes inside and outside the company. In a descriptive sense, an innovation strategy identifies (means) regularities, procedures in the behavior of enterprises during the period of
change in the level of their relationship with the environment. In normative terms, innovation strategies mean a program of actions of an enterprise in relation to its environment [11]. The separation of innovation strategies is important for all possible levels of corporate strategies. At the enterprise (corporate) level, innovation strategy includes decisions on the delineation of the strategic orientation of the entity and the setting of the development policy of the enterprise.

According to another definition [12], innovation strategy is defined as a long-term action plan prepared for the needs of innovation management, i.e. the process of searching for such types of innovation based on the resources available that will increase the market efficiency of the enterprise. The process of its formulation and selection should be preceded by an analysis of numerous factors, including, m.in, determining: the company's resources, the risk associated with the implementation of a given strategy, the costs of implementing the strategy and the chances of success. In general, an innovation strategy can take different levels of aggregation, resulting in it being created for corporations, enterprises, business units, product management departments, or even countries. Most often, however, the innovation strategy is treated as an element of the company's development strategy, which plays an important role not only in differentiating products and services in relation to competitors, but also in striving to reduce the costs of its operations [13].

Determining the strategic orientation of the enterprise includes deciding on the directions of expansion in the domestic and/or on the global market. This is expressed in the search for a new concept of business development and a new development policy [14].

Innovation strategy can be described as a scope of activities for all innovative procedures in an organization that includes strategic goals and guidelines that have a vision to develop innovation [14]. According to Trillig and Blaeser-Benfer [16], an innovation strategy can be achieved in the paradigm of five dimensions: technology-oriented, time-oriented, market-oriented, competition-oriented and collaboration-oriented.

In subject-related literature, there is a multitude of typologies of innovation strategies. Assuming a certain level of generality of the innovation strategy, several criteria for the division of the innovation strategy can be distinguished: the criterion of novelty (pioneer strategies, imitative strategies), the criterion of activity, (proactive, active, reactive, passive) [17], the criterion of the level of management, the criterion of the function of the enterprise and the criterion of economic security of the strategy [12].

Innovation strategy can be selected on the basis of the amount of R&D expenditure in a given economic entity [18], and distinguish offensive, defensive, imitation, dependent strategies, traditional and opportunistic. The strategies proposed by Freeman are research and innovation and show an active attitude to innovation. R. Boutellier, O. Gassman and M. von Zedtwitz [19] identified four variants of innovation strategies that can be adopted by companies, especially those involved in technological innovation processes.

• "invention leader" strategy,
• innovation leader strategy,
• early follower strategy,
• late follower strategy.

The first two strategic options are suitable for companies positioning themselves as active innovators in their business sector. On the other hand, the other two options are appropriate for companies positioning themselves as passive innovators, i.e. in practice, imitators of innovative solutions developed by other entities.

One of the most popular innovation strategies is proposed by Twiss [20]. The author distinguishes eight innovation strategies: An offensive strategy is a strategy that uses product improvement, their development and innovations related to them. The offensive concerns, on the one hand, product innovations and, on the other hand, determining the customer needs that this innovation is to meet. This requires companies to spend a lot of money and, above all, time and effort to understand the expectations of the recipients and the importance of their contribution to the creation of a new product or the improvement of an existing one. It requires a well-developed R&D department with a high innovative attitude, a strong marketing department and an effective production department. This strategy may generate high profits for the company, but it carries a significant level of risk. Defensive strategy is mainly based on imitation and copying of new products, which is related to reducing the costs needed for their creation. It is characterized by low risk and low profits, does not require the company to develop and implement new products.

Another strategy presented by Twiss is the license purchase strategy. It involves purchasing verified technological innovations. This strategy has numerous advantages, including the reduction of costs related to research and development, the lack of the need to independently check the technology or the speed of acquiring a given innovation. The company using the strategy strives to use the achievements of others instead of developing its own.
The avoidance strategy consists in possibly limiting contacts with direct competition. When analysing the market and the activities of competitors, the company identifies its opportunities, threats and strengths and weaknesses of competition, as well as looking for market niches in which competition will not be able to operate. Thus, a small segment of the market is explored by one company. It is suitable for small companies that operate on a large and dynamic market.

Among the strategies we distinguish there is also the market creation strategy. In this strategy, the company focuses on research and development, which will enable the creation of a new market and new products. This is a risky action, characteristic of a pioneer position where there is a high risk of failure. However, if we succeed in creating a new market, there will be no competition in the initial period, which gives the company great opportunities to make profits and build relationships with the customers.

The independent strategy is based on improving and modernising the current product. It involves changes in the product, which, thanks to the modification and application of new technologies, increases its market share, always at the expense of the old product. This strategy brings the best results in the long term, at the same time assuming that an offensive strategy will be applied after the independent strategy. The strategy of acquiring highly qualified staff involves taking over employees with specialist knowledge from the competitors. This allows for acquiring specific, detailed knowledge of the technology used by the competition. As long as the company has adequate resources, it can use the information it has obtained to create innovation. The last strategy presented is the strategy of acquiring other companies. It consists in the acquisition (or merger) of the entire company together with its know-how. On the one hand, it allows to increase the potential and resources, and on the other hand – to eliminate possible competitors.

Contemporary concepts of the innovation strategy include the open innovation strategy [21], the blue ocean strategy [22] and the market niche.

In the face of various crises, the actions of the company are not equal. On the one hand, adverse changes in the environment negatively affect the innovation activity of enterprises, as some of them reduce expenditure on innovation in response to an external threat [23]. On the other hand, these external threats may stimulate the innovative activity of enterprises and stimulate their innovation [24, 25].

The studies by Kijek [26] indicate that the relationship between innovative activities of companies and changes in the economic situation is relatively strong, but ambiguous. The global financial crisis of 2008 proved that innovative Polish companies proved to be less resistant to negative external shocks. From the point of view of the vulnerability of companies to economic changes, two periods should be distinguished: the global financial crisis of 2008-2010 and the gradual economic recovery of 2010-2012. In the first period, companies rarely used innovative resources, which led to a sharp decrease in the indicators of the commercialization of innovation – which is why it is called an innovation crisis. Within the second period, the decline in innovation commercialization rates was smaller, but at the same time, there was a decrease in the frequency of use of innovative resources by companies, which indicated a sense of uncertainty and pessimism about further opportunities for the development of innovative product markets [27]. The innovative activity of foreign companies was changing in a similar way.

When considering the innovative strategies of companies in times of economic crisis, one can come across the view that maintaining a sustainable innovative activity in the analysed period can significantly contribute to increasing the survival of the company and its competitiveness in the last phases of the economic slowdown. In addition, increased use of innovative resources in times of crisis may mitigate its effects and shorten the period of innovation pessimism. Some coherence of innovation strategies before and during the crisis increases firms' resilience to external shocks and reduces the likelihood of disruptions in the innovation path during the economic downturn. The important role of friendly relations between management and trade unions and industrial relations in improving the company's ability to survive in a crisis situation is also emphasized [28]. The persistence of innovation in times of crisis can be sustained both through public support for enterprises and their own innovation strategies [29]. Research by BCG [30] or C. Flammer and I. Ioannou [31] indicates that companies that increase investment in innovation in the period of economic slowdown achieve better financial results in the long term compared to entities limiting investment in innovation.

The analysis of data from 28 daughter companies in the group shows that the most commonly used innovation strategy is the strategy of incremental process innovation. Therefore, it seems that these gradual changes initiated in organizations during the crisis may eventually bring new ways of working. The crisis did not seem to be an "opportunity" for these companies to initiate new breakthrough projects based on possible new business models questioning the dominant project [32].
The results of this study corroborate the conclusions of other studies that process innovations are preferred by mature companies during the crisis because they reduce production costs [33].

3. Research methods
In order to achieve the assumed goal, the article uses deductive inference, critical analysis of the subject-related literature and the in-depth interview (IDI). The critical overview of literature was based primarily on the articles from the Google Scholar database.

IDI is a research method, the key assumption of which is the interaction between the researcher and the respondent based on trust, empathy, ability to ask questions and listening to the answers [34]. This method is recommended especially when it is required to deepen and specify the knowledge on a given subject [35]. Interviews, including individual in-depth interviews (IDI) have been the most common and practical qualitative research method and a way of data collection for many years now [36]. A properly conducted study using an IDI is a goal-oriented interaction: the acquisition of in-depth information and knowledge that relates, among other things, to the individual's self, experiences, values and decisions [37].

There are many types of interview formats, e.g. structured, semi-structured, open. In practice, however, as analysts admit, each of them has a specific structure and only its level of rigidity is different. In addition, there are several styles of interviewing (e.g. active, neutral, formal, informal, controlled, free), ways of conducting an interview (traditional-personal, i.e., face to face; via remote communication techniques, e.g. Internet, telephone). Interviews may also differ in nature (e.g. formal and informal interviews) [38, 39, 40, 41, 42].

In justification of the choice of IDI as a research technique, it can be pointed out that in addition to being widespread and having a number of different advantages, it is certainly adequate to the needs of examining the envisaged group of respondents – i.e. managerial staff responsible for making decision in innovative activities. IDI was used in research on different topics related to decision-making processes. Kozioł-Nadolna & Wiśniewska [44] presented examples of the research using IDI as an inspiration in an attempt to test the suitability of this technique for decision support systems and used IDI in supporting managerial decisions in innovative activities research. Kozioł-Nadolna&Beyer [44] used this technique to study the determinants of decision-making processes among managers.

The in-depth interviews with managerial staff of organisations were conducted on March-April 2022 at the offices of the studied entities. At the beginning of the interview, respondents were given an explanation on how the study would be conducted using the IDI questionnaire, consent to participate in the study was obtained, and then the questions were asked. The interview was structured and conducted in the form of a face-to-face interview. The average duration of the interview was approx. 1 hour.

3.1 Research sample characteristics
The aim of the empirical study was to identify innovation strategies in the surveyed enterprises before and during the pandemic (under the influence of adverse changes in their environment).

In March and April 2022, a survey was conducted in 12 enterprises from Zachodniopomorskie Voivodeship.

Non-probabilistic intentional selection was applied, selecting individuals in a subjective manner to make them the most useful and/or representative. The following selection criteria have been adopted: - the size of the enterprise – the study covered small, medium-sized and large enterprises, i.e. employing from 10 employees; - innovativeness of the enterprise – the study was conducted in innovative enterprises, for which, in accordance with the Oslo methodology, companies were considered to have introduced at least one new or significantly improved product and/or one new or significantly improved technological process in the last 3 years; – majority capital – only enterprises with a majority share of domestic capital, location of the business - companies from the Zachodniopomorskie Voivodeship have been examined.

12 interviews (N=12) were conducted with owners and managers who knew the specifics of the company's innovation activity and its development and innovation strategy. The research sample is dominated by medium-sized enterprises (50-249 employees), which account for 66.7%, three large enterprises (25%) and one small enterprise (8.3%). The largest percentage share in the research sample is represented by manufacturing enterprises (58.3%), while there are fewer service enterprises (41.7%). 91.7% of enterprises have domestic capital, 8.3% one mixed with the majority share of domestic capital.
Interviews were conducted with business owners (41.7%) or people employed as a director or senior manager (25%), manager or middle manager (33.3%). In order to identify the dominant innovation strategies in enterprises, the B. Twiss classification has been used. The reason for this choice was that it represents the broadest spectrum of innovation strategies and is not disjointed, so respondents could select more than a single answer.

4. Results and discussion

In the first question asked, the respondents were asked to determine the level of innovation of their company. Four people said he was tall, seven said he was medium, and one said he was low. The conclusion is quite optimistic, the self-assessment of entrepreneurs indicated that in their opinion they are not behind the competition. Then, they were asked whether the level of company's innovativeness led to the possibility of avoiding negative effects of the COVID-19 pandemic, 10 people answered affirmatively, two negatively.

The survey used the classification of innovation strategy proposed by B. Twiss, and the respondents were asked to indicate all innovation strategies implemented in their enterprises before and during the pandemic. Before the pandemic (period 2016-2019), respondents most often pointed to an offensive strategy (9 indications), independent strategy (6 indications) and market creation (5 indications). This means that before the pandemic, companies pursued an active policy in the field of innovation, introduced new products and improved old ones, carried out R&D works in order to create a new market and offer new and previously unknown products on it. This can be deemed as positive.

During the pandemic, entrepreneurs continued to use the offensive strategy most often (8 indications), which is interesting because this strategy means simultaneously improving current products and introducing new ones. As a crisis situation, the pandemic may have caused a reduction in innovative activity, which is primarily manifested in the lack of introducing innovative products to the market, but this did not happen.

Studies by Mierzejewska and Dziurski [45] also indicate that both before and during the pandemic, respondents most often pointed to an offensive strategy. The second place was occupied by the strategy of obtaining human resources (6 indications), which means acquiring from the market and employing highly qualified specialists who had previously worked for the competitors. It is interesting that during the pandemic, an increase in indications for this strategy was observed, which may be due to the fact that it is less active than the others. The third place was occupied by an independent strategy, based on the modernization of the products already offered, which gradually push the products offered by the company out of the market.

Before and during the pandemic, the respondents did not indicate that they had a avoidance strategy. Relatively rarely, because only after one indication before and during the pandemic had the strategy of acquiring other companies. It is also worth noting that both before and during the pandemic, enterprises often did not use a defensive strategy, which shows that proactive actions were a priority for companies (Fig. 1).

The results of the study indicate a positive assessment of the implemented innovation strategies by enterprises during the pandemic. Most of the indications were for the offensive strategy, which may mean that enterprises did not significantly reduce their innovative activity during the pandemic. On the other hand, it is possible to observe a reduction in innovative activity in some enterprises through a decrease in indications for the strategy of creating a market or an independent strategy.

Therefore, it can be concluded that enterprises that conducted innovative activities and applied innovation strategies before the pandemic did not stop doing so during the pandemic. This is also confirmed by the fact that 10 companies gave an affirmative response that the level of innovativeness of the company affected the possibility of avoiding the negative effects of the COVID-19 pandemic.
It is also interesting how many innovation strategies were chosen by the surveyed enterprises before and during the pandemic (Table 1). Before the pandemic, only one company pointed to one strategy, which was an independent strategy. Two companies applied two strategies, it was a combination of an offensive strategy with an independent one. The largest number of respondents indicated the three strategies used, most often companies combined an offensive strategy with a strategy of creating a market or acquiring human resources or an independent one. Three respondents used a combination of four strategies, in two cases it was a combination of offensive strategy with market creation, independent and recruitment, in the third a combination of offensive and defensive, purchase of licenses and recruitment.

It can be noted that during the pandemic, the largest number of enterprises were limited to the use of two strategies. It is not possible to identify the dominant combination of strategy, but in three cases they used a combination of an offensive strategy with a defensive one, acquiring another company or an independent one. It is interesting to observe that at that time, one company used a combination of five innovation strategies (offensive strategy, defensive strategy, market creation, independent strategy and recruitment strategy).

Before the pandemic, companies used a total of 32 innovation strategies, during the pandemic their number decreased to 26. This was probably due to the fact that during the pandemic period three companies declared that they did not use any of these innovation strategies.

Table 1. The number of innovation strategies applied by enterprises before and during the pandemic

| The number of strategies | Before the pandemic | During the pandemic |
|-------------------------|---------------------|---------------------|
| 1 strategy applied      | 1 enterprise        | 0                   |
| 2 strategies applied    | 2 enterprises       | 4 enterprise        |
| 3 strategies applied    | 5 enterprises       | 3 enterprises       |
| 4 strategies applied    | 3 enterprises       | 1 enterprise        |
| 5 strategies applied    | 0                   | 1 enterprise        |
| No strategy             | 1 enterprise        | 3 enterprises       |

Source: Own study.
Entrepreneurs were also asked whether the pandemic forced them to introduce various innovative solutions. Nine companies replied in the affirmative, three in the negative. The most frequently introduced were: remote work (9 indications), cloud solutions (8) and the development of services related to cybersecurity and data protection (5). Entrepreneurs also pointed to agile management, automation of production, implementation of WI-FI 6 or dissemination of 3D printing. In an effort to deepen the knowledge of strategy choices by enterprises, it was asked whether having an innovation strategy was important for the development of innovation. Ten respondents agreed with this statement, one denied it and one did not have an opinion on the matter. In the surveyed enterprises, the most often authors of the innovation strategy are the management board (8 indications), the R&D department (3 indications) or an external entity (1).

The innovation strategy defines the long-term development of products or services, technologies, new solutions throughout the organization and management, as well as licensing and patent policy. The innovation strategy indicates how solutions are sought in the organization, how ideas are transformed into business models and concepts of products or services, as well as what determines the grant for the further development of projects. Such a document makes innovation perceived in the organization as a continuous process, not as a one-off response to competitors’ actions or the need to adapt to the market suddenly [46].

5. Conclusions

The study conducted in enterprises shows how important innovation and its introduction are, regardless of the unfavourable external conditions that undoubtedly exist in the pandemic. Reducing innovation activity due to a crisis situation and adopting passive innovation strategies are ineffective. According to the OECD study [47], after the global financial crisis of 2008-10, companies from Europe and the United States, which invested heavily in research and development, relatively quickly improved the level of sales of their products. Similar conclusions are provided by the research of the Institute of Economic Sciences of the Polish Academy of Sciences [48].

The research results presented in the article enrich the knowledge about innovative activities of enterprises during the pandemic. Innovation strategies used by enterprises before the pandemic (in 2016-2019) and during its duration (2020-2022) were identified. To summarise the research carried out, it can be stated that:

- before the pandemic, respondents most often pointed to the offensive strategy, independent and market creation, during the pandemic to the offensive strategy, recruitment and independent;
- most indications before and during the pandemic were for the offensive strategy, which may mean that enterprises did not significantly reduce their innovative activity during the pandemic. An offensive strategy is a proactive strategy, focused on the customer’s needs and providing innovative products and services to the customer;
- before and during the pandemic, respondents did not use the avoidance strategy. Relatively rarely, because only after one indication before and during the pandemic had the strategy of acquiring other companies;
- enterprises that were innovative before the pandemic and applied innovation strategies did not stop doing so during the pandemic. This is also confirmed by the fact that 10 companies gave an affirmative response that the level of innovativeness of the company affected the possibility of avoiding the negative effects of the COVID-19 pandemic;
- most enterprises before the pandemic chose a combination of three strategies, most often combining an offensive strategy with a strategy of creating a market or acquiring human resources or an independent;
- during the pandemic, most enterprises limited themselves to applying two strategies. It is not possible to identify the dominant combination of strategy, but in three cases they used a combination of an offensive strategy with a defensive one, acquiring another company or an independent;
- the pandemic reduced the number of innovation strategies chosen by enterprises, from 32 before the pandemic to 26; but one enterprise during the pandemic used a combination of as many as five innovation strategies (offensive, defensive, market creation, independent and recruitment strategy);
- the pandemic forced companies to introduce various innovative solutions, most often remote work, cloud solutions and the development of services related to cybersecurity and data protection were introduced;
- the ability of the organisation to create innovation depends on the strategy that is within the competence of the management, of the highest level, in eight surveyed companies, the author of the innovation strategy is the management board.
By analysing the results obtained, one can identify research and managerial implications. This article can therefore fill that gap and lead into further theoretical and empirical research. The results of the research may be useful for other researchers who, using and improving the proposed approach, can conduct their own research or for entrepreneurs - owners and managers, in the sense of broadening their knowledge about the applied innovation strategies and inducing them to pay more attention to the importance of decisions taken when choosing innovation strategies. This knowledge may also be important for making impact assessments of strategic choices. The limitation of the study in question is the relatively small size and deliberate selection of the research sample. Limitations may also arise from the subjectivity of respondents' assessments due to the multidimensionality of substantive issues. Thus, it is advisable to extend future research to a larger number of organisations.

The presented results of the study are quite fragmented, and the conclusions on changes in the strategy area before and during the pandemic should be treated as a contribution to further, more comprehensive and in-depth research. Examples of possible research directions are both national (Polish enterprises covered by the study) and international (foreign enterprises) analysis of innovation strategies used by companies during the pandemic and before the pandemic period.

It also seems interesting to look for answers to the questions about the reasons behind the choices of individual innovation strategies made by enterprises. It is also worthwhile to expand the research with the results of the activities undertaken within the adopted innovation strategies. From the perspective of the directions of further research, it should be noted that this area will still be very important for Polish entrepreneurs, because the war in Ukraine is another crisis causing changes in innovative strategies.

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