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ORGANISATIONAL RESILIENCE AS A DETERMINANT OF THE DEVELOPMENT OF INNOVATIVE SERVICE ENTERPRISES

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ABSTRACT

The article aims to diagnose the relationship between the formation of organisational resilience and the development of innovative service enterprises. The leading approach of the study was inductive. It also used analysis and synthesis methods. The leading empirical method was a diagnostic survey in the form of a CAWI survey. The statistical analysis was used for quantitative data. The research tools used included the CAWI survey questionnaire, PS IMAGO PRO 10.0, and MS Excel software. The empirical study was conducted on a sample of 100 respondents representing companies classified into the following PKD sections, which belong to the sub-sector of high-tech knowledge-intensive services: 59, 60, 61, 62, 63, and 72. Proportional stratified sampling was used, and the numbering of PKD departments determined the strata. The survey showed the importance of shaping organisational resilience for developing service enterprises in the following areas: process and product, financial, and market at a moderate level. In addition, positive correlations of moderate strength were identified between the importance of shaping organisational resilience in the financial area and the importance of shaping organisational resilience in the process and product area, and the market area. What is more, no statistically significant differences were found in the importance of shaping resilience for the development of service enterprises in the following areas: process and product, financial and market between different classes of these enterprises distinguished according to the following criteria: leading business profile, age, scale of operations, and average annual turnover. The issue of shaping organisational resilience should be developed in the activity of innovative entities. Shaping resilience can positively impact enterprises' development and position in the market. Managers and/or business owners must identify the principal areas of resilience development, and the leading effects associated with its development, which will enable/improve the estimation of the level of development of a given company.

KEY WORDS

organisational resilience, innovative enterprise

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INTRODUCTION

Organisational resilience is often defined as an organisation's ability to cope with adversity (Weick, 2016). Crisis phenomena caused, among others, by the COVID-19 pandemic, the war in Ukraine, or cli-

mate change mean that organisational resilience is indicated as an essential and current subject of research, including research in the discipline of management and quality sciences (Ingram, 2023; Williams et al., 2021; Clement & Rivera, 2017). The indicated adverse social, economic, and natural phenomena cause enterprises, including service enter-

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prises, to operate in conditions of far-reaching unpredictability of the environment and, thus, in conditions of uncertainty. Hence, the increased interest in the concept of organisational resilience, i.e., the search for mechanisms and processes that will allow organisations to function and even develop despite such difficult operating conditions, has been observed in recent years (Marquez-Tejon et al., 2024; Verreynne et al., 2018; Vetrova et al., 2020). The article discusses the resilience of service enterprises, treating them as specific economic entities requiring a separate research approach. In the case of service enterprises, which most often belong to the group of SMEs, individual resilience plays a unique role in shaping organisational resilience because the person of the owner and the manager are usually the same. The organisation's survival in the face of crisis may depend on the behaviour of this crucial player from the organisation's perspective (Soluk et al., 2021).

Previous research (van der Vegt et al., 2015; Song, 2022; Ingram, 2023) indicates that organisational resilience may depend on several different factors that can determine the survival of a given innovative entity, e.g., human, financial, knowledge, and material resources (Ngoc Su et al., 2021; Webb & Chaffer, 2016; Searing et al., 2021; Polyanska et al., 2019). Innovative enterprises must develop each of these areas. In innovation processes, there must be no "gaps" and "bottlenecks" that reduce the level of organisational resilience because this will probably harm the value provided to the stakeholders of these processes. The research conducted so far on shaping the resilience of enterprises (including innovative ones) has a limited subject scope and focuses on individual resources (Chang, 2021; Wiczorek-Kosmala, 2022), processes (Stoverink et al., 2020) in enterprises or the scale of their operations (Möller et al., 2018; Hundal et al., 2021). Therefore, a "gap" lacks an extensive holistic empirical view. The study conducted by the authors of this article fills this "gap". It can be the basis for more complex and comprehensive conclusions on applying mechanisms for shaping organisational resilience in developing innovative service enterprises. In addition, the study focuses on the importance of shaping organisational resilience for developing service enterprises in three areas: process and product, financial, and market.

The article aims to diagnose the relationship between organisational resilience formation and the development of innovative service enterprises. The following research problem was raised: What is the importance of shaping organisational resilience for

developing innovative service enterprises? A diagnostic survey in the form of a CAWI survey was used to solve the indicated problem. In addition, statistical analysis of quantitative data was used. The empirical study was conducted on 100 respondents representing companies classified as the sub-sector of high-tech knowledge-intensive services.

The article consists of five main parts: (1) "Literature review" presenting the essence of the phenomenon of organisational resilience and its importance in the context of the activities of innovative enterprises; (2) "Research methods", with particular emphasis on the research problem and research hypotheses, specification of the scope of research and research methods used, as well as the structure of the research sample; (3) "Research results" in the perspective of the three areas where the primary effects of shaping resilience can be observed: process and product, financial and market; (4) "Discussion of the results", comparing the results obtained with the researches of other authors; and (5) "Conclusions", containing recommendations for the practice of management.

1. LITERATURE REVIEW

Research on organisational resilience undertaken in management and quality sciences has a long history (Hillmann & Guenther, 2021; Ingram, 2023). However, no single, universally accepted definition of the concept exists (van der Vegt et al., 2015; Kossek & Perrigino, 2016; Kahn et al., 2018; Ingram & Głód, 2018; Buyl et al., 2019; Olekalns et al., 2020; Stoverink et al., 2020). The concept of organisational resilience was introduced into the literature by Mallak (1998). In his concept, resilience is built on constructive perception of experiences and positive adaptive behaviours. It is associated with providing adequate resources, expanding decision-making boundaries, and developing the ability to create solutions immediately using available resources (Ingram, 2023). It is most often assumed that organisational resilience is a set of adaptation mechanisms based on the competencies (capabilities) of the company that affect the possibilities of organisational renewal after a crisis (Ingram, 2023). Ducheck (2020) pointed out that immunity is a specific ability to respond to unforeseen random events. Resilience is also treated as one of the possible responses of a company to a crisis (Kowalewski & Moczydłowska, 2024), along with antifragility or robustness and sustainability (Munoz et al., 2022). Organisational resilience is, therefore,

one of the types of resilience characteristic of the organisation's entity. It is essential because it is a condition for maintaining sustainable organisational effectiveness (Yu & Zhu, 2022) and, in challenging situations, a condition for survival.

Organisational resilience research focuses on diverse sources of potential threats. These sources can be external, such as natural disasters, political turmoil and war (Zhou et al., 2022), and internal, such as corruption (Tunley et al., 2018). Organisational resilience is primarily intended to respond to rapid changes in the company's environment (Jiang et al., 2019), uncertainty (Burnard & Bhamra, 2011), and complexity (Kagan & Kirchberg, 2016). Resilience is identified with organisational adaptation or is supposed to lead to adaptation to rapid changes in the environment (Wissman-Weber & Levy, 2018). In addition to the critical adaptation process, it also includes the pursuit of responsibility and sustainability in action (Stone & Rahimifard, 2018; Visser, 2021; Song, 2022), making sense (Teo et al., 2017; Tisch & Galbreath, 2018), balancing organisational structures (Andersson et al., 2019), planning (Weigand et al., 2014), collective organisational mindfulness (Wang et al., 2021), employee empowerment (van den Berg et al., 2022), use of organisational routines (Manfield & Newey, 2018; Jiang et al., 2019; Ingram, 2023).

The analysis of organisational resilience also requires establishing the relationship between the concept of resilience and risk management. Risk management, which has a comprehensive theoretical foundation, is one of the concepts related to organisational resilience, as it can be assumed that it is one of the mechanisms supporting the survival of an organisation (Douglas & Haley, 2024). Thus, it has functions like immunity (van der Vegt et al., 2015). Risk management attempts to prepare an organisation for unforeseen events (Andersson et al., 2019).

The resource-based approach dominates research on organisational resilience sources (Wieczorek-Kosmala, 2022). The role of human resources is crucial here first and foremost (Ngoc Su et al., 2021), and only secondarily, financial and information (technological) resources. Organisational resilience is determined by the ability to minimise employee competency gaps (Webb & Chaffer, 2016), the professionalism of HR policies and the flexibility of HR solutions (Chung, 2022), and the sense of job security among employees (Filimonau & de Coteau, 2020). A significant source of resilience is free financial resources, the so-called slack resources (Leuridan & Demil, 2022), and financial resources in general (Searing et al., 2021). There is no

doubt that financial resources facilitate the adaptation to new conditions significantly, which is crucial from the perspective of the company's survival through the possibility of introducing new solutions responding to new market conditions (Ingram, 2023). The individual characteristics of individuals: owners, managers, and critical decision-makers also play a crucial role in shaping organisational resilience (Anwar et al., 2023). The most frequently indicated individual determinants of resilience are self-efficacy (Alonso et al., 2019), personal mental resilience of the leader and coping with stress (Stoverink et al., 2020), absence of narcissistic tendencies and excessive risk-taking (Buyl et al., 2019).

Analysing scientific achievements on organisational resilience justifies asking about the universality of methods and techniques constituting organisational resilience. Many recommendations, including those on immunity, are universal (Monazzam & Crawford, 2024). Organisational learning and knowledge management, mature leadership, having action plans in crises, flexible shaping of resources, especially human, development of relational capital, etc., are indicated (Saad et al., 2021). However, some of the suggestions are highly specific to the context in which resilience is analysed, e.g., resulting from the location of the subjects studied (Möller et al., 2018; Ingram, 2023), their size, or the specifics of their business (Hundal et al., 2021).

The critical issue in this article's topic is the relationship between organisational resilience and innovation. Most researchers treat innovation as a source of resilience (Senbeto & Hon, 2020; Huang & Jahromi, 2021; Do et al., 2022), although there are also publications in which this relationship is reversed, i.e., innovation is indicated as a result of organisational resilience (Santoro et al., 2020; Akgün & Keskin, 2014).

To sum up the epistemological analysis, it should be stated that there are two dominant views on the essence of the activities of organisations describing the mechanisms of immunity. Some researchers assume that it is a passive adaptive ability, and then the focus is on adaptation processes (Ali & Gölgeci, 2019). In this approach, resilience leads to survival. In the second approach, which is closer to the authors of this article, developmental change is an expression of resilience (Prayag et al., 2020). Resilience assumes not only passive adaptation or change in the face of disruption but also that the ability to predict and effectively counteract potential turbulence in the environment is dormant (Duchek, 2020).

2. RESEARCH METHODS

The subject of the study was the perception of organisational resilience as a factor stimulating the development of enterprises in Poland. The study's main objective was to estimate the importance of shaping organisational resilience as a determinant of the development of innovative service enterprises. The research refers to the respondents' ratings and opinions. The research problem was formulated: What is the importance of shaping organisational resilience for developing innovative service enterprises? The study put forward the following hypotheses:

[H-1] The importance of shaping organisational resilience is high for developing service enterprises in the following areas: process and product, financial, and market.

[H-2] a) A strong positive correlation exists between the importance of shaping organisational resilience in the financial area and the importance of shaping organisational resilience in the process and product area. b) A strong positive correlation exists between the importance of shaping organisational resilience in the financial area and the importance of shaping organisational resilience in the market area.

[H-3] a) Statistically significant differences exist in the importance of shaping resilience for the development of service enterprises in the following areas: process and product, financial and market between different classes of these enterprises distinguished according to the criterion of the leading business profile. b) Statistically significant differences exist in the importance of shaping resilience for developing service enterprises in the following areas: process and product, financial and market, between different classes of these enterprises, as distinguished by age. c) Statistically significant differences exist in the importance of shaping resilience for the development of service enterprises in the following areas: process and product, financial and market, between different classes of these enterprises, which are distinguished according to the criterion of the scale of operation. d) Statistically significant differences exist in the importance of shaping resilience for the development of service enterprises in the following areas: process and product, financial and market, between different classes of these enterprises, which are distinguished according to the average annual level of turnover criterion.

The study's objective, subjective, spatial, and temporal scope was determined (Table 1). The study used an inductive approach. Elements of the deductive approach were also included, but the inductive approach played the leading role in the study. Analysis and synthesis were also used in the study. The leading empirical method was a diagnostic survey (Karbownik, 2017) in the form of a CAWI (Computer-Assisted Web Interview) survey. A statistical analysis of quantitative data was also used. In addition, the following research tools were used:

- CAWI questionnaire, which included a metric — five questions, the central part — 12 detailed questions requiring respondents to assess them on a 5-point scale (the value “1” meant very little importance of the impact of shaping organisational resilience on a given outcome, and the value “5” — very high importance) and one screening question,
- PS IMAGO PRO 10.0 and MS Excel software (for calculating descriptive statistics, performing Kolmogorov-Smirnov and Kruskal-Wallis tests for independent samples, determining Spearman's rho correlation and performing cluster analysis — k-means method, as well as sketching graphs).

In terms of the structure of the research sample, it should be noted that the respondents represented enterprises classified to the following PKD departments, which belong to high-tech sectors, and more specifically, to the sub-sector of high-tech knowledge-intensive services (Centrum Rozwoju Regionalnego w Braniewie, 2021; PKD, 2021). These are:

- department No. 59 — activities related to producing films, video recordings, television programmes, and sound and music recordings;
- department No. 60 — broadcasting of public and subscription programmes;
- department No. 61 — telecommunications;
- department No. 62 — software and IT consulting and related activities;
- department No. 63 — information service activities;
- department No. 72 — research and development.

20 % of respondents were in each of these layers (Fig. 1). On the other hand, considering the age parameter, the sample was dominated by young entities, i.e., operating on the market for up to five years (32 %) and relatively young, i.e., operating on the market for 6–10 years (31 %). The smallest percentage of enterprises in the sample were mature, i.e., entities operating for 11–15 years (14 %) (Fig. 2).

Tab. 1. Scope of the empirical study

SCOPE	DESCRIPTION
Objective scope	Perception of the development of organisational resilience as a determinant of the development of innovative service enterprises.
Subjective scope	The survey was conducted on a random sample (proportional stratified sampling — the numbering of PKD sections determined the strata) of business owners or managers responsible for risk management, innovation processes, or project management (one respondent from each surveyed company). The study included companies from the <i>high-tech, knowledge-intensive services sector</i>. The research sample consisted of 100 organisations (micro, small, and medium-sized entities based in Poland and conducting their activities mainly in Poland). Eligible for the study were people who answered “yes” to the screening question: <i>Has your company completely and correctly implemented at least five product and/or process innovations in the last five years of its operation on the market, and does the company share resources with other participants in innovation processes?</i>
Spatial scope	The study covered almost the entire Polish region — the surveyed companies were located in 13 voivodeships.
Temporal scope	The survey was conducted from July to August 2021 and covered the last five years of business activity, i.e., January 2016 to December 2020.

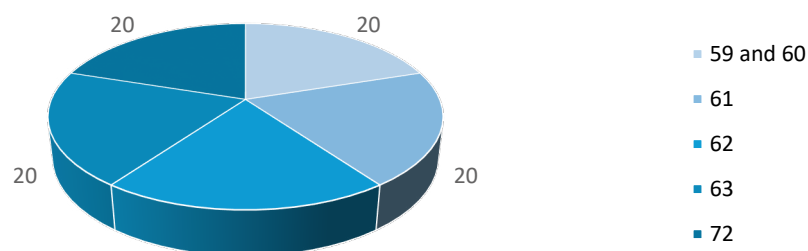


Fig. 1. Leading business profile (according to PKD) of the surveyed service companies [%] (N=100)

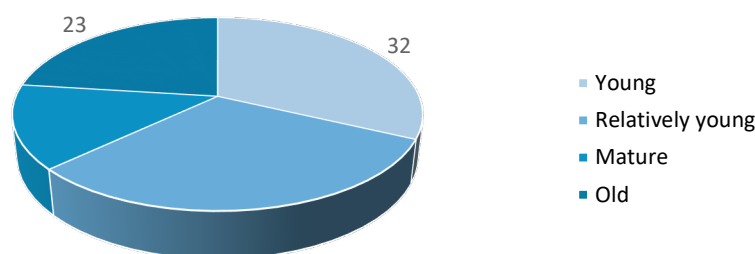


Fig. 2. Age of the surveyed service enterprises [%] (N=100)

Considering the criterion of the scale of action, it can be assumed that the research sample was dominated by entities operating on a local scale (1 city/commune/district) — 36 % and on a regional scale (1–8 voivodeships in Poland) — 24 %. A smaller percentage of the surveyed entities conduct processes on the following scales: national (9–16 voivodeships

in Poland) — 19 %, European (at least one country in Europe outside Poland) — 14 %, and international (at least one country in the world outside Europe, including Poland) — 7 %. In addition, the research sample was dominated by entities that achieved an average annual turnover level of PLN 0–0.5 million — 34 % and PLN 0.5– 1 million — 24 %. Annual turnover

values of companies were as follows: PLN 1–1.5 million — 16 %, PLN 1.5–2 million — 7 %, PLN 2 – 2.5 million — 3 %, PLN 2.5–3 million — 4 %, and more than PLN 3 million — 12 %.

The spatial distribution of the surveyed service enterprises was diverse. The research sample was dominated by entities from the following voivodeships: Śląskie (18 %) and Mazowieckie (17 %), as well as Pomorskie (12 %), Dolnośląskie (10 %), and Wielkopolskie (10 %).

The above contents allow assuming that the research sample was diverse. However, it should be noted that the study's authors are aware that the sample is not representative, and it is impossible to conclude the population based on it. Nonetheless, the authors believe that the study may become the basis for identifying general trends and formulating basic

guidelines and recommendations for perceiving organisational resilience as a determinant of the development of service enterprises.

3. RESEARCH RESULTS

Considerations on the perception of organisational resilience as a determinant of the development of innovative service enterprises should begin with an indication of the areas where the primary effects of shaping resilience can be observed. The study assumes the following three areas: process and product, financial, and market (Table 2). Such a division was adopted mainly because it exposes the basic classes of effects related to the development of innovative service enterprises and focuses both on the perspective

Tab. 2. Basic areas of shaping resilience and impact on the development of enterprises

AREA	BASIC EFFECTS OF RESILIENCE
Process and product	• Reducing employee errors. Increasing the number of innovations/new solutions/products/services developed. • Increasing the volume of sales of products/services. • Reducing the time needed to plan and prepare business processes. • Reducing the time to develop innovations/new solutions/products/services.
Financial	• Effective and planned implementation of the company's budget assumptions. • Increasing the company's financial liquidity. • Reducing the total cost of the company. • Increasing profits.
Market	• Increasing the level of specialisation of the activity on the market. • Increasing the company's market share. • Increase in customer numbers.

Tab. 3. Descriptive statistics for the importance of shaping organisational resilience for the development of service enterprises — process and product area (N=100)

STATISTICS	EFFECTS OF SHAPING RESILIENCE				
	REDUCING EMPLOYEE ERRORS	INCREASING THE NUMBER OF INNOVATIONS/NEW SOLUTIONS/ PRODUCTS/SERVICES DEVELOPED	INCREASING THE VOLUME OF SALES OF PRODUCTS/ SERVICES	REDUCING THE TIME NEEDED TO PLAN AND PREPARE BUSINESS PROCESSES	REDUCING THE TIME TO DEVELOP INNOVATIONS/ NEW SOLUTIONS/ PRODUCTS/ SERVICES
Mean	3.40	2.93	3.47	3.23	3.18
Median	3.00	3.00	4.00	3.00	3.00
Dominant	3	3	3	3	3
Standard deviation	1.239	1.103	1.185	1.043	1.114
Variance	1.535	1.217	1.403	1.088	1.240
Skewness	-0.319	0.095	-0.578	-0.150	-0.275
Kurtosis	-0.664	-0.566	-0.262	-0.067	-0.353
Range	4	4	4	4	4
Minimum	1	1	1	1	1
Maximum	5	5	5	5	5

of innovative activity and aspects of the market environment and financial potential. Therefore, it can be assumed that this perspective considers three main pillars of developing innovative entities. Of course, the authors know this is one of many classifications, but the abovementioned areas were adopted for the study.

The first of the issues considered is the importance of shaping organisational resilience for developing service enterprises in the following areas: process and product, financial and market. Considering the first area — process and product — it can be noted that in the opinion of the respondents (the respondents assessed each effect of shaping resilience using a 5-point scale, where the value “1” meant very little importance of the impact of shaping organisa-

tional resilience on a given effect, and the value “5” — very high importance) the most significant importance of shaping resilience is in terms of effects: increasing the volume of sales of products/services (average score at the level of 3.47) and reducing the number of errors made by employees (average rating at the level of 3.40). On the other hand, the least important is the increase in the number of developed innovations/new solutions/products/services (average score at the level of 2.93) (Table 3).

Considering the next area — financial, — it can be noted that in the opinion of the respondents, the most significant importance of the impact of shaping organisational resilience is for the effects in the following areas: increasing profits (average rating at the level of 3.74), increasing the financial liquidity of the

Tab. 4. Descriptive statistics for the importance of shaping organisational resilience for the development of service enterprises — financial area (N=100)

STATISTICS	EFFECTS OF SHAPING RESILIENCE			
	EFFECTIVE AND PLANNED IMPLEMENTATION OF THE COMPANY'S BUDGET ASSUMPTIONS	INCREASING THE COMPANY'S FINANCIAL LIQUIDITY	REDUCING THE TOTAL COST OF THE COMPANY	INCREASING PROFITS
Mean	3.53	3.61	3.34	3.74
Median	3.50	4.00	3.00	4.00
Dominant	3	5	4	5
Standard deviation	1.132	1.246	1.312	1.186
Variance	1.282	1.553	1.722	1.406
Skewness	-0.523	-0.528	-0.300	-0.702
Kurtosis	-0.080	-0.622	-1.022	-0.321
Range	4	4	4	4
Minimum	1	1	1	1
Maximum	5	5	5	5

Tab. 5. Descriptive statistics for the importance of shaping organisational resilience for the development of service enterprises — market area (N=100)

STATISTICS	EFFECTS OF SHAPING RESILIENCE		
	INCREASING THE LEVEL OF SPECIALISATION OF THE ACTIVITY ON THE MARKET	INCREASING THE COMPANY'S MARKET SHARE	INCREASE IN CUSTOMER NUMBERS
Mean	3.40	3.56	3.92
Median	3.00	4.00	4.00
Dominant	3	3	5
Standard deviation	1.137	1.192	1.107
Variance	1.293	1.421	1.226
Skewness	-0.421	-0.583	-0.933
Kurtosis	-0.355	-0.263	0.207
Range	4	4	4
Minimum	1	1	1
Maximum	5	5	5

company (average rating at the level of 3.61) and effective and planned implementation of the company's budget assumptions (average rating at the level of 3.53). It is crucial for the effect related to the reduction of total costs of business activity (average rating at the level of 3.34) (Table 4).

On the other hand, in the respondents' opinion, the last of the specified areas — the market area — is characterised by the most significant importance of shaping resilience for increasing the number of customers (average score at 3.92). For this area, the effect related to increasing the level of activity specialisation on the market is of relatively minor importance (average score at 3.40) (Table 5).

Mean values were determined (using arithmetic mean statistics) for the effects of resilience development in each of the three areas. On this basis, it was possible to determine the average importance of shaping organisational resilience for developing service enterprises in process and product, financial, and market areas (Table 6).

The analysis of the importance of shaping organisational resilience for developing service enterprises in process and product, financial, and market areas referred to a 5-point scale. The following assessment levels were adopted in the study:

- Low — average grade values in the range 1–2.33).
- Moderate — average grade values in the range 2.33–3.66).
- High — average grade values in the range 3.66–5.

The authors are aware of the fact that this is a contractual division into three “equal” areas of assessment and, in fact, the evaluation of the importance of shaping organisational resilience for the development of service enterprises in process and product, financial and market areas in each business entity can be considered differently, considering different limit values and criteria. Referring to the established ranges, it can be noted that the average importance of shaping organisational resilience for the development of service enterprises in the following areas: process and product, financial and market

Tab. 6. Descriptive statistics for the importance of shaping organisational resilience for the development of service enterprises — the perspective of three areas (N=100)

STATISTICS	AREAS		
	Process and product	Financial	Market
Mean	3.24	3.56	3.63
Median	3.20	3.63	3.67
Dominant	3.00	3.00	3.67
Standard deviation	0.704	0.753	0.825
Variance	0.496	0.566	0.681
Skewness	0.031	-0.420	-0.475
Kurtosis	1.242	0.929	0.486
Range	4.00	4.00	4.00
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	5.00

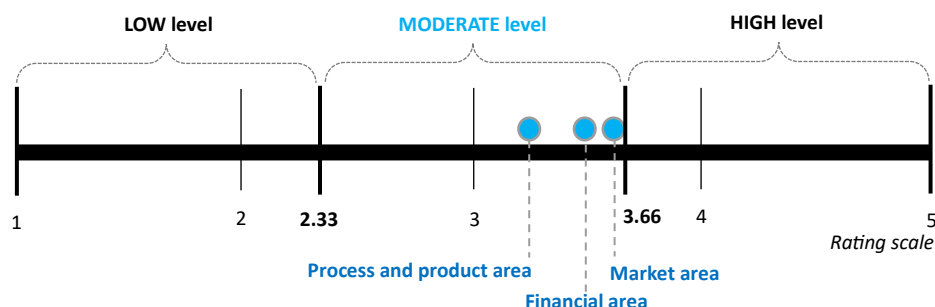


Fig. 3. Average ratings for the importance of shaping resilience in three areas (process and product, financial, and market) for the development of service enterprises (N=100)

is at a moderate level (Fig. 3). Therefore, based on the above results, it is possible to falsify the hypothesis [H-1] in the following wording: The importance of shaping organisational resilience is high for developing service enterprises in the following areas: process and product, financial, and market.

At this point, it is also worth referring to the identification and analysis of the structure of clusters of the surveyed service enterprises in terms of average assessments of the importance of shaping organisational resilience for their development in the following areas: process and product, financial, and market. It can be noted that the research sample is dominated by entities with moderate ratings of importance in all three areas (58 %). A significant percentage (40 %) are also companies with high ratings of the importance of shaping organisational resilience for their development in all three areas (Table 7).

Reference should be made to Spearman's rho coefficient, among other things, assessing potential correlations between the importance of shaping

organisational resilience in the financial area and the importance of shaping organisational resilience in the process and product, and market areas because the variables describing the importance of shaping organisational resilience in each of the three areas do not have a normal distribution (Table 8). The correlation coefficient between the importance of shaping organisational resilience in the financial area and the importance of shaping organisational resilience in the process and product area is 0.331, and between the importance of shaping organisational resilience in the financial area and the importance of shaping organisational resilience in the market area is 0.422. The correlation is positive in both cases, but its strength is moderate/weak (Table 9).

Based on the above results, it is possible to falsify the hypotheses:

- [H-2a] as follows: A strong positive correlation exists between the importance of shaping organisational resilience in the financial area and the importance of shaping organisational resilience in the process and product area.

Tab. 7. Clusters of enterprises due to average assessments of the importance of shaping organisational resilience for the development of service enterprises in the following areas: process and product, financial, and market (N=100)

	CLUSTER		
	No. 1	No. 2	No. 3
	ENTERPRISES WITH MODERATE RATINGS OF IMPORTANCE IN ALL THREE AREAS	ENTERPRISES WITH LOW RATINGS OF IMPORTANCE IN ALL THREE AREAS	ENTERPRISES WITH HIGH RATINGS OF IMPORTANCE IN ALL THREE AREAS
Stand: Process and product area	-0.24090	-2,75859	0.48723
Stand: Financial area	-0.46827	-3,06276	0.83213
Stand: Market area	-0.42517	-2,98152	0.76558
N (%)	58 (58)	2 (2)	40 (40)

Tab. 8. Kolmogorov-Smirnov test for one sample — testing the normality of distribution for variables describing three areas of impact of resilience on the development of service enterprises (N=100)

H0	SIGNIFICANCE ^a	DECISION
The variable "process and product area" distribution is normal, with a mean of 3.24 and a standard deviation of 0.70398.	0.008	Reject the H0 hypothesis
The variable "financial area" distribution is normal, with a mean of 3.56 and a standard deviation of 0.75259.	0.011	
The variable "market area" distribution is normal, with a mean of 3.63 and a standard deviation of 0.82508.	<0.001	

a. Significance level is 0.050.

Lilliefors' method is based on Monte Carlo (10000) samples with an initial value of 624387340.

Tab. 9. Spearman's rho correlations between the importance of shaping organisational resilience in the financial area and the importance of shaping organisational resilience in the process and product and market areas (N=100)

		PROCESS AND PRODUCT AREA	MARKET AREA
Financial area	Correlation coefficient	0.331*	0.422*
	Significance (two-sided)	<0.001	<0.001

* Correlation significant at 0.01 (two-sided).

Tab. 10. Kruskal-Wallis test for independent samples — the leading business profile criterion (N=100)

H0	SIGNIFICANCE ^a	DECISION
The distribution of the “process and product area” variable is the same for all “leading business profile” categories.	0.185	There are no grounds for rejecting the H0 hypothesis
The distribution of the “financial area” variable is the same for all “leading business profile” categories.	0.622	
The distribution of the “market area” variable is the same for all “leading business profile” categories.	0.253	

a. The significance level is 0.050.

b. Asymptotic significance is presented.

Tab. 11. Kruskal-Wallis test for independent samples — the age criterion (N=100)

H0	SIGNIFICANCE ^a	DECISION
The “process and product area” distribution is the same for all “age” categories.	0.357	There are no grounds for rejecting the H0 hypothesis
The distribution of the “financial area” variable is the same for all “age” categories.	0.815	
The distribution of the “market area” variable is the same for all “age” categories.	0.270	

a. The significance level is 0.050.

b. Asymptotic significance is presented.

Tab. 12. Kruskal-Wallis test for independent samples — the scale of action criterion (N=100)

H0	SIGNIFICANCE ^a	DECISION
The “process and product area” distribution is the same for all “scale of action” categories.	0.358	There are no grounds for rejecting the H0 hypothesis
The distribution of the “financial area” variable is the same for all “scale of action” categories.	0.869	
The distribution of the “market area” variable is the same for all “scale of action” categories.	0.936	

a. The significance level is 0.050.

b. Asymptotic significance is presented.

Tab. 13. Kruskal-Wallis test for independent samples — the average annual turnover criterion (N=100)

H0	SIGNIFICANCE ^a	DECISION
The “process and product area” distribution is the same for all “average annual turnover” categories.	0.741	There are no grounds for rejecting the H0 hypothesis
The distribution of the “financial area” variable is the same for all “average annual turnover” categories.	0.723	
The distribution of the “market area” variable is the same for all “average annual turnover” categories.	0.703	

a. The significance level is 0.050.

b. Asymptotic significance is presented.

- [H-2b] as follows: A strong positive correlation exists between the importance of shaping organisational resilience in the financial area and the importance of shaping organisational resilience in the market area.

The last issue considered is whether there are differences in the importance of shaping resilience for the development of service enterprises in the following areas: process and product, financial and market between different classes of these enterprises distinguished according to the following criteria: leading business profile, age, scale of operation, and average

annual turnover. For this purpose, the Kruskal-Wallis test was used for independent samples (Tables 10, 11, 12, and 13).

The Kruskal-Wallis test for independent samples (Tables 10, 11, 12, and 13) indicated no sufficient grounds to conclude that service enterprises differed. Based on the above results, it is, therefore, possible to falsify the hypotheses:

- [H-3a] as follows: Statistically significant differences exist in the importance of shaping resilience for the development of service enterprises in the following areas: process and product,

financial and market between different classes of these enterprises distinguished according to the criterion of the leading business profile.

- [H-3b] as follows: Statistically significant differences exist in the importance of shaping resilience for developing service enterprises in the following areas: process and product, financial and market, between different classes of these enterprises, as distinguished by age.
- [H-3c] as follows: Statistically significant differences exist in the importance of shaping resilience for the development of service enterprises in the following areas: process and product, financial and market, between different classes of these enterprises, which are distinguished according to the criterion of the scale of operation.
- [H-3d] as follows: Statistically significant differences exist in the importance of shaping resilience for the development of service enterprises in the following areas: process and product, financial and market, between different classes of these enterprises, which are distinguished according to the average annual level of turnover criterion.

The results obtained will be discussed in the next part of the article.

4. DISCUSSION OF THE RESULTS

Shaping organisational resilience is a complex and challenging task in the current environment of enterprises, including those operating in the service sector. This is due to high competition in the market (not only local but also global), limited access to high-quality resources (e.g., staff and managers), and the need to integrate risk management with short- and long-term planning. However, shaping an appropriate level of organisational resilience is important because it can increase the likelihood of correct and relatively safe development of enterprises. However, it is difficult to indicate what precisely the acceptable “level” of such “resilience” should be. One approach worth applying in management practice is to focus on the individual effects that resilience can “strengthen”. This approach is an opportunity for a relatively simple development of a set of measures/indicators that can be used to shape organisational resilience. This issue has not been developed in this article but will be the subject of further research by the authors.

The survey showed the importance of shaping organisational resilience for developing service enterprises in the following areas: process and product, financial, and market, which are at a moderate level. This is consistent with, e.g., results of the research by Leuridan and Demil (2022) and Searing et al. (2021) in terms of financial outcomes, Jiang et al. (2019) and Kagan and Kirchberg (2016) in terms of market activities, and Stone and Rahimifard (2018) and Visser (2021) in terms of product and process business development. It can also be assumed that the results obtained lead to similar conclusions as the research by Santoro et al. (2020) and Akgün and Keskina (2014) that innovation and the development of innovative activities result from properly shaped organisational resilience. It is also worth noting that the research conducted was maintained in the convention adopted by Prayag et al. (2020) and Duchek (2020), which states that shaping resilience is aimed at developing enterprises, including those from the service sector. Moreover, organisational resilience makes it possible to effectively counteract potential turbulence in the environment. The study modified the analytical perspective of the authors cited above, exposing the process and product, market, and financial areas, which gave a slightly more detailed illustration of the respondents’ opinions.

The research results are also consistent with the conclusions published by Douglas and Haley (2024) and Andersson et al. (2019) on the link between shaping resilience and risk management. It is necessary to consider, e.g., reducing the number of errors made by employees, shortening the time of planning and preparing business processes, effective and planned implementation of the company’s budget assumptions, and reducing the total costs of business activity. It can be assumed that the actions of managers/owners in the areas mentioned above are the “foundation” of risk management and constitute an attempt by innovative service companies to prepare for unforeseen events.

In addition, it is worth noting that the study showed positive correlations of moderate strength between the importance of shaping organisational resilience in the financial area and the importance of shaping organisational resilience in the process, product, and market areas. Therefore, it can be concluded, in a somewhat “cautious” way, that the increase in the importance of financial resilience, in a sense, corresponds to the rise in the importance of resilience for the company’s operations on the market

and the development of its core business (innovative in the process and product range).

At this point, it is also worth noting that there are no statistically significant differences in the importance of shaping resilience for the development of service enterprises in process and product, financial, and market areas between different classes of these enterprises distinguished according to the following criteria: leading business profile, age, scale of operation, and average annual turnover. In other words, representatives of all the surveyed enterprises similarly assessed the importance of shaping resilience for developing service enterprises to “strengthen” innovative enterprises. This may indicate the legitimacy of developing relatively “universal” guidelines/guidelines for shaping organisational resilience and treating it as a “tool” for improving service enterprises. Of course, it should be noted that the research sample was not fully representative, and the conclusions obtained should be applied in principle to the surveyed entities. However, some “generalisations” can be made to the population. It should be remembered that the results of this study are only the “general basis” of managerial decisions. In principle, in every innovative service company, the study’s conclusions can be interpreted slightly differently and used to a different extent.

CONCLUSIONS

This article focuses on diagnosing the relationship between the development of organisational resilience and the development of innovative service enterprises. Attention was paid primarily to how representatives of innovative service enterprises assess the importance of shaping organisational resilience for the development of their entities (in three areas: process and product, financial, and market). It was also focused on examining whether there are statistically significant differences between different categories of service enterprises (e.g., due to the criterion of age, leading business profile, etc.) in assessing the importance of shaping organisational resilience for the development of enterprises.

Practical recommendations resulting from the research are as follows:

1. Service enterprise managers and owners should identify the principal areas of resilience development and their leading effects, enabling a more precise estimation of a given company’s level of development.

2. Shaping organisational resilience can be the “basis” for strengthening innovation activities. Therefore, it is worth consciously managing organisational resilience, not only at the top management level but also at lower levels. A general awareness of the importance of organisational resilience for all employees is critical here. In shaping organisational resilience, a positive synergy effect (employee cooperation) is crucial, thanks to which it will be possible to support innovation processes in many aspects.

3. Finance should be one of the “foundations” for shaping organisational resilience: it can be a kind of “lever” for the organisation’s development.

4. When diagnosing the relationship between organisational resilience and the development of innovative service enterprises, it is recommended to use a holistic approach, considering the most significant possible number of factors/conditions that may significantly determine organisational resilience and thus translate into the development of innovative service enterprises.

5. Assessing the importance of organisational resilience should be seen only as one of many “signposts” for managers/business owners. The method of calculation presented in the article has a relatively large “margin of error”. Nevertheless, awareness of estimating the importance of organisational resilience is essential. It can change how service companies are managed, e.g., by moving towards a more extensive system for identifying and analysing risk factors.

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