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IN SEARCH OF FACTORS REINFORCING THE RELATIONSHIP BETWEEN ORGANISATIONAL RESILIENCE AND ORGANISATIONAL PERFORMANCE: A CONCEPTUAL FRAMEWORK AND RESEARCH RESULTS

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ABSTRACT

The study aims to explore how external support and the ability to understand systemic linkages (organisation's capability for systems thinking) influence the relationship between organisational resilience and organisational performance.

The empirical research was conducted to verify whether external support and systems thinking have the capacity to moderate the relationship between organisational resilience and organisational performance. A set of hypotheses was developed based on the theoretical research and subsequently tested on a sample of 268 organisations operating in Poland. Two alternative testing methods were used: stepwise regression analysis with a moderator and Hayes' PROCESS macro technique (also based on regression analysis). The Johnson-Neyman technique was used to identify regions within the range of the moderator variable, where the effect of the focal predictor on the outcome was statistically significant or non-significant.

The obtained results clearly show that the external support and systems thinking, when considered separately, act as moderators of the analysed relationship. The model with two moderators is also statistically significant, and the simultaneous inclusion of both moderators significantly increases the percentage of explained variance. However, an interesting phenomenon can be observed here. The analysis of conditional effects reveals that at a low level of systems thinking, and across all levels of external support, the moderation effect is not statistically significant. It becomes statistically significant only at the average and high levels of systems thinking, and at both of these levels, the effect increases with the rise in external support.

This study provides important insights into the factors influencing the relationship between organisational resilience and organisational performance. It emphasises the importance of systemic linkages and, above all, the understanding of the context in which organisations operate.

KEY WORDS

organisational resilience, organisational performance, external support, systems thinking, management

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INTRODUCTION

In a rapidly changing environment, organisations are increasingly facing disruptive events that threaten the continuity of their existence. Organisational resilience is thus becoming a key determinant of an

organisation's ability to survive and thrive. This raises the question of whether it also affects organisational performance. Most research indicates a positive correlation between organisational resilience and organisational performance (Chowdhury et al., 2019; Suryaningtyas et al., 2019; Zahari et al., 2022; Raza & Anwar, 2025); however, it does not provide a clear

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answer as to whether resilience always and under all conditions translates into improved organisational performance. The dynamics of this relationship remain the subject of scientific debate, and the results of empirical studies are not always conclusive (Prayag et al., 2018; Schäffer, 2020). This suggests that various factors may influence the strength and direction of this relationship and highlights the need for a deeper understanding of its nature, considering the elements that affect its intensity. There are only a few studies in the literature analysing the role of mediators and moderators in the relationship between organisational resilience and organisational performance. For example, a study by Suryaningtyas et al. (2019) found that resilient leadership and organisational culture play an important mediating role in this relationship, while Wang et al. (2022) indicated that environmental dynamism serves as a moderating factor, enhancing the positive impact of organisational resilience on competitive advantage through organisational learning. Despite existing research, a comprehensive understanding of the factors influencing the evolving relationship between organisational resilience and organisational performance is still lacking. Despite growing interest in organisational resilience, a research gap remains regarding the contextual determinants that may enhance or undermine its impact on organisational performance. In particular, the role of different moderators (both external and internal) has been insufficiently explored.

Among external factors, one under-researched area is external support, which can be understood as institutional support (e.g., public policies, emergency assistance, and regulation) and inter-organisational relationships (including collaboration with partners, access to network resources or mutual support). In some contexts, these external support mechanisms may determine whether an organisation's resilience is more rapidly transformed into tangible outcomes (organisational performance) or not. A second potential moderator that has so far received insufficient research attention is an organisation's ability to understand systemic linkages in its environment (systems thinking). In times of complexity and discontinuity, responding effectively to change depends not only on the strength of internal resources, but also on an organisation's ability to perceive itself as part of a broader system, such as supply chains, innovation ecosystems or interdependence structures. Organisations capable of such systems thinking can more accurately anticipate the effects of change, make more integrated decisions and interact more effectively with

others, also in the context of drawing on external support. Drawing on the aforementioned considerations, this study formulates the following research problem: how do external support mechanisms and systems thinking capabilities influence the relationship between organisational resilience and organisational performance? Therefore, this study aims to explore how external support and the ability to understand systemic linkages (systems thinking) influence the relationship between organisational resilience and organisational performance. To address the research objective, a quantitative approach was adopted. The empirical study was conducted to collect data that served as the basis for verifying the assumed relationships among the variables. The starting point of this study, however, is clarifying the concept of organisational resilience, which lies at the core of the research inquiry.

1. LITERATURE REVIEW

1.1. ORGANISATION'S RESILIENCE AND ITS MEASUREMENT PROBLEMS

Although organisational resilience is not a new concept and has evolved, there is still no consensus on its substance. The difficulty in defining it also stems from various ways in which the organisation's essence is conceptualised. Research papers on organisational resilience are rooted in a variety of theoretical frameworks, ranging from systems theory (Holling, 1973) or Complex Adaptive Systems (CAS) theory (Holland, 1992) to resource dependence theory (Pfeffer & Salancik, 1978) and High-Reliability Organisations (HRO) theory (Weick & Sutcliffe, 2001; Sutcliffe, 2011), to the currently prevailing approach grounded in the theory of dynamic organisational capabilities (Teece et al., 1997).

There is an ongoing debate on whether resilience resides in organisational structures or emerges through organisational actions, whether it is a skill, a certain attribute, a feature, a property of the organisation, or rather a set of abilities or capabilities that an organisation develops to cope with and in coping with unexpected events (Zabłocka-Kluczka, 2020). From the perspective of engineering and systems theory, resilience is defined as a single stable state to which the system can return after a perturbation, a capacity for robustness or the ability to recover critical functions and return to equilibrium following a disruptive event (Coutu, 2002; Horne & Orr, 1998; Kantur & Iseri-Say,

2015; Limnios et al., 2014; Riolli & Savicki, 2003). Organisations perceived as systems are resilient if they can quickly return to an acceptable state after disruptions, demonstrate the ability to withstand shocks, and bounce back after being bent (Madni & Jackson, 2009). According to Hollnagel (2014), resilience pertains more to the dynamic behaviour and adaptive performance of a system than to any fixed structural attribute. This way of thinking has shifted understanding of organisational resilience towards internal organisational reliability (Perrow 1984; Weick & Sutcliffe, 2001; Linnenluecke, 2017) and towards systems, mechanisms, and procedures that reduce the organisational volatility and enhance predictability under conditions of sudden threats (i.e., risk management). According to Powley (2009) and Ortiz-de-Mandojana and Bansal (2016), resilience is a latent dynamic capability, shaped over time by detecting and amending maladaptive tendencies, and tends to manifest only when the organisation confronts unexpected challenges. Thus, it is activated when an organisation faces a threat but is built much earlier, not only through systemic or structural solutions, but also through social interaction, relationships and organisational learning (Smith & Elliott, 2007; Sutcliffe & Vogus, 2003; Powley, 2009). The growing focus on the intangible dimensions, through which resilience is formed, has prompted a shift in research towards the theory of dynamic capabilities. This approach extends the understanding of resilience to include anticipatory sensing of threats, adaptive learning, and the ability to capitalise on adverse conditions (Hamel & Välikangas, 2003; Duchek, 2020; Duchek et al., 2020; Koronis & Ponis, 2018).

The complex nature of organisational resilience has led to the development of many methods for its measurement, which can be confusing given the multitude of factors being assessed. An overview of various approaches to measuring organisational resilience is provided by Rahi (2019), Chen et al. (2021), Hillman and Guenther (2021), and Ignatowicz et al. (2023). No perfect measurement framework emerges from these studies. Since many of them are context-specific, none can be considered universally better or worse. A good starting point for classifying methods of measuring organisational resilience appears to be their conceptual assumptions. The discourse remains open as to whether organisational resilience should be measured ex-post or ex-ante, and whether the metrics should be static or dynamic, quantitative (sometimes even purely financial) or qualitative and descriptive.

Measuring organisational resilience ex-post, as an outcome category, is consistent with the idea that resilience is understood as the ability to “bounce back” and is demonstrated only when the organisation is exposed to factors disrupting its functioning. Measures adopted in this approach usually describe speed or efficiency of return to baseline (and often this baseline is defined by the performance of an organisation). These measures are typically not very elaborate and are limited to one or a few metrics (dimensions), generally assessing the magnitude of disturbance the system can tolerate while still persisting, such as:

- recovery time (Gittel et al., 2006; Erol et al., 2010; DesJardine et al., 2019),
- severity of loss (DesJardine et al., 2019) or more precisely, a drop in performance (Ilseven & Puranam, 2021),
- rate of survival (Ortiz-de-Mandojana & Bansal, 2016), rate or level of recovery (Erol et al., 2010; Ilseven & Puranam, 2021), sometimes combined with
- level of vulnerability (Erol et al., 2010).

The main limitation of this measurement is that organisational resilience can only be considered retrospectively - it is impossible to measure and assess it before a crisis occurs. Such an approach makes it easy to compare the resilience of different organisations, even across various industries, but it seems to be of limited use for the management of an organisation in the context of a specific crisis. It must be admitted, however, that the knowledge gained during a given crisis can be successfully used to shape the future resilience of the organisation.

The limitations of the presented approach have become the impetus for the search for useful and reliable tools and techniques that allow for improving or shaping organisational resilience in advance, and at the very least provide organisations “with information on their resilience strengths and weaknesses before a crisis happens” (Lee et al., 2013, p. 30). These approaches focus on measuring factors, processes, elements, or dimensions that influence organisational resilience. In particular, they concentrate on elements that precede or constitute organisational resilience, or on the phases of the resilience-building process. One of the more popular models of resilience measurement that combines typical ex-post measures with an assessment of available resources is the 4R model of Bruneau et al. (2003). Although it is not specific to organisations, the authors proposed measures applicable to organisations within four performance criteria (robustness, redundancy, resourcefulness, and rapid-

ity). Equally popular is the Benchmark Resilience Tool (BRT), proposed and developed by Lee et al. (2013) and Whitman et al. (2013). It has evolved over time and is now a two-factor model, in which organisational resilience comprises two dimensions: planning and adaptive capacity. These are assessed using 13 indicators measured by 53 items, although researchers often use their own variations of the original three-dimensional scale, such as Roberston et al. (2022). A similar approach to assessing organisational resilience can also be found in ISO Standards 22316:2017, BS 65000:2014 or BS 65000:2022, which provide guidance for enhancing organisational resilience. From the perspective of the process approach, organisational resilience can be assessed by examining the processes (sub-processes) that contribute to its development. Following this logic, Ates and Bitici (2011) proposed a conceptual framework based on 29 management practices developed across five change process phases (preparing, planning, implementing, embedding, and reviewing). A different, yet still process-based, approach to measuring organisational resilience was adopted by Aleksić et al. (2013) and Macuzić et al. (2016). In both cases, a fuzzy set approach was applied. What comes to the fore here is not so much the identification of resilience factors (done within a specific industry context), but rather a holistic assessment of these factors and the comparison of their relative importance in contributing to organisational resilience. These frameworks provide more actionable information to decision-makers in shaping more resilient business strategies. However, such mathematical models of organisational resilience are constrained by one key limitation: the need for well-structured business processes and a carefully selected set of resilience attributes. A Fuzzy-Jess expert system for measuring business resiliency was also developed by Asgary et al. (2009). A process-based approach combined with the concept of dynamic capabilities can be seen in Duchek's (2020) three-dimensional proposal (in which organisational resilience consists of anticipation, coping and adaptation capabilities), conceptualised and operationalised by subsequent research, such as by Ahmić (2022). Finally, there are also frameworks grounded in the theory of dynamic capabilities, which lie at the heart of contemporary understandings of organisational resilience. Theoretical models by Sutcliffe and Vogus (2003) and Lengnick-Hall and Beck (2005), Lengnick-Hall (2011), which discuss cognitive, behavioural, and contextual or structural dimensions of resilience, have been operationalised by their successors. For example,

Akgün and Keskin (2014) developed a measurement model consisting of 21 items across six areas (competence orientation, deep social capital, original/unscripted agility, practical habits, behavioural preparedness, and broad resource networks) derived from the proposition of Lengnick-Hall and Beck (2005).

According to Hillman and Guenther (2021), what is common to all these frameworks and measurement models is that resilience is understood and conceptualised as a latent, multidimensional higher-order construct. This is because it is a deep-rooted and intrinsic characteristic of the organisation that can never be fully discovered, but only evaluated with varying degrees of accuracy. An important issue is the variety of dimensions and attributes shaping organisational resilience that are considered in the proposed models. The large number of evaluation criteria and measures raises a problem from the perspective of the practical application of these methods.

To summarise, measuring organisational resilience is a challenging task. Different frameworks for measuring organisational resilience are usually strongly influenced by their conceptual anchors (entry points), do not provide a complete picture, and are only partially (if at all) comparable (Schipper & Langston, 2015). The use of a particular method should therefore be dictated by the purpose of the measurement. This paper focuses, among other things, on understanding systemic linkages, which justifies the choice of an approach rooted in systems theory resilience.

1.2. ORGANISATION'S RESILIENCE, EXTERNAL SUPPORT, SYSTEMS THINKING, AND ORGANISATIONAL PERFORMANCE - HYPOTHESES DEVELOPMENT

External support refers to both tangible and intangible resources that organisations receive from external stakeholders - such as partners, institutions, or public agencies - with the aim of strengthening their capacity to cope with challenges and pursue their goals (Spear, 2006). Cheah et al. (2019) discuss external support in terms of the type of support (direct and indirect) and the type of stakeholders (e.g., governmental or non-governmental). Support can also be considered through the prism of a unilateral relationship (as in the case of government assistance to organisations), or it can result from bilateral or multilateral ties created through a process of market cooperation (e.g., as a result of networking).

Support offered by the government is usually actional, situation-dependent, and aligned with current policy, typically aimed at absorbing disruption or maintaining economic or social order (Hereida et al., 2022; Taneo et al., 2022). It may include both direct and indirect forms of support. Direct support is usually targeted at specific types of organisations and includes financial (e.g., regulatory frameworks, tax reduction, subsidies, and loans) and operational (e.g., permissions and licenses) benefits that organisations can actively solicit from the government. Indirect support (e.g., policy interpretation, information sharing, infrastructure investments, law enforcement, or R&D prompting) is addressed to a broader range of firms or industries (Gao et al., 2022). Government support for building organisational resilience is not merely theoretical. Many countries, especially during the COVID-19 pandemic, established national programmes and initiatives to reinforce this stance. In Poland, for example, to mitigate the economic impact of the 2020 pandemic crisis, the government prepared and enacted an assistance package consisting of six Crisis Shields (1.0, 2.0, 3.0 for big enterprises, 4.0, 5.0 - the Tourism Shield, and 6.0 - the Industry Shield) and Financial Shield 1.0. (Dębkowska et al., 2021). While assessments of the effectiveness of such initiatives vary, the literature provides evidence that governmental support positively influences organisational resilience (Gao et al., 2022; Kim et al., 2021; Taneo et al., 2021).

According to Kim et al. (2021), organisational resilience is a network outcome. Organisations that are closer to each other tend to be more resilient; however, this does not necessarily mean that an organisation must play the role of a network broker or be in the centre of the network. By definition, a business network is an organisation's formal or informal arrangement that enables it to gain and exchange resources (Ahuja, 2000), which are crucial in overcoming the difficulties of crises. The literature provides evidence that, in the context of adversity, relational capabilities - the social connections that enable access to and exchange of resources - play an important role in shaping organisational resilience (Williams et al., 2017). Business networks are positively correlated with organisational resilience (Xie et al., 2022; Xie et al., 2025; Liu & Yin, 2020), and this appears to be true in the short term. However, research is lacking on how reliance on external assistance affects the long-term development of organisational resilience.

To summarise, it is difficult to disagree with the thesis of Ratnawati and Suryani (2024, p. 75) that “in encounter crises, business cannot stand alone”. Exter-

nal support is thus important for organisational resilience (at least in the short term). Considering all the above, the following research hypothesis can be formulated:

H1: A positive relationship exists between external support and the organisation's resilience.

Organisations are, by definition, set up to operate in a competitive market environment. They strive not only to survive but also to gain an advantage over others in competing for limited resources, which, under the same conditions, determine their ability to achieve objectives. The mechanism of competition necessitates continuous improvement of products, processes, and management models. Market success - especially in the case of business organisations - is measured primarily by the ability to generate a sustainable financial surplus. In practice, however, the ability of organisations to participate in this “market game” varies greatly. Not all organisations have equal access to resources, knowledge, relationships, or institutional support. For many (especially those that are smaller, younger or operate in difficult sectors), functioning in a highly competitive environment presents significant barriers. In such cases, external support, both tangible (e.g., funding, infrastructure) and intangible (e.g., advice, regulatory facilitation), can play a crucial role not only in enabling them to remain viable but also in significantly increasing their competitiveness, regardless of the source from which this support originates.

According to Hereida et al. (2022), an organisation's success depends on access to government support, especially in the case of third-sector organisations. Government grants and donations positively influence financial efficiency (Ecer et al., 2016) and the achievement of an organisation's objectives (Thompson & Williams, 2014). Training support provided by the government also has a positive impact on business success, affecting both financial and non-financial performance, as well as organisational innovativeness (Rahman et al., 2015). Such assistance may also be significant for business organisations, but the support obtained through networking processes appears to be of even greater importance. According to Ahuja (2000), in this context, the position of an organisation within interorganisational networks matters for strengthening its outcomes. Moreover, network structure also plays an important role: both direct and indirect ties serve as sources of information, while direct ties additionally serve as sources of resources. Linkages and the resulting collaboration networks are key vehicles through which firms gain access to external knowledge (Fernandez-Perez et al., 2012). A num-

ber of benefits of participating in inter-organisational networks are cited in the literature, such as a sense of greater security, increased resource flexibility, reduced capital needs, risk transfer, knowledge sharing, enhanced innovation, and access to new customers. Although sometimes risks and negative aspects associated with interorganisational networks are also noted (Kawa & Pierański, 2015), the benefits of remaining in the network appear to outweigh the drawbacks. Therefore, the following research hypothesis is formulated:

H2: A positive relationship exists between external support and organisational performance.

Hereida et al. (2022) stated that organisations need to develop their resilience to foster future success and survive in complex environments. However, according to Legnick-Hall and Beck (2003), resilience is more than just bouncing back, and turning challenges into opportunities creates the conditions to perform better than before. This opens up the debate as to whether organisational resilience indeed implies improved performance.

The prevailing view in the literature is that organisational resilience promotes organisational performance (Sundström & Hollnagel, 2006; Carden et al., 2018; Chowdhury et al., 2019; Suryaningtyas et al., 2019; Beuren et al., 2021; Zahari et al., 2022; Raza & Anwar, 2025). However, both concepts are multidimensional and fuzzy, hence the question arises as to whether resilience always and under all conditions translates into improved organisational performance. As already noted, defining organisational resilience is challenging. Equally challenging is also defining organisational performance (Cheah et al., 2019). These two multidimensional constructs do not necessarily have a clear or direct relationship with each other. Schäffer (2020) noted that “organisational resilience hardly appears compatible with the mindset of short-term efficiency and performance maximisation that prevails in stock-listed and many other companies”. Moreover, resource redundancy, which is one of the ways of building organisational resilience, results in very tangible short-term costs, which may detract from the overall organisational performance. Prayag et al. (2018) confirmed this thesis. Hollands et al. (2023) did not find support for the claim that variations in organisational resilience over time affect business success; however, their results indicate that more resilient organisations tend to enjoy greater business success overall. Therefore, the following hypothesis was formulated:

H3: A positive relationship exists between the organisation's resilience and organisational performance.

The relationship between organisational resilience and organisational performance is therefore not so automatic or straightforward as it may seem. An organisation may be resilient (i.e., able to survive a crisis) but not necessarily perform better. External support may thus determine whether, and to what extent, this resilience is successfully transformed into tangible results and whether the rebound from adversity leads to strengthened performance. Therefore, the following hypothesis may be formulated:

H3M1: The higher the external support, the stronger the influence of the organisation's resilience on the organisational performance. External support is a moderator for the relationship between the organisation's resilience and organisational performance.

Systems thinking has its origins in the assumptions of Ludwig von Bertalanffy's systems theory. According to this concept, an organisation can be understood as a system in which information and other resources are exchanged to achieve the organisation's goals. The individual parts of the system are closely interconnected, and even a small change within one of the smallest subsystems can have a significant long-term impact on the whole (Koźmiński et al., 2013). The cognitive competence of recognising and understanding these relationships is the essence of systems thinking. Systems thinking is the ability to consciously consider objects and phenomena in the surrounding world as systems in their development and interdependence to analyse problem situations, to identify the contradictions that have created them, and to find the most effective solutions to the problems that have arisen (Petrov after Humenna, 2024). Skaržauskienė (2010, p. 50) stated that “an effect of systems thinking is relevant in the modern world, which generates more information than it is possible to control and creates interrelations that are difficult to forecast”. In this context, managers today need not only the skills to make decisions, solve problems, and act in an unstable environment, but also the ability to understand the causes and consequences of their decisions. Understanding these interrelations requires systems thinking.

In light of the Resource Dependence Theory (RDT), organisations are open systems constrained by their environment in terms of access to resources (Pfeffer & Salancik, 2015). According to Cheah et al.

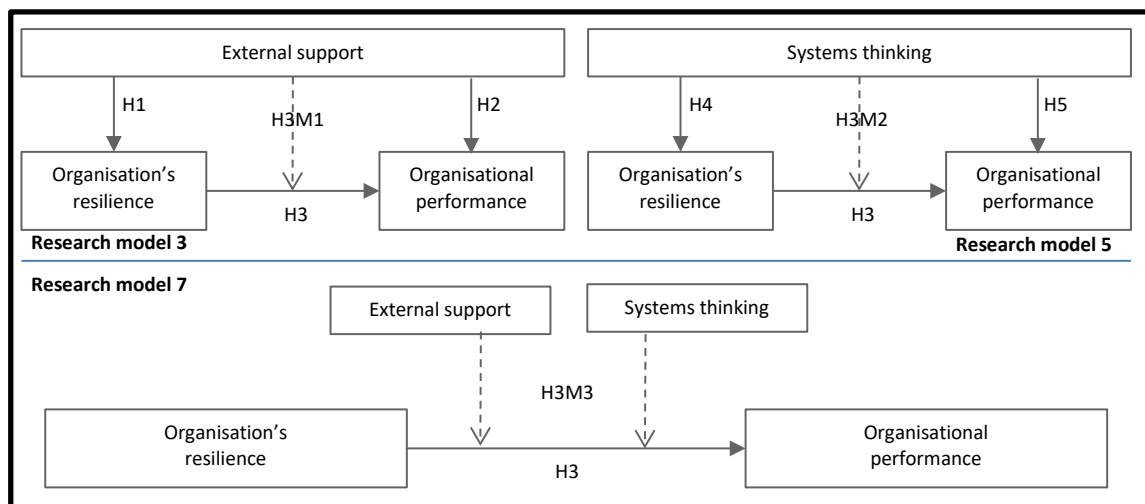


Fig. 1. External support and systems thinking as moderators of the relationship between the organisation's resilience and organisational performance.

(2019), an organisation's survival is limited by the availability of resources, which is shaped primarily by its ability to acquire external resources. This, in turn, requires an understanding of the interrelationships and context in which the organisation operates. The starting point for understanding the environmental linkages is the organisation's ability to be fully aware of its surroundings and their changes (commonly referred to as sensemaking (Weick, 2011) or situation awareness (Lee et al., 2013)). Systems thinking, although most often referred to as the analysis of an organisation's relationship with its external environment, is also crucial for understanding its internal dynamics. The ability to respond to unforeseen incidents and crises derives primarily from the ability to adapt, maintain business continuity, and recover from disruptions (Hamel & Välikangas, 2003; Duchek, 2020; Duchek et al., 2020; Koronis & Ponis, 2018). These processes largely depend on the internal structures and mechanisms that shape the organisation's functioning. Systems thinking enables a better understanding of the interdependencies between the organisational elements, processes, and resources; it promotes coordination and coherence of activities and facilitates faster decision-making. Therefore, the following hypothesis can be formulated:

H4: A positive relationship exists between systems thinking and the organisation's resilience.

As the drivers of an organisation's resilience are in many cases the same as those that are needed to gain a competitive advantage (Mitroff & Pauchant, 1989), one can also assume a link between systems thinking and organisational performance. According to Boy-

atzis and Goleman (2007), systems thinking is a cognitive intelligence competence, an ability to think or analyse information or situations that leads to effective or superior performance. For Senge (2000), it is the key (the titular "fifth") discipline enabling organisational learning. Surprisingly, although it is considered a valuable and desirable managerial competence, there is little empirical research verifying how much and to what extent it translates into organisational performance. One of the few examples is the paper of Skaržauskienė (2010), which demonstrated that organisational performance could be explained by systems thinking competencies (such as process orientation, interactivity, systems logic, dynamic thinking, etc.). In light of the above, the following research hypothesis is formulated:

H5: A positive relationship exists between systems thinking and organisational performance.

As with external support, understanding system linkages also appears to have the potential to influence the strength of the relationship between organisational resilience and organisational performance. An organisation's ability to see itself as part of a larger system of economic and institutional linkages, as well as its ability to understand how the interaction of internal elements contributes to building resilience, seems to be one of the key factors determining whether this resilience will be effectively leveraged to enhance organisational performance. Therefore, the following hypothesis can be formulated:

H3M2: The higher the systems thinking, the stronger the influence of the organisation's resilience on organisational performance. Systems thinking is

a moderator for the relationship between the organisation's resilience and organisational performance.

Finally, it is interesting to observe what happens when both of these factors act simultaneously. Not only can the two moderators independently influence the relationship between resilience and outcomes, but they can also interact with each other. In this context, the following hypothesis can be formulated:

H3M3: The higher the external support and systems thinking, the stronger the influence of the organisation's resilience on the organisational performance. External support and systems thinking are the moderators for the relationship between the organisation's resilience and organisational performance.

All developed hypotheses (and the three main research models), illustrating the relationships between external support, systems thinking, organisation's resilience, and organisational performance, are presented in Fig. 1. During the research process, simpler models, serving as the basis for the three main models presented below, were also built and tested, but they are not included in Fig. 1. However, they are described in detail later in the paper. The models shown in Fig. 1 (models 3, 5 and 7) are numbered according to the order in which they were developed and tested, which may cause some confusion.

2. RESEARCH METHODS

2.1. DATA GATHERING PROCESS AND CHARACTERISTICS OF THE RESEARCH SAMPLE

To verify the proposed hypotheses, a quantitative survey was conducted. The results presented in this article are part of a broader research project entitled

“Factors shaping Organisational Resilience”, which focuses on the issue of organisational resilience. The project consists of a series of independent cross-sectional studies conducted at different points in time: on the eve of the Covid-19 pandemic (in December 2019) and shortly before its official end (in May and June 2023), preceded by pilot studies carried out in 2018. To ensure comparability, the definition of organisational resilience and its measurement approach remained consistent throughout all study periods, although it was further developed in each subsequent phase. The findings presented in this article are based on data collected in December 2019. The research was conducted anonymously using the online survey service SurveyMonkey among organisations located in Poland, and it was the only condition limiting the sample (organisations were surveyed regardless of size, industry or type of business, etc.). In each organisation, only one survey was conducted and completed by a manager with a comprehensive understanding of the organisation as a whole. The survey was directed at senior management and company owners. In total, 268 responses were collected. Due to the lack of data, the number in distinct cross-sections of the research sample (Table 1) is different. Purposive sampling was used. According to the size of the population of organisations operating in Poland, the sample cannot be considered representative; however, it is sufficiently diversified to be a basis for overall conclusions concerning the given topic. The characteristics of the sample, presented in Table 1, show its diversity in terms of size and types of organisations. The study includes both small, medium, and large entities, representing different business profiles. Approximately 60 % of the respondents represent enterprises of a local nature, while the remaining 40 % are organisa-

Tab. 1. Research sample characteristics

SIZE OF THE ORGANISATION					
TYPE OF ORGANISATION	MICRO (BELOW 10 EMPLOYEES)	SMALL (10-49 EMPLOYEES)	MEDIUM (50-249 EMPLOYEES)	LARGE (ABOVE 249 EMPLOYEES)	TOTAL
Manufacturing	12	37	42	37	128
Trade	11	15	26	11	63
Service	9	11	24	28	72
Total	32	63	92	76	263
AGE OF ORGANISATION					
up to 5 years	8	13	5	0	26
6-10	9	22	39	7	77
11-15	11	23	37	34	105
over 20 years	4	5	11	35	55
TOTAL	32	63	92	76	263

tions operating internationally (both independent units that are part of corporations and holding companies, and enterprises that maintain permanent links with foreign partners).

2.2. VARIABLES MEASUREMENT

To examine the proposed hypotheses, key variables were defined: external support, systems thinking, organisation's resilience, and organisational performance.

External support was measured based on six statements referring to the range of an organisation's collaboration with and outside industry, the intensity of networking, and the accessibility to external resources, which were developed based on articles (Lee et al., 2013; Seville, 2017; McCann, Selsky & Lee, 2009; Tengblad & Oudhuis, 2018). Respondents rated each statement on a 5-point Likert scale ranging from "I strongly disagree" to "I strongly agree", with a neutral option at the middle point ("I have no opinion").

Systems thinking was measured based on four statements reflecting the organisation's ability to identify, understand, and control key links, resources, and dependencies (both internal and external), and, in particular, the ability of incident analysis in the wider context of organisational processes and not as isolated incidents, or an awareness of the interdependencies between elements of the organisation and between the organisation and its environment. Here, the same 5-point Likert scale was used.

Variable organisation's resilience was built based on four properties assigned to the resilience of the system: robustness, redundancy, resourcefulness, and rapidity (Bruneau et al., 2003; Wicker et al., 2013). Within four properties, four measures (respectively, one item according to one property) of the organisation's resilience were indicated. They were rated on the 5-point Likert scale (from strongly disagree to strongly agree, with a middle point "I do not have an opinion").

Organisational performance was measured based on the Balanced Scorecard concept (Kaplan & Norton, 1996). That framework allows one to draw

together multiple measures aimed at financial performance, internal business processes, customer perspectives, and innovation and learning. Within these four perspectives, ten measures of organisational performance were indicated. They were rated on the 5-point Likert scale (from well below expectations to well above expectations, with the middle point: as expected).

3. RESEARCH RESULTS

3.1. DESCRIPTIVE STATISTICS AND RELIABILITY ANALYSIS OF SCALES

As a first step in the research process, the reliability of the scales of each variable was verified. The results of the analysis of the reliability of the measurement scales are presented in Table 2. It is worth underlining that Cronbach's α was high for every variable, indicating a high internal reliability of the scales and measurements.

3.2. RELATIONSHIPS BETWEEN EXTERNAL SUPPORT, SYSTEMS THINKING, ORGANISATION'S RESILIENCE, AND ORGANISATIONAL PERFORMANCE

As the next step of the analysis was the correlation analysis between external support, systems thinking, organisation's resilience, and organisational performance to verify hypotheses H1, H2, H3, H4, and H5 (Table 3). The results showed that the scope of external support is statistically significantly correlated with:

- Organisation's resilience ($r(256)=0.549^{**}$, $p<0.001$), which is the basis for positive verification of the hypothesis H1, and
- Organisational performance ($r(251)=0.484^{**}$, $p<0.001$), which is the basis for positive verification of the hypothesis H2,
- and the scope of systems thinking is statistically significantly correlated with:

Tab. 2. Defined variables, along with the results of the reliability analysis of scales

NO.	VARIABLE	NO. OF SCALES	ALFA-CRONBACH	% VAR	M	SD
1	External support (ES)	6	0.824	53.313	3.42	0.95
2	Systems thinking (ST)	4	0.750	57.248	3.31	0.81
3	Organisation's resilience (OR)	4	0.809	63.659	3.29	0.87
4	Organisational performance (OP)	10	0.873	46.817	3.41	0.69

Tab. 3. Correlation analysis between the analysed variables

		ORGANISATION'S RESILIENCE	ORGANISATIONAL PERFORMANCE	EXTERNAL SUPPORT
ORGANISATIONAL PERFORMANCE	r	0.541**		
	Sig.	0.000		
	N	247		
EXTERNAL SUPPORT	r	0.549**	0.484**	
	Sig.	<0.001	<0.001	
	N	256	251	
SYSTEMS THINKING	r	0.703**	0.538**	0.660**
	Sig.	<0.001	<0.001	<0.001
	N	252	247	251

****.** Correlation is significant at a level of 0.01 (two-sided)

- Organisation's resilience ($r(252)=0.703^{**}$, $p<0.001$), which is the basis for positive verification of the hypothesis H4, and
- Organisational performance ($r(247)=0.538^{**}$, $p<0.001$), which is the basis for positive verification of the hypothesis H5,

In all cases, correlations are positive, moderate to strong. The results obtained also showed that there is a positive, although rather moderate and statistically significant correlation between an organisation's resilience and organisational performance. It allows for the acceptance of the H3 hypothesis.

Summarising, the obtained results clearly show that there is a statistically significant and positive correlation between all the analysed variables; however, it is definitely the highest in the case of the relationship between the organisation's resilience and systems thinking. Systems thinking ($\beta=0.572$, $p<0.01$) appeared to be a twice stronger predictor of the organisational resilience than external support ($\beta=0.247$, $p<0.01$), and this model proved to be a good fit to the data ($F(2, 247)=144.47$; $p<0.001$; adj. $R^2=0.535$). In the context of the regression analysis planned in the next step, one of the most important research stages will be to check whether there is no multicollinearity between the predictors in the model.

3.3.EXTERNAL SUPPORT AND SYSTEMS THINKING AS THE MODERATORS FOR THE RELATIONSHIP BETWEEN THE ORGANISATION'S RESILIENCE AND ORGANISATIONAL PERFORMANCE - RESEARCH RESULTS

The relation between organisational resilience and organisational performance was analysed in the

context of external support and systems thinking to verify whether these variables have the power to be statistically significant moderators of the relationship, the existence of which was verified above. Two alternative testing ways were used: stepwise regression analysis with moderator and Hayes PROCESS macro v. 4.2_beta designed for IBM SPSS Statistics software (Hayes Model 1 and Hayes Model 2). In the first step, the two considered moderators (external support and systems thinking) were entered into the model separately, and in the next step, simultaneously. To use the first research pattern, a few regression models were built:

- Research Model 1 was built as a base model for comparison, and only one independent variable (organisation's resilience) was included here as a predictor,
- Research Model 2 contained two predictors of organisational performance: the organisation's resilience and external support,
- Research Model 3 was built to verify the H3M1 hypothesis; in the model, in addition to the variables included in Research Model 2, a new variable - Moderator 1 - was introduced. The moderator variable was built as a product of two standardised independent variables (external support and organisation's resilience),
- Research Model 4 again contained two predictors of organisational performance: the organisation's resilience and systems thinking,
- Research Model 5 was built to verify the H3M2 hypothesis; in the model, in addition to the variables included in Research Model 4, a new variable - Moderator 2 - was introduced. The moderator variable was built as a product of two standardised independent variables (systems thinking and organisation's resilience),

Tab. 4. Multicollinearity statistics

RESEARCH MODEL	PREDICTORS	TOLERANCE	VIF
Model 2	Organisation's resilience	0.530	1.885
	External support	0.530	1.885
Model 4	Organisation's resilience	0.506	1.976
	Systems thinking	0.506	1.976
Model 6	Organisation's resilience	0.403	2.480
	External support	0.463	2.159
	Systems thinking	0.429	2.328

Tab. 5. Regression models' statistics - Research Models 3, 5, and 7

MODEL DESCRIPTION	R ²	DELTA R ²	MODERATOR COEFF.	STANDARD ERROR	T STAT	P VALUE
MODERATORS TREATED SEPARATELY						
Research Model 3: External support, Organisation's resilience, Moderator 1 (ORxES) <i>dependent v.: Organisational performance</i>	0.3940	0.0235	0.1090	0.0359	3.0396	0.0026
Research Model 5: Systems thinking, Organisation's resilience, Moderator 2 (ORxST) <i>dependent v.: Organisational performance</i>	0.3728	0.0345	0.1388	0.0384	3.6092	0.0004
TWO MODERATORS IN ONE RESEARCH MODEL SIMULTANEOUSLY						
Research Model 7: Systems thinking, External support Organisation's resilience, Moderator 1 (ORxES)	0.4158					<0.001
Moderator 2 (ORxST)		0.0000	0.0035	0.0686	0.0508	0.9595
Both moderators <i>dependent v.: Organisational performance</i>		0.0097	0.1404	0.0717	1.9588	0.0513
		0.0369				0.0009

- Research Model 6 contained three predictors of organisational performance: organisation's resilience, external support, and systems thinking,
- Research Model 7 was built to verify whether the moderating influence of external support and systems thinking is occurring in the sample when both are introduced into the model simultaneously (H3M3 hypothesis). To achieve this, two moderators (Moderator 1 and Moderator 2) were introduced as predictors in addition to the variables included in Research Model 6.

In the next step, the multicollinearity between the predictors in models 2, 4 and 6 was tested by calculating the tolerance and variance inflation factors (VIFs) for all predictors in the models. As shown in

Table 4, the lowest tolerance was 0.403, which is far above the 0.1 benchmark. The largest VIF value was 2.480, which is well below the 10.0 benchmark, and this suggests that there is no obvious multicollinearity between the predictors in the model.

The obtained results clearly show that the external support and systems thinking, considered separately, are the moderators of the analysed relations. In both cases, the obtained models are statistically significant ($F(3, 238) = 51.583$, $p < 0.001$ for external support and $F(3, 237) = 46.948$; $p < 0.001$ for systems thinking) and the delta R² is also statistically significant too ($F(1.238) = 9.2389$; $p = 0.0026$ for external support and $F(1.237) = 13.026$; $p = 0.0004$ for systems thinking). Therefore, the results obtained are the

Tab. 6. Regression models' statistics - Research Models 1, 6, and 7

	RESEARCH MODEL 1			RESEARCH MODEL 6			RESEARCH MODEL 7		
	β	t	p	β	t	p	β	t	p
Organisation's resilience (OR)	0.541	10.064	<0.001	0.190	2.332	0.021	0.156	2.382	0.0180
External support (ES)				0.279	3.669	<0.001	0.243	3.743	0.0002
Systems thinking (ST)				0.222	2.806	0.005	0.230	3.418	0.0007
Moderator 1 (ORxES)							0.004	0.051	0.9595
Moderator 2 (ORxST)							0.140	1.959	0.0513
Both									0.0009
R^2 (P)	0.290 (p<0.001)			0.3789 (p<0.001)			0.4158 (p<0.001)		
ΔR^2				0.089			0.0369		

basis for the positive verification of hypotheses H3M1, confirming that external support is a moderator of the relationship between the organisation's resilience and the organisational performance, and hypothesis H3M2, confirming that systems thinking is a moderator of the relationship between the organisation's resilience and the organisational performance. In both cases, the Johnson-Neyman technique was used to identify regions in the range of the moderator variable where the effect of the focal predictor on the outcome is statistically significant and not significant. The conditional effect of organisation's resilience on organisational performance is positive and statistically different from zero when external support is greater than 2.184 (the moderation effect is statistically significant for low ($b=0.1886$, $SE=0.061$, $t=3.0947$, $p=0.0022$), average ($b=0.2613$, $SE=0.057$, $t=4.5863$, $p<0.001$) and high ($b=0.3521$, $SE=0.0653$, $t=5.3911$, $p<0.001$) moderator values). The conditional effect of organisation's resilience on organisational performance is positive and statistically different from zero when the systems thinking is greater than 2.5524 (however, the moderation effect is statistically insignificant for low ($b=0.1234$, $SE=0.0677$, $t=1.8351$, $p=0.0677$) moderator values, but significant for average ($b=0.2631$, $SE=0.0596$, $t=4.4117$, $p<0.001$) and high ($b=0.3324$, $SE=0.0644$, $t=5.1616$, $p<0.001$) moderator values).

In the last step of analysis, to verify the H3M3 hypothesis, the Hayes PROCESS macro v. 4.2_beta was used. The obtained model with two moderators appeared statistically significant ($F(5.230)=32.7459$; $p<0.001$), and the introduction of two moderators simultaneously significantly increased the percentage of explained variance of the dependent variable compared to research model 3 (by 2.18 %), research model 5 (by 4.3 %), and research model 6 (by 3.69 %), respectively. However, an interesting phenomenon

can be observed here: external support is no longer a statistically significant moderator of the relationship between organisational resilience and organisational performance, while systems thinking is on the verge (slightly above the expected level of 0.05) of statistical significance. As Table 6 shows, the percentage of variance explained when organisational resilience effect is allowed to vary with both external support and systems thinking increases by 3.69 % and this increase is statistically significant ($F(2.230)=7.2642$; $p=0.0009$). Hence, it can be concluded, however with some caution, that the effect of organisational resilience on organisational performance is not independent of both external support and systems thinking, and the inclusion of both moderators has the power to change the relationship between organisational resilience and organisational performance. At least one of these variables (with an emphasis on systems thinking) moderates the discussed relationship when both are included in the model. The analysis of conditional effects shows that at a low level of systems thinking and all levels of external support, the moderation effect is not statistically significant. It becomes statistically significant only at the average and high levels of systems thinking, and on both of these levels, it increases with the increase of external support. Therefore, the results obtained are the basis for a partially positive verification of the H3M3 hypotheses, confirming that external support and systems thinking are moderators of the relationship between the organisation's resilience and organisational performance.

4. DISCUSSION OF THE RESULTS

The purpose of this study was to explore how external support and the ability to understand sys-

temic linkages (an organisation's capability of systems thinking) influence the relationship between organisational resilience and organisational performance.

The results of the study confirmed that both external support and systems thinking have a positive impact on organisational resilience, which is consistent with studies previously discussed (Gao et al., 2022; Kim et al., 2021; Taneo et al., 2021; Xie et al., 2022; Xie et al., 2025; Liu & Yin, 2020). It was also found that systems thinking is more than twice as strong a predictor of organisational resilience as external support. These two discussed factors appeared also to be good and statistically important predictors of organisational performance, which confirms the statements of Ahuja (2000), Ecer et al. (2016) or Hereida et al. (2022).

The obtained results clearly show that the external support and systems thinking, considered separately, are statistically important moderators of the relationship between organisational resilience and organisational performance. This means that the same level of resilience can produce very different results depending on the available support. Organisations surrounded by partners that share information or acquire resources can rebuild faster and turn resilience potential into a competitive advantage. A lack of support, on the other hand, will translate into poorer organisational performance. In organisations that operate in a less favourable environment, external support compensates for deficits by strengthening the operation of resilience mechanisms. Thus, it also acts as an amplifier of the relationship under discussion. The same moderating effect is observed for systems thinking. Systems thinking can significantly change the way an organisation "cushions" its resilience by transforming it into organisational performance. Resilience without systems thinking can be short-sighted. If an organisation does not understand what connections and dependencies shape its environment, its actions in a crisis may be reactive and ad hoc. Systems thinking recognises the long-term effects of a crisis and anticipates new opportunities or threats. Thus, it conditions whether resilience will have a sustainable impact on performance. One of the key components of resilience is learning from one's own experience (Duchek, 2014; Duchek, 2020). Organisations that understand systemic dependencies are more likely to reflect on the causes of disruption, rather than just the symptoms. As a result, they draw more pertinent conclusions and make greater, more lasting changes that enhance their future competitiveness and performance. Low level of systems

thinking and not considering the wider systemic context, in turn, means that even well-prepared, flexible, resilient organisations will fail to unleash the potential for efficiency and performance building.

And finally, it is very interesting to note the mechanism of synergistic effects of the factors studied. In organisations where systems thinking is strong and goes hand in hand with real relationship building, the positive impact of organisational resilience on organisational performance is stronger. However, the reinforcement effect does not occur at low levels of systems thinking. Organisations with a high capacity for systems thinking can better identify, source, and use available external support, which strengthens their ability to transform resilience into tangible results. In this case, the effect of one moderator is conditioned by the presence of another. This means that organisations with a high level of systems thinking make better use of available external support (e.g., by matching it to their priorities, integrating it into their activities, or more actively seeking such support), while access to support networks can in turn stimulate the development of systems thinking, e.g., through contact with more sophisticated partners or institutions.

Of the two considered moderators, a more important one is the ability to understand the linkages between the systems. Systems thinking is an internal moderator. This means that organisations can actively build this resource regardless of the environment. Although not every organisation can count on strong external support, the capacity for systems thinking can be developed in almost any organisation, making it a more universal tool for strengthening organisational resilience. Moreover, external support often acts in an ad hoc and reactive way to help an organisation survive in the face of a difficult crisis situation, while systems thinking also enables transformation, moving to a new, higher level of development. In that context, the ability to understand system linkages can be seen as a kind of lever that gives an organisation the chance not only to survive, but to gain a strategic advantage in a dynamically changing environment. And, finally, systems thinking enables the possibility of finding and using external support.

CONCLUSION

The main intention of this paper was to deepen the understanding of the relationship between

organisational resilience and organisational performance, considering the roles of two important moderators: external support (an external moderator) and systems thinking (an internal moderator). The results clearly show that the external support and systems thinking, considered separately, are the moderators of the analysed relationship. The model with two moderators is also statistically significant, and the introduction of two moderators simultaneously significantly increases the percentage of explained variance; however, an interesting phenomenon can be observed here. The analysis of conditional effects shows that at low levels of systems thinking and all levels of external support, the moderation effect is not statistically significant. It becomes statistically significant only at the average and high levels of systems thinking, and at both levels, it increases with growing external support.

The findings obtained raise very interesting practical and managerial implications and shed light on how organisations can build organisational resilience capacity beyond their own boundaries. The need to develop systems-thinking competence within an organisation appears to be one of the most important tasks facing managers. This means investing in the development of the ability to analyse the network of relationships - formal and informal - with external partners, suppliers, customers, or institutions of the environment, but also looking for tools to spot patterns in seemingly insignificant events. Organisations should implement training programmes and decision-support tools based on a systemic understanding of the effects of actions taken, and also seek instruments based on artificial intelligence. Although systems thinking is a more important moderator of considered relationships, the importance of access to resources and relationships with the environment should not be marginalised. Both factors can act complementarily to strengthen the adaptive capacity of enterprises. From a practical point of view, this implies the need to develop both systemic thinking competencies among managers and active management of interorganisational relationships. Organisations should not view their resilience in isolation from their network context. Focusing solely on their own assets and processes is not enough; they should also proactively identify critical dependencies in the environment and build mechanisms to jointly manage risk within the business ecosystem. In practice, this can mean, i.e., creating joint emergency procedures, integrating supply chain planning, or sharing information in real time. The ability to have a systemic

understanding of interrelationships is not limited to external relationships. Equally important is the awareness of interdependencies within the organisation. Managers should therefore strive for better integration of processes, alignment of goals between organisational units, and the elimination of silos that hinder rapid response to disruptions. This requires, among other things, effective communication and an understanding that local optimisation does not always translate into system-wide benefits.

The presented empirical study has certain limitations that must be considered when interpreting the results. First, the sample size (268 organisations) and the sampling method do not allow it to be treated as representative of the entire population. Additionally, the analysis was conducted only in one specific business context, which limits the possibility of generalising the results to organisations operating in other countries or sectors. For this reason, it is worth considering the replication of the survey under different economic conditions in the future. However, the study results provide a solid starting point for further analysis of the role. Accordingly, future research should seek to verify the relationships presented in other sectors and market conditions and aim for a representative sample. This will not only increase the relevance of the results but also deepen the understanding of the contextual determinants affecting the relationship between organisational resilience, its moderators, and organisational performance.

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