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# DYNAMIC CAPABILITIES AND FIRM PERFORMANCE: EMPIRICAL EVIDENCE FROM ORGANISATIONS IN POLAND

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**Purpose:** The primary goal of the study is to measure dynamic capabilities in Polish enterprises and analyze the relationship between dynamic capabilities and firm performance.

**Design/methodology/approach:** The study employs a mixed-methods approach that combines quantitative and qualitative research methods to achieve its objectives. The study takes a multidimensional approach. It conceptualizes dynamic capabilities through a multi-logic perspective, enhancing the traditional framework by integrating new variables like effectuation, bricolage and stakeholder synergy. Through a combination of quantitative measurements and qualitative insights, the research verifies the theoretical model in real-world business contexts. Provides actionable recommendations for business practitioners on measuring and developing dynamic capabilities to enhance organizational effectiveness. The focus is on small, medium, and large enterprises in Poland, with a broad sectoral representation to ensure relevance across various industries. The research is geographically confined to Poland but offers implications that can be extended to other markets.

**Findings:** The findings emphasize that dynamic capabilities are essential for organizational success, particularly in adapting to changing environments. However, their full impact on organizational effectiveness depends on multiple variables, including strategic potential, industry context, and internal resources. Future research should focus on expanding the scope of explanatory variables to better understand the multifaceted nature of firm performance.

**Research limitations/implications:** Future research should focus on expanding the scope of explanatory variables to better understand the multifaceted nature of firm performance.

**Practical implications:** This research provides a roadmap for enterprises aiming to leverage dynamic capabilities to enhance effectiveness and competitiveness, particularly in unpredict-table market environments.

**Originality/value:** The paper presents a novel approach by integrating dynamic capabilities theory with the concept of strategic potential and its microfoundations (e.g., opportunity sensing and seizing, resource reconfiguration, stakeholder synergy, effectuation and bricolage. This integration goes beyond existing models by emphasizing the role of dynamic market adaptation as key drivers of organizational effectiveness in volatile environments.

**Keywords:** dynamic capabilities, resource reconfiguration, stakeholder synergy, effectuation, bricolage

Category of the paper: research paper.

# 1. Introduction

The concept of dynamic capabilities emerges from strategic management, rooted in the resource-based view, focusing on an organization's ability to identify, seize, and reconfigure resources to exploit emerging opportunities and create value in turbulent environments (Teece et al., 1997). This perspective has gained prominence in recent years due to its relevance in volatile and complex business contexts, providing organizations with a competitive edge by leveraging strategic potential and dynamic resource orchestration.

Key contributors, including Teece, Pisano, and Shuen (1997), laid the theoretical foundations, defining dynamic capabilities as a firm's capacity to integrate, build, and reconfigure internal and external competencies to address rapid environmental changes. Further, Teece (2007) identified three core components: opportunity sensing, value creation, and resource reconfiguration. These elements form the theoretical basis of this dissertation, which aims to measure the level of dynamic capabilities in Polish enterprises, identify their key components, and examine their relationship with organizational effectiveness and strategic potential.

The concept of dynamic capabilities is one of the most prominent in strategic management, often seen as a critical factor determining a company's survival or success in rapidly changing environments (Pezeshkan et al., 2016). These capabilities encompass the ability to adapt, innovate, and reconfigure resources to exploit emerging market opportunities, benefiting customers while creating challenges for competitors (Teece et al., 2016).

Despite broad acceptance, the concept faces criticism for its lack of empirical clarity and definitional ambiguity. Critics argue that the distinction between dynamic and ordinary capabilities is often blurred (Helfat, Winter, 2011), and some question its tautological nature (Kraatz, Zajac, 2001; Danneels, 2008). While Eisenhardt and Martin (2000) suggest that dynamic capabilities may not guarantee a competitive advantage in rapidly evolving environments, Teece et al. (1997) maintain that they are essential.

Recent studies have shifted focus toward firm-specific processes for developing and renewing competencies to adapt to changing business conditions. However, despite growing empirical research, comprehensive frameworks addressing the dimensions, mechanisms, and outcomes of dynamic capabilities remain incomplete (Helfat, Martin, 2014; Peteraf et al., 2013).

Since 1997, various attempts have been made to define dynamic capabilities, first conceptualized by Teece, Pisano, and Shuen. They describe "dynamic" as the ability to renew competencies to adapt to changing business environments and emphasize that strategic management is essential for integrating and reconfiguring internal and external resources (Teece et al., 1997). Dynamic capabilities involve continuous organizational transformation through resource reconfiguration, fostering competitive advantage (Mitrega, Pfajfar, 2015).

Dynamic capabilities differ from ordinary capabilities, which are routine processes essential for daily operations, while dynamic capabilities enable strategic change (Winter, 2003; Zahra

et al., 2006). Despite their importance, defining these capabilities has been challenging due to overlapping terms like "competence" and "skill" (Krzakiewicz, Cyfert, 2017). Studies have shown that valuable competencies combine knowledge and cross-functional skills, essential for sustaining long-term competitive advantage (Bratnicki, 2000).

The concept of dynamic capabilities focuses on the ability of organizations to adapt, innovate, and respond effectively to changing environments. Developing it requires a strategic approach emphasizing creativity, entrepreneurship, and innovation, supported by key resources such as knowledge, technology, intellectual property, and stakeholder relationships.

Dynamic capabilities rely on microfoundations—organizational processes, decision-making frameworks, and resource orchestration—making them unique and challenging to replicate. They integrate resource-based view with strategic management, leveraging organizational history and current resource positions (Teece et al., 1997). Effective dynamic capabilities development depends on absorptive, adaptive, and innovative capabilities, which enhance organizational flexibility, learning, and innovation.

Key enablers of dynamic capabilities include resource positions, processes, and path dependencies, shaped by past decisions and current assets. Dynamic capabilities act as mechanisms to continuously sense and seize opportunities and reconfigure resources, ensuring competitive advantage. While traditionally analyzed at the organizational level, recent perspectives highlight the role of individual managers and teams in shaping and implementing these capabilities. To sustain competitive advantage, firms must recognize their strategic resource limitations and invest in dynamic capabilities development that enables continual resource reconfiguration, leveraging internal and external assets to align with evolving market demands. Investments in talent development, process improvement, and innovation enhance dynamic capabilities, enabling firms to adapt, innovate, and maintain long-term competitive advantage (Schilke, 2014).

Dynamic capabilities, comprising sensing opportunities and threats, seizing opportunities, and reconfiguring resource bases, are shaped by past organizational decisions and learning processes (Teece, 2007; Tallot, Hilliard, 2016). Organizational learning, supported by managerial awareness and decision-making, plays a critical role in developing these capabilities. Dynamic capabilities framework is inherently tied to organizational knowledge, encompassing accumulated experiences, explicit articulation, and activity codification (Zollo, Winter, 2002). This integration of tacit and explicit knowledge allows organizations to adapt, innovate, and respond effectively to changing environments.

Key stages of dynamic capabilities development include recognizing opportunities, managing knowledge, coordinating resources, reconfiguring assets, and adapting to new conditions. These processes hinge on resource orchestration, including technological, complementary, financial, reputational, structural, institutional, and market resources. Effective resource management, combined with innovation and adaptability, drives competitive advantage. Managers play a vital role in identifying, interpreting, and acting on environmental changes. Their ability to make strategic adjustments ensures organizational flexibility and long-term success in dynamic markets. Moreover, knowledge-based dynamic capabilities (Denford, 2013) highlight the acquisition, integration, and application of knowledge as foundational to capability development. Microfoundations such as skills, processes, decision-making models, and organizational routines form the building blocks of dynamic capabilities, enabling firms to achieve sustainable competitive advantage (Teece, 2007).

Moreover, Strategic potential, encompassing assets like a strong brand, innovative technologies, and operational capabilities, provides the foundation for dynamic capabilities, which enable organizations to adapt effectively to changing market conditions. It refers to a firm's resources, skills, and attributes that drive competitive advantage and achieve strategic goals through the deliberate development of dynamic capabilities (Cyfert et al., 2017). This includes tangible and intangible assets such as reputation, financial resources, intellectual property, employee expertise, and distribution networks. The microfundations of dynamic capabilities such as employee knowledge, structured processes, organizational flexibility, and knowledge management (Teece, 2007) foster adaptability, innovation, and efficient response to external changes, forming an integral part of strategic potential.

H1: Strategic Potential (SP) is a unidimensional construct.

**H4:** There is a positive relationship between Dynamic Capabilities (DC) and Strategic Potential (SP).

Dynamic capabilities are categorized into three key areas (Teece, 2007). This construct, foundational to my research and theoretical model, requires further elaboration to deepen the understanding of its dimensions and relevance. The first category of dynamic capabilities is opportunity sensing, which involves identifying and leveraging market opportunities to create value for customers (Teece, 2007). This strategic approach focuses on recognizing market gaps, trends, and niches to develop innovative strategies, products, or services that provide a competitive edge. Effective opportunity sensing requires market analysis, competitor insights, and understanding customer behavior to quickly adapt to changes and manage risks.

**H2:** The variable Dynamic Capabilities (DC) is a three-dimensional construct, comprising Opportunity Sensing (OppSen), Opportunity Seizing (OppSei), and Resource Reconfiguration (RR).

According to Teece (2007), opportunity sensing encompasses activities like scanning, creating, learning, and interpreting environmental signals. These actions help organizations identify market conditions, driving significant performance improvements (Tseng, Lee, 2014). Limited sensing capability may result in missed opportunities for growth and innovation, reducing competitiveness.

Opportunity sensing also involves organizational learning and knowledge management. Organizational learning enables firms to gather, process, and utilize internal and external knowledge to refine processes and make informed decisions (Zollo&Winter, 2002). Effective knowledge management-collecting, storing, sharing, and using information-enhances understanding of market dynamics, helping organizations swiftly adapt and identify business opportunities. Together, these practices ensure agility and innovation in navigating dynamic markets.

The second group of dynamic capabilities in Teece's (2007) framework is opportunity seizing. This involves actively leveraging identified business opportunities by taking actions, allocating resources, and managing risks to gain competitive advantages, increase revenue, or expand operations. Effective opportunity seizing requires flexibility, quick decision-making, and adaptability to changing market conditions, along with innovation and creativity. Successful seizing can enhance competitiveness, drive market expansion, and strengthen long-term positioning, though it involves risks as not all opportunities guarantee success.

Based on the operationalization of dynamic capabilities by Bratnicka-Myśliwiec, Dyduch, and Bratnicki (2019), opportunity seizing in the research model is tied to three constructs: a) effectiveness, b) bricolage, and c) stakeholder synergy. These constructs provide a broader perspective on their importance to the research problem and how they support the phenomenon under study.

Effectuation refers to leveraging available resources under the organization's control to create desired outcomes, especially in uncertain conditions (Sarasvathy, 2001). It emphasizes action based on current means rather than pre-established goals, supporting entrepreneurial efforts like innovation and market adaptation (McMullen&Shepherd, 2006). Effectuation aligns with dynamic capabilities, focusing on value creation, opportunity recognition, and strategic resource management (Arend et al., 2015). Key principles of effectuation include: (1) acceptable loss, investing only what can be affordably lost; (2) strategic alliances, forming partnerships for new opportunities; (3) exploiting unforeseen circumstances; and (4) controlling unpredictable futures by learning from surprises (Sarasvathy, 2001). This orientation enables quick, flexible decision-making essential for navigating uncertainty in entrepreneurship and innovation. Incorporating effectuation in opportunity seizing helps illuminate the strategic process of value creation, enhancing the understanding and operationalization of dynamic capabilities within research model.

Bricolage plays a critical role in seizing opportunities, often accompanying effectuation (Welter et al., 2016). It involves creatively combining available resources to address new challenges and create value (Baker&Nelson, 2005). This process enables firms to innovate by recombining existing resources to generate entrepreneurial opportunities where none previously existed (Bratnicka-Myśliwiec et al., 2019). Originally introduced by Claude Lévi-Strauss (1967), bricolage has been applied across disciplines, including organizational behavior, highlighting how resource-constrained firms achieve success despite limitations (Senyard et al., 2010). Key elements of bricolage include making do, which involves acting despite resource constraints and experimenting with unconventional approaches (Baker, Nelson, 2005). It also entails using resources at hand, leveraging internal or inexpensive external resources that are

often overlooked by others. Another element is resource recombination, which focuses on creatively repurposing resources for innovative applications beyond their original intent. Bricolage can manifest in two forms: parallel bricolage, where it is applied broadly and continuously across multiple activities, and selective bricolage, where it is used strategically in specific areas or for particular projects (Senyard et al., 2014).

Another significant variable is the stakeholder synergy that enhances stakeholder management by recognizing and leveraging opportunities to create value for multiple stakeholder groups simultaneously without diminishing the value for any group (Tantalo&Priem, 2016). This approach motivates and engages stakeholders by creating unique value combinations appreciated by different groups. Open organizational forms that involve external stakeholders are key to strengthening dynamic capabilities (Felin&Powell, 2015). Stakeholder synergy revises traditional approaches by demonstrating that actions can benefit shareholders and other stakeholders without trade-offs. Managers identify new value combinations tailored to different stakeholders, fostering synergy that increases overall value. Methods for achieving stakeholder synergy include enhancing value for one stakeholder group without negatively impacting others, addressing the needs of multiple groups through innovative actions that benefit all involved, and building motivation, trust, and collaboration among stakeholders to attract high-quality partners and enhance overall value (Harrison et al., 2010). Stakeholder synergy promotes cooperation and trust among groups, improving resource allocation, innovation, and responsiveness to changes. It aligns diverse interests to enhance competitiveness and support longterm success. By leveraging dynamic capabilities, firms achieve a competitive edge by combining resources and skills from stakeholders, making stakeholder synergy crucial for seizing opportunities and boosting organizational effectiveness.

Resource reconfiguration, the third dimension of dynamic capabilities, involves adapting resources to expand or reduce business scope by adding, divesting, or recombining assets for optimal use (Karim, Capron, 2016). Also known as resource orchestration, it refers to processes where managers accumulate, combine, and deploy resources to exploit current opportunities and create future ones, ultimately driving competitive advantage (Baert et al., 2016). Effective resource orchestration enhances organizational effectiveness and strategic entrepreneurship (Hitt et al., 2011). Resource reconfiguration includes three processes: structuring, bundling, and leveraging (Sirmion et al., 2007). Structuring involves acquiring, developing, or divesting resources to align with organizational needs. Bundling integrates resources to form specific capabilities, categorized as stabilizing (incremental improvements), enriching (expanding current capabilities), or pioneering (creating new capabilities). Leveraging entails mobilizing and coordinating capabilities to exploit opportunities, create unique competencies, and enter new markets (Ambrosini et al., 2009). These processes lay the groundwork for measuring dynamic organizational capabilities and conducting empirical studies on opportunity identification, resource utilization, and reconfiguration.

What is crucial in this study is that dynamic capabilities enhance organizational effectiveness and competitive advantage, but they must be developed and continuously shaped rather than acquired (Teece, Pisano, 1994). Building dynamic capabilities requires ongoing investments and is often assessed only after value creation (Zollo, Winter, 2002). This process involves cognitive, organizational, and operational efforts, along with managerial time and commitment. Errors in assessing the business environment can lead to poorly adapted capabilities, but even mistakes can offer valuable learning opportunities (Zahra et al., 2006).

Dynamic capabilities are vital for achieving superior organizational outcomes, enabling innovation, adaptability, and resource optimization (Teece et al., 1997; Helfat, Peteraf, 2009). They drive effectiveness through resource orchestration and allow businesses to anticipate challenges and exploit opportunities (Teece, 2007). Learning-oriented capabilities, as shown in studies like Pucci et al. (2017), play a critical role in improving performance, particularly by leveraging market trends and adapting strategies. Dynamic capabilities influence organizational outcomes by enabling adaptive, innovative, and anticipatory behaviors, tailored to market conditions.

Dynamic capabilities impact effectiveness indirectly, fostering resource reconfiguration and operational adaptability. Research highlights their role in long-term success, emphasizing the need for innovation, flexibility, and strategic alignment to sustain competitive advantage (Eisenhardt, Martin, 2000; Teece et al., 1997). Effectiveness and competitiveness are vital for success in today's dynamic markets. Dynamic capabilities help firms innovate, adapt, and optimize resources, enhancing financial performance, customer satisfaction, and market position (Teece, 2007). Competitive advantage relies on unique competencies, innovation, and responsiveness, enabling firms to outpace rivals and explore new markets. Moreover, effectiveness integrates learning, resilience, and forward-looking strategies, helping organizations minimize risks and create shared value for stakeholders (Holbeche, 2018). It involves aligning processes, leveraging dynamic capabilities, and using qualitative and quantitative measures for holistic firm performance assessment.

H3: Firm Performance (FP) is a unidimensional construct.

**H5:** There is a positive relationship between Dynamic Capabilities (DC) and Firm Performance (FP).

The theoretical approach, grounded in Teece's framework, examines the relationships between dynamic capabilities, strategic potential, and firm performance in subjective measures. The research explores how dynamic capabilities contribute to success in Polish enterprises, highlighting their strategic importance in a rapidly evolving business environment. The following research model provides a structural framework that predicts relationships between variables, enabling an understanding of how the studied construct is conceptualized (Figure 1).

When formulating the hypotheses, key categories characterizing the research sample were also considered, such as the respondent's position (M1) the form of business activity (M2), business profile (M3), company size (M4). The analysis of differences between individual

groups yielded intriguing insights into the specific characteristics of the surveyed enterprises and their potential impact on the study's outcomes.



Figure 1. The research model.

**H6:** Evaluations of variables SP, DC, and FP significantly depend on the respondent's position within the company (M1).

**H7:** Evaluations of variables SP, DC, and FP significantly depend on the form of business activity (M2).

**H8:** Evaluations of variables SP, DC, and FP significantly depend on the business profile (M3).

**H9:** Evaluations of variables SP, DC, and FP significantly depend on the size of the company's workforce (M4).

The 9 formulated hypotheses provide a critical framework for predicting relationships between the various elements of the model, which serves as the foundation for empirical analysis aimed at identifying potential areas requiring deeper understanding. Accordingly, these hypotheses, encompassing all variables presented in the model as well as the characteristics of the respondents, will be subjected to rigorous statistical analysis.

## 2. Methods

The foundation and initial step of the research process involved a comprehensive review of both international and Polish literature, utilizing databases such as Scopus, Ebsco, Emerald, ProQuest, and Google Scholar. This review provided the theoretical context and framework for subsequent steps. Conducted in two phases, the literature review first examined scholarly articles on dynamic capabilities dating back to 1994, the year of David Teece's seminal publication, which served as the cornerstone for this study. Due to the extensive volume of literature on this topic, only the most frequently cited perspectives were included. Subsequently,

the keywords "dynamic capabilities" and "resource-based view" were used to identify articles linking this perspective to the dynamic capabilities construct. Additional key aspects related to value creation and capture—such as entrepreneurial and relational orientations—were identified by expanding the search with terms like "dynamic capabilities" combined with "entrepreneurial orientation," "relational view," "resource reconfiguration," "effectuation," "bricolage," and "stakeholder synergy." Furthermore, articles exploring relationships between strategic potential and firm performance were reviewed.

The literature review, both thematic and narrative, facilitated an in-depth understanding of the existing knowledge base and identified research gaps that provided the impetus for this study. The thematic review focused on key issues, theories, and concepts related to dynamic capabilities, identifying research streams and foundational ideas that informed the study. The narrative review traced the chronological evolution of dynamic capabilities and their connection to firm performance, offering historical and conceptual insights. This comprehensive review grounded the research, establishing a solid theoretical and empirical foundation for further investigation.

The next critical phase was operationalization, encompassing the identification of variables, creation of the research model, and development of a survey tool. The construct mixology method (Newman et al., 2016) was employed, combining existing constructs or their components to create a new framework. While this method does not generate new empirical knowledge, it integrates established knowledge in innovative configurations, advancing the field. Existing tools and scales were adapted to design a questionnaire tailored to the study's specific constructs. This approach enabled the integration of diverse elements, aligning them with the theoretical framework. The survey tool, utilizing a 7-point Likert scale, ensured precise measurement of variables while reflecting theoretical objectives and maintaining alignment with the research model.

The research instrument incorporated constructs from previous operationalizations. Strategic Potential (SP) was measured through three dimensions: value creation points in the value chain, an organizational structure fostering innovation, and marketing capabilities to design, deliver, and capture value (Dyduch, Bratnicki, 2018). Dynamic Capabilities (DC) were operationalized as a three-dimensional construct comprising opportunity sensing, opportunity seizing (effectuation, bricolage, and stakeholder synergy), and resource reconfiguration. Tools for measuring these dimensions were adapted from existing scales (e.g., Bratnicka-Myśliwiec et al., 2019; Kuckertz et al., 2017; Chandler et al., 2011; Senyard et al., 2014), integrating relevant aspects while eliminating redundancies to ensure clarity and precision.

The effectuation scale combined elements from Chandler et al. (2011) and Werhahn et al. (2015), yielding a streamlined 15-item instrument. Bricolage, reflecting the use of available resources for innovative solutions (Baker, Nelson, 2005), was measured using a tool developed by Senyard et al. (2014), adapted to a seven-point Likert scale for consistency. Stakeholder synergy, emphasizing value co-creation across multiple stakeholders (Tantalo, Priem, 2016),

was measured using a four-item, one-dimensional scale by Bratnicka-Myśliwiec et al. (2019). Resource reconfiguration, the core dynamic capability for adapting resources to emerging opportunities, was assessed using an 11-item scale by Bratnicka-Myśliwiec et al. (2019), based on the framework by Sirmon et al. (2007).

The dependent variable, Firm performance (FP), was measured using non-financial subjective metrics. The scale, adapted from Dyduch and Bratnicki (2018), included 13 items capturing respondents' perceptions of firm performance. To enhance the tool's scope, three diagnostic items assessed the current state of dynamic capabilities, enabling a comprehensive understanding of the organizations' adaptability.

The final questionnaire consisted of 70 items rated on a seven-point Likert scale and four demographic questions regarding respondents' position, legal form, business profile, and company size. With 316 respondents, the study exceeded the recommended respondent-to-item ratio (Mider, Marcinkowska, 2013).

A subjective approach was adopted to capture respondents' perceptions and attitudes. This multidimensional construct approach allowed for nuanced insights, with participants rating their agreement or evaluation on a seven-point scale. The seven-point Likert scale ensured higher measurement precision by providing a balanced range of response options.

Data collection was conducted by the Center for Research and Expertise at the University of Economics in Katowice using the developed questionnaire. This method was selected for its effectiveness in gathering extensive data from respondents. The questionnaire included diverse question types to collect quantitative data for subsequent statistical analysis. It was tailored to the respondents' organizational roles, ensuring clarity and comprehensibility. Data collection, conducted in 2019, employed the Computer-Assisted Personal Interview (CAPI) technique, targeting small (10–49 employees), medium (50–249 employees), and large enterprises (250+ employees). The sample included companies across production, trade, and services, as well as sole proprietorships and partnerships, providing a comprehensive perspective on the research problem. The process yielded 316 complete responses, confirming the method's effectiveness and respondent engagement. This robust dataset facilitated detailed analysis and enhanced the validity and generalizability of the findings.

Following data collection, statistical analysis was performed, including descriptive statistics (mean, median, minimum, maximum, standard deviation, coefficient of variation) and normality tests (Chi-square). Distribution comparisons utilized nonparametric tests such as Kruskal-Wallis for three or more groups and U Mann-Whitney for two independent samples. Pearson's correlation coefficient measured variable relationships, with significance tested using t-tests. Regression models were applied to explore significant correlations, and hypothesis testing was conducted at  $\alpha$ =0.05 significance level. Factor analysis validated the constructs and variables in the model. All analyses were executed using PS IMAGO PRO 5.1, STATISTICA v.13.3, and MS Excel, ensuring precision and reliability. These steps enabled hypothesis verification, statistical summaries, and an examination of relationships between model variables. The analysis revealed patterns, dependencies, and significant trends, forming a robust basis for conclusions and recommendations. Statistically significant relationships and factors influencing firm performance provided critical insights, contributing to knowledge advancement in this domain.

Considering the timing of data collection and unforeseen events affecting Polish enterprises, additional in-depth interviews were conducted to contextualize survey findings. These events included the Covid-19 pandemic, Russia's invasion of Ukraine, and legislative changes impacting businesses. In March 2024, semi-structured interviews were held with three senior managers from two service companies and one trading company, guided by a predefined interview scenario.

The in-depth interview script was designed to provide a detailed perspective on the dynamic capabilities of enterprises and their responses to global crises. The interviews followed a semi-structured format with open-ended questions, allowing respondents to freely share their experiences and insights. Key themes included challenges and opportunities arising from market changes and strategies employed by firms to adapt and grow.

The first significant event discussed was the Covid-19 pandemic, which disrupted markets globally, causing demand fluctuations, supply chain constraints, and shifting consumer preferences. Companies accelerated digital transformation, e-commerce adoption, remote work, and IT-based management (Dyduch et al., 2021). Another critical event was Russia's invasion of Ukraine, leading to geopolitical instability, supply chain disruptions, rising commodity prices, and financial market volatility. Businesses faced increased costs, restricted trade, and logistical challenges, necessitating rapid adjustments.

Additionally, domestic legislative and economic reforms, including the "Polski Ład" introduced tax incentives and investment support. However, implementation challenges created initial confusion, impacting operational stability. Despite these hurdles, enterprises gradually adapted to the new regulations, regaining stability.

Given these disruptions, the study aimed to explore entrepreneurs' views on the role of dynamic capabilities during adverse conditions. The qualitative interviews complemented quantitative findings, providing additional insights. Conducted in March 2024, the interviews involved partially structured questions that encouraged detailed responses. Topics included respondents' roles, the firm's legal and operational profile, environmental dynamics, and the company's ability to identify and exploit market opportunities. Participants were asked about their understanding of dynamic capabilities, their firm's adaptability, and their resource allocation strategies in response to market shifts.

Further questions addressed the effectiveness of these strategies, measurements of success, and the overall impact on organizational development. Respondents reflected on gaps in their firms' capabilities, resource reconfiguration, and competitive positioning relative to other market players. The final section focused on the effects of global crises, including the Covid-19

pandemic, the war in Ukraine, and legislative changes, on the firms' dynamic capabilities and market responses.

This qualitative approach, while not fully meeting the criteria for mixed methods, offered valuable empirical insights that enriched the quantitative findings and deepened the understanding of dynamic capabilities in turbulent environments.

The research sample was selected through simple random sampling, initially consisting of over 1,200 enterprises. Contact was established with selected firms, and in cases of refusal, the next enterprise on the list was approached. If a firm agreed to participate, the survey questionnaire was sent via online communication methods. This process, conducted by the Center for Research and Expertise at the University of Economics in Katowice, resulted in 329 completed questionnaires. After reviewing the responses for completeness, 13 questionnaires were excluded due to missing data, leaving 316 for further statistical analysis.

The sample included respondents from various organizational roles to capture a comprehensive view of organizational dynamics. These roles ranged from entry-level specialists (12 respondents) to consultants/developers/analysts (57), managers (93), department heads (22), and executives/owners (122). This diversity provided insights into perspectives across different hierarchical levels, reflecting both top-down and bottom-up processes in opportunity identification and utilization (Nonaka et al., 2016).

Respondents also represented various legal forms of enterprises, including sole proprietorships (158 respondents) and other types of corporations. This division allowed for analysis of management practices and dynamic capabilities across organizational types. Additionally, enterprises were categorized by sector—production (84 respondents), trade (81 respondents), and services (151 respondents). This enabled a better understanding of sector-specific challenges and strategies.

Enterprise size, based on employee numbers, was another key factor. Small enterprises dominated the sample (200 respondents), followed by medium-sized (80) and large enterprises (36). While dynamic capabilities are considered independent of firm size, the division provided insights into resource constraints, decision-making processes, and adaptability across different scales. Smaller firms often face limited financial and human resources, while larger firms may encounter slower decision-making processes due to complex structures.

This detailed characterization of the sample facilitated a nuanced understanding of organizational practices, dynamic capabilities, and their impact on firm performance, providing the foundation for analysis.

### 3. Results

For the key dimensions of the model: Dynamic Capabilities (DC), Strategic Potential of the Enterprise (SP), and Firm Performance (FP), as well as the sub-dimensions of DC— Opportunity Sensing (OpSen), Opportunity Seizing (OpSei), and Resource Reconfiguration (RR)—a synthetic measure of the level of these variables was defined as the arithmetic mean of all responses to survey questions representing each dimension or sub-dimension. The highest average value was observed for the dimension Strategic Potential of the Enterprise (SP), while the lowest average score was recorded for Firm performance (FP).

The analysis of the distribution of the synthetic measure for Dynamic Capabilities (DC) shows that the majority of enterprises fall within the range of 5 to 6 (149 enterprises), with approximately 54% of enterprises exhibiting DC values above the average. For the Strategic Potential (SP) variable, the highest frequencies were observed in the intervals (4, 5] and (5, 6], with counts of 108 and 99, respectively. The distribution of Firm performance (FP) resembles a symmetric distribution, with the highest frequency of 140 observed in the interval (4, 5]. Based on the results of the  $\chi^2$  test, the hypothesis of normality was rejected for the DC and SP variables. However, for the Firm performance (FP) variable, there was no basis to reject the hypothesis of normality (Chi-square = 2.03699, p = 0.36).

To verify the validity of the variables used to describe the dimensions of Strategic Potential, Enterprise Dynamic Capabilities, and Firm performance, factor analysis was conducted. The following procedures, commonly recommended in the literature, were applied prior to performing the factor analysis: (1) Calculation of the Kaiser-Meyer-Olkin (KMO) measure for sampling adequacy. This measure should be greater than 0.5; (2) Bartlett's Test of Sphericity, which assumes that the correlation matrix is an identity matrix, indicating no significant correlations between variables. Rejecting the null hypothesis confirms that data reduction through factor analysis is appropriate. The selection of the number of factors was based on two criteria: (1) Kaiser Criterion: Factors with eigenvalues greater than 1 were retained; (2) Cattell's Scree Test: The point on the screen plot where the slope of eigenvalues transitions to a gentler decline was identified as the cutoff.

To achieve the highest possible factor loadings for individual factors, principal component analysis with Varimax normalized rotation was applied. Variables with factor loadings below 0.6 for all identified factors were excluded from the group of variables describing the construct. The reliability of the scale for each factor was assessed using Cronbach's alpha coefficient, with a minimum acceptable reliability set at a Cronbach's alpha value greater than 0.6 (Sagan, 2003). The results indicate that factor analysis can be conducted for all the analyzed dimensions. According to the scree plot criterion and the Kaiser criterion, the following dimensions should consider only one factor: Strategic Potential (SP), Orientation toward Partnership and Other Obligations (EPO), Bricolage (B), Stakeholder Synergy (SS), Resource Structuring (RRS), Capability Development (RRB), Capability Application (RRLC), and Firm Performance (FP).

During the analysis of the dimension "Orientation toward Partnership and Other Obligations," the variable EPO10 was removed due to its low correlation with latent variables (factor loading of 0.45). Based on the scree plot criterion and the Kaiser criterion, the dimensions describing effectuation—Affordable Loss Orientation (EAL), Flexibility Orientation (EEO), and Control/Experimentation Orientation (ECO)—were determined to be two-factor constructs. During the factor analysis of the ECO dimension, the variable ECO32 was removed as its factor loadings were less than 0.6.

The identified factors of the EAL dimension explain nearly 70% of the initial variance of the variables and were classified as the following subdimensions of Orientation toward Affordable Loss: Factor 1: Orientation toward Effectuation described by variables EAL16, EAL17, and EAL18; Factor 2: Effectuation Processes described by variables EAL13, EAL14, and EAL15.

The identified factors for EEO dimension explain nearly 61% of the initial variance of the variables and were classified as the following subdimensions of Orientation toward Flexibility: Factor 1: Orientation toward Effectuation described by variables EEO21, EEO23, EEO24, EEO25, and EEO26; Factor 2: Effectuation Processes described by variables EEO19, EEO20, and EEO22. The identified factors of the ECO dimension explain nearly 60% of the initial variance of the variables and were classified as the following subdimensions of Orientation toward Control/Experimentation: Factor 1: Effectuation Processes described by variables ECO27, ECO28, ECO29, and ECO30; Factor 2: Orientation toward Effectuation described by variables ECO31, ECO33, and ECO34.

The conducted analysis enabled the verification of the previously formulated hypotheses:

H1 The strategic potential variable (SP) is a unidimensional construct — Confirmed.

- **H2** The dynamic capabilities variable (DC) consists of three dimensions: opportunity sensing, opportunity seizing, and resource reconfiguration Confirmed.
- H3 The firm performance variable (FP) is a unidimensional construct Confirmed.

The Dynamic Capabilities (DC) variable is a three-dimensional construct, providing the basis for testing research hypothesis H4 through the analysis of Pearson correlation coefficients between the SP variable and the dimensions OpSen, OpSei, and RR, as well as between the key variables SP and DC. The calculated correlation coefficients are significantly greater than zero (p < 0.000), indicating a fairly strong relationship between the analyzed variables. The strongest positive correlation was observed between SP and Resource Reconfiguration (RR).

Additionally, the relationship between the key synthetic variables of the model, DC and SP, was examined. The Pearson correlation coefficient between these variables is significantly positive, amounting to 0.541 (p < 0.000). The scatterplot illustrating the analyzed variables is presented in Figure 2.



**Figure 2.** Scatter plot of the variable Dynamic Capabilities (DC) against the variable Strategic Potential (SP).

Source: Own elaboration.

After establishing a significant correlation between the considered variables, the parameters of a linear regression function describing the relationship between the variable DC and the variable SP can be estimated. A summary of the regression analysis results is presented in Table 1.

### Table 1.

*The results of the estimation of the linear regression model describing the relationship between the variable DC and the variable SP* 

R= 0,5402; R^2=0,2918; (F(1,314)=129,37; p<0,0000); Std. Error 0,579				
N=316	b	Std. error	t(314)	р
Intercept	3,219	0,164	19,642	0,000
SP	0,356	0,031	11,374	0,000

Source: own elaboration.

The coefficient value for the variable SP is significantly different from zero (t-test statistic value = 19.64, p < 0.000); no outliers were identified. Therefore, it can be concluded that the model is valid. However, only about 30% (R^2 = 0.2918) of the variability in the Dynamic Capabilities (DC) variable is explained by the proposed model. It is important to note that the model includes only one explanatory variable, Strategic Potential (SP), while other factors influencing this variable were not considered in these analyses.

The analyzed relationship is described by the following regression equation:

$$\widehat{DC} = 3,22 + 0,36 \text{ SP}$$
 (1)

where (DC) - represents the theoretical values of the DC variable determined using equation (1).

The basis for verifying research hypothesis H5 is the analysis of Pearson correlation coefficients between the subdimensions of the DC variable and the FP variable, as well as between the synthetic variables DC and FP. The correlation coefficients for the analyzed variables are presented in Table 2.

The calculated correlation coefficients are significantly greater than zero (p-values < 0.000). The strongest positive relationship was observed between Resource Reconfiguration (RR) and Firm Performance (FP). The variable Opportunity Sensing (OpSen) exhibited the weakest correlation with the analyzed variable FP. The Pearson correlation coefficient between the variables DC and FP is significantly positive at 0.501 (p-value < 0.000). A scatter plot of these variables and the regression line is presented in Figure 3.

#### Table 2.

Correlation coefficients between the analyzed variables

Variable	OpSen	OpSei	RR
FP	0,2477	0,4399	0,5593



Source: own elaboration.

Figure 3. Scatter plot of the variable Firm performance versus Dynamic Capabilities.

Source: own elaboration.

In the presence of a correlation between the analyzed variables, it is appropriate to identify the nature of this relationship. To this end, parameters of a linear regression function were estimated, where, in accordance with studies described in the literature, the dependent variable is Firm Performance. The results of the regression analysis are presented in Table 3.

#### Table 3.

The estimation results of	of the linear regre	ssion model des	scribing the relation	onship between
the variable FP and the	variable DC			

R= 0,501; R^2=0,251 (F(1,314)=97,01; p<0,0000); Std. error 0,746						
N=316	b	Std. error	t(314)	р		
Intercept	1,608	0,311	5,165	0,000		
DC 0,602 0,061 9,850 0,000						

Source: own elaboration.

The coefficient for the variable DC is significantly different from zero (t-statistic value = 9.85, p < 0.000); no outliers were identified. The model includes only one explanatory variable, DC, which explains just 25% (R<sup>2</sup> = 0.251) of the variability in the dependent variable FP. The analyzed relationship is described by the following regression equation:

$$\widehat{FP} = 1,61 + 0,602 \text{ DC}$$
 (2)

where (FP) – represents the theoretical values of the variable FP determined from the equation (2).

The conducted analysis enabled the verification of the previously formulated hypotheses:

**H4:** There is a positive relationship between Dynamic Capabilities and Strategic Potential – Confirmed.

H5: There is a positive relationship between Dynamic Capabilities and Firm Performance (FP).

To verify hypotheses H6, H8, and H9, which suggest that the distributions of assessments for variables SP, DC, and FP depend on the metric variables M1, M3, and M4, a nonparametric alternative to one-way analysis of variance - the Kruskal-Wallis test was used. The classical Anova assumptions are not met: the distribution of variable DC is not normal, and subgroup sizes are unequal. The obtained values of the Kruskal-Wallis test statistic are presented in Table 4.

#### Table 4.

Variable	Metric	K-W	р
SP	M1	H (4, N= 316) =11,44	0,022
	M3	H (2, N= 316) =7,20	0,027
	M4	H (2, N= 316) =13,18	0,001
DC	M1	H (4, N= 316) =8,031	0,091
	M3	H (2, N= 316) =2,05	0,357
	M4	H (2, N= 316) =2,39	0,302
FP	M1	H (4, N= 316) =10,06	0,039
	M3	H (2, N= 316) =0,98	0,611
	M4	H (2, N= 316) =0,63	0,729

Results of the Kruskal-Wallis Test

Source: own elaboration.

The distribution of the variable SP significantly depends on: the respondent's position in the company (M1), the business profile (M3), and the size of the company's workforce (M4). The results of the Kruskal-Wallis test are presented graphically in Figure 4.

To determine which of the observed differences in the levels of the SP variable across groups defined by metric variables are statistically significant, Dunn's multiple comparison test was applied. The p-values obtained from the multiple comparisons allowed for the following conclusions:

- (a) assessments of strategic potential levels in the group of directors (department heads) are significantly higher than those in the group of entry-level specialists (no significant differences in the SP variable assessments were found for other pairs of respondent groups with different positions in the company);
- (b) assessments of strategic potential levels in the group of respondents representing manufacturing companies are significantly higher than those in the group of respondents representing service companies (no significant differences in the SP variable assessments were found for other pairs of respondent groups representing companies with different business profiles);
- (c) assessments of strategic potential levels in the group of respondents representing companies with more than 50 employees are significantly higher than those in the group of respondents representing companies with smaller workforces.



Figure 4. Graphical presentation of Kruskal-Wallis test results: distributions of the SP variable based on metric variables.

Source: own elaboration.

The results of the Kruskal-Wallis test indicate no dependence of the DC variable distribution on metric variables M1, M3, and M4. However, the distribution of the firm performance (FP) variable significantly depends only on the respondent's position in the company (M1).

The p-values from the multiple comparisons allowed for the following conclusion: assessments of performance levels in the group of directors (department heads) are significantly higher than those in the group of entry-level specialists (no significant differences in the FP variable assessments were found for other pairs of respondent groups holding different positions within the company). The results of the Kruskal-Wallis test for the FP variable are presented graphically in Figure 5.



**Figure 5.** Graphical presentation of Kruskal-Wallis test results: distributions of the variable. Source: own elaboration.

The survey distinguished only two forms of business activity M2. Therefore, to verify hypothesis H7, the U Mann-Whitney test (a non-parametric alternative to the independent samples t-test) was used. The test results are presented in Table 5.

#### Table 5.

	-				
Variable	Sum.rang	Sum.rang	U	Z	р
SP	23700,0	22965,0	10404,0	1,570	0,116
DC	23210,0	23455,0	10894,0	0,934	0,351
FP	22224,5	24440,5	11346,5	-0,346	0,730

```
U Manna-Whitneya test for M2
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Source: own elaboration

The obtained test results (p > 0.05) indicate no dependence of the distribution of the analyzed variables SP, DC, and FP on the type of enterprise (p-values are greater than the adopted significance level  $\alpha = 0.05$ ).

The conducted analysis enabled the verification of the previously formulated hypotheses:

- **H6:**The evaluations of the variables SP, DC, and FP significantly depend on the respondent's position in the company (M1) Partially Confirmed. The evaluation of the variable DC does not significantly depend on the respondent's position in the company.
- **H7:**The evaluations of the variables SP, DC, and FP significantly depend on the type of business activity (M2) Not Confirmed.
- **H8:**The evaluations of the variables SP, DC, and FP significantly depend on the type of business profile (M3) Partially Confirmed. The evaluations of the variables DC and FP do not significantly depend on the type of business profile.

**H9:**The evaluations of the variables SP, DC, and FP significantly depend on the size of employment in the company (M4) - Partially Confirmed. The evaluations of the variables DC and FP do not significantly depend on the size of employment in the company.

# 4. Discussion

The findings from this study highlight several trends regarding the role of dynamic capabilities (DC) in enhancing firm performance (FP). Although the collected data does not fully explain the mechanisms behind generating FP through DC, the results demonstrate that dynamic capabilities are perceived and developed uniquely across organizations. The research provides insights into the impact of dynamic capabilities on effectiveness and emphasizes the role of strategic potential (SP) as a precursor to developing these capabilities (Table 6).

Statistical analysis confirmed the validity of the proposed model and verified the research hypotheses. Key findings include the unidimensionality of SP and FP and the three-dimensional structure of DC, comprising opportunity sensing, opportunity seizing, and resource reconfiguration. The results showed a positive relationship between SP, DC, and FP, underscoring the importance of DC in achieving organizational goals.

Table (	6.
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Variable	Insight
Strategic Potential	SP contains micro-foundations essential for developing DC and is significantly linked to DC.
Dynamic Capabilities	Resource reconfiguration is crucial for achieving OE, while DC enables survival in crisis conditions.
Organizational Effectiveness	Besides DC, OE is influenced by multiple external and internal factors, warranting further exploration.

Key research insights

Source: own elaboration.

Respondents largely confirmed their organizations capacity to identify opportunities, leverage them, and reconfigure resources effectively, highlighting these as significant drivers of firm performance. Moreover, qualitative interviews supported these conclusions, with respondents emphasizing the necessity of dynamic capabilities for survival and growth in dynamic market environments. As noted by Kanter et al. (2015), an entrepreneurial orientation toward opportunities plays a pivotal role in achieving efficiency.

While SP and DC were highly rated, FP showed more cautious evaluations. This suggests that organizations with higher FP may not actively seek opportunities but rather focus on maintaining their current status. Conversely, organizations seeking to improve FP may actively develop and deploy DC. This nuanced perspective indicates that while DC can create long-term value, immediate results may not always be evident. A strong relationship was observed between SP and DC, particularly in the dimension of resource reconfiguration, which aligns with findings by Cyfert and Krzakiewicz (2017). This indicates that SP, encompassing critical resources and competencies, serves as a micro-foundation for DC. Interviews further revealed the importance of human, financial, and learning resources in addressing market uncertainties and leveraging opportunities.

Interestingly, DC demonstrated universal applicability across various organizational contexts, regardless of industry or size. However, the ways these capabilities are utilized differ significantly depending on organizational specifics, including strategy and operational context. As Teece (2023) emphasizes, DC's effectiveness relies heavily on organizational systems, processes, and the leadership of senior management.

Finally, while SP ratings varied by respondent position, business profile, and firm size, DC ratings were independent of these factors. This suggests that while SP perceptions may differ due to role-specific awareness, DC are consistently valued across organizational contexts. However, resource-rich organizations, such as larger firms or production-oriented enterprises, tend to rate their SP higher, likely reflecting their tangible and measurable resources.

The findings also highlight the importance of exploring additional variables that influence DC, as FP was only partially explained by DC in the current model. Future research should investigate other determinants of FP to build a more comprehensive understanding of the factors driving organizational success.

### 5. Summary

This paper aimed to examine the construct of dynamic capabilities and their impact on firm performance. The study identified key components of dynamic capabilities, their microfoundations, and their effects on organizations. It also developed a conceptual research model based on these elements, drawing primarily on D. J. Teece's (2007) framework, which encompasses opportunity sensing, opportunity seizing (including bricolage, effectuation, and stakeholder synergy), and resource reconfiguration as core components. Additionally, strategic potential was identified as encompassing the microfoundations essential for dynamic capabilities development. The research successfully achieved its objectives by addressing processes, dimensions, relationships, and impacts associated with dynamic capabilities.

A review of the literature, combined with quantitative surveys and qualitative interviews, provided insights into the levels of dynamic capabilities in Polish enterprises and their influence on firm performance. The study confirmed positive relationships between strategic potential, dynamic capabilities, and firm performance. Statistical analysis validated the research model and provided evidence of dynamic capabilities critical role in enhancing firm performance. However, the findings also revealed that while respondents rated dynamic capabilities highly,

this did not directly translate into equally high assessments of firm performance, suggesting that other factors also contribute significantly to firm performance.

A key limitation of the study was its reliance on subjective measures of firm performance. While subjective evaluations provide valuable insights, integrating them with objective financial indicators, such as return on assets (ROA) or Tobin's q ratio, could enhance the robustness of future studies. Additionally, the data collection period (2019) preceded significant global disruptions, such as the Covid-19 pandemic and the war in Ukraine, which may have influenced the perception and development of dynamic capabilities. These events underscore the importance of examining dynamic capabilities under specific market conditions to capture their adaptive value during crises.

The study also highlights areas for future research. First, further investigation into additional factors influencing firm performance beyond dynamic capabilities is recommended to develop a more comprehensive model. Second, establishing a universally accepted set of dynamic capabilities components could provide actionable recommendations for practice. Third, integrating subjective and objective measures of firm performance would offer a more holistic perspective on firm performance. Lastly, assessing dynamic capabilities in dynamic market conditions could reveal new insights into their role during periods of instability.

In conclusion, this paper provides theoretical and practical contributions by identifying dynamic capabilities dimensions, their relationships with strategic potential and firm performance, and their critical role in organizational adaptability. However, the study's findings also emphasize that firm performance is influenced by a combination of dynamic capabilities and other organizational and environmental factors. This research offers a framework for understanding dynamic capabilities and lays the groundwork for further exploration of their impact on organizational success.

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