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Where does it come from? Formation of innovative ambidexterity within SMEs in turbulent times

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Abstract

This study investigates how small and medium-sized enterprises (SMEs) achieve and manage innovative ambidexterity through their dynamic capability, addressing potential imbalances in changing environments under resource constraints. Employing a comparative case study approach, the research draws on qualitative, in-depth interviews with CEOs and founders of four Russian SMEs operating in the Information Technology (IT) sector, selected from a larger cohort. Key capabilities were identified for each phase of the dynamic capability process. In the sensing phase, essential capabilities include cultivating dynamic technological and marketing skills, problem-solving proficiency and commitment to continuous learning with real-time awareness. In the seizing phase, the emphasis shifts to enhancing capabilities through learning, fostering innovation-driven culture, empowering employees, providing continuous training, promoting active collaboration at all levels, and recognizing achievements through team rewards. During the reconfiguration phase, adaptive decision-making, resource and coordination flexibility and future-oriented innovation and partnerships become critical. These capabilities contribute to a balance of exploratory and exploitative innovation within SMEs enabling the achievement of innovative ambidexterity. Throughout this process, potential imbalances are managed by leveraging critical capabilities such as clear goal-setting and performance feedback, culture of openness, trust, and mutual support, and adaptive decision-making with wise allocation of firm-specific resources. Through our findings, we advance the understanding that ambidexterity is achievable for resource-constrained SMEs in uncertain environment under external constraints, offering insights into dynamic capabilities that enable such attainment.

Keywords
Innovative ambidexterity, exploratory innovation, exploitative innovation, turbulent times, SMEs, dynamic capabilities, imbalances

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Introduction

To achieve sustainable performance (Lubatkin et al., 2006, Smara et al., 2024), competitive advantage (O'Reilly & Tushman, 2013), survival, and resilience (Iborra et al, 2020), many organizations are increasingly turning to the concept of innovative ambidexterity, which implies an appropriate balance of exploratory and exploitative innovations (He & Wong, 2004). According to previous research, exploitative innovations are to meet the current market needs; they involve incremental adjustments within existing technological trajectories. Exploratory innovations lead to radical changes necessary for targeting new or emerging markets (Benner & Tushman, 2003). These two strategies require completely distinct structures, processes, skills and capabilities (He & Wong, 2004). In general, exploration is linked to bottom-up learning, variance-increasing activities, flexibility and uncertain returns, whereas exploitation focuses on top-down learning, stability, and more predictable outcomes (Lavie et al., 2010). Resolving the contradictions between these approaches remains a key challenge for businesses aiming to be ambidextrous (Smith & Tushman, 2005).

In today's turbulent business environment, swift responses to emerging threats and opportunities are vital for survival and prosperity. Companies must be strategically adaptable to navigate the existing and new opportunities, capitalize on them, exploit the available leverages and mitigate risks. Balancing these strategies is crucial, especially when facing external shocks (Smara et al., 2024). Research shows that SMEs, despite their limited resources, benefit significantly from balancing exploratory and exploitative innovation (Cao et al., 2009). During recessions, SMEs tend to develop more ambidextrous strategies than larger firms, which helps them survive in uncertain environments (Alcalde-Heras et al., 2019). However, their "liability of smallness"—limited resources and capabilities—makes achieving innovative ambidexterity particularly challenging.

It has always been difficult for SMEs to maintain innovative ambidexterity in turbulent times; the COVID-19 pandemic further accentuated the importance of adaptability. The pandemic not only intensified the need for SMEs to balance exploration and exploitation but also acted as a significant opportunity, especially for IT businesses. The COVID-19 crisis emerged as a powerful catalyst for digital transformation, accelerating the adoption of emerging technologies and opening new market opportunities. Amankwah-Amoah et al. (2021) describe the pandemic as "the great accelerator," fast-tracking global shifts toward digitalization. This shift

has driven profound changes in business strategies, work patterns, and lifestyles, and created new growth prospects for IT firms. For example, Vardari et al. (2022) found that SMEs in Kosovo increased their information and communication technology investments during the pandemic, recognizing the role of technology in adapting to the crisis and enhancing operational efficiency. Akpan et al. (2021) further emphasize that the adoption of cutting-edge technologies, even involuntary, offered competitive advantages and ensured business survival. These studies highlight the critical role of digital technologies in helping IT firms navigate and thrive in uncertain times.

Attempts to explain how firms achieve ambidexterity have focused on structural means (O`Reilly & Tushman, 2013), top management behavior (Lubatkin et al., 2006), and organizational context (Gibson & Birkinshaw, 2004). However, research on ambidexterity has mainly examined its antecedents in periods of stability, with less attention given to how SMEs achieve and balance ambidexterity, especially in challenging environments. Ambidextrous strategies are particularly difficult for firms facing both internal and external constraints; empirical evidence about achieving innovative ambidexterity is not plentiful (Zimmermann et al., 2020).

Imbalances between exploration and exploitation are a critical issue in organizational learning and innovation. Overemphasizing exploration can lead to increased risks and resource depletion, while focusing too much on exploitation can cause missed opportunities and vulnerability to disruption (Lavie et al., 2010). Despite the importance of balance, there is insufficient understanding of how to manage and mitigate such potential imbalances. This study aims to develop a framework for achieving innovative ambidexterity in SMEs during turbulent times, identifying key capabilities to manage potential imbalances. Innovative ambidexterity, the ability to exploit existing assets while exploring new technologies and markets, is crucial for organizational adaptability (O'Reilly & Tushman, 2008). This concept is best understood through dynamic capabilities, which enable firms to integrate, build, and reconfigure competencies in response to changing environments. Prior studies on ambidexterity have frequently used a static viewpoint. However, contemporary contingency theory shows that alignment is a dynamic process. A variety of theoretical frameworks have been used to explain organizational ambidexterity; our choice is based on the assumption that dynamic capabilities provide the most suitable lens for understanding this concept. Dynamic capabilities allow organizations to sense and seize opportunities, transform operations, and efficiently allocate resources between exploratory and exploitative activities. Besides, these capabilities encompass organizational learning processes that help integrate new knowledge and refine existing knowledge, thereby supporting ambidexterity (Zollo & Winter, 2002). The interplay between exploitation and exploration should over time evolve into a comprehensive dynamic capability (Raisch et al., 2009). Building on this understanding, we have formulated the research questions addressed in this study. First, how do SMEs

achieve innovative ambidexterity that best serves their performance goals, helping them overcome adverse conditions and cope with environmental demands through the dynamic capability perspective? Second, how do SMEs deal with possible imbalances?

To identify the mechanisms, processes, and capabilities of SMEs that would support ambidexterity in challenging contexts, we conducted a comparative case study of SMEs selected from a larger cohort of Russian IT companies, all of which experienced the challenges and turbulence of COVID-19. Our results illuminate the pathway for innovative ambidexterity in Russian SMEs facing turbulent environments, offering a research framework that uncovers the essential building blocks of dynamic capability. Specifically, the three areas of dynamic capability (sensing, seizing, and reconfiguring), guided by short- and long-term goals, appear to be instrumental in fostering innovative ambidexterity. Through a dynamic capability model, the research underscores the pivotal role of three factors critical for achieving innovative ambidexterity. Firstly, SMEs benefit from the development of dynamic technological and marketing capabilities, problem-solving acumen, and continuous learning with real-time awareness. These capabilities empower SMEs to capitalize on emerging opportunities, fostering both exploration and exploitation. The second crucial factor is cultivating a culture of innovation and empowerment, coupled with active collaboration and continuous training, is crucial. This dynamic environment not only encourages the generation of fresh ideas but also optimizes resource utilization. Finally, to achieve ambidexterity, SMEs must strategically reconfigure resources through adaptive decision-making, resource and coordination flexibility, and forward-thinking innovation and partnerships. These findings provide a roadmap for SMEs to navigate crises, adapt to evolving market landscapes, and sustain innovation-driven growth in the face of uncertainty. To effectively address potential imbalances arising from management biases that may cause deviations from desired actions, several key capabilities are essential. These include providing clear goals and continuous performance feedback, incorporating both short-term adjustments and long-term planning. It is imperative to cultivate a culture of openness and trust, encourage agile adaptation, ensure goal alignment, and allocate firm-specific resources judiciously. Furthermore, the dynamic formation of teams emerges as pivotal in maintaining equilibrium between exploration and exploitation, thereby enabling SMEs to remain resilient and adept at seizing emerging opportunities.

The rest of the paper is organized as follows. Section 2 presents theoretical underpinnings of the study which covers the formation of innovative ambidexterity in SMEs and the view of the concept of ambidexterity through the lens of dynamic capability. Section 3 details the research design and methodology. Sections 4 describes the findings obtained by study. The discussion of conceptual framework developed by the author is presented in Section 5, and the final section summarizes the findings, implications and new theoretical perspectives created in the course of research.

Theoretical underpinnings

Dynamic capabilities and innovative ambidexterity

The dynamic capability view and innovative ambidexterity perspective have emerged as theoretical pillars necessary to understand how businesses compete in changing environments (Zimmermann & Birkinshaw, 2015). Dynamic capabilities involve integrating, building, and reconfiguring competencies for quick adaptation (Teece et al., 1997). Scholars like Benner and Tushman (2003) and Teece et al. (1997), have linked these capabilities to a firm's ability to balance exploration and exploitation. O'Reilly and Tushman (2008) emphasize that ambidexterity, as a dynamic capability, aligns with Teece's (2007) framework of sensing, seizing, and reconfiguring; it highlights the crucial role of managers in balancing these demands.

Teece (2007) outlines the dynamic capabilities framework essential for maintaining competitive advantage in rapidly changing environments, identifying three core capabilities: sensing, seizing, and reconfiguring. Sensing capability involves identifying and assessing opportunities and threats by monitoring environmental and technological changes (Birkinshaw et al., 2016). Organizations need to gather, analyze, and reshape data creatively. Effective sensing requires leaders who support learning, challenge the status quo, and tolerate failure to drive ambidexterity (O'Reilly & Tushman, 2008). Seizing capability involves making timely decisions and mobilizing resources to address opportunities and threats. O'Reilly and Tushman (2008) note that firms with strong seizing capabilities act swiftly in response to emerging crises, while those lacking this ability may struggle to act on opportunities and threats. Birkinshaw et al. (2016) found that in structural ambidexterity, sensing occurs in exploration units and seizing in exploitation units, whereas in contextual ambidexterity, both occur simultaneously, and in sequential ambidexterity, the focus shifts over time. Reconfiguring capability involves adjusting internal and external resources, assets, and priorities to adapt to changing markets and technologies. This requires moving away from past practices, redefining stakeholder roles, committing resources to long-term projects, and managing resources across alternatives (O'Reilly & Tushman, 2008). Birkinshaw et al. (2016) noted that while sensing and seizing are often managed by front-line staff, reconfiguring is typically handled by senior executives.

Dynamic capabilities bridge the gap between exploration and exploitation by enabling organizations to effectively balance and integrate these two seemingly conflicting activities. Dynamic capabilities allow organizations to sense changes in the environment, opportunities and potential risks (exploration), seize new opportunities and extract the maximum value from what the organization already possesses swiftly and effectively (exploitation) (O'Reilly & Tushman, 2008). This is crucial for capitalizing on emerging trends while maximizing the benefits from current assets. Organizations with dynamic capabilities also can reconfigure their resources, structures, and processes based on the insights gained from exploration and exploitation activities.

This adaptability enables them to shift focus, reallocate resources, and pivot strategies as needed to achieve a competitive advantage.

Research design

The purpose of this paper is to explore the nature of innovative ambidexterity as a core strategy and, using inductive research approach, build a theory explaining how to implement this strategy. The study is mostly empirical; it uses the qualitative approach to identify potential determinants of SMEs' innovative ambidexterity in turbulent times and explore mechanisms that help SMEs to deal with possible imbalances. The paper also provides information that may prove useful for developing a theory on balanced view of capabilities (Adu, 2019). Since case studies are best suited for responding to "how" and "why" questions that are firmly rooted in complex organizational environments, the authors carried out a comparative case study to acquire deep understanding of the context and processes involved (Yin, 2009). Such an approach makes it possible to grasp the complex and rich nature of the phenomenon and to identify patterns in various cases. It can help test the assumption that the results can be reproduced from case to case (Yin, 2009) and thus present a comprehensive picture of the processes.

Research context

The present research concerns SMEs' operation under both internal and external constraints for several reasons. First, the turbulent times caused by the pandemic COVID-19 proved suitable for the study of innovative ambidexterity, which is seen as the best strategy for firm survival and resilience (Iborra et al., 2021). Second, SMEs provide excellent material for examining innovative ambidexterity under pressure. In the COVID-19 epidemic that had a global impact but did not affect all businesses equally, the SMEs suffered the most (Etemad, 2020). Reliability that enables SMEs to survive is crucial given their limited resources (Wiklund & Shepherd, 2011) and their financial stability becomes even more important in highly dynamic environments, where SMEs face competitive pressures to engage in both exploitative and explorative innovation (Senaratne & Wang, 2018). According to Eggers (2020), their small size makes it easier for SMEs to change course and readapt their strategies when opportunities or threats arise; it takes them less effort to leverage their existing competences or develop the new ones. Third, the sampling of firms (Eisenhardt, 1989) was determined by the objectives of our research: IT companies have ample market opportunities but also face significant challenges. To better cope with these, they pursue incremental innovations like software process improvements and implement radical changes such as open-source and globally distributed software development. These companies may favor both exploitative and exploratory innovation as part of their efforts to become or remain competitive (Ceptureanu et al., 2022). This means

that IT SMEs provide an appropriate context for identifying the capabilities needed to achieve innovation ambidexterity. They are also heterogeneous enough to assess generalizability as their businesses share characteristics that make comparisons and replication easier.

Building on this foundation, we conducted an in-depth qualitative study of four IT SMEs in Saint Petersburg, selected through theoretical sampling. Although the sample size may appear rather small, it aligns with the objectives of qualitative research, prioritizing depth over breadth to uncover complex mechanisms (Eisenhardt, 1989; Yin, 2018). The selection was guided by the three main criteria: relevance, access, and diversity. The IT sector's dynamic nature and emphasis on innovation made it an ideal context for the study in question. Access to CEOs, facilitated through professional networks, enabled comprehensive data collection and the heterogeneity of firm characteristics provided varied insights. Despite the small size of the sample, robust methodologies including triangulation, iterative coding, and cross-case analysis ensured the validity of our findings, offering meaningful contributions to understanding innovation ambidexterity in turbulent environments. The case SMEs are summarized in Table 1.

Table 1. Summary of case SMEs

SMEs	Specialization	Year founded	Number of Employees	Informant's Position
A	Online teaching IT outsourcing company	2018	10	P1: CEO
B	Educational robotics	2015	51-200	P2: CEO
C	Computer software DDoS protection	2013	11-50	P3: CEO
D	IT company	2017	40	P4: CEO

Data collection

Semi-structured interviews, and archival data were some of the data sources we used.

Interviews: A total of 4 interviews were conducted among the selected ambidextrous SMEs to delve deeper into the determinants of innovative ambidexterity and attain theoretical saturation. The founders and CEOs of SMEs were interviewed in-depth and semi-structurally to gather data. Spradley's (1979) technique was used; the interviews started with broad questions about the company's history, its organizational structure, its current projects, and a typical workday. The interviews lasted between 60 and 120 minutes, involved two researchers, were tape-recorded, and were thoroughly and completely transcribed to enhance transparency and replication for the sake of reliability (Eisenhardt & Bourgeois, 1988).

Archival data: Before each visit, we acquired information on the organization's past, its background, and its web material from public data sources. During the visit, we gathered company-produced papers, such as the company's internal newspaper and personnel handbooks.

The qualitative paper follows a case-study design, with in-depth analysis of four cases of SMEs that have been selected out of a larger cohort of Russian businesses. It closely examines their ambidexterity based on the scores obtained from their CEOs/ founders' evaluation. Interviews were our primary source of inductive data; archival materials, too, contributed to our understanding of each case, its strategic, operational, and cultural features, providing insights that could refute or reinforce our interview findings. With a case study strategy, we may need to use and triangulate multiple sources of data. Triangulation refers to the use of different data collection techniques within one study in order to ensure that the data are telling you what you think they are telling you (Saunders et al., 2009).

Data analysis

This study aimed, first, to explain how innovative ambidexterity could be achieved in SMEs during COVID-19 pandemic and, second, to explore how to deal with possible imbalances. To answer these questions, we conducted an in-depth interview with the managing director of an ambidextrous SME. The interview included general questions about the company, its establishment year, the size of the management team, the company's objectives and also questions about the respondent's age, education and entrepreneurial experience.

The analysis of the answers obtained in the interviews allowed us to identify the capabilities necessary for innovative ambidexterity and the mechanisms that may help to manage possible imbalances. Despite the differences in data analysis, it is possible to compare the work based on qualitative approaches with the process of creating codes using important information extracted from the data, when categories are created and themes identified. As a component of qualitative analysis, qualitative coding is a systematic process for turning data into trustworthy and meaningful concepts. The transcripts were manually coded with the assistance of Microsoft Word tools. The themeing, i.e. data-focused coding strategy, was used to code the data: a simple descriptive phrase captured the meaning of a data portion. Codes were created for each research question as part of a structured, sequential coding procedure (Adu, 2019). These first-order concepts give a broad picture of the capabilities required to attain innovative ambidexterity and the mechanisms for managing possible balance with regard to the informants. Categories and themes are then created on the basis of the codes. In order to organize first-order concepts into second-order themes, the sorting strategy was adopted as code categorization technique which examines the codes, compares them and classifies them according to their similarities. The themes that emerged from the cross-case analysis served as a foundation for our resulting frameworks (Adu, 2019).

Findings

Capabilities for innovative ambidexterity

We apply the dynamic capability framework to identify key capabilities for achieving innovative ambidexterity in challenging conditions. Focusing on sensing, seizing, and reconfiguring, we used a process-oriented approach to structuring our analysis of IT SMEs, which ensured consistency with previous comparative case studies (Adu, 2019). Our findings are interpreted through the lens of dynamic capabilities, innovation, and ambidexterity literature.

Sensing capabilities

There are four distinct types of sensing capabilities, intertwined with dynamic technological and market capabilities, problem-solving proficiency, and commitment to continuous learning with real-time awareness (Figure 1). The 'Dynamic Market Capability' theme emphasizes the need to stay informed on market trends, customer preferences and competition to adapt strategies effectively. As respondent P4 notes, *"…also monitor our brand name and category…constantly look for new information"* stressing the importance of tracking competitors' actions: *"…we try to know what our competitors are doing."*

The 'Dynamic Technological Capability' theme highlights the importance of monitoring and integrating new technologies into organizational processes. Participant P2 emphasizes adapting to technological changes: *"We try to keep up with these times and pick up innovative trends."* This commitment to continuous improvement is echoed by respondent P1: *"Talking about technological advancement, it's continuous improvement."* Strong technological capabilities enable firms to explore new market opportunities.

The "Problem-Solving Ability" theme emphasizes the importance of creative thinking and innovation in tackling challenges. Respondent P4 speaks about agility during crises: *"When omni-channel chat solutions were banned in Russia, we had to pivot on something new."* Participant P2 underscores the culture of ideation: *"ideas persons."* This supports cross-domain creativity and exploration. The "Continuous Learning and Real-Time Awareness" theme stresses staying informed and adaptable, with respondent P4 stating, *" searching for... trends everything online reading about it daily as well."* and *"so I constantly look for new information in the field."* Continuous learning equips organizations to explore, innovate, and identify new markets.

Sensing capability is crucial for innovative ambidexterity, supplying inputs for both exploration and exploitation. Effective sensing helps organizations detect emerging trends, customer needs and technological advancements (exploration) and at the same time identify opportunities to leverage existing strengths (exploitation). Essentially,

sensing capabilities act as a radar, guiding organizations towards new opportunities and providing the intelligence to navigate uncertainties.

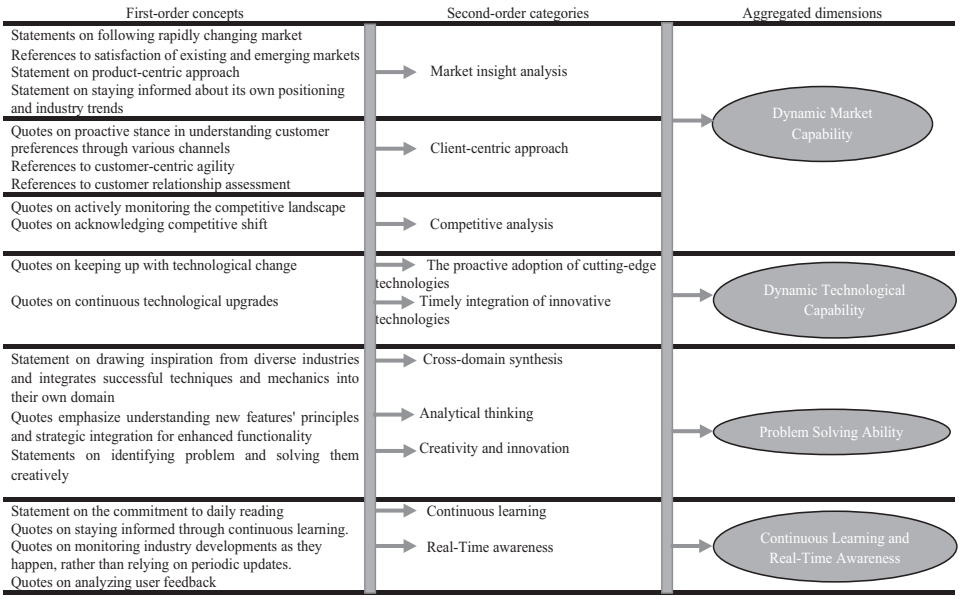

Figure 1. Data Structure: the sensing capabilities

Seizing capabilities

Seizing an opportunity requires a multifaceted approach that leverages organizational capabilities to their fullest potential. Seizing capabilities are manifest in four themes (Figure 2). "Learning-driven Capability Enhancement" theme stresses the importance of continuous learning, as it enables people to explore new ways while using existing knowledge for continuous improvement. All founders emphasized this need: P1 noted, "*in Telegram, Pasha Durov introduces some new features, new functions, new possibilities for creating bots. And a month later, we know how to use these innovative features in our products, or at least we understand some roadmap from the point: a certain feature has appeared here, and we know how to use it with EdTech"*; P2 confirmed, *"Only by always learning, you can move the whole industry forward"*. P4 stated, *"with years of experience you learn how to, you know, to run on the direction that you feel interesting"*, and added, *"you should understand what needs to be done; in the process of understanding the context they also learn a lot, this is very good for learning"*.

"Cultivating a Dynamic Innovation Culture and Empowerment" fosters creativity and innovation by encouraging employees to take risks and explore new ideas, helping organizations seize opportunities. P1 emphasized, *"I try to facilitate learning as much as possible, that is to say please study*," Following March (1991), knowledge sharing

involves both exploring new possibilities and utilizing existing knowledge to tackle current tasks effectively. Along the same lines P4 stated *"in a successful team, the process itself is all about knowledge sharing"*. P2 agreed, *"We are constantly developing and helping our partners to develop"*. Empowerment enhances adaptability, encouraging individuals to embrace change, solve problems and adopt new approaches (Grass et al., 2020). P4 explained, "In the development team, we have also a policy: people like managers don't tend to assign tasks to individuals who actually decide themselves what should be done on their platform".

"Continuous Training and Active Collaboration" theme equips employees with the skills to seize opportunities. Many informants asserted that training at all levels of a firm helps to gain talented workforce. P2 specified: *"We set a goal to create a team of talented enthusiasts and achieve the main dominant tone of "Enthusiasm". The theme* "Achievement Recognition and Team Rewards" motivates teams to excel and seize opportunities, reinforcing their commitment to organizational goals. These programs have a direct impact on employee motivation: *"When we complete a big project, which is very profitable, we give a split award to the team that did it", said P1*. P2 added, *"Like many IT companies, we use financial incentives and also intangible rewards, such as giving the employees educational opportunities."*

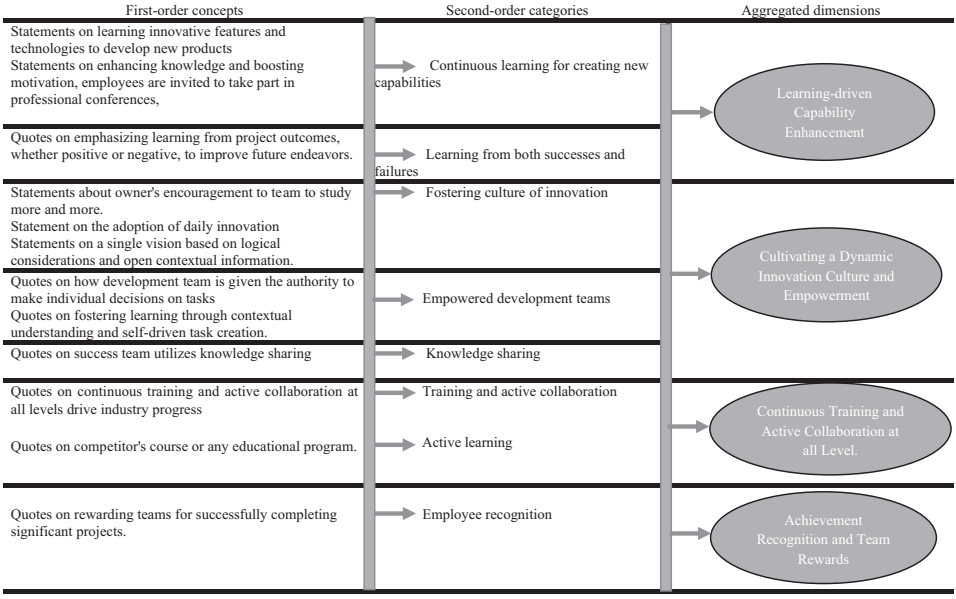

Figure 2. Data Structure: the seizing capabilities

Reconfiguring capabilities

The SMEs seeking to achieve organizational ambidexterity need to dynamically reconfigure resources and priorities, which requires dynamic capability (Kiss et al.,

2020). We have identified three different groups of reconfiguring capabilities related to "Adaptive Decision-Making", "Resource and Coordination Flexibility", and "Future-Forward Innovation and Partnerships" (Figure 3). "Adaptive Decision-Making" emphasizes flexibility in managing paradoxes and requires a long-term perspective in dynamic environments. Our informants confirmed this approach. P1 said, *"just that there are roadmaps. We're basically, like, thoroughly updating our roadmaps", he added "It will be a brainstorm, it will just be written on the board, and during a regular discussion… it will be discussed, and the team will make some kind of decision about it".* Diversity within a Top Management Team (TMT) boosts organizational ambidexterity by fostering creativity and innovation. Informant P4 pointed out that managers frequently draw the key or all employees into decision-making, *"Basically, our structure involves many people in decision-making, not just one, allowing technical staff to resolve challenges proactively because they have the authority to do so and this provides more flexibility… Basically because we don't have like middle management in the company we want to give as much context as possible to people so that they could make their own decisions".* He emphasized the commitment to managing risk through an iterative decision-making process *"Investing is a default option; we test potential ideas cheaply with prototypes or research. As confidence grows and risk decreases, we proceed without significant conflict, though there may be competition among ideas to test."*

The theme "Resource and Coordination Flexibility" emphasizes effective resource management necessary to balance exploration and exploitation, foster innovation and ensure efficiency. Research has shown that firms use dynamic strategies to adapt to changing environments through resource and coordination flexibility (Wei & Guo, 2014). Along the same lines, the informant P2 said that *"correctly combined different types of activities help competent prioritization and delegation of tasks"*; P3 added *"Effective coordination and immersion in the specifics lead to increased productivity, as everyone understands their role and tasks better."* Informant P4 explained, *"we review new information together, sharing ideas about its potential uses. This process serves as a learning tool for the team and helps onboard new members by showing how the team thinks."* The informant P2 highlighted the need for adaptability in roles because individuals may need to address various tasks simultaneously: *"At some point, each of us is faced with what is needed in several places at the same time";* informant 4 added, *"and then there is success team working in business development, marketing, sales, but it's all like, one person does everything."*

The theme "Future-Forward Innovation and Partnerships" emphasizes the importance of adjusting strategies, operations, and partnerships flexibly, which, according to informant P4 means *"constantly talking to customers in various ways, from visiting their office to reading app store reviews.".* Multi-firm project alliances that share the risks of technological uncertainty, complexity, and costs look for complementary expertise and skills (Tiwana, 2008). In the same vein informant P3 maintained that they *"support and update existing projects for our current customer base"*; informant P2 pointed out that *"Management sets the priority of innovative projects based on conditions of implementation, budget, and scaling prospects."*

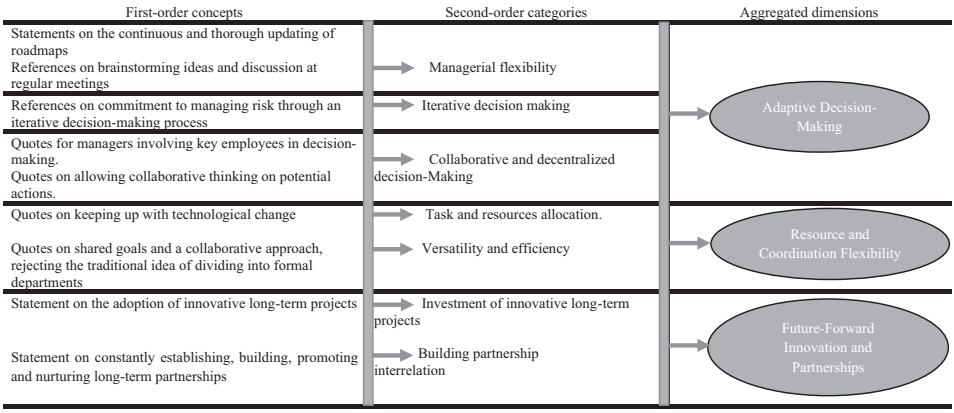

Figure 3. Data Structure: the reconfiguring capabilities

Capabilities to cope with possible imbalances

Feedback loops

To improve learning and performance at the individual, team and organizational levels it is essential to set the right goals and provide effective feedback (DeShon et al., 2004). Respondents agree that in challenging conditions firms need to quickly introduce new products or services to meet the emerging needs (Netz et al., 2022). Respondent P2 emphasized, *"we plan to make a solution that will work not only in the cloud, but which can be installed on the customer's site and which could work in a hybrid mode."*. Performance measurement and evaluation are vital for assessing success and identifying improvement areas. A firm that seeks to achieve ambidexterity should adjust its strategies and processes for both short-term gains and long-term success, with indicators tied to the organizational goals (O'Reilly & Tushman, 2013). In conversations with the four companies, several key performance indicators emerged. The number of new products/services reflects innovation; customer satisfaction highlights client needs; ideation rate points to creativity; resource utilization measures efficiency; revenue growth is a crucial financial measure; project implementation quality ensures client satisfaction; the "wow" effect of products indicates market appeal; referral and sharing metrics represent customer advocacy; customer recommendations show trust; and employee engagement is critical for organizational success. Feedback loops contribute to adjusting behaviors and practices in alignment with balanced goal prospects (DeShon et al., 2004).

Key Capabilities

The individual-based sorting strategy is used to develop themes for the second research question: "How to deal with a possible imbalance?" Once sorted,

the answers formed three groups described here as themes (Figure 4). The first theme, "Fostering a Culture of Openness, Trust, and Mutual Support", involves creating an environment where employees are encouraged to share ideas and collaborate. Trust and support enhance reliance on each other's commitments and encourage mutual assistance and endorsement, promoting collaboration, efficient resource utilization, and individual involvement in decisions (Gibson & Birkinshaw, 2004). Openness also cultivates a culture that values innovation and change (O'Reilly et al., 2014), encourages creativity and builds a cohesive, resilient team that smoothly shifts between exploration and exploitation.

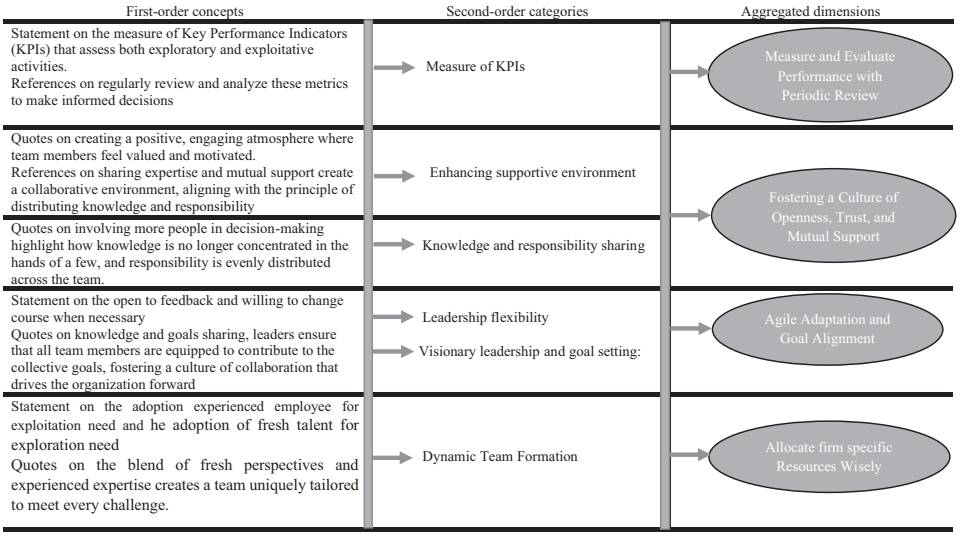

Figure 4. Data Structure: capabilities to cope with possible imbalance

The second theme, "Agile adaptation and Goal alignment" plays a pivotal role in cultivating leaders with the flexibility to navigate changing circumstances, aligning team members towards a common vision and objectives. Research into strategy and leadership highlights the importance of a shared vision as a transformative mechanism within a learning organization, fostering active involvement in developing, communicating, and implementing organizational goals (Wang & Rafiq, 2014). Insights from the upper echelon and ambidexterity literature suggest that transformational leaders are crucial in translating shared goals and values into desired behaviors, increasing the likelihood of implementing the senior team's vision through collaborative actions (Jansen et al., 2008).

The third theme, "Allocating Firm-Specific Resources Wisely," emphasizes the importance of dynamic team formation for effective resource management in attaining strategic objectives. This capability enables a flexible and adaptable team to address various operational challenges. Prior research underscores the importance

of firm-specific human capital in pursuing both explorative and exploitative activities. Encouraging experienced employees to leverage their competencies to refine existing knowledge and skills can improve exploitation; fresh perspectives help develop new competencies and thus enhance exploration (Kengatharan, 2021). Some studies suggest that employees often play multiple roles, contributing to both exploitation and exploration (Floyd & Lane, 2000).

Discussion

The conceptual model (Figure 5) illustrates how innovative ambidexterity is achieved in turbulent times through dynamic capability phases. It shows how feedback loops in performance measurement and strategic goals help adjust behaviors to cope with possible imbalance of exploration and exploitation. The analysis has shown that, guided by short- and long-term goals, SMEs with capabilities in sensing, seizing, and reconfiguration can achieve innovative ambidexterity in turbulent times. Despite their limitations, SMEs benefit from their flexibility that enables them to navigate opportunities and threats. Innovative ambidexterity requires developing capabilities to sense changes, seize opportunities, and reconfigure resources. Our conceptual framework includes these key pillars of dynamic capability with specific abilities.

Pillar 1: SMEs need dynamic technological and marketing capabilities, problem-solving skills, and continuous learning to help decision-makers capitalize on current and future opportunities in a rapidly changing environment. These capabilities facilitate exploration and exploitation within SMEs; integrating digital technology and ambidexterity became particularly important in the COVID-19 era. SMEs use technology exploration and exploitation to meet customer demands and stay competitive (Van de Vrande et al., 2009). Marketing capabilities contribute to incremental innovation; effective exploration leads to radical innovation (Eng & Okten, 2011), also enhancing the quality of problem-solving (Glover et al., 2016).

Pillar 2: Seizing opportunities for exploration and exploitation necessitates a multifaceted approach that maximizes organizational capabilities through learning-driven enhancement, fosters a dynamic culture of innovation and empowerment, encourages continuous training and active collaboration at all levels, and utilizes achievement recognition and team rewards to their utmost potential.

SMEs need to be constantly engaged in continuous learning, invest in generating fresh ideas, develop new knowledge and skills, and thus ensure that existing capabilities are continuously improved. Learning to collaborate stands as a critical factor that benefits innovation whether focused on exploitation or exploration (Hernández-Espallardo et al., 2011). Fostering a culture of innovation involves creativity, risk-taking and entrepreneurial mindset; all these support exploration and agility in seizing new opportunities, while achievement recognition and team rewards enhance the capability to exploit existing strengths (Khan & Mir, 2019).

Existing research highlights the significance of an ambidextrous organizational culture, characterized by both innovation and a performance-based approach as a crucial facilitator of contextual ambidexterity (Khan & Mir, 2019, Wang & Rafiq, 2014). Active collaboration is paramount for balancing exploration and exploitation. External partnerships bring in complementary resources and knowledge, reducing resource constraints and risks, especially during crises (Hernández-Espallardo et al., 2011). Strong internal and external knowledge capabilities support long-term growth and resilience; collaboration facilitates best practice sharing and continuous improvement, essential for optimizing resources (Zouaghi et al., 2018). Training is key in bridging exploration and exploitation. It ensures that employees perform effectively in their current roles while developing new skills to adapt to evolving organizational needs (Greco et al., 2019).

Pillar 3: Ambidexterity also requires reconfiguring resources and modifying priorities; the capabilities that help in this phase are threefold: adaptive decision making, resource and coordination flexibility, and forward innovation and partnerships.

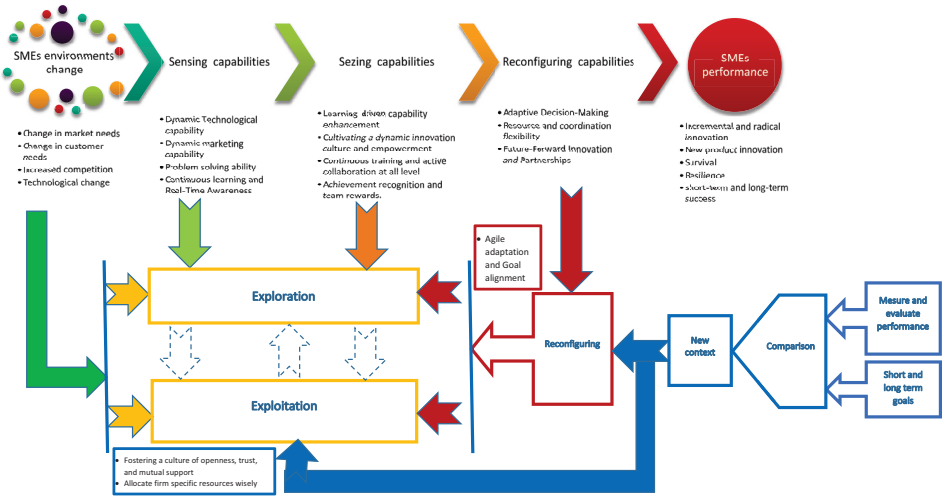

Figure 5. Conceptual model: how SME can achieve innovative ambidexterity in turbulent times through the processes of dynamic capability

As posited by the upper echelons' theory, the decision-making acumen enabling SMEs to sense environmental shifts and seize both exploratory and exploitative avenues is contingent upon the capabilities of their TMTs (Dolz et al., 2018). Adaptive decision-making requires managerial flexibility, decentralized decisions, and an iterative approach. Organizations must adjust to environmental shifts, with leaders embracing new ideas and roles to enhance problem-solving and foster a culture of creativity and change. Incremental changes in processes or products are also

crucial (O'Reilly et al., 2014). Involving team members in decision-making enhances their receptiveness to change, encourages exploration, and facilitates knowledge transfer. This collaborative approach helps overcome cognitive limitations and creates a shared memory system within the team (Nemanich & Vera, 2009). Research shows that firms achieve agility through strategic flexibility, which depends on effective management of resources and adaptation of internal processes, including reallocating assets and adjusting coordination to respond to market changes (Wei & Guo, 2014). Innovation is often managed as a project, and project-based firms support this process, contributing to long-term success. Organizations navigate production challenges and adapt to evolving client demands, balancing the exploitation of existing knowledge and exploration of new ideas (Hobday, 2000). By fostering collaboration, a management team stands to effectively leverage complementary resources and skills, thereby gaining entry to a wide array of capabilities and expertise (Tiwana, 2008).

As a result of the study, we have formulated several propositions that clearly describe the formation and development of innovative ambidexterity within SMEs under difficult conditions.

Proposition 1: The concurrent development of dynamic technological and marketing capabilities, problem-solving ability and continuous learning with real-time awareness within SMEs plays a pivotal role in fostering both exploration and exploitation. These initiatives not only enable SMEs to adapt their capabilities dynamically but also empower organizations to navigate the changing environments with resilience and agility.

Proposition 2: Cultivating a spirit of empowerment, fostering innovation and performance-driven culture, promoting active collaboration at all organizational levels, and emphasizing engagement in continuous learning collectively nurtures an environment conducive to both explorative and exploitative endeavors. This approach provides firms with the resilience needed to thrive amidst challenges and opportunities.

Proposition 3: Adaptive decision-making, flexibility in resource allocation and coordination, and forward-thinking approaches to innovation and partnerships, establishes a robust foundation needed to achieve strategic objectives. This framework enables SMEs to effectively reconfigure resources, thereby helping to maintain the delicate equilibrium between the dual endeavors of exploration and exploitation.

Balancing exploration and exploitation is a permanent challenge for SMEs. Managers' efforts to achieve the right balance can be skewed by managerial biases. Wang and Li (2008) suggest that firms using the satisficing principle may prematurely halt exploration if their satisfaction threshold is low, while those exceeding their satisfaction point pursue more exploratory innovations. The proposition below explains how to manage this potential imbalance effectively.

Proposition 4: Essential capabilities to manage the potential imbalance between exploration and exploitation include clear goals and performance feedback, a culture

of openness, trust, and mutual support, agile adaptation and goal alignment, together wiht wise allocation of firm-specific resources.

Conclusion

In this study, our aim was to fully understand and characterize the capabilities essential for implementing ambidexterity within SMEs, particularly within recessionary contexts. Drawing upon the dynamic capability perspective, we elucidate how companies achieve and sustain innovative ambidexterity. However, the realization of ambidexterity is a multifaceted endeavor, lacking a 'one-size-fits-all' solution. Through our investigation, we have identified the capabilities crucial for supporting both exploration and exploitation, and reconfiguring existing structures toward ambidextrous SMEs. We assert that sensing and seizing capabilities play pivotal roles in fostering exploration and exploitation activities. Nevertheless, achieving a harmonious balance between these two strategies necessitates a robust reconfiguring capability. To perpetuate this equilibrium and effectively manage potential imbalances, feedback loops emerge as vital mechanisms. It is essential to nurture the key behaviors and practices aligning them with balanced goal perspectives.

We support the conclusions of research literature on ambidexterity, dynamic capabilities, and organizational adaptation by showing that achieving ambidexterity in resource-constrained firms is challenging yet possible (Alcalde-Heras et al., 2019). Our insights reveal how ambidexterity can be attained despite internal and external constraints through dynamic capabilities. According to O'Reilly and Tushman (2008), sensing, seizing, and reconfiguring are essential for organizational ambidexterity. In turbulent times, ambidexterity is a dynamic achievement. SMEs that integrate dynamic technological and market capabilities, problem-solving skills, and continuous learning can better sense and address environmental opportunities and threats. However, the successful seizing of these opportunities for exploration and exploitation demands a multifaceted strategy. This strategy includes bolstering organizational capabilities through learning-driven initiatives, fostering a culture of innovation and empowerment, promoting ongoing training, encouraging active collaboration at all levels, and leveraging achievement recognition and team rewards. SMEs benefit from a threefold approach when making critical decisions on reallocating essential assets and priorities for recovery: adaptive decision-making, resource and coordination flexibility, and future-oriented innovation and partnerships. Effective management of these capabilities allows SMEs to navigate the balance between exploration and exploitation, ensuring resilience and readiness to seize emerging opportunities in evolving business landscapes. When addressing potential imbalances, essential capabilities required to manage the delicate balance between exploration and exploitation include establishing clear goals and providing performance feedback, cultivating a culture of openness, trust, and mutual support, agile adaptation and alignment with goals, and the strategic allocation

of firm-specific resources, for which dynamic formation of teams is crucial. We offer our theoretical framework to scholars and practitioners, aiding in the attainment and maintenance of innovative ambidexterity within challenging contexts for SMEs. We are confident that SMEs endowed with high levels of dynamic capabilities along the three dimensions - sensing, seizing, and reconfiguring - produce innovations that combine their current market or technological capabilities, continuous learning and cognitive flexibility with fast decision making, which should lead to the creation of revolutionary and evolutionary innovations and hence an ambidextrous innovation portfolio. SMEs' senior managers and CEOs should work to develop an ambidextrous strategy by building a culture that supports innovation. Their perception of risk aids in their decision-making and the development of ambidexterity may prove critical when the future is highly uncertain.

Achieving innovative ambidexterity in uncertain contexts is crucial for SME managers. SMEs benefit when managers effectively balance exploration and exploitation through their decisions. Our research highlights the specific behaviors and decisions that help SMEs achieve ambidexterity, especially under survival threats. Leaders must respond quickly, allocate resources efficiently, and build the skills needed to adapt to a changing environment (Alcalde-Heras et al., 2019). Managers' cognitive flexibility and adaptive decision-making influence the reconfiguration stage of dynamic capabilities by optimizing resource allocation and modifying priorities for effective exploitation and exploration. We recommend that manager teams be set up in a way that encourages unconventional thinking by cultivating a dynamic innovation culture, empowerment and adoption of new information sources, which can improve decision-making. Managers need to be aware that dynamic technological and marketing capabilities and problem-solving ability help in obtaining, interpreting, and shaping information in novel ways. On the other hand, to adjust to a quickly shifting business environment, managers are recommended to maintain continuous learning, continuous training at all levels and innovative culture to absorb and transform external knowledge into internal innovation and better navigate the challenging environments. SMEs need to develop and nurture specific capabilities to effectively manage the delicate balance between exploration and exploitation. By providing clear goals and regular performance feedback, SMEs can align their actions with strategic objectives and ensure a focused pursuit of both avenues.

Openness and trust encourage innovation; agile adaptation and goal alignment allow SMEs to quickly adjust strategies. Efficient resource allocation and dynamic team formation support both exploration and exploitation, helping SMEs maintain balance and drive sustained innovation and growth. This study's conceptual model, based on the Russian SMEs, may not be extrapolated to other regions or industries. Future research should explore diverse contexts through cross-industry and cross-country analyses, use larger and more varied samples, and consider external factors influencing SMEs. Longitudinal studies could also provide deeper insights into the evolution of ambidextrous capabilities over time.

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