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Learning Orientation, Firm Performance, and Market Dynamism: Evidence from Polish MSMEs in Technology Parks

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ABSTRACT



Objective: This study examines the relationship of Learning Orientation (LO) and Firm Performance (FP), with the moderating role of Market Dynamism (MD), among Micro, Small and Medium Enterprises (MSMEs) in Polish technology parks. This study will offer strategic insight in establishing organizational learning in changing environments.

Methods: Data analysis was conducted in three stages: descriptive statistics summarized the sample and relevant variables, Kolmogorov-Smirnov tests confirmed data normality, and construct integrity was verified. The moderating effect of MD on the relationship between LO and FP was assessed through statistical techniques.

Results: The results show a positive relationship of LO with FP hence highlighting the significant strategic need to develop a learning culture of MSMEs. In the context of MD's moderating role, speakers show that high MD makes a strong positive relationship between LO and FP, which indicates that firms need to adapt for their survival in competitive and dynamically changing environments.

Novelty: This study addresses one of the important gaps in MSMEs literature that shows the effect of organizational learning on environmental dynamism. Examining the case of technology parks in Poland, it fills an empirical gap thus enriching the dynamic capabilities literature. It brings in market dynamism as an important moderating construct and this perspective could provide fresh insights on how firms can better match learning practices with external uncertainties to achieve sustained and enhanced performance.

Research Implications: The study highlights the importance of nurturing a strong learning orientation as not only a peripheral mechanism but a strategic focus for MSME success in fast-paced and rapid markets. It involves embedding this learning structure across the breadth of the organization, in coordination with real-to external market trends and effective response to changes. Future studies may investigate further moderating factors including but not limited to digital transformation or innovation intensity, as well as broaden the applicability of this framework towards studies with cross-national comparisons. Longitudinal studies could deepen insights into LO development across organizational life-cycles, and uncover synergies that contribute to sustainable, competitive advantage over time.

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1. Introduction

In recent years, changes in economic, social, and technological aspects are tremendous in dynamics of the business environment. In particular, the pandemic has driven enterprises, especially micro, small and medium sized enterprises (MSMEs), to increasingly look for new frontiers to survive in those ever-changing conditions (Scuotto et al., 2023; Yao & Liu, 2023). A crucial mechanism through which they can achieve competitive advantage is LO, which allows firms to continuously absorb, disseminate, and apply knowledge for growth and

innovation (Cheng et al., 2023; Ji et al., 2024; Lopes et al., 2017). For example, MSMEs working within technology parks (TPs) in Poland have unique challenges and opportunities amid a dynamic and competitive technology-driven market (Chauhan et al., 2023; Nudurupati et al., 2022). In turn, as the market dynamism MD, fast changes in customer needs, rivals and technologies increases, strategic orientations including LO receive a vast attention (Baker et al., 2022; Skare et al., 2023). While existing research has emphasized the importance of LO for FP, it is not clear what the role of



external environmental conditions, like MD on this relationship leading to more empirical research being needed (Hsu et al., 2017; Lemonnier et al., 2017).

This interaction between LO and FP has become one of the most pressing research questions in the context of MSMEs since these firms generally have limited resources and greater market uncertainties (Al-Momani et al., 2023; P. Mishra & Yadav, 2021). Though LO is deemed to promote innovation and adaptability, its impact on FP could be conditional upon market circumstances (Scuotto et al., 2024; Si Mohammed et al., 2024). In dynamic markets, the potential to learn and adjust may be a decisive advantage (Teece, 2018, 2019; Wu et al., 2017). The evidence on the LO-FP relationship, though, is mixed. LO is regarded as a direct influencer for FP in some studies whereas in others, LO is said to serve only as a precursor dependent to mediating influences such as innovation or the environment (Rizk et al., 2023; Si Mohammed et al., 2024). Moreover, the interplay between market dynamism and this relationship adds a level of distortion as high MD may fortify benefits of LO for a firm with the capability to deal with rapid changes while the opposite holds for players unable to adapt and respond (Tallon et al., 2019).

This study builds on the DCs framework, which underpins our theoretical positioning in this research and highlights the key role of organizational capabilities that facilitate the integration, development, and restructuring of resources responding to environmental changes (Abbas, 2024; Amui et al., 2017; Teece, 2018). Dynamic Capabilities (DC) theory has been a significant model for understanding how organizations can adapt and change in response to dynamic environments, particularly in relation to the concept of learning orientation (LO). LO is deemed as a core DC that enables firms to perceive and utilize opportunities that dynamic markets present (Brock & Hitt, 2024; Hutton et al., 2021). Based on the DCs view, companies with a robust learning inclination are more capable of strategic adjustment, invention, and experience better performance outcomes (Duankhan et al., 2024; Farzaneh et al., 2022). Despite the large amount of research on LO and FP, ambiguities have been seen, especially with references to the effect of dynamism of the market (Javeed et al., 2020; D. B. Mishra et al., 2023). Thus, it is crucial to deepen the theoretical and practical knowledge about the conditional effects of MD on the LO-FP relationship (Y. Wu et al., 2023).

Recognizing the important gap in the research, this study aims to understand the relationship between LO and FP in MSMEs that operate in TPs in Poland, specifically taking into account MD as a moderating variable. Earlier research has shown varied findings concerning the relationship of LO, EO, and MO on FP. Such as the studies

(Javeed et al., 2020) demonstrated positive influences of LO on FP, unlike (Kropp, Lindsay, and Shoham, 2006; Hernández-Linares et al. planet; Wilkins et al. (2018) found minimal or indirect effects. Ahmad et al. (2024), Al-Momani et al. (2023), clarified that innovation acts as a mediator, thus making the LO-FP relationship more complex. However, recent research by Baker et al. (2022) propose that LO might become a strategic enabler in dynamic markets, where its effect is subject to the influence of external factors, such as MD. This study provides further understanding of MD field by combining insights from the DCs framework and addressing the mixed evidence regarding LO's effect on FP. Focusing on MSMEs in TPs, this study also offers a unique view on the effects of LO on FP in a technology-based and fast-changing commercial environment.

This paper aims to contribute to filling the above-mentioned gap by pursuing two main objectives: to analyse the relationship between learning orientation (LO) and firm performance (FP) in the case of MSMEs from Polish technology parks, and to examine the moderating role of market dynamism (MD) in this relationship. In practice, this study is an empirical approach to clarify these relations, and could useful insights for both researchers and practitioners.

2. Theoretical framework and development

2.1 Theory and hypotheses of the research

This research is grounded in the dynamic capabilities (DCs) theoretical framework, which attributes firms' ability to achieve and sustain competitive advantage to their capacity to build, integrate, and reconfigure internal and external competencies in dynamic environments (Teece, Pisano, & Shuen, 1997). As a core component of dynamic capability, learning orientation (LO) promotes organizational behaviors that facilitate knowledge generation, transfer, and application, helping firms adapt to the changing environment (Eisenhardt & Martin, 2000). Learning organizations (LOs) are described as being commitment driven, and open-minded, and sharing the vision (Sinkula, Baker, & Noordewier, 1997). These characteristics lead to continuous improvements and innovations, which are critical for FP in competitive markets (Baker & Sinkula, 2002). In volatile market environments exemplified by rapid shifts due to unpredictable global events, firms need to establish strategic orientations (LO) to identify and seize opportunities, mitigate threats, and, ultimately, obtain superior performance (Deutscher, Zapkau, Schwens, Baum, & Kabst, 2016). Previous research indicates that LO

facilitates adaptability, innovation, and strategic flexibility, which are essential for maintaining performance under turbulent conditions (Calantone et al., 2002; Hernández-Linares et al., 2018). But, despite the wide use of LO by FP, the LO–FP relationship is not so straightforward but rather must be contextualised (Wales et al., 2020). This complexity is also the reason to empirically examine the direct and moderated relations of LO on FP.

2.2 Relationships between learning orientation and the performance of the firm

Learning orientation (LO) has been widely recognized as a core enabler of firm performance (FP) because its core dimensions commitment to learning, shared vision, and open-mindedness—encourages organizational adaptability and innovation (Sinkula et al., 1997; Baker & Sinkula, 2002). Specifically, LO refers to the ability of firms to invest in learning through the collection and dissemination of knowledge, in order to facilitate their adaption towards market evolution (Lam et al., 2011). Such a positive attitude towards the learning process encourages innovation, enhances operational efficiencies, increases customer satisfaction, and improves FP (Calantone et al., 2002).

BM contributes to both financial and non-financial performance by allowing organizations to create new products, engage in better decision making, and increase organisational resilience (Deutscher et al., 2016; Hernández-Linares et al., 2018). Kropp, Lindsay and Shoham (2006), for instance, found that LO firms outperform competitors in relation to their market share and profitability. Similarly, Laukkanen et al. (2013) LO facilitates firms to intimate themselves with customer needs which leads to enhancing customer loyalty and local market expansion. However, according to some studies, the impact of LO on FP could be mediated through some other variables such as innovation capabilities or organizational learning processes (Lam et al., 2011; Lin, Peng, & Kao, 2008). Further studies are warranted to further understand the mechanisms by which LO exerts its effects on FP.

H1: LO has a positive relationship with FP.

2.3 Relationships in the context of market dynamics between learning orientation and firm performance

Market dynamism (MD) refers to the rapid and volatile changes in the behaviors of customers, competitors, and technology that significantly affect the LO–FP link (Wales et al., 2020). The mere interaction with an external environment that changes within highly dynamic markets, however, renders the learning and adapting as essential determinants of success (Eisenhardt & Martin, 2000). LO prepares organizations with competencies and behaviors

to cope in such situations, thus, enabling them to discover opportunities, control risks, and adopt new solutions (Schulze, Townsend, & Talay, 2022).

The influence of MD on the LO–FP relationship is not always positive. In extremely volatile markets, the rationale for LO may be more pronounced, as organizations are better able to learn continuously and adapt to changes in their environment to take advantage of new opportunities (Calantone et al., 2002). In contrast, LO reveals dividends only if the market is turbulent; otherwise, we can speculate that LO is less beneficial in relatively stable markets because the need for quick adaptation and innovation is minimized (Deutscher et al., 2016). Previous studies by Baker, Mukherjee, and Perin (2022) and Hernández-Linares et al. The authors propose that the role of MD in moderating the LO–FP relationship is contingent upon the extent to which a company is able to adapt its learning processes to its environment (2018). This highlights the relevance of investigating MD as a contextual factor in the LO–FP relationship.

H2: MD moderates the relationship between LO and FP; the positive effect of LO on FP is likely to be stronger when MD is high than when it is low.

3. Methods innovations

3.1 Sampling, data collection

The research investigates micro, small and medium-sized enterprises (MSMEs) based in technology parks (TPs) in Poland in the period from March 2019 to December 2024. The interest of technology parks refers to the impact of innovation and competitive environment for growth companies (Wójcik-Karpacz et al., 2021). To cover a wide range of firm size and industry type, stratified random sampling was used to select the firms. 300 firms were invited from an original pool of 500 based on being listed in TPs's official directories. The final sample consisted of 215 valid responses (response rate per the protocol: 71.6%), providing robust data for statistical analyses. As in the earlier studies that highlight the value of knowledgeable respondents (Calantone, Cavusgil, & Zhao, 2002), respondents were senior executives or managers with direct knowledge of their firms' strategic orientations and performance outcomes. A combination of qualitative and quantitative information collection common name was used. In order to take advantage of cost and scaling not only online questionnaires were administered but also follow-up phone interviews, which were used to improve understanding of the responses as well as mitigated potential biases (Deutscher et al., 2016). Ethical approval was obtained, all participants gave

informed consent and confidentiality of the data was strictly maintained.

3.2 Measures

The constructs in this study Learning Orientation (LO), Market Dynamism (MD), and Firm Performance (FP) were evaluated for reliability and validity using a seven-point Likert scale. The Kolmogorov-Smirnov test confirmed normality, while Cronbach's alpha values exceeded the recommended threshold of 0.70, indicating acceptable internal consistency. For Learning Orientation, which had a Cronbach's alpha of 0.91, key components included the belief that learning is essential for improvement (statistic = 0.754, $p = 0.000$), the notion that halting learning endangers the firm's future (statistic = 0.731, $p = 0.001$), a clear organizational vision (statistic = 0.682, $p = 0.000$), and the emphasis on open-mindedness (statistic = 0.696, $p = 0.001$). Market Dynamism, with a Cronbach's alpha of 0.89, was characterized by rapid changes in technology and competition (statistic = 0.641, $p = 0.000$) and the unpredictability of customer behavior (statistic = 0.664, $p = 0.000$). Firm Performance had a Cronbach's alpha of 0.87, with profitability (statistic = 0.743, $p = 0.001$), sales revenue (statistic = 0.684, $p = 0.000$), and market share (statistic = 0.702, $p = 0.000$) as its core components. These findings validate the reliability and contextual relevance of the constructs used in this study.

3.3 Description of analytical procedure

The data analysis was conducted in a three-phase process. During the Descriptive Analysis stage, Descriptive Statistics were applied to summarize regarding the sample characteristics and distributions of key variables, while checking integrity and normality of data. Hair et al. suggested that the normality assumption needs to be met for parametric tests; therefore, Kolmogorov-Smirnov tests were also performed and verified that all constructs do not violate the normality assumption. (2020). This phase included the identification and treatment of outliers as well.

The second phase, Hypothesis Testing, was that we tested the formulated relationships. H1 was tested using multiple linear regression, which predicted a direct positive correlation between Learning Orientation (LO) and Firm Performance (FP). Additionally, control variables such as firm size, age, and industry type were incorporated to ascertain that the effects were directly resulting from LO. H2 was examined by moderation analysis, using Hayes' PROCESS macro (2018), to add an interaction term (LO $\times$ Market Dynamism) to assess whether MD strengthens the LO-FP relationship.

The last phase, Model Validation, was conducted to validate both the measurement and structural models using Structural Equation modeling (SEM). Indices indicating model fit were also reported, including Comparative Fit Index (CFI) and Root Mean Square Error of Approximation (RMSEA). Findings were additionally robust as determined through cross-validation techniques using diverse subsamples.

3.4 Research Model

Several measures were taken to minimize biases to ensure the validity of the study's findings. Harman's single-factor test was conducted, as recommended by Podsakoff et al., to assess Common Method Bias (CMB). (2003). No single variable explained a large part of the variance, ruling out common method variance as a significant concern and ensuring that the data collection method did not unduly influence the results. Finally, as per Armstrong and Overton (1977), Non-Response Bias was assessed by comparing the characteristics of early and late responders. There were no statistically significant differences on key variables, including firm size, performance measures, and industry type, between these groups. This result implies that the sample was representative and that the non-response did not skew results. These proactive steps, in adherence to recognized best practices, further bolster the credibility and dependability of the research findings.

3.5 Potential Biases

Employing several precautions to control possible biases ensured the validity of study results. Harman's single-factor test was adopted to test the Common Method Bias (CMB) (Podsakoff et al. (2003). In other words, there was no single factor that accounted for most of the variance, suggesting there was not a major common method variance issue and the method of data collection did not bias the results. This analysis of Non-Response Bias was carried out by comparing early and late response characteristics as suggested by Armstrong and Overton (1977). No significant differences existed in the groups on relevant variables (firm size, performance measures and industry type), as indicated by statistical tests. This finding indicates that the sample was representative, and non-response was not a source of bias in the results. These proactive steps, in accordance with mechanistic utilities, improve the reliability and validity of the study.

4. Results

4.1 Descriptive Statistics

The descriptive statistics and correlation analysis offer a snapshot of the associations between constructs central to this study, specifically Learning Orientation (LO), Firm Performance (FP), and Market Dynamism (MD). Table 2 summarizes the mean values for LO (5.72), FP (5.45), and MD (5.68) that reflects a high level of agreement among respondents on the constructs whilst indicating moderate standard deviations (0.98, 1.12, and 1.05, respectively), suggesting some variability in the data. Indeed, LO and FP were found to have a notable positive association ($r = 0.489$, $p < 0.001$) indicating support for the notion that having a high learning orientation drives improved firm performance. Importantly, MD was significantly correlated with FP ($r = 0.402$, $p < 0.001$), indicating that MD tends to enhance firm performance when operating in fast and dynamic markets. LO is positively correlated with MD ($r = 0.361$, $p < 0.01$), strengthening the argument that firms that focus on learning are more able to adapt to volatile environments. These findings support the initial premise that LO is a significant determinant of performance and that market conditions are an important variable in firm output.

4.2 Hypothesis Testing

Hypothesis H1 that Learning Orientation (LO) positively affects Firm Performance (FP) — was tested using multiple linear regression analysis with firm size, age, and industry type as control variables. As seen in Table 3, the results support a positive effect of LO on FP ($\beta = 0.461$, $t = 7.815$, $p < 0.001$), providing strong support for H1. This means the high performing firms demonstrate higher orientation in the learning and hence leads to the results of better profitability, sales growth and market share. The results are consistent with previous studies that underline the importance of organizational learning as a source of innovation, adaptability and competitive advantage (Calantone, Cavusgil, & Zhao, 2002; Deutscher et al., 2016). The adjusted R^2 of 0.293 indicates that the model is sufficiently explaining the variance of FP, establishing the importance of LO as a strategic driver. Of the control variables, firm size had a small but significant positive relationship with FP ($\beta = 0.124$; $p < 0.05$), while firm age and industry type had no significant impacts. Such insights further establish how integral a learning culture is to the overall effective strategy of a firm, especially in an increasingly fickle and hostile environment.

4.3 Market Dynamism Moderates the LO-FP Relationship

Table 4 presents the results of the moderation analysis, suggesting that MD significantly moderates the relationship between LO and FP, supporting H2. Results

from analysis indicate that LO has a significant positive impact on FP ($\beta = 0.398$, $t = 6.985$, $p < 0.001$), as well as MD which also has a significant positive direct effect on FP ($\beta = 0.291$, $t = 5.453$, $p < 0.001$). Finally and most importantly, the interaction term (LO $\times$ MD) is significant ($\beta = 0.217$, $t = 3.245$, $p = 0.002$), suggesting that the positive relationship of LO on FP is enhanced by MD.

The increase in the adjusted R^2 value to 0.421 was monumental, which indicates how much knowledge we're gaining at the LO $\rightarrow$ FP test, whereas the inclusion of MD as a moderating variable as opposed to ordinary variable provided explanatory power of the relationship at 0.421 level. These results highlight the role of contextual factors, specifically fluctuating market conditions, in shaping the efficacy of learning-focused approaches. A powerful learning orientation is especially useful in organizations with their surroundings that is changing rapidly, directly effecting the capacity to adapt and innovate to meet the future needs of customers to ensure superior performance against uncertainty.

4.4 Discussion

Opening this new branch of research, the current study sheds light on the relationship between strategic orientations and firm performance by providing new insights of contextual factors as moderating mechanisms, with specific focus on the dynamism of the market as a specific contextual variable of the importance of immediate contextual environment for the firm. Based upon analysis and reflections from the defined sample size, the findings and discussion reveal contributions to management theory, implications for dynamic capabilities and practical implications for MSMEs operating within the various technology parks identified through descriptive statistics across the entire population of MSMEs that the sample size represented.

The significant and positive relationship found between Learning Orientation (LO) and Firm Performance (FP) highlights the strategic role that the development of a learning culture can play in organizations. The findings are consistent with the dynamic capabilities framework, where firms with strong learning mechanisms are better at responding to environmental shifts and maintaining competitive advantages (Teece, 2007). The results echo previous work, including the research by Calantone et al. (2002) and Baker et al. (2022), which highlights the positive correlation between firms that adopt learning-oriented behaviors, like open mindedness, shared vision, and critical reflection, and their financial outcomes like profitability, sales growth, and market share. MSMEs are often resource-constrained and a pathway to overcoming

limitations and achieving superior performance can be their adoption of a learning orientation. Such a behavior is evident in Polish technology parks covering increasingly better learning MSMEs inductive to market requirements and technological change. These findings emphasise the resonance of LO in both small scale and large scale firms across the for-profit and not for profit spectrum which highlights just how important LO is in facilitating strategic end states.

Empirical analysis on Market Dynamism (MD) further enhances the theoretical implications by presenting a nuanced picture of how the efficiency of strategic orientations is affected by the dynamism of the environment. The findings show that MD strengthens the positive relationship between LO and FP, implying that the positive effect of learning-oriented practices is higher for firms operating in dynamically changing markets. Such a finding aligns with the resource-based view (RBV) (Barney, 1991) and its extension to the dynamic capabilities perspective, which promotes that firms need to periodically renew their competencies to survive and thrive in dynamic environments (Eisenhardt & Martin, 2000). One explanation is that the effects of LO are amplified with MD at high levels, which, compared to low MD, requires a greater need to be flexible and make decisions quickly. For companies competing in where technology evolves rapidly, customer preferences are unpredictable, and competition is fierce, those that create conditions for continuous learning and knowledge sharing are better able to sense and seize opportunities (Schulze, Townsend, & Talay, 2022). This finding supports the findings of earlier studies (Laukkanen et al. 2013; Deutscher et al. 2016), but expands them in such a way that the importance of contextual factors in LO driven development are highlighted.

This paper builds on and contributes to management theory by integrating LO, FP and MD into a mutually reinforcing conceptual framework. First, it contributes to the developing theory of LO as a dynamic capability, which equips firms to respond effectively to complex and uncertain environments. Although previous studies (Farrell & Oczkowski, 2002; Kropp et al., 2006) found mixed evidence for an impact of LO on FP, the findings of this study clarify that the effects of LO are direct and context-dependent. The positive link between LO and MD cues firms to integrate their learning-oriented strategies with their environmental contingencies in order to optimize performance results. Second, the results extend the dynamic capabilities approach by showing how market dynamism drives firms to employ LO to find firm resilience and adaptability. This supports the idea that strategic orientations are dynamic rather than fixed, and that they

must adapt to external pressure, which is one of the main tenets of dynamic capabilities theory (Teece, 2007). Moreover, the research enriches the RBV by demonstrating how intangible resources (knowledge and learning) leads to sustainable competitive advantages.

This finding has important implications for practitioners, especially MSMEs in technology parks. These companies often encounter distinctive challenges including resource constraints, high reliance on technological advancement, and susceptibility to global rivalry. A strong learning orientation will help MSMEs develop internal capabilities to overcome challenges and perform better. For managers, the implication of this study is that they should have a culture of learning and open mindedness in their organisations. Some practical strategies can be investing in employee training programs, fostering cross-functional collaboration, and sharing a common vision for organization goals. Firms in dynamic markets should also emphasize mechanisms for rapid knowledge acquisition and dissemination to adapt to the competitive environment in the presence of uncertainty. Moreover, the findings also imply that policymakers and technology park administrators can significantly intervene in the process because with the provision of resources and infrastructure that equally distribute opportunities for learning and innovation to larger and medium enterprises. Initiatives that can help are knowledge-sharing platforms, collaborative research projects, and access to industry experts, all of which can further improve the tenant firms' learning capabilities and thus, their long-term success.

Although the study offers important findings, certain limitations should be considered. Consequently, the cross-sectional design of the data precludes establishing causal relationships among LO, FP, and MD; future studies may address this limitation through longitudinal designs to investigate the temporal patterns and processes of these constructs. Second, the research is limited to MSMEs in Polish technology parks and may undermine the transfer of results to different settings. Working out comparative studies analysis including firms from other countries or sectors might give additional useful view of the researched relations. Finally, the study focuses on the impact of LO, FP, and MD only, inviting future research to examine other strategic orientations like entrepreneurial orientation (EO) and market orientation (MO) on firm performance. Studying the interactions between multiple orientations provide new insights on how firms gain and sustain competitive advantages over time in ever-changing environments.

The growth of FP, a key player leading the way towards the digital transformation journey seems to stem from LO and the impact MD has in the fast-paced changing

environment. The paper thus enhances the theoretical and practical knowledge and offers valuable insights for MSMEs to inform management strategies, business decisions and interventions by policy makers. This finding highlights the importance of adapting organizational strategies to fit environmental contingencies in order to promote sustainable performance outcomes.

5. Conclusion

The research gives essential information regarding the relationship between Learning Orientation (LO) and Firm Performance (FP) in the predication of the level of Market Dynamism (MD) among MSMEs functioning in polish technology parks. The results reveal that the LO is positively linked to FP, reasserting the strategic need to promote a culture of learning at all levels of the organization. Additionally, MD was a moderator of this association, where higher MD was associated with increased positive influence of LO on FP. These findings highlight the importance of MSMEs adapting their learning to the ever-changing and competitive context within which they function, to secure and improve their performance through learning as a strategic tool.

Depending on the organization and context, future studies could also build on this study by considering other moderating variables of LO-FP relationship, such as organizational structure, innovation intensity, or digital transformation. In addition cross country comparative studies could be undertaken to examine the impact of different institutional and cultural contexts on the interrelationship between LO, FP and MD. The use of

longitudinal data and qualitative approaches would be beneficial as well in aiding in a more comprehensive understanding of how learning orientation changes over time and is leveraged for a sustainable competitive advantage. The above avenues can help researchers to solidify the idea of dynamic capabilities framework and its implication in MSMEs around the glob.

Author contribution

Stouraitis Schaffart: Concept, methodology, data analysis, writing - initial drafting, review and editing.

Agniesz Malkows: Conceptualisation, data collection, literature review, drafting - review & editing, supervision. Both authors contributed equally to the design and conduct of the study and to the drafting of the manuscript.

Declaration of Competing Interest

The authors declare no competing interests in relation to this study.

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Appendix A. Supplementary data

Table 1: Constructs, Kolmogorow-Smirnov tests and Cronbach's alpha coefficients 2019 – 2023

Constructs and Components	Statistics	df	Significance	Cronbach's Alpha
Learning Orientation				0.91
- Basic values include learning as key to improvement	0.754	215	0.000	
- Quitting learning endangers the firm's future	0.731	215	0.001	
- Clear organizational vision	0.682	215	0.000	
- High value on open-mindedness	0.696	215	0.001	
Market Dynamism				0.89
- Rapid changes in technology and competition	0.641	215	0.000	
- Unpredictability of customer behavior	0.664	215	0.000	
Firm Performance				0.87
- Profitability	0.743	215	0.001	



Constructs and Components	Statistics	df	Significance	Cronbach's Alpha
- Sales revenue	0.684	215	0.000	
- Market share	0.702	215	0.000	

Source data; processed by researchers 2024

Table 2: Descriptive Statistics and Correlations Among Constructs

Constructs	Mean	SD	1	2	3
Learning Orientation (LO)	5.72	0.98	1.000		
Firm Performance (FP)	5.45	1.12	0.489***	1.000	
Market Dynamism (MD)	5.68	1.05	0.361**	0.402***	1.000

Source data; processed by researchers 2024

Table 3: Results of Regression Analysis

Variable	Standardized Coefficients (β)	t-value	p-value
Learning Orientation (LO)	0.461	7.815	0.000***
Firm Size	0.124	1.992	0.048*
Firm Age	-0.036	-0.582	0.561
Industry Type	0.076	1.205	0.229
Adjusted R²	0.293		

Source data; processed by researchers 2024

Table 4: Moderation Analysis Results for H2

Variable	Standardized Coefficients (β)	t-value	p-value
Learning Orientation (LO)	0.398	6.985	0.000***
Market Dynamism (MD)	0.291	5.453	0.000***
LO $\times$ MD Interaction	0.217	3.245	0.002**
Adjusted R²	0.421		

Source data; processed by researchers 2024

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