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Abstract

This paper, therefore, conducts much detail with regard to the moderating role of environmental dynamism between dynamic capabilities and firm performance, with special reference to Small and Medium Enterprises (SMEs) of Pakistan. The conceptual framework leans on the proposition by Teece, Pisano, and Shuen (1997) that dynamic capabilities allow reconfiguration of resources for the changing market demand and hence the source of competitive advantage to the firm. It is theoretically possible that empirical studies on the moderating effect of environmental dynamism are possible, and still scarce within this domain—an even more rare context in the case of Pakistani SMEs. Thereby, this research intends to fill that gap by empirically examining how the influence of environmental dynamism plays out at the dynamic capabilities-performance nexus in Pakistani SMEs—a sector pivotal for the economic growth of the nation but also challenged by a unique blend of local business conditions. Understanding how firms can benefit from their dynamic capabilities in relation to their performance in volatile markets has become important within this fast-changing business environment. This paper, therefore, through an intensive review of the literature, traces the development of the dynamic capability theory in highlighting its relevance for firm performance and the critical roles environmental dynamism has played as one of the most emphasized contextual factors in firm performance. Quantitative research design will be used for data collection from a broad base of industries under the SME sector of Pakistan, and it will be collected through cross-sectional surveys to explore the proposed relationships. Findings have revealed an environmental dynamism-relevant moderating effect on the relationship between dynamic capabilities and performance. That is to say, in the most volatile environments, SME performance will be more dependent on dynamic capabilities, and that dependence will imply that the strategic value of the capabilities would become contingent on the level of environmental dynamism. This is congruent with the resource-based view (RBV) theory of strategy: the strategic value of resources and capabilities depends on the fit that such resources will have with the external environment. Implications for managers and policymakers, therefore, could be said to be very pragmatic, since SMEs operating within such dynamic markets would have a crying need to develop and deploy dynamic capabilities in a strategic way to effectively steer through the environment. First, these findings contribute to theoretical development in that they draw and support from the dynamic capability view (DCV) and RBV literature in verifying the contingent value of the dynamic capability with respect to environmental dynamism. It not only adds some fertile insights into the dynamic capabilities framework within an emerging market context like Pakistan but also substantiates some interesting facets for SMEs to gain an edge on their competitive advantage within the fast-changing global business environment.

Keywords: Dynamic Capabilities, Firm Performance, Environmental Dynamism

1. Introduction

The dynamic capabilities notion has gained significant importance in the strategic management discussions providing deep reflections on how firms adapt to changing competitive terrains. This research paper focuses on the subtle interaction between dynamic capabilities and firm performance, with particular attention to the moderating role of environmental dynamism. The development of the argument is built on the platform laid by Teece, Pisano, and Shuen (1997) who proposed that dynamic capabilities allow organizations to reorganize their resources in response to changing market requirements, which ultimately sends the firm to a competitive advantage. However, there is a lack of empirical research on the role of environmental dynamisms in moderating this relationship, especially in the context of SMEs in Pakistan.

SMEs are rather crucial part of the economy being known for the ability to be flexible and to innovate. Yet, the role of dynamic capabilities upon performance in changing environmental conditions remains largely unexplored. This absence is more evident in emerging markets like Pakistan, where the SME plays a crucial role in national development but operates in a unique set of challenges and opportunities that are determined by the local business environment (Acs & Audretsch, 2003). The importance of this question cannot be overestimated. In an age where market volatility and technological developments are the order of the day, the knowledge of how firms could exploit their dynamic capabilities to improve performance is hallmark. This research adds to the theoretical landscape by combining the variables of dynamic capabilities, firm performance, and environmental dynamism; thereby, this study provides practical implications for the managers and policymakers who want to strengthen the competitiveness of SMEs in unstable markets.

To scaffold this investigation, the paper is structured as follows: The literature review provides an overview of the development of dynamic capabilities theory, focusing on its significance to firm performance and the role of environmental dynamism. Next is the detailed methodology section that describes the quantitative research design, data collection procedures, and analysis techniques used to test the research hypotheses. The results section gives the survey data of Pakistani SMEs that provide measurable proof on the relationships between dynamic capabilities, environmental dynamism, and performance of the firm. The last part has discussion and conclusion parts, the discussion of the findings in the larger scholars' debate, and conclusions, theoretical and managerial implications, and future research directions. This opening paves the way for a detailed examination of dynamic capabilities in an emerging market perspective, addressing the need for better empirical studies in this area (Helfat & Peteraf, 2003).

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2. Literature Review

2.1. Dynamic Capabilities: Theoretical Foundations and Evolution

Teece, Pisano, and Shuen's (1997) concept of dynamic capacities has ultimately proven to be dynamic in examining the procedures as well as the means of adaptation of enterprises to rapidly changing environmental situations. Recent research has extended the development of the fundamental ideas by revealing the mechanisms of learning, behavior modifications, and adaptability that contribute to the antecedents of adaptation. According to Acevedo-Gelvez and Albornoz-Arias (2020), adaptability and continuous learning are two essential characteristics displayed by the organizations because they enable them to flourish in the market competition that forces them to be distinctive and their rivals to be trying to copy their business practices (Acevedo-Gelvez & Albornoz-Arias, 2000). A framework for how organizations can handle entrepreneurial issues of evolutionary fitness is provided by Cristofaro and Lovallo (2022) who offer an evolutionary perspective of dynamic capabilities that addresses the micro foundations as well as strategic behavior at the individual and collective levels (Cristofaro & Lovallo, 2022). Kurtmollaiev (2020) offers a concept of dynamic capacities that centers on the processes of establishing, growing, and altering the organizational resource base in relation to the issues of nature and agency. Using the sense-seize-transform paradigm, Torres, Sidorova, and Jones's (2018) research examines the function of business intelligence and analytics (BI&A) in organizations and finds that, as a component of dynamic capabilities, BI&A is positively correlated with firm performance through the mediation of business process change capabilities (Torres, Sidorova, & Jones, 2018; Audi & Ali, 2023). In their 2019 paper, Baía and Ferreira support an indirect dynamics evaluation approach to the dynamic capabilities-performance link, arguing that rather than direct performance increases, dynamic capabilities are mostly responsible for change and intermediary results. The study by Zhou, Zhou, Feng, and Jiang (2019) focuses on the function of several dynamic capacities aspects in various forms of innovation that ultimately increase firm performance. Although the various dimensions of the dynamic capabilities have been discussed with nuance, their research, which included 204 Chinese companies, has generally supported the idea that dynamic capabilities affect the firm performance through innovation (Zhou, Zhou, Feng, & Jiang, 2019).

2.2. Environmental Dynamism as a Moderating Factor

The relationship between dynamic capabilities and firm performance is significantly moderated by the dynamism of the environment. A firm's dynamic skills may play a part in this dynamic environment, which is marked by quick and unforeseen changes in technology, client choices, and competitive manoeuvres. According to Taghizadeh et al. (2020), open innovation and technological capabilities are the variables that are influenced by dynamic capabilities in Malaysia. These variables have a significant impact on the operational performance of SMEs, and environmental dynamism has a negative moderating effect on the relationship between open innovation and operational performance. However, Park and Xiao (2020) note that taking into account dynamic capacities among developing market enterprises leads to a favorable performance; environmental dynamism hinders this positive effect, whereas entrepreneurial orientation improves it. Furthermore, Wamba et al. (2020) contend that big data analytics-enabled dynamic capability enhances supply chain agility and adaptation, which in turn boosts organizational performance. The relationship between strategy and performance among micro and small enterprises in Ghana is examined by Agyapong, Zamore, and Mensah (2019). They find that in a dynamic environment, a cost-leadership strategy may enhance performance, while a differentiation strategy may have the opposite effect (Agyapong et al., 2019). The examination of the literature highlights how important dynamic capabilities are in determining a firm's performance, especially in dynamic environments (Akram et al., 2022). Despite the fact that this research domain has been defined to a great extent, there are still many opportunities to learn more about the mechanisms through which dynamic capabilities are developed, used, and exploited for competitive advantage in various organizational and environmental contexts. In-depth empirical study to close the highlighted gaps will yield both practical solutions and a plethora of theoretical insights for professionals hoping to thrive in the complex creatures that are today's corporate environments.

3. Research Design and Methodology

Consistent with the research aims of the study, a quantitative research design is adopted, based on positivist paradigm that promotes empirical quantification and analysis. Especially relevant for the analysis of the relationships between measured variables – that is, dynamic capabilities, firm performance and environmental dynamism is this approach. To gather information that depicts the current state of affairs, the cross-sectional survey method is employed, using well-structured questionnaires to collect data from SMEs at a particular time, thereby enabling a holistic investigation of the phenomenon under study. The study depends on the engagement of SMEs that dominate the economically live and entrepreneurially emerging scene of Pakistan. The sample captures a diverse range of industries thereby guaranteeing a rich heterogeneity which is a characteristic of the country's business landscape. A stratified random sampling approach is adopted by segmenting firms by industry and size to improve the representativeness and extrapolative potential of the results. The sample size for the target sample power is determined through a power analysis that provides a statistically strong base of participants. The research design can be described as an architecture for the systematic process of data collection and subsequent interpretative analysis, the study follows a number of steps including operationalization, instrument development, data collection, hypothesis testing and interpretation (Zikmund 2003). Surveys, which are conducted using self-administered questionnaires, are considered as the most efficient approach to get specific answers from a sample group (Cooper & Emory, 2001). The study's dependence on pre-existing constructs makes validation of the research instrument critical. Hence, the instrument's development is twofold: initial content validity provides strategy follows by a pilot test that guarantees a polishing, removes all anticipated limitations, and increases both the significance of the content and reliability of the instrument (Davis, 1989; Moore & Benbasat, 1991).

3.1. Unit of Analysis

In social and behavioral sciences, the unit of analysis defines the main component of the research, ranging from individuals and groups to organizations and cultures. This study is limited to the strategic-level individuals that are managers and assistant managers

of their organizations which are involved in the decision-making process. This option parallels the objective of the research to explore dynamic capabilities impact at a decision-making echelon inside businesses.

3.2. Target Population

This research is focused on the SMEs of Pakistan and, in particular, those that are located in the economic centers of Gujrat, Sialkot, Gujranwala, Wazirabad, and Jalalpur Jattan. The SME sector, which text book is a backbone of Pakistan’s economy, has a mixture of industries, making everything from ceramics to cutlery, reflecting the diversity of the country’s manufacturing capability. The selection criteria for the target population were methodically set: manufacturing organizations registered with SMEDA, operation in the target geographical areas, and not bound by a single industry to illustrate the notion of dynamic capability in diverse sectors. This broad categorization is in line with the desire to maximize variable variation and improve the generalizability of the findings (Simsek & Heavey, 2011). A total of 2358 enterprises are registered under SMEDA, which defines the sample size of the study. The literature provides a dichotomy in the method of choosing the respondents within an organization. However, other authors argue that a single respondent from a company is enough (Hussain, Aktar, and Butt 2009; Llusar et al. 2009; Kaynak 2003), and others purport multiple viewpoints (Douglas and Judge 2001; Rungtusanatham et al. 1998) claiming that individuals within the same organization may This study favors the second approach and collects data from a variety of respondents within an enterprise to provide diversity of views. Hence the managers and assistant managers, who are part of the decision-making network, constituted the focal respondents, cutting across every department which includes finance, HR, sales, marketing, and operations.

3.3. Sampling Technique

In the context of the challenges of sample size in multivariate research, this study is guided by the rule of 10, according to which “the sample itself should be more than ten times the number of variables” (Sekaran, 2013), but it also recognizes that the acceptable range of the sample size varies from 30 to 500 (Field, 2005) Thus, 516 respondents were the appropriate number chosen, precisely representing the required dimension of the multivariate analysis. The study using a cluster sampling approach captures the population of interest that is dispersed across different geographical areas. Random sampling technique is superior to non-random sampling in the presence of region specific phenomena of dynamic capabilities. The clusters are regionally bounded with proportionate selection of interviews for equal representation. The resultant distribution was made of 460 respondents from Sialkot, 24 from Gujranwala, 22 from Gujrat, and 5 from each of Jalalpur Jattan and Wazirabad. In these clusters, convenience sampling was concluded as the method for choosing the managers and assistant managers among the participants.

4. Results

The investigation into the moderating effect of environmental dynamism on the relationship between dynamic capabilities and firm performance yields significant insights. This section elucidates the findings derived from the hierarchical regression analysis presented in Table 3, which forms the empirical backbone of our study.

4.1. Analysis of Dynamic Capabilities and Firm Performance

Table 1: Moderating Effecting Test

Model No.	Coefficient Estimates							Model Summary			
	DV	IV	Coefficient	SE	t-test	P-value	LLCI	ULCI	R ²	F-test	P-value
1	FP	constant	6.09	0.56	10.95	0.00	5.00	7.18	0.2775	65.5656	0.00
		DC	-0.20	0.14	-1.43	0.15	-0.48	0.08			
		ED	-0.83	0.16	-5.30	0.00	-1.14	-0.52			
		Int_1	0.13	0.04	3.21	0.00	0.05	0.21			

The hierarchical regression model was designed to disentangle the complicated relationship among dynamic capabilities (DC), firm performance (FP), and environmental dynamism (ED) within the context of SMEs. Model 1 presents a bunch of coefficient estimates, standard errors, t-test values, P-values, and confidence intervals as well as a model summary comprising R², F-test, and its P-value, which gives our analysis a strong statistical base. The constant coefficient of 6.09 ‘(SE = 0.56)’ was highly significant (t = 10.95, p < 0.00) and suggests a high level of firm performance in the absence of dynamic capabilities and environmental dynamism adjustments. This finding highlights the inherent performance levels among the sampled SMEs, as the basis for future investigations. The coefficient for dynamic capabilities (DC) was -0.20 with a standard error of 0.14. In isolation, dynamic capabilities did not predict firm performance within the sampled SMEs at t-value of -1.43 (p = 0.15). This unexpected result suggests that the impact of dynamic capabilities on improving firm performance might be overridden by the moderating variables or any other uncontrolled factors. Environmental dynamism (ED) negatively affected firm performance having a coefficient of -0.83 (SE=0.16, t = -5.30, p<0.00). This crucial result clearly represents the issues faced by volatile market conditions where higher environmental dynamism apparently results in the decrement of firm performance, emphasizing the importance of management of environmental uncertainty to dynamism of markets.

4.2. The Moderating Role of Environmental Dynamism

The interaction term (Int_1), representing the moderation effect of environmental dynamism on the relationship between dynamic capabilities and firm performance, was significantly positive (coefficient = 0.13, SE = 0.04, t = 3.21, p < 0.00), with lower and upper confidence intervals ranging from 0.05 to 0.21. This finding unequivocally supports the hypothesis that environmental dynamism moderates the dynamic capabilities-performance relationship. This means that, as the environmental dynamism increases, the

stronger positive influence of dynamic capabilities on firm performance is observed, such that in more volatile environments, dynamic capabilities become still more critical for SME performance. Further, the summary of the model emphasizes the importance of our findings, having an R^2 value equal to 0.2775, which states that approximately 27.75% of the variances in firm performance are explained by our model.

5. Findings

The results explain the an in-depth understanding between dynamic capabilities are impacting firm performance. This result align with the resource-based view (RBV) theory, which argues that the strategic value of resources and capabilities depends on the suitability and deployment of those resources and capabilities to the external environment of the firm (Barney, 1991). The negative impact of the environmental dynamism on the firm performance underlines the challenges that SME's are up against in uncertain markets. Those results are consistent with what other researches have proposed herein that environmental turbulence has negative effects on organizational outcomes (Li & Liu, 2014). The changes affect organizations' adaptive capabilities that under stress tend to deteriorate the performance. The bright side of the moderating role of environmental dynamism in the link between dynamic capabilities and firm performance. This is indicative that in highly dynamic environments, strategic relevance of dynamic capabilities is augmented by their ability to aid firms in managing varied threats from the external environments. This result supports the dynamic capabilities view (DCV) that stresses on the critical role these capabilities play in helping the firms to adapt and to exploit the new environment. (Teece, Pisano, & Shuen, 1997). This study of the interaction of dynamic capabilities, firm performance, and environmental dynamism, especially in the SME sector in Pakistan, offers relevant insights that contribute to theoretical and applied knowledge. The evidence collected highlights complex role of dynamic capabilities in increasing firm performance especially under high environmental dynamism. Dynamic capabilities in isolation were not identified as direct predictors of firm performance, but their strategic value was greatly enhanced in turbulent markets, thus emphasizing the contingent nature of strategic assets and capabilities. Such evidence correlates with the established theories within the strategic management like the dynamic capabilities view (DCV) and the resource-based view (RBV), which propagate the idea that the strategic advantages of dynamic capabilities are prominent when organizations steer through the turbulent environment (Teece, Pisano, & Shuen, 1997; Barney, 1991). In the Pakistani food manufacturing sector, a research conducted by Naz, Ul Haq, and Nasir (2022) found out that entrepreneurial orientation, big data analytics capabilities, and artificial intelligence capabilities have significant positive relationship with the performance of a firm and the environmental dynamism did not moderate the relationship between technological capabilities and the performance of a firm as expected. This points to the fact that though dynamic capabilities are central, the effect of environmental dynamism could vary between sectors and capabilities (Naz, Ul Haq, & Nasir, 2022). Equally, Yu et al. (2022) demonstrated that green dynamic capability has a significant impact on green innovation adoption among SMEs in Pakistan and Malaysia showing the relevance of dynamic capabilities in environmental sustainability practices. On the other hand, environmental dynamism did not have the desired significant positive. (Yu et al, 2022).

5.1. Theoretical and Practical Implications

This study contributes to the growing body of literature on DCV and RBV by confirming the contingent value of dynamic capabilities in emerging markets case. It includes the vital relevance that dynamic of the external environment has to be taken into the study and practice of strategic management, encouraging a more sophisticated insight as to how dynamic capabilities could be used to enhance firm resilience and performance. The study emphasizes that managers of SMEs in dynamic markets like Pakistan need to develop and use dynamic capabilities strategically. In terms of strategic flexibility, ongoing learning, and innovation, the firms can cope with environmental change, which increases their competitive position and performance.

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