

Dynamic Capabilities, Environmental Dynamism, and Firm Performance: Evidence from an Emerging Manufacturing Economy

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Abstract: The dynamic capabilities perspective explains how firms reconfigure resources to sustain competitive advantage under conditions of environmental change. Despite extensive theoretical development, empirical findings on the relative influence of dynamic capabilities and environmental dynamism on firm performance remain context-dependent and fragmented, particularly in emerging manufacturing economies. This study examines the joint and comparative effects of dynamic capabilities and environmental dynamism on organizational performance using a convergent mixed-methods design. Quantitative data were collected from 317 managers of manufacturing firms, complemented by qualitative interviews and focus group discussions with 17 senior managers. Results show that both constructs significantly influence performance, jointly explaining 77.5% of its variance. However, dynamic capabilities demonstrate substantially stronger predictive power than environmental dynamism. Qualitative findings reveal that strategic flexibility, innovation orientation, and technology integration function as embedded managerial routines that sustain performance outcomes. The study contributes to dynamic capability theory by clarifying boundary conditions in moderately dynamic environments and extending empirical evidence to resource-constrained manufacturing contexts. Implications for theory and practice are discussed.

Keywords: *Dynamic Capabilities; Environmental Dynamism; Firm Performance; Manufacturing Firms; Emerging Economy; Strategic Flexibility; Innovation Capability.*

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I. INTRODUCTION

Firms operating in increasingly volatile, technology-intensive, and competitive markets must continuously adapt to sustain competitive advantage. The dynamic capabilities perspective has emerged as a dominant framework explaining how organizations sense opportunities, seize them through strategic investments, and reconfigure internal resources to respond to environmental change (Teece, 2007; Helfat & Peteraf, 2015). Rather than focusing solely on resource possession, this perspective emphasizes higher-order routines that enable firms to renew and recombine assets in dynamic environments.

Despite its theoretical prominence, important questions remain unresolved regarding the performance implications of dynamic capabilities. Empirical studies have reported varying magnitudes of impact, suggesting that contextual conditions shape their effectiveness (Drnevich & Kriauciunas, 2011; Wilden, Devinney, & Dowling, 2016). In particular,

environmental dynamism—defined as the rate, unpredictability, and instability of external change—has been proposed as a key boundary condition influencing the value of dynamic capabilities. While some scholars argue that dynamic capabilities yield greater returns under high turbulence, others suggest that well-developed adaptive mechanisms may independently drive performance even in moderately dynamic contexts.

Moreover, much of the empirical research on dynamic capabilities has been conducted in developed economies and large multinational firms. Emerging economy manufacturing contexts remain underrepresented in the literature. This omission is significant because manufacturing firms in emerging regions face distinctive structural constraints, including limited resource availability, institutional uncertainty, evolving regulatory environments, and rapid market transformation. In such contexts, it is unclear whether

internal adaptive capacity or external environmental volatility plays the dominant role in shaping performance outcomes.

A second limitation in the existing literature concerns methodological approach. Most studies rely exclusively on quantitative survey designs, focusing on statistical relationships between constructs. While valuable, such approaches often overlook the micro-level managerial processes through which dynamic capabilities are enacted in practice. Recent calls within strategic management research emphasize the need to unpack the microfoundations of capabilities and examine how they are operationalized within organizations.

This study addresses these gaps by examining the joint and relative effects of dynamic capabilities and environmental dynamism on firm performance within a regional manufacturing economy. Using a convergent mixed-methods design, the research integrates large-sample quantitative analysis with qualitative inquiry into managerial experiences. This design enables both structural testing of theoretical relationships and exploration of the processes underlying capability deployment.

The study contributes to the literature in three primary ways. First, it clarifies the relative predictive strength of dynamic capabilities and environmental dynamism, offering empirical evidence on boundary conditions in a moderately dynamic environment. Second, it extends dynamic capability theory to an emerging manufacturing context, enhancing its external validity. Third, by incorporating qualitative evidence, it illuminates the managerial routines and strategic practices that operationalize dynamic capabilities, thereby contributing to ongoing discussions on capability micro foundations.

II. METHODS

This study employed a convergent mixed-methods design to examine the effects of dynamic capabilities and environmental dynamism on firm performance. Quantitative and qualitative data were collected concurrently, analyzed separately, and integrated at the interpretation stage. The research was conducted among manufacturing firms operating in an emerging regional economy. Manufacturing firms were selected because they operate under high levels of technological change, supply chain complexity, and competitive pressure—conditions central to dynamic capability theory.

The quantitative sample comprised 317 managers from medium and large manufacturing firms. Respondents held senior or operational leadership positions with direct knowledge of firm strategy and performance. For the qualitative component, 17 senior managers were purposively selected for in-depth interviews and focus group discussions to explore managerial enactment of capabilities.

All constructs were measured using established scales adapted for manufacturing settings and assessed on five-point Likert scales. Dynamic capabilities were operationalized

across four dimensions: product innovation capability, strategic decision-making capability, technological capability, and strategic flexibility. Environmental dynamism captured changeability and predictability of the external environment. Firm performance was measured multidimensionally, incorporating strategic effectiveness, resource utilization, process efficiency, and innovation outcomes.

Quantitative data were analyzed using descriptive statistics, Pearson correlations, and multiple regression analysis. Both predictors significantly influenced performance, jointly explaining 77.5% of the variance ($R^2 = .775$, $p < .001$). Qualitative data were examined using thematic analysis. Identified themes were compared with quantitative results to assess convergence and provide micro-level insight into capability deployment.

All scales demonstrated acceptable internal consistency ($\alpha > .70$). Content validity was established through expert review. Credibility of qualitative findings was enhanced through member checking and triangulation.

III. RESULTS

Descriptive statistics indicate strong manifestation of dynamic capabilities across surveyed firms ($M = 4.38$, $SD = .56$). Environmental dynamism was perceived as moderately high ($M = 3.96$, $SD = .73$). Firm performance exhibited consistently high evaluations ($M = 4.44$, $SD = .53$). Bivariate correlations revealed strong positive associations between dynamic capabilities and firm performance ($r = .87$, $p < .001$), and between environmental dynamism and performance ($r = .73$, $p < .001$). The magnitude of these coefficients suggests substantial alignment between adaptive capacity and performance outcomes.

Multiple regression analysis was conducted to examine the joint and relative effects of dynamic capabilities and environmental dynamism on firm performance. The overall model was statistically significant and explained 77.5% of the variance in firm performance ($R^2 = .775$, $p < .001$), indicating substantial explanatory power. Dynamic capabilities exhibited a strong positive effect on performance ($\beta = .70$, $p < .001$), while environmental dynamism also demonstrated a significant but comparatively weaker influence ($\beta = .22$, $p < .001$). These findings indicate that internal adaptive capacity exerts a more dominant influence on performance outcomes than external environmental volatility within this context.

Thematic analysis identified four recurring managerial mechanisms underlying dynamic capabilities: Innovation-oriented strategy, Information-based strategic decision-making, Technology integration and upgrading, and Strategic flexibility in sourcing and market positioning. Managers described these mechanisms not as episodic reactions but as embedded routines shaping organizational responsiveness. Environmental dynamism was primarily experienced through intensified competition and shifting customer expectations. However, respondents consistently emphasized that strong

internal capability structures enabled firms to manage environmental turbulence effectively.

Integration of quantitative and qualitative results demonstrates overall convergence. Statistical evidence confirms the significant influence of dynamic capabilities and environmental dynamism on performance, while qualitative insights clarify the processes through which capabilities are enacted. A nuanced divergence emerged regarding the relative importance of predictors: although regression analysis indicates dynamic capabilities as the stronger driver, a minority of managers perceived environmental shifts as the primary catalyst for performance outcomes. Overall, findings suggest that in moderately dynamic environments, internal adaptive mechanisms function as the principal determinant of firm performance.

IV. DISCUSSION

The results provide strong empirical support for the central proposition of dynamic capability theory: firms possessing well-developed adaptive and reconfiguration mechanisms achieve superior performance outcomes. The magnitude of the regression coefficient ($\beta = .70$) and the substantial variance explained ($R^2 = .775$) suggest that internal capability development functions as a dominant strategic asset in shaping firm performance. These findings reinforce arguments that dynamic capabilities are not merely reactive mechanisms activated under extreme turbulence but can operate as enduring sources of competitive advantage. Rather than being contingent solely on high environmental instability, capability strength appears to independently drive performance in moderately dynamic environments. This extends prior contingency-based perspectives by demonstrating that internal adaptive capacity may outweigh environmental volatility in determining firm outcomes.

Although environmental dynamism exhibited a weaker coefficient ($\beta = .22$), it remained statistically significant. This suggests that while external volatility influences performance, its effect is mediated by firms' internal ability to interpret and respond to change. The findings contribute nuance to the boundary-condition debate in dynamic capability research. Rather than positioning environmental dynamism as the primary determinant of capability value, the evidence indicates that internal capability robustness may substitute for extreme environmental turbulence as the key performance driver. In moderately dynamic settings, firms with strong reconfiguration routines appear less vulnerable to external instability.

The qualitative findings illuminate how dynamic capabilities are enacted at the managerial level. Managers emphasized innovation orientation, strategic flexibility, and technology integration as embedded routines rather than episodic responses. These mechanisms functioned as structured organizational processes guiding continuous adaptation. This contributes to the microfoundations discourse by demonstrating that dynamic capabilities are operationalized through routine managerial practices, including information-based decision-making, proactive

technology upgrading, and adaptive sourcing strategies. Such routines create organizational stability within environmental instability.

By situating the study within a regional manufacturing economy, this research extends dynamic capability theory beyond its dominant Western empirical base. Firms operating in emerging economies often face resource constraints, institutional fluidity, and evolving competitive structures. In such contexts, developing internal adaptive capacity may be especially critical. The findings suggest that capability investment can compensate for environmental unpredictability in resource-constrained settings. This highlights the strategic importance of internal capability-building as a pathway to performance sustainability in emerging markets.

For practitioners, the findings underscore the importance of institutionalizing adaptive routines rather than relying solely on environmental monitoring. Strategic flexibility, continuous innovation, and technology integration should be embedded as systematic organizational processes. Firms should prioritize capability development as a proactive strategy rather than a reactive adjustment to environmental shifts. Structured investment in innovation and strategic decision systems may yield sustained performance benefits even under moderate environmental turbulence.

V. CONCLUSION AND RECOMMENDATION

This study examined the relative and joint effects of dynamic capabilities and environmental dynamism on firm performance within an emerging manufacturing context. The findings demonstrate that although both constructs significantly influence performance outcomes, dynamic capabilities exert substantially stronger predictive power. These results reinforce the central premise of dynamic capability theory that sustained performance advantages are primarily rooted in a firm's internal adaptive capacity rather than solely in external environmental conditions.

By clarifying the relative influence of internal capabilities and external turbulence, this research contributes to ongoing boundary-condition debates within the dynamic capabilities literature. The evidence indicates that in moderately dynamic environments, well-developed reconfiguration routines operate not merely as contingent responses to instability but as enduring strategic assets. Internal capability strength appears to mitigate the disruptive effects of environmental volatility, highlighting the strategic centrality of organizational adaptability.

For practitioners, the findings emphasize the importance of institutionalizing adaptive routines as structured organizational processes. Manufacturing firms should prioritize continuous innovation, strategic flexibility, and technology integration as embedded managerial practices rather than episodic initiatives. Proactive investment in capability development may yield more sustainable performance benefits than reactive adjustments to market fluctuations. Strengthening decision-making systems,

upgrading technological infrastructure, and fostering innovation-oriented cultures can enhance resilience in evolving competitive landscapes.

This study is not without limitations. The cross-sectional design restricts causal inference, and the focus on a single regional context may limit generalizability to other institutional environments. Future research should adopt longitudinal designs to examine the temporal evolution of capabilities and performance. Comparative multi-country studies could further assess contextual variations, while investigations of moderating and mediating mechanisms—such as firm size, industry characteristics, or institutional conditions—may deepen understanding of how dynamic capabilities translate into competitive advantage.

Overall, the findings underscore that dynamic capabilities should be viewed not as reactive tools activated only during turbulence, but as structured organizational assets that sustain competitive performance across varying degrees of environmental change.

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