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INNOVATIVE CAPABILITIES AND SME PERFORMANCE IN TURBULENT ENVIRONMENTS: AN INTEGRATED CONCEPTUAL FRAMEWORK FOR NIGERIA'S MANUFACTURING SECTOR

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ABSTRACT

The performance of small and medium-sized manufacturing enterprises (SMEs) in Nigeria lags behind peer nations, a challenge exacerbated by a turbulent business environment. While innovative capability is widely recognized as a key to competitive advantage, the literature remains fragmented, often examining singular capabilities in isolation. This conceptual paper proposes a novel, integrated framework to address this gap. Grounded in the Resource-Based View and Dynamic Capabilities theory, we synthesize four distinct but interrelated innovative capability dimensions critical for manufacturing SMEs: Ideation and Organizing Structures, Know-How Development, Exploitation of External Knowledge, and Individual Innovative Activity. We posit that it is the synergistic configuration and management of these capabilities as a higher-order dynamic capability that enables SMEs to navigate uncertainty and achieve sustainable performance. The paper develops detailed propositions linking each dimension to SME performance, moderated by contextual factors in Nigeria. By offering this integrated model, the study makes a primary theoretical contribution by clarifying the architecture of innovative capability in a resource-constrained context and a practical contribution by providing a diagnostic framework for managers and policymakers. The concluding agenda outlines pathways for empirical validation and future research.

Keywords: Innovative Capability, SME Performance, Dynamic Capabilities, Manufacturing Sector, Conceptual Framework, Nigeria, Turbulent Environment.

1. INTRODUCTION

Small and medium-sized enterprises (SMEs) are universally acknowledged as engines of economic growth, innovation, and employment. In Nigeria, this sector holds immense potential, yet its contribution, particularly in manufacturing, remains sub-optimal compared to similar economies in Africa and Asia (Chege & Wang, 2020; FSS, 2020). This performance gap persists within a notoriously turbulent business environment characterized by infrastructural deficits, policy volatility, economic instability, and intense competitive pressures (Akpan et al., 2022). In such a context, the traditional pursuit of static resources is insufficient for sustained advantage. Consequently, scholars and practitioners increasingly point to a firm's innovative capability—its ability to continuously create, reconfigure, and apply knowledge—as the critical determinant of resilience and growth (Assink, 2006; Freixanet & Rialp, 2022).

However, understanding of this vital construct as it applies to manufacturing SMEs in emerging economies like Nigeria is limited and fragmented. Extant research has often adopted a reductionist approach, investigating discrete capabilities such as knowledge sharing (Aulawi et al., 2009), external networking (Zhan & Xie, 2023), or leadership (Ahn & Bessiere, 2022) in isolation. This fragmentation obscures a fundamental reality: for an SME operating in a resource-scarce, volatile setting, innovative capability is not a single activity but a complex, synergistic system of interconnected practices

and routines. The absence of an integrated framework that captures this systemic nature represents a significant theoretical gap, limiting our ability to explain performance differentials and provide holistic guidance to managers.

Therefore, the central aim of this conceptual paper is to develop and present a comprehensive, testable framework that models the multidimensional structure of innovative capability and its direct relationship with the performance of manufacturing SMEs in Nigeria. We move beyond a checklist of factors to argue that innovative capability functions as a higher-order dynamic capability, comprised of four core, interdependent dimensions:

i. Ideation and Organizing Structures: The capacity to generate novel ideas within a supportive, flexible organizational architecture.
ii. Know-How Development: The capacity for continuous, experiential learning and skill enhancement.
iii. Exploitation of External Knowledge: The capacity to identify, absorb, and utilize knowledge from outside the firm's boundaries.
iv. Individual Innovative Activity: The capacity to foster and harness innovative behaviors at the employee level.
This paper contributes not by presenting empirical data, but by synthesizing theory and extant literature to construct a novel conceptual model. We delineate the constituent dimensions of innovative capability, articulate their proposed relationships with firm performance through a set of formal propositions, and explicitly discuss the moderating role of Nigeria's distinctive environmental turbulence. In doing so, we provide researchers with a coherent framework for future empirical investigation and offer practitioners a structured lens to audit and strengthen their innovative potential.

The paper proceeds as follows: The next section establishes the theoretical foundation, integrating the Resource-Based View and Dynamic Capabilities theory. This is followed by a detailed conceptual development of each capability dimension and the formulation of propositions. We then present the integrated conceptual model visually and narratively, leading to a discussion of the framework's theoretical, managerial, and policy implications. Finally, we conclude with a robust agenda for future research.

2. LITERATURE REVIEW

The pursuit of competitive advantage and sustained performance in small and medium-sized enterprises (SMEs) has long been a central theme in strategic management and entrepreneurship literature. Within this broad discourse, a firm's innovative capability—its capacity to develop and implement new products, processes, or systems—has been consistently identified as a critical driver of growth and resilience, especially in dynamic markets (Assink, 2006; Freixanet & Rialp, 2022). This review synthesizes two interconnected streams of research: (1) the constituent dimensions of innovative capability, and (2) the performance of SMEs in turbulent environments, to delineate the specific gap this study addresses.

Innovative Capability: A Fragmented Construct

Scholarly understanding of innovative capability is rich yet fragmented. Research has progressed by isolating and examining specific, discrete dimensions of this broader construct. For instance, significant attention has been paid to ideation and organizing structures, exploring how flexible, non-bureaucratic architectures foster creativity and the implementation of new ideas (Björk et al., 2010; Cui et al., 2018). Similarly, the dimension of know-how development—the experiential building of tacit knowledge—has been framed as a core learning capability that underpins technical proficiency and adaptive problem-solving (Sheng & Chien, 2016; Dubey et al., 2019).

Concurrently, the exploitation of external knowledge has been extensively studied through lenses of open innovation and absorptive capacity, highlighting how SMEs leverage networks to access complementary resources and reduce innovation risks (Hervás-Oliver et al., 2021; Wu et al., 2021). Finally, the role of the individual has been captured through research on Innovative Work Behavior (IWB), which stresses the importance of employee-driven idea generation and championing as a micro-foundation for organizational innovation (De Jong & Den Hartog, 2010; Anderson et al., 2014).

While these studies provide deep insights into individual mechanisms, they predominantly adopt a reductionist approach. As noted, investigations often focus on a single dimension, such as knowledge sharing (Aulawi et al., 2009) or external networking (Zhan & Xie, 2023), in isolation from other interrelated capabilities. This fragmentation presents a theoretical limitation, as it overlooks the systemic reality that in practice, these dimensions do not operate independently but are likely to interact and co-evolve within the firm.

SME Performance in Turbulent Environments

A separate but related body of literature focuses on the challenges SMEs face in turbulent environments, such as Nigeria's, characterized by institutional voids, policy instability, and infrastructural deficits (Akpan et al., 2022; Chege & Wang, 2020). This research rightly identifies environmental volatility as a key constraint on SME performance and survival. However, much of this work treats turbulence as an exogenous shock or a direct

determinant of performance, rather than as a contextual condition that moderates how internal capabilities translate into outcomes.

The Identified Research Gap

The synthesis of these two streams reveals a critical, unresolved gap in the literature. First, there is a paucity of studies that integrate the multiple dimensions of innovative capability—ideation structures, know-how development, external knowledge exploitation, and individual activity—into a single, coherent framework. The prevailing fragmented approach fails to explain how these capabilities function synergistically as a holistic organizational system. Second, and more specifically for the context of this study, there is an absence of research that examines how such an integrated innovative capability model operates within the unique, high-turbulence environment of Nigeria's manufacturing SME sector. The combined effect of these capabilities, and how their value is potentially amplified by contextual volatility, remains theoretically underdeveloped and empirically untested.

Therefore, this study aims to bridge this dual gap. It moves beyond examining isolated capabilities to propose a configurational model that specifies how four core dimensions interrelate to form a higher-order dynamic capability. Furthermore, it explicitly theorizes the Nigerian manufacturing context—with its distinct form of turbulence—not merely as a backdrop but as a critical moderating condition that shapes the capability-performance relationship. This integrated and context-sensitive approach offers a more complete theoretical explanation for SME performance differentials in frontier markets.

3. THEORETICAL FOUNDATION

This paper is grounded in the integration of two complementary theoretical perspectives: the Resource-Based View (RBV) and Dynamic Capabilities Theory (DCT). Together, they provide a robust and multi-layered foundation for conceptualizing how innovative capabilities are formed, how they function, and why they are particularly critical for driving sustainable performance in SMEs facing Nigeria's turbulent business environment.

The Resource-Based View (RBV): The Source of Heterogeneity and Advantage

The RBV posits that a firm's sustained competitive advantage stems from its possession of strategic resources that are Valuable, Rare, In-imitable, and Non-substitutable (VRIN) (Barney, 1991). This view shifts the focus of strategy from the external market positioning to the internal resource endowment of the firm. While tangible assets (e.g., machinery, capital) are important, the RBV emphasizes the paramount strategic significance of intangible resources and capabilities—such as knowledge, skills, brand reputation, and unique organizational processes.

In the context of this study, the four dimensions of innovative capability—Ideation and Organizing Structures, Know-How Development, Exploitation of External Knowledge, and Individual Innovative Activity—are conceptualized as precisely these kinds of intangible, firm-specific resources. For instance, a deeply ingrained culture of experiential learning (Know-How) or a uniquely effective network for sourcing external knowledge are complex social phenomena that are path-dependent, causally ambiguous, and therefore difficult for competitors to replicate. The RBV thus provides the initial logic for why cultivating these capabilities can be a source of performance heterogeneity among manufacturing SMEs in Kano State.

However, a primary critique of the classic RBV is its relative static nature. It excels at explaining why existing resource bundles confer advantage but is less equipped to explain how firms build, reconfigure, and renew these bundles to maintain advantage in the face of rapid environmental change—a condition endemic to the Nigerian manufacturing landscape (Eisenhardt & Martin, 2000).

Dynamic Capabilities Theory (DCT): The Mechanism for Renewal

Dynamic Capabilities Theory addresses this critical limitation. It is defined as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (Teece, Pisano, & Shuen, 1997, p. 516). DCT shifts the analytical focus from the stock of resources to the orchestration processes and strategic routines that manipulate the resource base. These are the higher-order capabilities that govern how a firm senses opportunities and threats, seizes them through investment and mobilization, and transforms itself through continuous renewal (Teece, 2007).

This paper synthesizes these two perspectives to propose that innovative capability, as configured in our model, functions as the core dynamic capability for manufacturing SMEs in turbulent environments. The four dimensions are not merely independent VRIN resources; they are the interconnected micro-foundations (Teece, 2007) or lower-order operational routines that collectively enable the dynamic capability cycle:

Sensing: Exploitation of External Knowledge (P3) and Individual Innovative Activity (P4) act as the firm's antennae, scanning the environment for new technologies, market shifts, and operational inefficiencies.

Seizing: Ideation and Organizing Structures (P1) provide the agile, supportive framework to rapidly mobilize around these sensed signals, evaluate new ideas, and commit resources to promising initiatives.

Transforming: Know-How Development (P2) is the core learning and reconfiguration engine. It allows the firm to internalize new knowledge, adapt processes, and build new skills, thereby fundamentally altering its operational resource base to maintain alignment with the environment.

Theoretical Synthesis and Contribution

Thus, the RBV explains why these innovative capabilities are potentially valuable sources of advantage (their VRIN nature), while DCT explains how they are dynamically managed as an integrated system to achieve and sustain that advantage amidst turbulence. This integration moves the framework beyond a simple input-output model of resources affecting performance. It reconceptualizes the four dimensions as a synergistic dynamic capability system that enables SMEs in constrained, volatile settings to perpetually align and realign their limited resources with shifting external conditions. This theoretical grounding provides a powerful lens to understand not just if innovative capabilities matter, but the specific process by which they matter most in the challenging context of Nigeria's manufacturing sector.

4. CONCEPTUAL DEVELOPMENT AND PROPOSITIONS

Building upon the integrated RBV-DCT foundation, this section deconstructs the higher-order dynamic capability of Innovative Capability into its four posited dimensions. For each dimension, we provide a precise conceptual definition, anchor it within relevant literature, and explicate its unique theoretical mechanism for enhancing SME performance within a turbulent context. This culminates in the formulation of a set of testable propositions that form the core of the proposed framework.

4.1 Ideation and Organizing Structures

Conceptual Definition: This dimension captures a firm's dual capacity for (a) the systematic generation, evaluation, and selection of novel ideas (ideation), and (b) the maintenance of an organizational architecture that facilitates this process (organizing structures). This includes elements such as decentralized decision-making, cross-functional teams, low-power distance, and reward systems that incentivize creativity and calculated risk-taking.

Theoretical Mechanism and Link to Performance: In stable environments, efficiency-focused, hierarchical structures may be optimal. However, in Nigeria's turbulent setting, characterized by sudden policy shifts and supply chain disruptions, opportunity and threat windows are narrow. Flexible, organic structures reduce bureaucratic inertia, enabling SMEs to rapidly reconfigure human and intellectual resources around emerging problems or opportunities (Cui et al., 2018). This agility transforms sporadic individual creativity into a structured organizational capability for continuous ideation. By swiftly developing and testing prototypes or process adaptations, SMEs can seize fleeting market advantages, mitigate risks, and enhance operational responsiveness, directly leading to improved performance in terms of adaptability, customer satisfaction, and growth.

Proposition 1 (P1): There is a positive relationship between a firm's capability in ideation supported by flexible organizing structures and its level of performance. This relationship is strengthened in conditions of high environmental turbulence.

4.2 Know-How Development

Conceptual Definition: This refers to a firm's ingrained, collective capacity for continuous and experiential learning, leading to the systematic enhancement of its tacit, practical knowledge base. This encompasses technical mastery of processes, machinery, and materials, as well as the shared, often un-codified, "know-how" of solving complex, context-specific problems that arise in production and operations.

Theoretical Mechanism and Link to Performance: Know-how is a path-dependent, socially complex, and tacit intangible resource, making it a prime candidate for being VRIN (Barney, 1991). In an environment with unreliable infrastructure (e.g., intermittent electricity, poor logistics), deep, experiential knowledge of how to maintain equipment with limited spare parts or adapt production schedules becomes a rare and invaluable source of resilience and efficiency. This capability represents the core transformation function within the dynamic capability cycle. It allows the firm to internalize lessons from both successes and failures, continuously refining its operational routines (Sheng & Chien, 2016). This accumulated, firm-specific knowledge base reduces downtime, improves product quality, lowers waste, and fosters innovative problem-solving, thereby directly enhancing operational and financial performance.

Proposition 2 (P2): There is a positive relationship between a firm's capability in know-how development and its level of performance.

4.3 Exploitation of External Knowledge

Conceptual Definition: This is a firm's ability to identify, assimilate, transform, and apply valuable knowledge and technological information sourced from outside its organizational boundaries. Key sources include customers, suppliers, competitors, consultants, universities, research institutions, and diaspora networks.

Theoretical Mechanism and Link to Performance: SMEs, especially those in resource-constrained settings like Nigeria, cannot generate all necessary knowledge and innovation internally. This capability is therefore the primary sensing mechanism of the dynamic capability (Teece, 2007). It overcomes internal R&D limitations by providing access to novel solutions, emerging technologies, and market insights (Hervás-Oliver et al., 2021). Effective exploitation involves not just access, but the absorptive capacity to understand and apply this knowledge. For a Nigerian manufacturer, this could mean collaborating with a local technical college to solve a production flaw, adopting a process innovation from an international supplier, or learning new quality standards from a multinational buyer. This inflow of knowledge fuels the ideation process and accelerates internal know-how development, leading to product/process improvements, reduced innovation costs, and enhanced competitiveness.

Proposition 3 (P3): There is a positive relationship between a firm's capability in exploiting external knowledge and its level of performance.

4.4 Individual Innovative Activity

Conceptual Definition: This dimension concerns the extent to which a firm can foster, harness, and leverage Innovative Work Behavior (IWB) among its employees at all levels. IWB is a multi-stage construct encompassing the generation, promotion, and implementation of novel, beneficial ideas related to products, processes, or work methods (De Jong & Den Hartog, 2010).

Theoretical Mechanism and Link to Performance: Dynamic capabilities are ultimately enacted by individuals. Individual innovative activity constitutes the essential micro-foundation of human agency (Teece, 2007). In SMEs where formal R&D departments are absent, the discretionary effort of employees to improve a tool, suggest a workflow adjustment, or solve a customer complaint is a vital innovation resource. A culture that encourages autonomy, tolerates intelligent failure, and recognizes initiative unlocks this decentralized capacity. Empowered employees act as a distributed sensor network, identifying micro-level opportunities and threats, and as execution agents, championing small-scale transformations. This amplifies the firm's overall agility and innovative output, turning human capital into a direct driver of incremental innovation, efficiency gains, and enhanced performance (Anderson et al., 2014).

Proposition 4 (P4): There is a positive relationship between the level of individual innovative activity within a firm and its level of performance.

5. AN INTEGRATED CONCEPTUAL MODEL

The preceding analysis has articulated four distinct dimensions of innovative capability and their individual theoretical links to performance. However, the central thesis of this conceptual paper is that sustainable advantage in a turbulent environment is not derived from these dimensions in isolation, but from their synergistic configuration into a higher-order dynamic capability. This section presents the unifying conceptual model that embodies this thesis, illustrating the interrelationships and collective function of these dimensions as a cohesive system for strategic renewal.

Visual Representation of the Conceptual Model

Figure 1 provides a visual synthesis of the proposed framework. The model posits that the four dimensions—Ideation & Organizing Structures (P1), Know-How Development (P2), Exploitation of External Knowledge (P3), and Individual Innovative Activity (P4)—are distinct yet interrelated components. They are collectively manifested as the latent, higher-order construct of Innovative Capability, conceptualized as the firm's core dynamic capability for innovation. This integrated capability is proposed as the primary antecedent of SME Performance. Crucially, the model incorporates Environmental Turbulence as a key boundary condition, theorized to positively moderate the relationship between Innovative Capability and Performance. This signifies that the value of this dynamic capability is amplified in volatile contexts where the need for continuous adaptation is greatest.

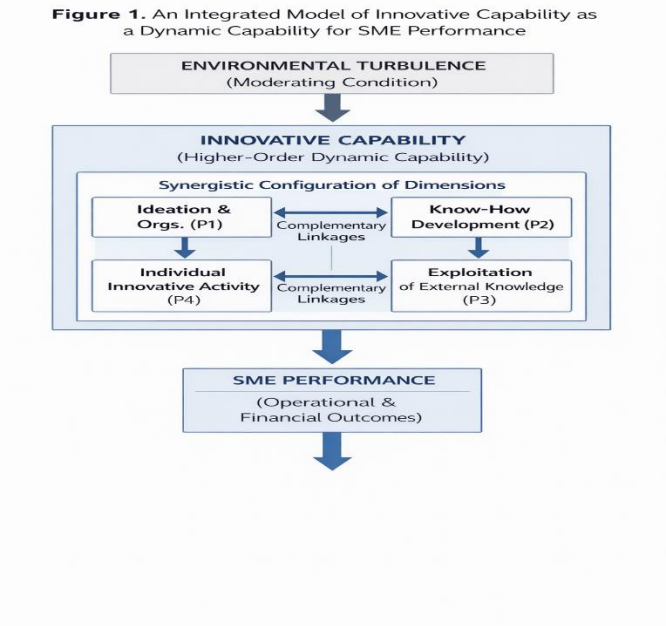

Figure 1. An Integrated Model of Innovative Capability as a Dynamic Capability for SME Performance

Narrative of Synergistic Integration

The model represents a system where the integrated whole generates greater value than the sum of its individual parts. The double-headed arrows signify

reciprocal complementarities that create a reinforcing cycle of innovation, embodying the sensing-seizing-transforming logic of a dynamic capability.

i. Ideation & Organizing Structures (P1) creates the enabling architecture. A flexible, non-bureaucratic structure is necessary to effectively capture and process insights from external knowledge (P3) and to provide a legitimate platform where individual innovative activities (P4) can be voiced, developed, and resourced. Without this supportive structure, external knowledge remains unassimilated and individual initiatives are stifled.

ii. Know-How Development (P2) serves as the absorptive and transformative engine. It provides the foundational knowledge stock required to evaluate, understand, and utilize external knowledge (P3). Furthermore, it converts novel but raw ideas from the ideation process (P1) into practical, implementable solutions based on deep, tacit understanding of the firm's technical and operational context.

iii. Exploitation of External Knowledge (P3) acts as the strategic sensing and resource-injection mechanism. It scans the environment to provide fresh stimuli and novel technological information that fuel the ideation process (P1). Simultaneously, it identifies new domains for learning, thereby accelerating and directing internal know-how development (P2). It prevents core capabilities from becoming core rigidities.

iv. Individual Innovative Activity (P4) is the human agency and execution core. It is the micro-foundational element where the potential of supportive structures (P1), accumulated know-how (P2), and external insights (P3) are actualized. Employees generate the initial ideas, champion implementations, and experiment with solutions, translating organizational capability into concrete action and adaptation.

The Dynamic Capability Cycle in Operation

This integrated system enacts a continuous cycle: Sensing opportunities and threats via external knowledge networks (P3) and alert employees (P4); Seizing these by rapidly prototyping and mobilizing resources within agile structures (P1); and Transforming the firm by developing new know-how (P2) and embedding changes through sustained individual initiative (P4). Environmental turbulence, prevalent in the Nigerian context, moderates this relationship by increasing the frequency and necessity of this cycle. The more turbulent the environment, the greater the performance returns derived from possessing and managing this synergistic, integrated innovative capability system. Thus, the model provides a holistic framework for understanding how manufacturing SMEs can build not just innovative resources, but the dynamic capacity to continually renew them in the face of uncertainty.

6. DISCUSSION

This paper has developed an integrated conceptual model positioning innovative capability as a synergistic dynamic capability essential for manufacturing SMEs in turbulent environments. The proposed framework synthesizes four key dimensions—Ideation and Organizing Structures, Know-How Development, Exploitation of External Knowledge, and Individual Innovative Activity—into a coherent system that enables firms to sense, seize, and transform in response to volatility. The following discussion elucidates the implications, contributions, and boundaries of this model.

6.1. Implications for Theory and Practice

Theoretical Implications: The model offers two primary theoretical advancements. First, it addresses the micro-foundations gap in Dynamic Capabilities Theory (DCT) as applied to SMEs. By specifying the lower-order operational routines (the four dimensions) that collectively constitute a higher-order dynamic capability, it moves DCT from an abstract framework to a testable construct in the SME context. Second, it introduces a configurational perspective to the innovation literature, arguing that the interaction and complementarity of capabilities are more critical than any single dimension in isolation. This challenges the prevailing reductionist approach and suggests that future research should examine capability bundles and their synergistic effects, potentially using methods like fsQCA (Rihoux & Ragin, 2009).

Practical Implications: For SME owner-managers, the model serves as a diagnostic and strategic roadmap. It provides a structured audit tool to assess strengths and weaknesses across the four capability domains. The key managerial insight is the necessity for balanced and synergistic investment. For example, investing in external networks (P3) yields limited returns if internal know-how (P2) is too weak to absorb new knowledge, or if bureaucratic structures (P1) prevent the implementation of employee-driven ideas (P4). For policymakers and development agencies (e.g., SMEDAN, the Bank of Industry), the model argues for integrated support programs. Instead of offering isolated training (P2) or networking events (P3), effective interventions should be designed to strengthen multiple, interconnected dimensions simultaneously, thereby building the holistic adaptive capacity of the SME sector.

6.2. Contributions

This study makes three distinct contributions:

i. Theoretical Contribution: It advances the Resource-Based and Dynamic Capabilities views by developing an

integrated, context-sensitive model that clarifies the architecture of innovative capability for frontier-market SMEs. It theoretically explains how specific micro-foundations combine to form a dynamic capability and how environmental turbulence amplifies its value.

ii. Practical Contribution: It provides a clear, actionable framework for SME managers to evaluate and build their innovative potential systematically. For policymakers, it offers a rationale for designing multi-faceted capacity-building initiatives that move beyond piecemeal support.

iii. Contextual Contribution: It addresses a significant gap in the literature focused on sub-Saharan Africa by providing a tailored conceptual model for understanding innovation in Nigeria's unique manufacturing landscape, characterized by institutional constraints and acute volatility. This sets a foundation for context-specific research in similar frontier economies.

6.3. Delimitations and Limitations

As a conceptual paper, its scope and inherent constraints must be acknowledged.

Delimitations: The model is deliberately focused on manufacturing SMEs within a specific regional context (Kano State, Nigeria). It examines four pre-defined capability dimensions, acknowledging that other factors (e.g., access to finance, regulatory environment) also influence performance but are outside the present scope.

Limitations: The primary limitation is that the proposed relationships and interactions are theoretical and await empirical validation. The model, while grounded in literature, is a proposition. Furthermore, the complex, reciprocal linkages between dimensions, while theorized, present a significant measurement and modeling challenge for future empirical work. Finally, the model is static in presentation, whereas dynamic capabilities are inherently processes that unfold over time; longitudinal research is required to fully capture their evolutionary nature.

7. CONCLUSION AND SUGGESTION FOR FUTURE RESEARCH

This conceptual paper has sought to address a critical gap in understanding the drivers of sustainable performance for manufacturing SMEs in turbulent economies. We have argued that the prevailing, fragmented view of innovative capabilities is insufficient to explain resilience and growth in contexts like Nigeria. In response, we developed an integrated model grounded in the Resource-Based View and Dynamic Capabilities Theory. The model posits that four interdependent dimensions—Ideation and Organizing Structures, Know-How Development, Exploitation of External Knowledge, and Individual Innovative Activity—configure synergistically to form a higher-order dynamic capability. This integrated Innovative Capability is presented as the core mechanism that enables SMEs to sense opportunities, seize them through agile structures, and transform their operations via continuous learning, thereby navigating environmental turbulence and achieving superior performance.

The primary contribution of this work is the provision of a coherent, testable framework that moves the discourse from examining isolated capabilities to understanding their systemic interaction. For scholars, it offers a detailed theoretical proposition and a roadmap for empirical inquiry. For practitioners and policymakers in Nigeria and similar contexts, it provides a structured lens for diagnosing capability gaps and designing holistic interventions.

As the proposed model is conceptual, its value will be realized through rigorous empirical testing and refinement. The following agenda outlines specific pathways for future research, beginning with the essential task of operationalization.

Table 1. Proposed Operationalization of Constructs for Empirical Testing

Construct	Conceptual Definition	Sample Measurement Items (5-point Likert scale)	Key Sources
Ideation & Organizing Structures	The firm's ability to generate, evaluate, and implement new ideas within flexible and supportive organizational arrangements.	i. Our organizational structure enables rapid evaluation and implementation of new ideas.2. Employees are empowered to make decisions aimed at improving their work processes.3. Collaboration across departments to support innovation is common in our firm.	Björk et al. (2010); Cui et al. (2018)
Know-How Development	The capability to continuously develop experiential learning and enhance tacit, practice-based knowledge.	ii. We systematically reflect on successes and failures to improve our processes.2. Employees regularly share work-related knowledge and practical insights with colleagues.3. The firm invests in training that develops deep, operation-specific skills.	Sheng & Chien (2016); Dubey et al. (2019)

Construct	Conceptual Definition	Sample Measurement Items (5-point Likert scale)	Key Sources
Exploitation of External Knowledge	The capability to identify, assimilate, and apply valuable knowledge obtained from external sources.	iii. We actively seek technological and market information from suppliers, customers, and industry networks.2. The firm has effective routines for adopting and adapting useful ideas from outside.3. We collaborate with external partners (e.g., universities, consultants) to address operational or strategic challenges.	Hervás-Oliver et al. (2021); Wu et al. (2021)
Individual Innovative Activity	The extent to which employees engage in innovative work behavior, including idea generation, promotion, and implementation.	iv. Employees frequently propose novel solutions to work-related problems.2. Employees actively champion new ideas and mobilize support for their implementation.3. Individuals are willing to take calculated risks to achieve innovative improvements.	De Jong & Den Hartog (2010); Anderson et al. (2014)
Environmental Turbulence	The degree of instability and unpredictability characterizing the firm's competitive and market environment.	v. Competitors' actions in our market are difficult to predict.2. Customer preferences and demands change rapidly.3. Technological change in our industry occurs at a fast pace.	Jaworski & Kohli (1993)
SME Performance	The firm's performance in terms of key operational and financial outcomes.	vi. Growth in profitability over the past three years.2. Growth in market share over the past three years.3. Overall improvements in operational efficiency and productivity.	Ahmad et al. (2016); Pham & Doan (2020)

Suggestion for Future Research

Building on this operational foundation, future research should pursue the following agenda:

i. Empirical Validation and Model Testing: The immediate next step is to quantitatively test the proposed model. Research should:

Use the (or similar) scales in Table 1 to collect survey data from a representative sample of Nigerian manufacturing SMEs.

Employ Partial Least Squares Structural Equation Modeling (PLS-SEM) to assess the measurement model's validity and reliability, test the strength of the higher-order Innovative Capability factor, and evaluate the direct (P1-P4) and moderating effects (Environmental Turbulence) hypothesized in the structural model.

ii. Investigating Synergies and Configurations: To fully explore the integrative thesis, studies should:

Apply configurational methods like fuzzy-set Qualitative Comparative Analysis (fsQCA) to identify whether there are multiple, equally effective "recipes" or combinations of the four capabilities leading to high performance.

Conduct in-depth qualitative case studies to trace the real-world processes of interaction between the capability dimensions, uncovering the nuanced mechanisms of synergy within specific firms.

iii. Longitudinal and Process-Oriented Studies: To capture the "dynamic" essence of the capability:

Design longitudinal studies to examine how these capabilities are built, eroded, or reconfigured over time, and how their evolution correlates with performance trajectories.

Investigate the sequencing and path dependencies in capability development. For a resource-constrained SME, is there an optimal order for investing in these dimensions?

iv. Expanding Contextual and Contingency Factors: The model's boundary conditions and generalizability can be refined by:

Exploring other salient moderators in the Nigerian context, such as the role of digital technology adoption, ownership structure (e.g., family-owned), or specific leadership styles.

Testing the framework's applicability in other turbulent frontier markets (e.g., in East Africa) and comparing different sectors (e.g., manufacturing vs. service SMEs) to assess its robustness and boundary conditions.

In conclusion, this paper provides a structured conceptual lens for analyzing innovation in resource-constrained, volatile settings. By offering an integrated

model and a clear, actionable agenda for future research, it aims to stimulate a more nuanced and productive line of inquiry. Ultimately, such research can inform scholarly theory and provide evidence-based guidance to strengthen the innovative capacity and resilience of SMEs, the vital backbone of emerging economies.

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