Innovative Capabilities and performance of Manufacturing SMEs in Kano State, Nigeria

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ABSTRACT

This study investigates the impact of innovative capabilities on the performance of manufacturing Small and Medium-sized Enterprises (SMEs) in Kano State, Nigeria, drawing on the Resource-Based View (RBV) theory. The research examined seven dimensions of innovative capability: participatory leadership culture, work climate and well-being, ideation and organizing structure, know-how development, exploiting external knowledge, regeneration, and individual activity. Data were collected from a population of 594 manufacturing SMEs, with a final sample of 439 respondents. The data were analyzed using the Statistical Package for Social Sciences (SPSS) version 24 for preliminary analysis, and the hypotheses were tested using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings revealed that Individual Activity and Know-how Development significantly and positively impacted SME performance. Conversely, Exploiting External Knowledge, Ideation and Organizing Structure, and Regeneration did not show a significant relationship with performance. The study concludes that for manufacturing SMEs in this context, internal capabilities related to human capital and knowledge development are more critical for performance than external knowledge acquisition or certain structural innovation processes. The implications suggest that SME owners and policymakers should prioritize strategies that enhance employee engagement, skill development, and participatory leadership to improve firm performance.

Keywords: Innovative Capability, Manufacturing Sector, SMEs Performance.

1. INTRODUCTION

Small and medium-sized enterprises (SMEs) are universally acknowledged as critical engines for economic growth and development in both developed and developing nations. Their performance transcends individual business success, serving as a vital barometer of national economic health. By significantly contributing to market output and revenue generation, SMEs play a fundamental role in shaping economic trajectories (Melo et al., 2023). Consequently, identifying pathways to enhance SME performance has become a paramount concern for academics, policymakers, and industry practitioners worldwide. The benefits of improved SME performance are substantial, including the diffusion of innovation, increased productivity, and greater value creation, which collectively translate into enhanced goods and services and stronger market competitiveness (Hanifah et al., 2020).

Despite their foundational role in most global economies, SMEs in many developing nations, particularly within the manufacturing sector, have underperformed in their contribution to GDP. This is especially true in Nigeria. A comparative analysis reveals that while Nigerian SMEs contribute approximately 50% to the national GDP, this lags behind contributions in South Africa and Tanzania (60%) and Ghana (70%) (Chege et al., 2020). More alarmingly, manufacturing SMEs in Nigeria contribute a mere 14% to GDP, a figure significantly lower than the 30–40% contributed by their Asian counterparts (FSS, 2020). This underperformance is exacerbated by an unstable and volatile business environment characterized by global economic shocks, the aftermath of the COVID-19 pandemic, local insurgencies, and intense competition from large multinational corporations, leading to operational stagnation and limited growth potential (Akpan et al., 2022; Endris et al., 2022).

In light of these persistent challenges, there is a compelling need for SMEs to cultivate resilience through innovative and adaptive strategies. Merely accumulating intangible resources is insufficient; SMEs must actively reconfigure and integrate these resources to generate a competitive advantage (Aminu & Mahmood, 2015; Nguyen, 2025). In turbulent environments, firm performance becomes increasingly reliant on innovation capability—the strategic process of leveraging internal and external knowledge to generate, develop, and implement new ideas and solutions. This capability serves as an integrative mechanism that connects a firm's resources to superior performance outcomes (Freixanet & Rialp, 2022; Hu et al., 2020). Enhanced innovation capabilities enable SMEs to respond dynamically to market needs through several key dimensions. These include participatory leadership, which fosters a collaborative environment for innovation (Amrita et al., 2022); a positive work climate and well-being that enables employees to function effectively and innovatively (Jia-Jia et al., 2022); structured processes for ideation to intensify new product development (Cui et al., 2023); the development of internal know-how to coordinate resources effectively (Pittaway & Montazemi, 2020); the exploitation of external knowledge for open innovation (Radicic, 2021); regeneration through organizational learning (Saunila & Ukko, 2013); and the empowerment of individual activity, as employees' innovative actions form the bedrock of the organization's overall capability (Saunila & Ukko, 2013).

Despite the established critical role of innovation capability, there is a notable scarcity of empirical research that comprehensively examines the combined effect of these multifaceted constructs on the performance of SMEs within the unique and challenging context of Nigeria. Previous studies have often focused on isolated elements, leaving a gap in understanding which specific capabilities are most impactful. Therefore, this study aims to fill this gap by investigating the distinct effects of participatory leadership culture, work climate and well-being, ideation and organizing structure, know-how development, exploiting external knowledge, regeneration, and individual activity on the performance of manufacturing SMEs in Kano State, Nigeria. The findings are intended to provide targeted insights for SME

owners and policymakers seeking to prioritize effective strategies for performance enhancement.

2. LITERATURE REVIEW

This section establishes the theoretical foundation for the study and develops the hypotheses. Grounded in the Resource-Based View (RBV) theory (Barney, 1991), this research posits that a firm's unique internal resources and capabilities are the primary drivers of its competitive advantage and performance. For SMEs, innovative capabilities represent such strategic, intangible resources that are valuable, rare, and difficult for competitors to imitate. This review explores the specific innovative capabilities under investigation and links them to SME performance.

2.1 Innovation Capability and Firm Performance

A substantial body of literature affirms the positive impact of innovation on firm performance. Studies consistently show that innovation strongly influences financial success, sales performance, and productivity (Jalali et al., 2025; Ferreira et al., 2021; Singh et al., 2025). The benefits, however, can vary by innovation type. For instance, organizational innovation—changes in workplace organization or external relations—enhances internal coordination and efficiency, while technological innovation directly boosts competitiveness and market effectiveness (Rajapathirana & Hui, 2018; Yunis et al., 2018). Alfawaire and Atan (2021) further established that organizational innovation often acts as a prerequisite for successfully leveraging technological innovations, impacting performance across productivity, quality, and flexibility.

However, much of the existing research has focused on specific, isolated elements of innovation. A critical gap remains in the comprehensive measurement of multi-dimensional innovative capabilities, particularly within the context of manufacturing SMEs in developing economies (Troise et al., 2022). This study aims to address this gap by proposing and testing a holistic framework of innovative capabilities. Therefore, we hypothesize:

H1: There is a positive relationship between innovative capability and SME performance.

2.2 Participatory Leadership Culture

From an RBV perspective, leadership culture is a strategic resource that can shape organizational behavior and outcomes. Participatory leadership, characterized by involving employees in decision-making, fosters a sense of ownership and responsibility (Owusu-Agyeman, 2021). This style promotes shared problem-solving, enhances knowledge integration, and breaks down communication barriers, creating a motivating environment conducive to innovation (Chang et al., 2022; Wong et al., 2018). Empirically, participative leadership has been linked to higher levels of cohesion, trust, and overall performance (Wang

et al., 2023; Saunila, 2017). By fully engaging human capital, this leadership style unlocks a firm's innovative potential.

H2: There is a positive relationship between participatory leadership culture and SME performance.

2.3 Ideation and Organizing Structure

Ideation—the generation and development of new ideas—is the foundation of the innovation process (Saunila et al., 2017). While individual and team creativity are crucial sources of ideas (Beretta et al., 2018), their effective management requires supportive organizational structures. Congruent structures and procedures are necessary to drive innovative activities across the organization (Purc & Laguna, 2019). Supportive structures improve internal communication and help establish routines that enable more effective operations and superior performance in innovation (Singh & Dixit, 2015). Thus, ideation capabilities represent the dynamic organizational processes for stimulating, selecting, and implementing valuable ideas.

H3: There is a positive relationship between ideation and organizing structure and SME performance.

2.4 Know-How Development

Know-how refers to the practical, often tacit, knowledge required to efficiently convert inputs into outputs (Sofologi et al., 2023). The RBV explicitly identifies knowledge as a key strategic resource. A continuous learning orientation is at the core of innovation, as organizations committed to learning deeply understand their environment and emerging technologies (Sawaean & Ali, 2020). Investing in employee expertise development directly enhances a firm's human capital, which has been consistently linked to improved manufacturing and overall firm performance (Ho & Kuvaas, 2020). Developing internal know-how builds a unique and inimitable capability that is central to sustaining a competitive advantage.

H4: There is a positive relationship between know-how development and SME performance.

2.5 Exploiting External Knowledge

The knowledge-based view, an extension of RBV, emphasizes the strategic importance of knowledge. External knowledge search allows firms to acquire specialized expertise not available internally, expanding their knowledge base for innovation (Wu et al., 2021). This is a key tenet of open innovation, where interacting with external parties—such as customers, suppliers, and research institutions—can significantly improve innovation performance and lead to higher growth rates (Hervas-Oliver et al., 2021; Jiang et al., 2022). Firms that

effectively absorb and utilize external knowledge can enhance their operational agility and financial outcomes.

H5: There is a positive relationship between exploiting external knowledge and SME performance.

2.6 Individual Activity

The innovative behavior of individual employees is a critical micro-foundation of a firm's overall innovative capability (Saunila & Ukko, 2013). This behavior encompasses both the generation of novel ideas and their implementation (Anderson et al., 2014). Employees who are creative and intrinsically motivated create a work environment ripe for innovation (Zhu et al., 2018). As business realities change, adaptable and proactive employee behavior becomes a source of competitive advantage (Nayal et al., 2023). Therefore, the aggregate of individual innovative activities forms a valuable human resource that directly contributes to firm performance.

H6: There is a positive relationship between individual activity and SME performance.

2.7 Work Climate and Well-being

A positive work climate and employee well-being are intangible resources that foster innovation. Employee well-being, defined as a subjective assessment of mental, emotional, and job satisfaction, is crucial for creating an environment where individuals can function effectively (Pradhan & Hati, 2022; Kim et al., 2019). When employees feel safe, healthy, and satisfied, they are more likely to be engaged and exhibit innovative behaviors. Leadership practices that promote a positive emotional climate have been shown to have a significant impact on firm performance and growth (Tariq et al., 2020). A supportive climate is, therefore, an investment in the human capital necessary for innovation.

H7: There is a positive relationship between work climate and well-being and SME performance.

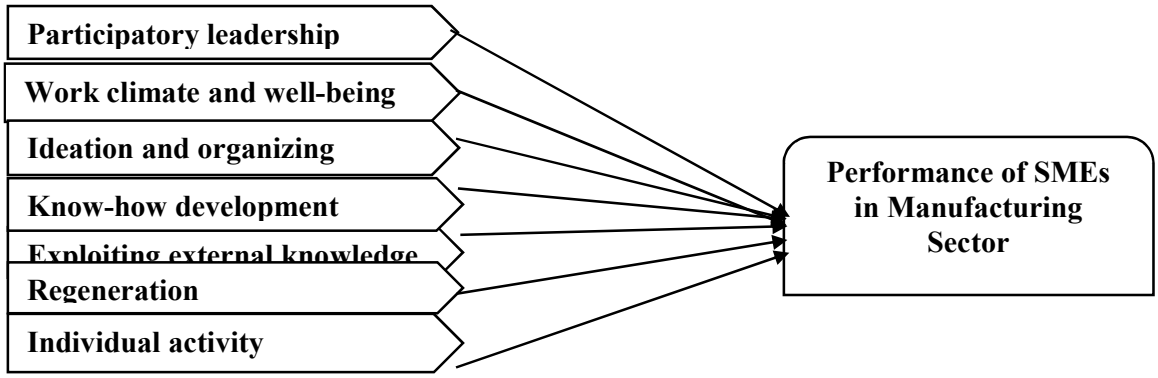
2.8 Regeneration

Regeneration refers to an organization's ability to learn from experience and use those insights to create innovations and develop its operations (Saunila & Ukko, 2013). In a broader sense, regenerative innovation involves practices that allow businesses to renew and thrive by prioritizing systemic collaboration, human and environmental wellbeing, and long-term thinking (Sanhokwe, 2024). This forward-looking orientation, which includes future-oriented planning and a tolerance for risk, is a driver of radical innovation (Shih, 2018).

Firms that embed these learning and regenerative principles into their routines are better positioned to adapt and achieve sustained growth and market share (Hu et al., 2020).

H8: There is a positive relationship between regeneration and SME performance.

INNOVATIVE CAPABILITIES



Conceptual framework

The research framework used in the study, indicating the relationship between the independent variables indicated by firms' innovative capabilities, measured by ideation and organizing structure, know-how development, exploiting external knowledge and individual activity; and the dependent variable measured by the performance of manufacturing SMEs.

3. METHODOLOGY

The study adopted a cross-sectional research design. Data were collected using a self-administered questionnaire. The population for the study comprised manufacturing SMEs operating in Kano State, Nigeria, with owner-managers and managers of these enterprises serving as the target respondents. According to the Kano State Industrial Survey (2019), there were 594 manufacturing SMEs operating across various locations within the state. This figure was used to define the study's population. The Small and Medium Enterprises Development Agency of Nigeria (SMEDAN, 2017) reported a larger number of total SMEs in Kano State (2,441), which represented 3.3% of Nigeria's total; however, for the specific focus on the manufacturing sector, the 2019 Industrial Survey provided a more precise and relevant population. The minimum required sample size was determined to be 399, calculated using the sampling formula introduced by Cochran (1977).

4. RESULTS AND DISCUSSIONS

i. Assessment of Measurement Model

To evaluate the measurement model of this study, the researcher is tasked to assess the reliability of individual items measuring each latent construct, the internal consistency reliability (i.e., construct reliability), discriminant validity, as well as convergent validity for each reflective construct (Hair et al., 2017).

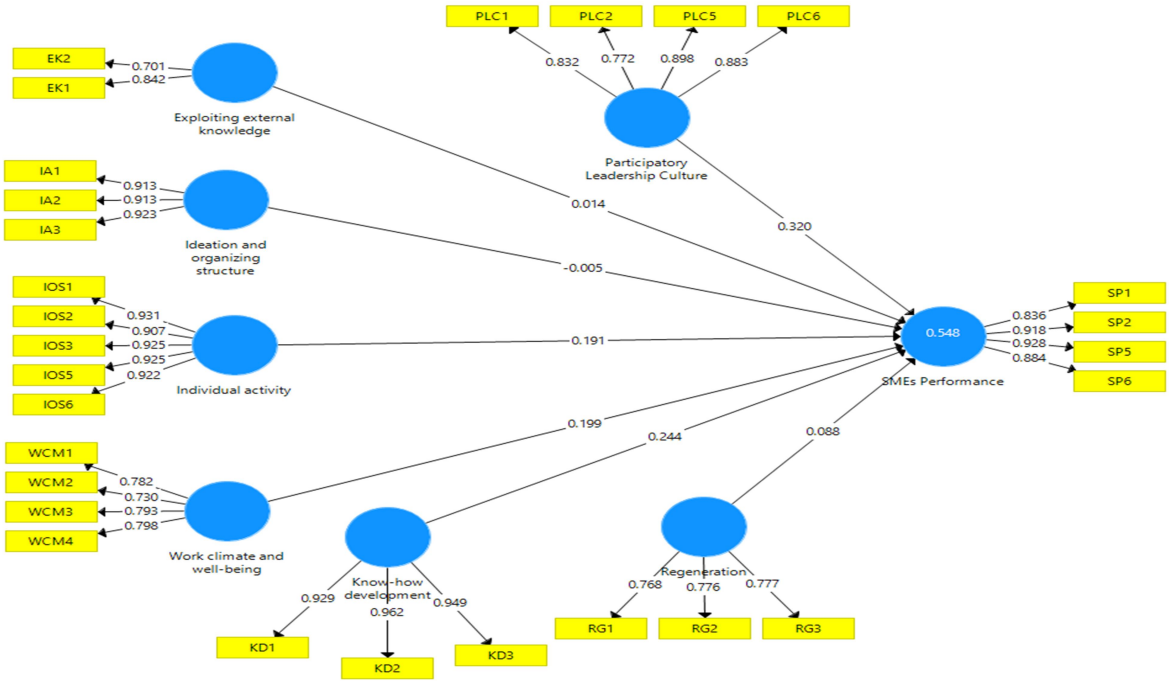


Figure 1.1: Measurement model

Table 1.1: Item Loadings, Internal Consistency, and Average Variance Extracted

Constructs	Indicators	Outer Loadings	Composite Reliability	Average Variance Extracted (AVE)
Exploiting external knowledge	EK1	0.842	0.748	0.600
	EK2	0.701		
Ideation and organizing structure	IA1	0.913	0.940	0.840
	IA2	0.913		
	IA3	0.923		
Individual activity	IOS1	0.931	0.966	0.850
	IOS2	0.907		
	IOS3	0.925		
	IOS5	0.925		
	IOS6	0.922		
Know-how development	KD1	0.929	0.963	0.896
	KD2	0.962		
	KD3	0.949		
Participatory Leadership Culture	PLC1	0.832	0.911	0.719
	PLC2	0.772		
	PLC5	0.898		
	PLC6	0.883		
Regeneration	RG1	0.768	0.817	0.599
	RG2	0.776		
	RG3	0.777		
SMEs Performance	SP1	0.836	0.940	0.796
	SP2	0.918		
	SP5	0.928		
	SP6	0.884		
Work climate and Well-being	WCW1	0.782	0.858	0.602
	WCW2	0.730		
	WCW3	0.793		
	WCW4	0.798		

As can be seen in Table 1.1, all items less than 0.60 were removed from the analysis due to some measurement issues. All other indicators have loadings of 0.70, indicating the item's reliability in measuring their respective reflective latent constructs.

Table 1.2: Measurement Model: Discriminant Validity (Heterotrait-Monotrait Ratio (HTMT)

Construct	1	2	3	4	5	6	7	8
1 Exploiting external knowledge								
2 Ideation and organizing structure	0.870							
3 Individual activity	0.630	0.547						
4 Know-how development	0.311	0.236	0.253					
5 Participatory Leadership Culture	0.500	0.474	0.436	0.300				
6 Regeneration	0.279	0.894	0.595	0.346	0.466			
7 SMEs Performance	0.823	0.502	0.529	0.490	0.666	0.550		
8 Work climate and well-being	0.376	0.385	0.274	0.169	0.531	0.396	0.476	

As can be seen from Table 4.8, the HTMT statistics are presented based on correlations among items of their reflective constructs. This study's reflective latent constructs have discriminant validity as the HTMT value is lower than the thresholds of 0.85 proposed by (Kline, 2018). Therefore, discriminant validity was confirmed using the HTMT criterion. Consequently, it is enough to say that all the latent constructs of this study have discriminant validity using all the approaches.

ii. Structural Model

The structural model was used to test the hypothesized relationships between the independent variables (the seven innovative capabilities) and the dependent variable (SME performance). The model assessed the strength and significance of the path coefficients (Beta values), which indicate the direct impact of each predictor variable on the outcome variable.

The analysis, as summarized in Figure 4.2 and the hypotheses test table, revealed a clear pattern. The path coefficients for Individual Activity (β=0.191), Know-how Development (β=0.244), Participatory Leadership Culture (β=0.320), and Work Climate & Well-being (β=0.199) were positive and statistically significant ($p<0.05$). This confirms that these four constructs are substantial drivers of SME performance in this context.

Conversely, the paths for Exploiting External Knowledge (β=0.014), Ideation & Organizing Structure (β=-0.005), and Regeneration (β=0.088) were not statistically significant ($p>0.05$), indicating that these factors, as measured, did not have a direct meaningful impact on performance. The model's predictive power is thus primarily derived from the significant human-centric and internal capability factors.

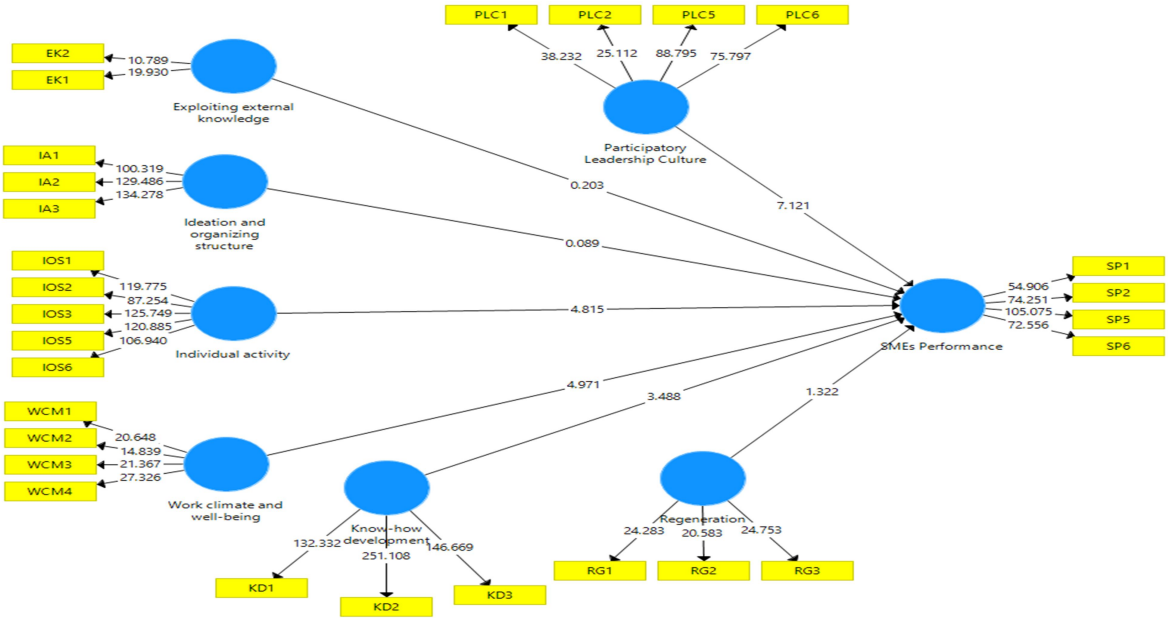


Figure 4.2: Structural Model

iii. Hypotheses Test

Table 4.10 presents the results of the hypothesis testing, showing the direct effects of each innovative capability on SME performance. The key metrics are the Beta (β) coefficient, which indicates the strength and direction of the relationship, and the p-value, which determines its statistical significance.

The results show a clear distinction:

Supported Hypotheses: Four variables demonstrated a significant positive impact on performance. Participatory Leadership Culture (β=0.320) had the strongest effect, followed by Know-how Development (β=0.244), Work Climate & Well-being (β=0.199), and Individual Activity (β=0.191). The p-values of 0.000 and 0.001 confirm these relationships are statistically significant.

Unsupported Hypotheses: Three variables—Exploiting External Knowledge (β=0.014), Ideation & Organizing Structure (β=-0.005), and Regeneration (β=0.088)—had very weak and statistically non-significant relationships with performance (p-values > 0.05), leading to the decision that these hypotheses are not supported. In summary, the table conclusively identifies which specific innovative capabilities are key drivers of performance for the manufacturing SMEs in this study.

Table 1.3 Hypotheses test

Relationship	Beta	Standard Deviation (STDEV)	t-Value	P Values	Decision
Exploiting external knowledge -> SMEs Performance	0.014	0.069	0.203	0.839	Not Supported
Ideation and organizing structure -> SMEs Performance	-0.005	0.053	0.089	0.929	Not Supported
Individual activity -> SMEs Performance	0.191	0.040	4.815	0.000	Supported
Know-how development -> SMEs Performance	0.244	0.070	3.488	0.001	Supported
Participatory Leadership Culture -> SMEs Performance	0.320	0.045	7.121	0.000	Supported
Regeneration -> SMEs Performance	0.088	0.066	1.322	0.187	Not Supported
Work climate and well-being -> SMEs Performance	0.199	0.040	4.971	0.000	Supported

iv. Discussion of Findings

Participatory leadership culture's strong positive relationship with SMEs performance supports the resource-based theory by emphasizing the value of leadership as a unique organizational capability. Participatory leadership fosters a culture of collaboration and empowerment, which enhances organizational cohesiveness and performance. Prior research by Pearce, Sims Jr, and practice (2002) has shown that participatory leadership positively impacts organizational outcomes by leveraging the collective capabilities of employees. For manufacturing SMEs in Kano, this finding underscores the importance of inclusive leadership practices in harnessing the full potential of their human resources.

The finding that regeneration does not significantly impact SMEs performance can be viewed through the resource-based theory perspective, which emphasizes sustained competitive advantage through continuous capability development. While regeneration efforts aim at renewal and revitalization, they may not immediately translate into performance gains without a solid foundation of internal resources. Prior studies, such as those by Ambrosini and Bowman (2009) suggest that regeneration processes must be part of a broader strategic framework. For Kano's manufacturing SMEs, this finding indicates that regeneration efforts must strategically align with other internal capabilities to yield performance benefits.

The significant positive relationship between work climate and well-being and SMEs performance aligns with resource-based theory, highlighting the importance of intangible resources like organizational culture and employee well-being. A positive work climate enhances employee satisfaction and productivity, improving organizational performance. Prior research, such as that by Wright and McMahan (1992), has demonstrated the link between a supportive work environment and improved firm performance. This finding suggests that for manufacturing SMEs in Kano, fostering a positive work climate and ensuring employee well-being are critical for leveraging human resources effectively.

The finding that exploiting external knowledge does not significantly impact SMEs performance aligns with the resource-based theory (RBT), which emphasizes the importance of unique, inimitable internal resources over external ones. The theory suggests that competitive advantage is primarily driven by firm-specific resources and capabilities rather than generic external knowledge. Prior studies, such as those by Barney (1991), support this view by highlighting that while external knowledge can complement internal resources, the unique internal capabilities are more critical for performance enhancement. In the context of manufacturing SMEs in Kano, external knowledge alone is insufficient without the internal capacity to integrate and utilize it effectively.

The lack of a significant relationship between ideation and organizing structure and SMEs performance can also be interpreted through resource-based theory. RBT posits that it is not merely the presence of ideas but the ability to transform them into valuable, rare, and inimitable capabilities that drive performance. Prior research, such as by Teece (2007), suggests that the processes and routines that convert ideas into actionable strategies are crucial. In the case of Kano's manufacturing SMEs, the study indicates that ideation alone does not significantly enhance performance without effective implementation mechanisms.

The significant impact of individual activity on SMEs performance strongly aligns with resource-based theory, which underscores the importance of human capital as a critical resource. Individual activities, such as proactive behavior, innovation, and personal initiative, contribute to developing unique competencies that enhance firm performance. Prior studies, like those by Becker and Gerhart and Trevor (1996), have highlighted the vital role of human capital in driving organizational success. This finding suggests that for manufacturing SMEs in Kano, encouraging individual employee engagement and proactivity is key to leveraging human capital for better performance.

The finding that know-how development significantly supports SMEs performance is consistent with resource-based theory, which highlights the importance of developing unique, inimitable capabilities. Investing in employee skills and expertise builds a firm’s internal resources, enhancing its competitive advantage. Prior studies, such as those by Grant (1996), emphasize that knowledge is a critical organizational resource. In the context of Kano's manufacturing SMEs, this finding suggests that strategic investments in training and development are crucial for building a competitive edge.

5. Conclusion

This study sought to investigate the impact of specific innovative capabilities on the performance of manufacturing SMEs in Kano State, Nigeria, guided by the Resource-Based View theory. The empirical findings provide a nuanced understanding of which capabilities truly drive performance in this context. The results confirm that internal, human-centric resources are paramount. Specifically, Individual Activity, Know-how Development, Participatory Leadership Culture, and a positive Work Climate & Well-being were identified as significant drivers of SME performance. These elements represent the core intangible resources that are valuable, rare, and difficult to imitate, thereby forming a sustainable competitive advantage.

Conversely, the study found that Exploiting External Knowledge, Ideation & Organizing Structure, and Regeneration did not have a statistically significant impact on performance. This suggests that for these manufacturing SMEs, the potential benefits of external knowledge and structured ideation processes may be contingent upon first having a strong foundation of internal capability and a motivated workforce. Similarly, long-term regenerative strategies may be perceived as secondary to immediate operational survival and growth. The study concludes that for manufacturing SMEs in challenging economic environments like Nigeria's, a strategic focus on empowering employees, developing internal expertise, and fostering a supportive and inclusive organizational culture is the most critical path to enhanced performance.

6. Recommendations

Based on the specific findings of this study, the following targeted recommendations are proposed for SME owners, managers, and policymakers:

1. Prioritize Investment in Human Capital Development: Given the strong positive impact of Know-how Development and Individual Activity, SMEs should institutionalize continuous training and skill-upgrading programs. Furthermore, management should create clear channels and provide resources to empower employees to initiate and implement their innovative ideas, thereby directly leveraging individual activity for firm-level gain.
2. Cultivate Participatory Leadership and a Positive Work Climate: Since Participatory Leadership Culture and Work Climate & Well-being were significant, SME owners must move beyond autocratic leadership styles. They should implement structured mechanisms for involving employees in decision-making and proactively foster a supportive work environment that prioritizes employee well-being. This builds the trust and motivation necessary for a innovative and high-performing workforce.
3. Strengthen Internal Capabilities Before Extensive External Search: The non-significant result for Exploiting External Knowledge implies that simply seeking external information is insufficient. Therefore, it is recommended that SMEs first focus on developing robust internal absorptive capacity—through the human capital investments mentioned above—to effectively

identify, assimilate, and apply valuable external knowledge before heavily investing in external partnerships.

4. Focus on Practical Implementation Over Ideation Structures: The finding that Ideation and Organizing Structure was not significant suggests that having ideas or formal structures alone does not improve performance. The recommendation is to shift focus from merely generating ideas to creating simple, efficient processes for implementing the most promising ideas generated by an empowered workforce. Resources should be directed towards execution rather than complex ideation management systems.

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