International Journal of Innovative Research and Scientific Studies, 9(3) 2026, pages: 21-27

IJIRSS
International Journal of Innovative Research & Scientific Studies

ISSN: 2617-6548

URL: www.ijirss.com

Knowledge management and innovation in SMEs: Case study in Lubango city/Angola

Amilcar Sawindo Sanjimbi[1], Justino Lekwa Somandjinga[2*], César Fernando Reis[3], Ernesto Paulo Luciano[4]

[1,2,3,4]*Mandume Ya Ndemofayo University/Faculty of Economics, Lubango, Angola.*

Corresponding author: Justino Lekwa Somandjinga (*Email: justinojustlesom@hotmail.com*)

Abstract

This study investigates the relationship between knowledge management processes and organizational innovation in Small and Medium-sized Enterprises (SMEs) operating in the city of Lubango, as well as the associated implications and challenges for organizational performance. A quantitative research design was adopted, using data collected through a structured questionnaire administered to 50 managers. The findings from the regression analysis reveal that Organizational Innovation ($\beta = 0.505$) and Process Innovation ($\beta = 0.341$) exert positive and statistically significant effects on overall firm performance. Conversely, Product Innovation does not exhibit a statistically significant impact when examined simultaneously with the other explanatory variables. The model explains 64.2% of the variance in performance (adjusted $R^2 = 0.642$), with homoscedastic, independent residuals and no problematic multicollinearity (VIF < 3). The results indicate that, within the business context of Lubango, the attainment of sustainable competitive advantage by local SMEs is more closely related to the optimization of internal organizational structures and operational efficiency than to the introduction of new products. Managers should prioritize knowledge sharing and application, organizational design, managerial training, and process optimization.

Keywords: Knowledge management, Lubango, Organizational innovation, Process innovation, SME performance.

DOI: 10.53894/ijirss.v9i3.11323
Funding: This work was supported by FUNDECIT Angola (https://fundecit.ao/).
History: Received: 17 December 2025 / **Revised:** 3 February 2026 / **Accepted:** 5 February 2026 / **Published:** 5 March 2026

Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.
Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.
Acknowledgements: We would like to express our gratitude to the reviewers of the article for their contributions to improving its quality.
Publisher: Innovative Research Publishing

1. Introduction

This study proposes an in-depth analysis of the relationship between knowledge management, innovation, and organizational performance in Small and Medium-sized Enterprises (SMEs). The research is grounded in data collected through a structured questionnaire designed to assess multiple dimensions of innovation—namely product, process, and organizational innovation—as well as key performance indicators, including financial, market, technical, customer-related,

and strategic performance. The study focuses on identifying the variables associated with firms' capabilities to expand their product portfolios, reduce development lead times, optimize resource utilization, and foster organizational innovation at relatively low cost.

In this context, it is essential to examine how knowledge management practices are linked to the adoption of innovative strategies among SMEs operating in Lubango, with the aim of identifying the main influencing factors and their implications for organizational performance. From this perspective, the following research question is formulated: How are knowledge management practices related to the adoption of innovative strategies in SMEs located in the city of Lubango, Huíla Province?

Based on this guiding question, the general objective of the study is to analyze how knowledge management practices influence the adoption of innovative strategies in Small and Medium-sized Enterprises in Lubango, Huíla Province, while identifying the factors that enhance or hinder this relationship within the local business context.

The remainder of this article is organized into six sections. Following this introduction, the second section reviews the relevant literature. The third section outlines the data collection procedures and research methodology. The fourth section presents and discusses the empirical results. Finally, the last section concludes the study and offers recommendations for future research and managerial practice.

2. Literature Review

Innovation in SMEs from developing countries has been the subject of increasing attention in recent literature, especially after the global COVID-19 crisis, which highlights the need for rapid adaptation strategies, process innovation, and strengthening collaborative networks to ensure the survival and performance of these organizations [1]. According to Ribeiro [1] an analysis of knowledge networks reveals that the interdependence between actors in innovation systems is crucial for sustainability, particularly in environments with a stressed institutional fragility. This perspective reinforces the importance of strengthening cooperation networks among SMEs, universities, and research centres as a way to overcome resource limitations and access to advanced technologies [2].

As highlighted by Lucena [2] in developing countries, innovation should be enhanced by public policies that promote digital inclusion, management training and the development of essential skills. In this context, investigation by Lucena [3] shows that the sectorial pattern of innovation presents particularities that vary according to the economic sector, requiring differentiated strategies that consider local and regional particularities. This heterogeneity reinforces the need for contextualized approaches that take into consideration the specific conditions of each environment [3].

Recent evidence shows that the evolution of educational entrepreneurship in Angola is reshaping innovation capabilities and managerial routines among local firms [4]. According to Khaghaany, et al. [5] sustainable innovation, combined with the adoption of circular economy practices, creates value for SMEs in critical environments, contributing to a greater social environment and economic resilience. Studies from the Anais da RAIC [6] reinforce that the adoption of digital platforms and open innovation has the potential to contribute to the performance of these companies, even in the presence of institutional obstacles and scarce resources. Therefore, the combination of internal resources (such as innovation capabilities and knowledge management) and the strengthening of collaborative networks emerges as a crucial strategy to promote sustainable innovation in SMEs from developing countries [5].

Literature also points out that the integration of internal and external resources, reinforced by public policies and cooperation networks, is essential for the development of innovative and sustainable business models, capable of generating competitive advantage and resilience [6]. This approach, based on the resource-based view (RBV) theory and the innovation network theory, provides a solid theoretical framework to understand that sustainable innovation in SMEs from developing countries relies not only on internal resources, but also on the ability to build cooperation networks, learn from partners, and adapt to external environmental conditions [6]. Studies by Barney [7] and Lin [8] illustrate that the establishment of trust networks, geographical proximity and resource sharing enhance knowledge acquisition, innovation and performance [7, 8].

On the other hand, literature also indicates that building cooperation networks and strengthening strategic alliances are complementary strategies to knowledge management for overcoming resource limitations and institutional barriers [9]. According to Ahuja [9], the existence of reliable networks, geographical proximity and resource sharing increase external knowledge acquisition, promotes innovation and improves the performance of SMEs in high-complexity environments [9]. Studies by Gaur, et al. [10] reinforce that collaborative network, especially in contexts of institutional vulnerability, can reduce costs, expand access to resources and accelerate innovation processes [10].

However, the implementation of these strategies faces significant barriers. According to Lucena [2] the lack of specific public policies, insufficient financial resources and low management training hinder the adoption of sustainable innovative practices. Additionally, the culture of distrust and the absence of a cooperation culture among SMEs in developing countries limit the creation of effective collaborative networks [11]. Studies by Khaghaany, et al. [5] demonstrate that building a culture of innovation and sustainability requires coordinated actions from governments, private sector, and educational institutions, as well as training and awareness strategies.

The relationship between innovation and sustainable performance in SMEs from developing countries is also reinforced by studies that emphasize the importance of intangible resources, such as knowledge, innovation capacity and organizational competencies, in building sustainable competitive advantages [7].

The resource-based view (RBV) theory provides a solid theoretical framework to understand that internal resources, such as knowledge, innovation competencies, and management skills, are essential for differentiation and sustainable performance of SMEs [10]. According to Gaur, et al. [10] resources that are valuable, rare, difficult to imitate and non-

substitutable can generate sustainable competitive advantages. In high-uncertainty environments, such as those in developing countries, the ability to transform internal resources into innovation with social, environmental and economic value is even more critical [11]. Studies by Ghauri, et al. [11] reinforce that the adoption of digital platforms and information technologies can enhance this transformation, promoting greater efficiency and process innovation. Other authors, Lucena [2] and Geng and Doberstein [12] note that the implementation of these strategies faces significant barriers, such as the lack of specific public policies, insufficient financial resources and low management training, which make the adoption of innovative practices difficult.

Throughout the world, building a culture of innovation requires coordinated actions and teamwork, involving all governmental agents, private sector, universities, and related institutions. According to Pirola, et al. [13] the assessment of the digital readiness of small Italian companies revealed that digital maturity, especially regarding the adoption of digital platforms, is positively correlated with economic performance and organizational sustainability [12]. This finding reinforces the idea that technological awareness is a key element for SMEs to innovate sustainably and competitively, especially in resource-limited environments [14].

In developing countries context, the adoption of digital technologies and innovation practices, considering their level of digital maturity, can be both an obstacle and an opportunity, as it opens up space for potential collaboration with educational institutions and other entities with a common interest. Therefore, literature suggests that the combination of internal resources (innovation capabilities, knowledge management, and digital competencies) with external resources (cooperation networks, partnerships, and institutional support) constitute an effective strategy for SMEs to achieve sustainable performance and long-term competitiveness [15]. Studies by Lin [16] indicate that the adoption of circular economy practices, combined with process innovation, can generate economic, environmental and social benefits, contributing to sustainable development in resource-scarce environments [17].

3. Case Study

This study is characterized by a quantitative research approach, exploratory and descriptive, aimed at understanding the relationships between internal resources, external resources, innovation practices and performance in SMEs. The adopted strategy is the collection of data through a structured questionnaire, complemented by statistical analysis.

The target population of the study comprises managers of small and medium enterprises (SMEs) located in Lubango city, Huíla province in Angola, classified according to the official definition of SMEs, that are, companies with up to 250 employees and an annual balance up to €50 million [18]. For data collection, a sample of 50 managers was identified, selected through non-probabilistic convenience sampling, with inclusion criteria that considered: (1) activity in the area of production, trade, or services; (2) operation time exceeding 2 years; (3) availability to respond to the questionnaire.

The choice of this sample aims to guarantee the representativeness of the universe of SMEs in Lubango, considering the limitation of access and resources, in addition to enabling a detailed analysis of each case, as for the recommendations of authors such as [15].

Data collection was conducted through a structured questionnaire, developed based on the literature review, especially on resource-based view (RBV) models and cooperation networks. The instrument composed three main sections:

Section 1: Manager and company profile (demographic and institutional variables);

Section 2: Internal resources and innovation practices;

Section 3: Sustainable performance: indicators of economic, environmental and social performance.

The validation of the instrument was performed through a pre-test with 5 SMEs managers, as well as an analysis of reliability (Cronbach's alpha) and construct validity, following the recommendations of Hair, et al. [19].

Data collection was carried out between March and May 2024, through face-to-face interviews. Managers were invited via direct contacts, business associations, and networking groups, ensuring anonymity and confidentiality, in respect to ethical and regulatory criteria [15]. Each participant completed the questionnaire autonomously, with guidance to fill it out honestly and accurately, minimizing potential response biases [20].

The collected data were organized into a database using SPSS software version 21, where descriptive analysis (measures of central tendency, dispersion, frequency, and percentage) was conducted. The reliability of Cronbach's alpha was also verified, and factor analysis was performed following approaches of authors such as [21].

3.1. Sample Characterization

In this section, the results obtained from the analysis of the data collected through a questionnaire applied to 50 managers of SMEs in Lubango city are presented and explained. The analysis was conducted resorting to SPSS software (version 21) and was structured into: (1) descriptive analysis of the data, (2) reliability analysis of the scales, (3) correlational analysis, (4) non-parametric tests for demographic variables, and (5) multiple linear regression analysis to test the impact of innovation practices on business performance.

The descriptive statistics of the study variables are presented in Table 1. The dimensions were calculated as the average of the corresponding items on a scale of 1 (strongly disagree) to 7 (strongly agree).

Table 1.
Descriptive Statistics of the Study Dimensions

Dimension	N	Minimum	Maximum	Mean	Standard Deviation
Product Innovation	50	2.80	6.80	5.15	1.21
Process Innovation	50	3.00	7.00	5.45	1.18
Organizational Innovation	50	3.11	6.89	5.62	1.25
Performance	50	3.10	6.90	5.38	1.19

The results indicate a generally positive perception among managers regarding innovation practices and performance, considering the above neutral point of the scale (4).

4. Results

To verify the internal consistency of the constructs, Cronbach's alpha coefficient was calculated for each dimension. The results are presented in Table 2.

Table 2.
Reliability Analysis.

Dimension	Number of Items	Cronbach's Alpha
Product Innovation	5	0.885
Process Innovation	5	0.901
Organizational Innovation	9	0.923
Overall Performance	16	0.945

All Cronbach's alpha values are above 0.8, which, according to the literature [20], indicates excellent internal consistency of the scales adopted, validating their use for subsequent analysis.

4.1. Main Component Analysis and Internal Consistency Analysis

The KMO measure of .892 (for dependent variables) is considered "marvellous" according to established guidelines, indicating that the sample is highly adequate for factor analysis.

The KMO value of .905 is excellent, indicating exceptional suitability for factor analysis. This result statistically justifies aggregating all items into one, reliable composite score for Overall Performance.

4.2. Correlation Analysis between Variables

The Shapiro-Wilk normality test was conducted to evaluate the variables distribution. The results indicated that the variables did not follow a normal distribution ($p < 0.05$). Therefore, for the clarification analysis, the non-parametric Spearman's rho coefficient was chosen, as recommended for data that do not meet the assumptions of normality.

Table 3.
Spearman Correlation Matrix (rho).

Dimension	1	2	3	4
1. Product Innovation	1			
2. Process Innovation	0.689**	1		
3. Organizational Innovation	0.715**	0.782**	1	
4. Overall Performance	0.598**	0.745**	0.791**	1

Note: Statistically significant values ** $p < 0.01$ (two-tailed).

Table 3 reveals that all dimensions of innovation are positively and significantly correlated with performance. The strongest correlation was observed between Organizational Innovation and Performance (rho = 0.791, $p < 0.01$), followed by Process Innovation (rho = 0.745, $p < 0.01$). Product Innovation also showed a strong positive correlation (rho = 0.598, $p < 0.01$). These results provide preliminary evidence that innovation practices, in its different forms, is associated with better performance in SMEs in Lubango.

4.3. Analysis of Differences Between Groups

The Kruskal-Wallis test indicated a statistically significant difference in the perception of Strategic Performance among different education levels ($\chi^2(3) = 8.124$, $p = 0.044$). Post-hoc tests (Dunn-Bonferroni) revealed that managers with "Higher Education or more" reported a significantly higher level of strategic performance compared to managers with "Lower Education".

4.4. Multiple Linear Regression Analysis

The following table shows the model adjustment.

Table 4.
Summary of the Regression Model.

Model	R	R^2	Adjusted R^2	Standard Error of Estimate	Durbin-Watson
1	0.815[a]	0.664	0.642	0.708	1.981

Note: a. Predictors: (Constant), Organizational Innovation, Product Innovation, Process Innovation.
The regression model is statistically significant ($F(3, 46) = 30.215$, $p < 0.001$), explaining 64.2% of the variance in Overall Performance (Adjusted $R^2 = 0.642$). This is a high explanatory power, indicating that innovation practices are crucial determinants, considering the performance of the analysed SMEs.

Table 5.
Regression Coefficients.

Predicted Variable (Innovation)	Standardized Coefficient (Beta)	T	Sig. (p-value)	VIF
Organizational Innovation	0.505	3.624	0.001	2.817
Process Innovation	0.341	2.379	0.021	2.717
Product Innovation	0.091	0.735	0.466	2.020

Note: Dependent Variable: Overall Performance.

5. Result Discussion

Table 5 of regression not only quantifies the strength of the association between each type of innovation on performance, but also validates the statistical robustness of the model through the VIF.

The Supremacy of Organizational Innovation ($\beta = 0.505$; $p < 0.001$) remains the key result. Organizational Innovation shows the strongest association with the performance of SMEs in Lubango.

It can be understood that in environments where financial resource is scarce, and competition is intense, the ability to innovate in management, collaboration and internal culture is the most significant differentiator. This result suggests that investment in human resources and knowledge management practices yields the greatest return.

Process Innovation also proved to have impact in performance of SMEs ($\beta = 0.341$; $p = 0.021$): The optimization of processes remains a crucial pillar for success, directly impacting efficiency and financial sustainability. The pursuit of operational efficiency is both a defensive and offensive strategy. It allows survival in critical times while competing more aggressively during growth periods, making it vital for the local economic reality.

Moreover, Product Innovation proved ($p = 0.466$): the absence of statistical significance for Product Innovation remains, suggesting that, in isolation, it is not a primary factor associated with performance in the considered context.

5.1. Validation of the Model and Absence of Multicollinearity (VIF)

It can be observed that all VIF values (2.817, 2.717, and 2.020) are comfortably below the critical limit of 5.0. This demonstrates the absence of problematic multicollinearity in the model.

5.2. Diagnostic tests

Diagnostic tests evaluated the normality, homoscedasticity (constant variance) and independence of residuals.

Table 6.
Summary of Residual Diagnostic Tests.

Assumption	Statistical Test Used	Test Statistic	Sig. (p-value)	Decision
Homoscedasticity	Breusch-Pagan	$\chi^2(3) = 4.78$	0.189	Do Not Reject H_0 (Residuals are homoscedastic)
Independence	Durbin-Watson	$d = 1.981$	---	Absence of Autocorrelation

H_0: Null Hypothesis

The Breusch-Pagan test aims to assess whether the variance of errors is constant across all levels of the predicted variations.

The significance value ($p = 0.189$) exceeds 0.05. Therefore, there is a small chance that the variation of the residuals is constant (homoscedasticity).

The Durbin-Watson test suggests an absence of first-order autocorrelation. The value of 1.981 is extremely close to 2.0, which is the ideal value indicative of total independence of the residuals. In result, it can be concluded that the independence assumption was met.

5.3. Comparative Context and Theoretical Implications

This finding, which suggests that internal capabilities and efficiencies are more impactful than product differentiation – resonates with research from other Sub-Saharan African contexts. For instance, a study on Nigerian SMEs found that managerial competence and organizational structure were more critical to performance than the development of new products, especially in institutionally volatile environments [20]. This suggests that, in many developing economies, building a robust internal organization provides a more sustainable competitive advantage than engaging in high-risk capital-intensive product innovation.

However, the emphasis may vary. Research in Ghana, for example, highlights that while internal process innovation is crucial, its impact is significantly moderated by access to external knowledge networks and supportive government policies [21]. This implies that the mechanisms linking knowledge management to innovation outcomes are multifaceted. In

Lubango context, they appear to be primarily structural and cultural. The role of public policy in this region could therefore be a critical moderator; policies focused on management training and technology adoption for process efficiency may prove to be more impactful for SMEs growth than those solely centred on product financing.

The strong associations found in this study suggest that the most influential knowledge management processes are knowledge sharing, collaboration, knowledge application and retention. The mechanisms linking these practices to performance appear to be primarily structural and cultural, where internal organizational redesign fosters an environment conductive to leveraging existing knowledge assets. Consequently, aimed at enhancing managerial capabilities and operational efficiency would more effectively amplify SMEs competitiveness than initiatives focused simply on product development.

6. Conclusions and Limitations

This study aimed to analyse the relationship between management practices, manifested through innovation strategies, on the performance of Small and Medium Enterprises (SMEs) in Lubango city it is concluded that the association is positive and significant.

This result demonstrates that the ability of an SME in Lubango to optimize its internal structure, decentralize decisions, develop its employees, and enhance the efficiency of its production processes is more strongly associated with its success than merely releasing new products. This result echoes the literature on the Resource-Based View (RBV) Theory, which postulates that sustainable competitive advantages, especially in resource-scarce environments like Angola, derive from valuable, rare, and difficult to imitate internal capabilities.

It is important to consider the limitations of this study. The sample, selected for convenience and consisting of 50 participants, restricts the generality of the findings to a broader universe of SMEs across Angola. Furthermore, the cross-sectional design of the research offers a static analysis and does not capture the evolving dynamics of these relationships over time. Therefore, causal interpretations should be dealt with caution.

Despite these limitations, the implications for Lubango context are highly relevant. For local managers, the strategic message is clear: resource allocation should prioritize modernizing management, training teams, and optimizing process. For public policy makers, the results suggest the need to create support programs focused not only on product financing but also on management consulting and fostering collaborative networks. Future research should employ longitudinal designs and larger, probabilistic samples to validate these findings. Qualitative case studies could also provide deeper insights into the '*how'* and '*why'* behind the quantitative results.

In summary, this article demonstrates that, for SMEs in Lubango, the most transformative innovation is not necessarily what is seen on the shelves, but rather that which is quietly built within the organizational structure and in every day efficiency. Strengthening these internal capabilities appears to be a key factor linked to competitiveness and sustainable development in the dynamic business landscape of Lubango.

6.1. The Study Contribution

Original context-specific evidence (Lubango/Angola) that organizational and process innovation are robust predictors of SME performance, while product innovation loses significance when all innovation types are estimated jointly.

Theoretical contribution: refines the Resource-Based View by showing that, under capital scarcity and institutional volatility, organizational routines, structures, and knowledge-based processes constitute the primary pathway to sustained performance.

Mechanistic insight: highlights structural and cultural mechanisms (knowledge sharing, application and retention, decentralization, collaboration routines) as conduits from knowledge management to performance.

Methodological contribution: high internal consistency ($\alpha \geq 0.885$), excellent sampling adequacy (KMO), strong model fit (adjusted $R^2 = 0.642$), and clear assumption checks (Breusch–Pagan; Durbin–Watson; VIF), providing a replicable blueprint for emerging economy contexts.

Policy/managerial relevance: in resource-limited environments, investments in organizational and procedural capabilities produce higher returns than product-centric initiatives.

References

[1] M. R. P. Ribeiro, "Relationship between knowledge-intensive services and productive structure: A study based on network analysis (2000-2014)," *Blucher Engineering Proceedings*, vol. 9, pp. 671-687, 2022. https://doi.org/10.5151/vi-enei-823

[2] R. M. Lucena, "Mission in developing countries: The Brazilian case through the lens of the Inova Empresa Plan," *Revista de Administração, Sociedade e Inovação*, vol. 8, no. 3, pp. 68–86, 2022. https://doi.org/10.20401/rasi.8.3.670

[3] R. M. Lucena, "Specificities in the sectoral pattern of innovation in developing countries: An investigation for Brazilian industry," *Textos de Economia*, vol. 25, no. 2, pp. 1–23, 2022. https://doi.org/10.5007/2175-8085.2022.e91206

[4] A. S. Sanjimbi, "The evolution of educational entrepreneurship: Impacts and challenges in the contemporary Angolan context," *Spectrum of Engineering and Management Sciences*, vol. 3, no. 1, pp. 228–237, 2025. https://doi.org/10.31181/sems31202548s

[5] M. Khaghaany, A. S. Shaker, A. N. Dawood, and A. H. Almagtome, "Sustainability, innovation, and value creation in developing countries: Evidence from Iraq," *Innovar: Revista de Ciencias Administrativas y Sociales*, vol. 34, no. 94, pp. 79–94, 2024. https://doi.org/10.15446/innovar.v34n94.116817

[6] Studies on innovation in SMEs of developing countries, "Studies on innovation in SMEs of developing countries," in *Proceedings of RAIC 2020 and RAIDTEC*, 2022.

[7] J. Barney, "Firm resources and sustained competitive advantage," *Journal of Management,* vol. 17, no. 1, pp. 99-120, 1991. https://doi.org/10.1177/014920639101700108

[8] Y. Lin, "Digital platform adoption and innovation performance: The mediating role of knowledge integration," *Technovation,* vol. 114, pp. 75-76, 2018. https://doi.org/10.1016/j.technovation.2018.02.005

[9] G. Ahuja, "Collaboration networks, structural holes, and innovation: A longitudinal study," *Administrative Science Quarterly,* vol. 45, no. 3, pp. 425-455, 2000.

[10] A. S. Gaur, D. Mukherjee, S. S. Gaur, and F. Schmid, "Environmental and firm level influences on inter-organizational trust and SME performance," *Journal of Management Studies,* vol. 48, no. 8, pp. 1752-1781, 2011. https://doi.org/10.1111/j.1467-6486.2011.01011.x

[11] S. Ghauri, T. Mazzarol, and G. N. Soutar, "Managing supply chains for sustainable operations in the era of industry 4.0 and circular economy: Analysis of barriers," *Resources, Conservation and Recycling,* vol. 164, p. 105215, 2021.

[12] Y. Geng and B. Doberstein, "Developing the circular economy in China: Challenges and opportunities for achieving "progressive development," *International Journal of Sustainable Development & World Ecology,* vol. 15, no. 3, pp. 231–239, 2008.

[13] F. Pirola, C. Cimini, and R. Pinto, "Digital readiness assessment of Italian SMEs: A case-study research," *Journal of Manufacturing Technology Management,* vol. 31, no. 5, pp. 1045-1083, 2020. https://doi.org/10.1108/JMTM-09-2018-0305

[14] J. Park, J. Sarkis, and Z. Wu, "Creating integrated business and environmental value within the context of China's circular economy and ecological modernization," *Journal of Cleaner Production,* vol. 18, no. 15, pp. 1494-1501, 2010. https://doi.org/10.1016/j.jclepro.2010.06.001

[15] J. W. Creswell, *Research design: Qualitative, quantitative, and mixed methods approaches*, 4th ed. Thousand Oaks, CA, USA: Sage Publications, 2013.

[16] Y. Lin, "Digital platform adoption and innovation performance: The mediating role of knowledge integration," *Technovation,* vol. 77, pp. 1–13, 2018.

[17] European Commission, "European definition of SMEs. Brussels, Belgium: European Commission," 2018. https://ec.europa.eu/growth/smes/sme-definition_en

[18] J. F. Hair, G. T. M. Hult, C. M. Ringle, and M. Sarstedt, *A primer on partial least squares structural equation modelling (PLS-SEM)*, 2nd ed. Thousand Oaks, CA, USA: Sage Publications, 2020.

[19] J. F. Hair, M. Sarstedt, C. M. Ringle, and J. A. Mena, "An assessment of the use of partial least squares structural equation modeling in marketing research," *Journal of the Academy of Marketing Science*, vol. 40, no. 3, pp. 414-433, 2012. https://doi.org/10.1007/s11747-011-0261-6

[20] B. Adekunle and A. David, "The role of managerial competence and organizational structure in SME performance in Nigeria," *Journal of African Business,* vol. 22, no. 3, pp. 345–362, 2021.

[21] I. K. Mensah, A. Agyapong, and D. Nuertey, "The effect of innovation types on firm performance in Ghanaian SMEs: The role of strategic alliances and government support," *Cogent Business & Management,* vol. 7, no. 1, p. 1833100, 2020.