Moderating Effects of Entrepreneurial Training on the Link Between Innovative Capacity and Performance of Agro-Based SMEs in Nigeria

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ABSTRACT

Innovation is also commonly considered an important source of firm performance, numerous agro-based SMEs are unable to convert innovative potential into practical results. Entrepreneurial training has been advanced as a possible process of reinforcing this association, but there is little and inconclusive empirical evidence on its moderating effect. In this research, the moderating factor of entrepreneurial training is tested on the relationship between innovative capacity and the performance of agro-based small and medium enterprises (SMEs) in Nigeria, which is specifically in Kwara State. The survey was designed using a quantitative, cross-sectional survey design, which included 314 owners and managers of agro-based SMEs who were chosen using a multistage sampling method. A structured questionnaire was used to collect data that were analysed by means of descriptive statistics and multiple regression analysis. The test of moderation was carried out by adding an interaction term to the element of innovative capacity and entrepreneurial training. The findings show that innovative capacity positively and significantly impacts SME performance (0.931 = 0.002), and this is the reason why it is an important factor in sales growth, profitability, and market expansion. However, entrepreneurial training has no statistically significant direct impact on performance (= 0.331, p = 0.216). More to the point, the interaction coefficient between innovative capacity and entrepreneurial training is negative and insignificant (β = -0.113, p = 0.080), indicating that entrepreneurial training does not mediate the relationship between innovation and performance. The model explains a moderate proportion of variance in performance (R^2 = 0.313, F = 47.13, p < 0.001). This research concludes that innovative capacity forms an important contribution to the performance of the SMEs, but the entrepreneurial training alone is not effective to strengthen the relationship. It suggests that training programmes should be restructured in such a way that they include practical and context specific factors and are supplemented by financial, technological, and institutional resources to generate significant performance results.

Keywords**:** *Innovative Capacity; Entrepreneurial Training; SME Performance; Agro-Based SMEs*

1. INTRODUCTION

Innovation is no longer an organizational quality that is desirable but rather a survival requirement in the modern economies. The competition is no longer between firms in terms of scale and access to resources; it is now between firms in terms of their capacity to continually create, adapt and implement new ideas in response to the changing market conditions. The change is especially acute in small and medium enterprises (SMEs), where resource scarcity requires resourcefulness, and not redundancy. In this regard, innovative capacity as the capacity to develop, embrace, and introduce new products, processes, or business models has become a decisive factor in the performance of firms and their sustainability over time (Hidayat and Pok, 2025; Brimah et al., 2023).

In developing economies this dynamic acquires an added urgency. SMEs are not marginal players; they are core to economic form and stability. In Nigeria, SMEs play a significant role in the national product and the labour market, with almost half of the gross domestic product of the country being produced by SMEs in the country and the sector being a major source of industrial activity and job creation (Chidi & Chike, 2024; SMEDAN & NBS, 2023). The agricultural sector of this industry is even more crucial. It is at the nexus of the

food security, rural livelihoods and value chain development. When agro-based SMEs are successful, their impacts spread out- enhancing income distribution, robust supply chains, and stabilizing local economies (Asuquo et al., 2024). In case of their underperformance, the implications are also far-reaching.

Yet even though they are important in structure, there is a continuing contradiction. The nature of the environment in which these enterprises exist requires innovation, yet not all of them manage to innovate successfully. There is an indication of poor innovation results among the Nigerian SMEs, especially the agro-based companies, whereby the companies tend to experience challenges in the conversion of ideas into commercial outputs (Kolawole, 2024). It is not merely a matter of lack of ideas, but the problem is the failure to develop and implement innovative capacity in a systematic manner. The lack of financial resources, poor infrastructure, and an insufficient system of institutional support interact to inhibit experimentation and restrict the use of technology (Ajirowo, 2024; Ajayi & Adeyeye, 2023). his disparity between potential and actual performance is further exposed in certain regional situations like Kwara State in which agro-based SMEs are subjected to other forms of pressure. The increase in the cost of production attributed to macroeconomic reforms, insecurity impacting the rural production systems, and disjointed access to the market have all contributed to a lowering of the margin of trial-and-error innovation. In an ideal scenario, these businesses would have adaptive abilities that take advantage of technology, talented workforce, and networks of collaboration to stay competitive (Uford, 2022). As a matter of fact, most of them depend on conventional production practices, informality in knowledge systems, and minimal strategic planning. The outcome is a trend of low productivity, stifled growth, and, in most instances, business discontinuity.

This brings to the fore a pivotal question on whether innovative capacity is so central, yet it does not always translate to better performance among agro-based SMEs? The literature at hand has tried to solve this by looking at direct links between innovation and firm performance. Research has revealed that companies that have a greater degree of innovative activity have a higher level of profitability, market share, and survival (Donkor et al., 2018; Neely and Jasper, 2012). Nevertheless, these studies tend to presuppose that the relationship between innovation and performance is linear without further questioning the circumstances in which this relationship can exist or fail.

Later research has started to challenge this assumption with some indicating that the relationship between innovation and performance can be dependent on other organizational or environmental variables. Entrepreneurial training has been one of them which have become increasingly popular. Ideally, training will provide entrepreneurs with managerial skills, strategic thinking skills, and the ability to identify and capitalize on the opportunities. It is also predicted to enhance the potential of companies in transforming innovative concepts into practical results. Governments and development agencies have thus spent a lot of money on training programmes that have facilitated better performance of SMEs.

Nonetheless, the data is inconclusive. Although certain studies have shown positive impacts of entrepreneurial training on the performance of firms, others have found weak or insignificant correlations, especially in cases where the training is not specific to the firms or where structural constraints exist (Adam and Alarifi, 2021; Singh and Hanafi, 2020). More to the point, very little research has studied explicitly the existence of entrepreneurial training in moderating the relationship between innovative capacity and performance. To put it another way, there is still no certainty whether training enhances the capacity of firms to convert innovation to quantifiable success or it has independent effect to the innovation processes.

It is not an insignificant gap. When entrepreneurial training fails to significantly improve innovation-performance relationship, then the existing policy strategies might be misplaced. Funds can be allocated into knowledge enhancing programmes that do not enhance results. On the other hand, when training has a moderating role, it will be necessary to comprehend the processes by which training works to create effective interventions. This lack of definite empirical data, especially in the framework of agro-based SMEs in Nigeria, causes incomplete assumptions on the part of the scholars and policy-makers.

The effects of this uncertainty are direct and indirect. At the company level, the lack of effective innovation is manifested in low competitiveness, decreased market penetration, and decreased profitability. On the sectoral level, it undermines agricultural value chains and retards economic transformation in the rural areas. On the national level, it limits the overall development potential of SMEs as development drivers and sources of employment. These compounding effects support the necessity of a more subtle view of the interaction of

innovation with other variables- particularly in the development processes of human capital like entrepreneurial training.

It is on this basis that the current research falls at the crossroads of the theory of innovation, human capital building, and the research on SME performance. With the help of the resource-based view and the contingency theory, the study conceptualises the innovative capacity as a strategic resource and the entrepreneurial training as a contingent factor that could possibly impact the effectiveness with which this resource is utilised. Instead of presupposing a fixed and direct relationship, the study poses the question of the conditions under which innovation is associated with performance results in the context of agro-based SMEs.

2. LITERATURE REVIEW

The connection between innovation and firm performance has long been in the centre of focus in the entrepreneurship and strategic management literature. Based on the theory of innovation as outlined by Joseph Schumpeter, a firm is regarded as a dynamic entity, whose survival hinges on its capability to perform creative destruction i.e. substituting the old processes with newer and more efficient and competitive processes. In this theoretical context, innovative capacity is not merely an operational quality; it is a strategic resource that defines how far the firms are able to react to the turbulence in the environment and maintain a competitive advantage.

The innovative capacity becomes multidimensional in the case of agro-based SMEs. It goes beyond technological upgrades to cover product innovation, process enhancement, marketing adaptation, and reorganization (Hidayat & Pok, 2025; OECD, 2024). Such a more expanded conceptualization is especially applicable in the case of developing economies, including Nigeria, where innovation is frequently necessity-based and influenced by resource limitations as opposed to formal systems of R&D (Ajirowo, 2024). Agro-based SMEs exist in unstable environments that are marked by changes in the costs of inputs, lack of infrastructures, as well as uncertainties in the market, and innovation is a very important mechanism through which the SMEs can survive and perform.

However, even though the role of innovative capacity is generally accepted, there is still controversy in the channels through which it is converted into performance outcomes. There is a growing focus on finding contingent factors, especially those human capital interventions that can affect this relationship, including entrepreneurial training.

Innovative Capacity and SME Performance

Empirical studies tend to show that there is a positive linkage between innovative capacity and firm performance. As an example, in a study by Olaleye et al. (2024) (401 SMEs in Lagos), innovation capability contributes to business sustainability in significant ways, and the mediating variables are competitive advantage and organizational resilience. The positive aspect of this study is that it has a strong quantitative design with a substantial sample size that increases the generalizability. Nevertheless, it has a weakness in that it supposes linear relationship and gives minimal consideration to contextual moderators.

Likewise, Okohue (2020) utilized the results of a survey of 300 SMEs in Abuja and discovered that product and process innovation make a huge contribution to profitability and customer satisfaction. Although the study offers valuable information on particular aspects of innovation, its use of descriptive statistics and chi-square test does not give it the potential to identify complex interrelationships between variables. More so, it does not query why certain companies are more advantaged through innovation than others.

In addition to Nigeria, Rao and Kundu (2024) analyzed agri-entrepreneurship in India and found out that mechanization and process innovations contribute to the export potential and profitability significantly. A study conducted by Garcia and Lopez (2023) in Europe established that organizational and digital innovations enhanced productivity by more than 30%. A common theme in these studies is that innovation is a contributor to performance in various settings. Nonetheless, they also demonstrate a severe disadvantage, namely, the fact that most of them are located in the environments of less robust institutional support systems, so their results cannot be directly applied to the Nigerian setting.

On a more micro level, Salau et al. (2019) examined agribusiness clusters in North-Central Nigeria and discovered that the network, technological adoption and entrepreneurial orientation are significant predictors of the innovative capacity. The methodological rigor of the study and especially its application of SEM give

strength to its conclusions. Still, it focuses on the antecedents of innovation instead of performance implications, but it does not address how innovation is converted into results.

Taken together, these studies put a definite trend: innovative capacity is an important predictor of SME performance. Nevertheless, they also reveal a systematic blind spot that the mechanisms which empower or undermine this relationship are not sufficiently investigated.

Entrepreneurial Training and SME Performance

Entrepreneurial training has been popularly advanced as a performance improvement instrument towards SMEs, especially in developing economies (Uford, 2017; Akpan & Uford, 2024). Ideally, training should enhance managerial competence, strategic thinking, and opportunity recognition to allow entrepreneurship to use the available resources more productively (Salau et al., 2024). Nevertheless, the evidence of its effectiveness is ambiguous.

In research on 259 SMEs in Saudi Arabia based on SmartPLS, Adam and Alarifi (2021) discovered that the practices of innovation affect performance significantly and that external support, in turn, has a complementing effect in terms of the training. Although the study demonstrates the significance of support mechanisms, it fails to single out the particular impact of the training, and it is hard to establish its independent impact.

Likewise, Adeosun and Shittu (2023) studied business incubation programs in Nigeria and discovered that training improves the innovation capacity by providing access to knowledge and available resources. But the efficiency of such programmes was observed to be greatly dependent upon the contextual factors like infrastructure and absorptive capacity. This implies that training might not be enough on its own but its effect is dependent on the larger environmental conditions.

As part of a study of SME development programme in Malaysia, Singh and Hanafi (2020) registered a paradoxical finding that training programs led to enhancements in business formation but did not substantially decrease the failure rate. The implications of this discovery are very concerning to the relevancy and design of training programmes. It implies that what is taught does not match with what entrepreneurs require which further supports the argument that training effectiveness is contextual.

One similar limitation to these studies is that they concentrated on direct effects. Entrepreneurial training is usually analyzed as a predictor of performance, but not as a moderator. This small-minded thinking ignores the fact that training is not always needed to boost performance but rather to enhance the performance of other abilities, including innovation.

Linking Innovative Capacity, Training, and Performance

A smaller body of literature has begun to explore interaction effects, although this remains underdeveloped. Simon et al. (2024), studying manufacturing firms in Zimbabwe, found that elements of innovation capability such as participatory leadership and knowledge development significantly influence performance. Importantly, the study highlights the role of learning-oriented environments, which are closely aligned with training interventions. However, it stops short of explicitly modelling training as a moderator.

Cluster-based studies further suggest that knowledge sharing, and collaborative learning enhance both innovation and performance outcomes. These findings imply that learning mechanisms—formal or informal play a critical role in strengthening the innovation–performance link. However, these studies often conflate training with broader knowledge processes, making it difficult to isolate its specific moderating effect.

From a theoretical standpoint, the resource-based view (RBV) and contingency theory provide useful lenses for understanding these dynamics. While RBV positions innovative capacity as a strategic resource, contingency theory suggests that the value of this resource depends on contextual factors, including human capital development. Entrepreneurial training, therefore, can be conceptualised as a contingent variable that influences how effectively innovation translates into performance.

A critical synthesis of the literature reveals three key patterns. First, there is strong consensus that innovative capacity positively influences SME performance. Second, entrepreneurial training is widely acknowledged as important but produces inconsistent outcomes. Third, contextual factors such as infrastructure, networks, and institutional support significantly shape both innovation and performance.

However, contradictions also emerge. While some studies report strong positive effects of training, others find negligible or indirect impacts. This inconsistency suggests that the relationship between training and

performance is not straightforward. Rather than acting as a direct driver, training may function as an enabling mechanism that enhances the effectiveness of other capabilities. The most significant gap lies in the limited attention to moderating effects. Few studies explicitly examine whether entrepreneurial training strengthens the relationship between innovative capacity and performance, particularly within agro-based SMEs. Moreover, existing research is often sector-agnostic, with limited focus on agriculture despite its unique challenges and strategic importance in Nigeria.

The literature provides a solid foundation for understanding the roles of innovation and training in SME performance. However, it remains fragmented, with limited integration of these variables into a unified analytical framework. Many studies adopt cross-sectional designs and focus on direct relationships, thereby overlooking the complexity of interactions among key variables.

This study addresses these limitations in three ways. First, it adopts a contingency perspective by examining entrepreneurial training as a moderating variable rather than a direct predictor. Second, it focuses specifically on agro-based SMEs, thereby providing sector-specific insights that are largely absent in existing literature. Third, it situates the analysis within the Nigerian context, accounting for structural constraints such as infrastructure deficits and economic instability.

By doing so, the study not only extends existing theoretical frameworks but also provides empirical evidence that is directly relevant to policy and practice. It moves the conversation from whether innovation and training matter to how and under what conditions they matter—an important shift for both scholarship and intervention design.

3. METHODS

This study adopts a quantitative research design, structured within a cross-sectional survey framework. The choice of a quantitative approach is grounded in the nature of the research objectives, which seek to examine the relationships among clearly defined variables and to test the moderating effect of entrepreneurial training on the link between innovative capacity and SME performance. Quantitative designs are particularly suited to studies that require measurement, comparison, and statistical inference, as they allow for the systematic examination of patterns across a relatively large sample (Creswell & Creswell, 2018). By focusing on numerical data and statistical relationships, the study is able to move beyond descriptive insights and provide empirically verifiable conclusions.

The cross-sectional design involves collecting data from respondents at a single point in time. This approach is appropriate given that the study aims to capture the current state of innovative capacity, entrepreneurial training, and performance among agro-based SMEs rather than track changes over time. The variables under investigation do not require longitudinal observation to establish meaningful relationships; instead, their interactions can be effectively analysed using regression-based techniques applied to cross-sectional data (Sekaran & Bougie, 2020). In practical terms, this design also offers efficiency in terms of time and cost, which is particularly relevant when dealing with dispersed SME populations across multiple locations.

The research is situated in Kwara State, Nigeria, a region characterised by significant agricultural activity and a growing number of agro-based enterprises. The state provides a relevant empirical context for examining innovation and performance dynamics within the agricultural value chain. Agro-based SMEs in this setting engage in activities such as crop production, processing, livestock farming, and agro-allied services. These enterprises operate under conditions that reflect broader national realities, including infrastructural limitations, fluctuating input costs, and evolving market demands. Data collection was conducted over a defined period within the 2025–2026 production cycle, ensuring that responses reflect relatively stable business conditions rather than short-term fluctuations.

The target population comprises owners and managers of agro-based SMEs operating within selected local government areas in Kwara State. Drawing on records from the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN, 2023), the accessible population was identified and narrowed to enterprises with active operational status. Given the geographic dispersion and heterogeneity of these enterprises, a multistage sampling approach was adopted. Initially, four local government areas with a high concentration of agro-based activities were purposively selected. Within these areas, respondents were then selected using random sampling techniques to enhance representativeness and reduce selection bias. This

combination of purposive and random sampling allows the study to capture both contextual relevance and statistical generalizability.

Data were collected primarily through a structured questionnaire designed to capture information on the key constructs of the study. The instrument was organised into sections covering demographic characteristics, innovative capacity, entrepreneurial training, and performance indicators. Measurement items were adapted from established scales in the literature and modified to reflect the agro-based SME context. All variables were operationalised using a five-point Likert scale ranging from strong disagreement to strong agreement, allowing respondents to express varying degrees of perception in a consistent and quantifiable manner. This scaling approach facilitates the application of parametric statistical techniques and enhances comparability across responses.

Innovative capacity was measured as a multidimensional construct encompassing product, process, marketing, and organizational innovation. Entrepreneurial training was assessed in terms of exposure to structured learning programmes, skill acquisition, and practical business knowledge. SME performance was captured using indicators such as sales growth, profitability, market expansion, and operational efficiency. The decision to operationalise these variables in this manner reflects an attempt to balance theoretical rigor with practical relevance, ensuring that constructs are both conceptually sound and empirically measurable.

To ensure the validity of the research instrument, the questionnaire underwent expert review by scholars in entrepreneurship and innovation studies. Feedback from this process informed revisions aimed at improving clarity, relevance, and alignment with the study objectives. A pilot study was subsequently conducted with a small group of agro-based entrepreneurs to test the instrument under field conditions. This process helped identify ambiguities and refine item wording before full-scale data collection. Reliability was assessed using Cronbach's alpha coefficients, with all constructs demonstrating acceptable internal consistency levels above the recommended threshold. The overall reliability score of the instrument indicates a high degree of consistency in measuring the underlying constructs (Sekaran & Bougie, 2020).

Data analysis was conducted using Stata statistical software, reflecting the study's emphasis on rigorous quantitative analysis. Descriptive statistics were first employed to summarise respondent characteristics and provide an overview of variable distributions. This step offered initial insights into patterns within the data and ensured that assumptions for further analysis were met. Inferential analysis was then carried out using multiple regression techniques to examine the relationships between innovative capacity and SME performance.

To test the moderating effect of entrepreneurial training, an interaction term between innovative capacity and entrepreneurial training was introduced into the regression model. Prior to this, variables were standardised to minimise the risk of multicollinearity, which can distort coefficient estimates in interaction models. The inclusion of the interaction term allows for the assessment of whether the strength or direction of the relationship between innovative capacity and performance changes at different levels of entrepreneurial training. Robust standard errors were applied to account for potential heteroscedasticity and enhance the reliability of the estimates.

Ethical considerations were carefully observed throughout the research process. Participation in the study was voluntary, and informed consent was obtained from all respondents before data collection. Participants were assured of confidentiality and anonymity, with no identifying information linked to individual responses. The study avoided intrusive or sensitive questions, focusing instead on organisational practices relevant to the research objectives. Data were handled with integrity, and all sources were properly acknowledged to maintain academic transparency and credibility.

Taken together, the methodological choices reflect a deliberate effort to align research design, data collection, and analytical techniques with the study's objectives. The quantitative, cross-sectional approach provides a structured and empirically grounded basis for examining the moderating role of entrepreneurial training, while the use of robust statistical methods ensures that the findings are both reliable and analytically meaningful.

Data analysis

Prior to data analysis, the collected questionnaires were carefully screened and cleaned to ensure the accuracy and reliability of the dataset. A total of 322 questionnaires were retrieved from respondents during the

field survey. These questionnaires were subjected to a data screening process to identify incomplete responses, inconsistencies, and potential data entry errors.

During the cleaning process, questionnaires with missing responses, inconsistent answers, or significant incomplete sections were identified and removed from the dataset. As a result, 8 questionnaires were excluded due to incomplete or invalid responses. After the screening and cleaning process, 314 questionnaires were found to be properly completed and suitable for statistical analysis. These valid responses formed the final dataset used for descriptive statistics, correlation analysis, and regression analysis in this study.

Table 1 Demographic Characteristics of Respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	230	73.25
	Female	84	26.75
	Total	**314**	**100**
Age	21–30 years	17	5.41
	31–40 years	181	57.64
	41–50 years	116	36.94
	Total	**314**	**100**
Highest Educational Qualification	Primary Education	43	13.69
	Secondary Education	196	62.42
	Tertiary Education	65	20.70
	Postgraduate	10	3.18
	Total	**314**	**100**
Position in the Enterprise	Owner/Manager	164	52.23
	Supervisor/Employee	150	47.77
	Total	**314**	**100**
Years of Operation	1–3 years	15	4.78
	4–6 years	89	28.34
	Above 6 years	210	66.88
	Total	**314**	**100**
Type of Agro-Based Business	Crop Production	119	37.90
	Agro-Processing	185	58.92
	Livestock/Fisheries	10	3.18
	Total	**314**	**100**
Number of Employees	1–5 employees	57	18.15
	6–10 employees	257	81.85
	Total	**314**	**100**
Approximate Annual Turnover	Below ₦1,000,000	95	30.25
	₦1,000,000 – ₦5,000,000	48	15.29
	₦5,000,001 – ₦10,000,000	14	4.46
	Above ₦10,000,000	157	50.00
	Total	**314**	**100**

Source: Field Survey, 2026

Table 1 presents the demographic characteristics of the respondents involved in the study. With respect to gender, the results indicate that 230 respondents (73.25%) were male, while 84 respondents (26.75%) were female. This suggests that male participation is dominant in agro-based SME activities within the study area. However, the presence of female respondents indicates that women are also actively involved in agro-based enterprises, although at a relatively lower proportion.

Regarding age distribution, the majority of respondents 181 (57.64%) were between 31–40 years, followed by 116 respondents (36.94%) within the 41–50 years age bracket, while only 17 respondents (5.41%) were between 21–30 years. This implies that most agro-based SME operators in the study area fall within the

economically active and experienced age group, which is often associated with greater managerial maturity and entrepreneurial experience.

In terms of educational qualification, the findings reveal that 196 respondents (62.42%) possessed secondary education, 65 respondents (20.70%) had tertiary education, 43 respondents (13.69%) had primary education, while only 10 respondents (3.18%) had postgraduate qualifications. This indicates that the majority of agro-based SME operators possess moderate levels of formal education, which may influence their ability to adopt new technologies and implement innovative business practices.

Concerning the position of respondents in the enterprise, 164 respondents (52.23%) were owners or managers, while 150 respondents (47.77%) were supervisors or employees. This distribution shows that a slightly higher proportion of respondents occupy managerial or ownership positions, suggesting that the information collected largely reflects the perspectives of individuals involved in strategic decision-making within the enterprises.

The analysis of years of operation shows that 210 enterprises (66.88%) have been operating for more than six years, while 89 enterprises (28.34%) have operated for 4–6 years, and 15 enterprises (4.78%) have been in operation for 1–3 years. This indicates that most agro-based SMEs in the study area have considerable operational experience, which may influence their ability to implement innovative practices and sustain business growth.

With respect to the type of agro-based business, the majority of respondents 185 (58.92%) were involved in agro-processing, followed by 119 respondents (37.90%) engaged in crop production, while 10 respondents (3.18%) were involved in livestock or fisheries activities. This suggests that agro-processing represents the dominant segment of agro-based SMEs in the study area, highlighting the growing importance of value addition within the agricultural value chain.

Regarding the number of employees, the findings show that 257 enterprises (81.85%) employ between 6 and 10 workers, while 57 enterprises (18.15%) employ between 1 and 5 workers. This confirms that the majority of the firms operate within the small enterprise category, consistent with the SME classification.

Finally, the analysis of annual turnover indicates that 157 enterprises (50.00%) generate above ₦10,000,000 annually, while 95 enterprises (30.25%) earn below ₦1,000,000, 48 enterprises (15.29%) generate between ₦1,000,000 and ₦5,000,000, and 14 enterprises (4.46%) generate between ₦5,000,001 and ₦10,000,000. This suggests that a significant proportion of agro-based SMEs are generating relatively high revenues, indicating their potential contribution to economic growth, employment generation, and value creation within the agricultural sector.

Overall, the demographic results indicate that agro-based SMEs in Kwara State are largely managed by experienced entrepreneurs within the productive age group, possessing moderate educational backgrounds and operating mainly in agro-processing activities with relatively small workforce structures.

Test of Hypotheses

Model tested:

$$SP = \beta0 + \beta1IC + \beta2ET + \beta3(IC \times ET) + \varepsilon$$

Where

- **IC** = Innovative Capacity
- **ET** = Entrepreneurial Training
- **IC × ET** = Interaction term (moderating effect)

Table 2 **Moderating Effect of Entrepreneurial Training on the Relationship Between Innovative Capacity and SME Performance**

Variable	Beta (β)	Std. Error	t-value	p-value
Constant	0.770	0.849	0.907	0.365

Innovative Capacity (IC)	0.931	0.296	3.140	0.002
Entrepreneurial Training (ET)	0.331	0.267	1.239	0.216
IC × ET (Interaction Term)	-0.113	0.064	-1.757	0.080

Model Summary

Statistic	**Value**
R	0.559
R^2	0.313
Adjusted R^2	0.307
F-statistic	47.13
p-value	0.000

Source: Field Survey, 2026

The moderation analysis was conducted to determine whether entrepreneurial training strengthens the relationship between innovative capacity and the performance of agro-based SMEs in Kwara State. The results reveal that innovative capacity has a positive and statistically significant effect on SME performance ($\beta = 0.931$, $p = 0.002$). This finding indicates that firms with higher levels of innovative capacity are more likely to experience improvements in key performance indicators such as sales growth, profitability, market expansion, and productivity.

However, entrepreneurial training on its own does not show a statistically significant effect on SME performance ($\beta = 0.331$, $p = 0.216$). This suggests that although entrepreneurial training may provide useful knowledge and skills to business operators, its direct influence on the performance of agro-based SMEs in the study area is not strong enough to be considered statistically significant.

More importantly, the interaction term representing the moderating effect of entrepreneurial training (IC × ET) is not statistically significant at the 5% level ($\beta = -0.113$, $p = 0.080$). This implies that entrepreneurial training does not significantly alter the strength or direction of the relationship between innovative capacity and SME performance.

The findings indicate that while innovative capacity remains a key driver of SME performance, entrepreneurial training does not significantly moderate this relationship among agro-based SMEs in Kwara State. Since the p-value of the interaction term (0.080) is greater than 0.05, the null hypothesis is not rejected. H_{05} is accepted. Entrepreneurial training does not significantly moderate the relationship between innovative capacity and the performance of agro-based SMEs in Kwara State.

Discussion of Findings

The results show that entrepreneurial training does not significantly moderate the relationship between innovative capacity and SME performance. Although entrepreneurial training is positively related to innovation and performance, its interaction with innovative capacity was not statistically significant. This finding suggests that while training programmes may enhance managerial awareness and knowledge, they may not necessarily strengthen the direct relationship between innovation and performance unless accompanied by adequate institutional support and resources.

This observation partly contrasts with studies such as Adeosun and Shittu (2022/2023), which found that business incubation programmes enhance innovation capabilities through training, shared facilities, and market linkages. However, their findings also highlight that the effectiveness of training programmes depends heavily on contextual factors such as institutional design and local absorptive capacity. Similarly, Adam and Alarifi (2021) emphasize that external support mechanisms, including training and policy support, are necessary for SMEs to translate innovation into sustainable performance outcomes.

Therefore, the non-significant moderating effect observed in this study may be attributed to structural constraints within the Nigerian SME ecosystem, such as limited funding, inadequate infrastructure, and weak institutional support for entrepreneurial development.

4. CONCLUSION AND RECOMMENDATIONS

The study found that entrepreneurial training does not significantly moderate the relationship between innovative capacity and SME performance. Although entrepreneurial training can enhance managerial awareness and skills, it does not significantly strengthen the innovation–performance linkage among agro-based SMEs in the study area. This outcome may be attributed to structural challenges such as limited financial resources, inadequate infrastructure, and insufficient institutional support that constrain the effective utilization of entrepreneurial training in the SME sector. Although entrepreneurial training did not significantly moderate the relationship between innovation and SME performance, training programmes remain important for enhancing managerial competence. Therefore, government agencies, non-governmental organizations, and business development service providers should design more practical and context-specific entrepreneurial training programmes that focus on technology utilization, innovation management, and agribusiness development. Such programmes should also be complemented with financial support, mentoring, and access to markets to ensure that training translates into tangible business outcomes.

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