

TQM AND AGRIBUSINESS PERFORMANCE OF SMEs: THE MEDIATING EFFECT OF NETWORK COMPETENCE

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(Received 05th July 2026; revised 13th August 2026; accepted 21st August 2026)

Abstract. Agribusiness in Nigeria has grown remarkably over the last decades. According to National Bureau of Statistics, about 40.2 million households are actively involved in agriculture with over 90% either involved in crops and livestock farming. The quantitative research design is aimed at examining the mediating role of network competency on the relationships between TQM practices (leadership commitment, customer focus, continuous improvement and employee involvement) on the agribusiness performance of SMEs. Using a sample 256 SMEs managers and employees analysed with PLS-SEM 4, the following findings were made leadership commitment, customer focus and network competency have direct and significant positive relationship with agribusiness performance of SMEs. Network competency fully mediated the relationship between leadership commitment, continuous improvement and employee involvement while partial mediation was observed with customer focus. The findings emphasise the need for agricultural SMEs to integrate external networking tactics with internal quality management. Leadership-driven quality culture, customer-focused operations, and continuous improvement practices that improve connections with suppliers, buyers, extension agents, and government programs should be top priorities for managers.

Keywords: *total quality management, agribusiness performance, human capital, resource-based view, network competence*

Introduction

Small and medium sized enterprises (SMEs) are the backbone of every developing economy owing to the number of peoples employed in the sector (Athallah and Purnama, 2025). In Nigeria, SMEs represents about 96% of total business undertakings, which makes them central and critical to business development, economic growth, business innovation and diversification from oil-based economy (National Bureau of Statistics, 2022). SMEs are not exclusively located in the urban areas instead; they are equally concentrated in the rural areas where agribusiness SMEs (agribusinesses) provide effective avenues for food security, value chain transformation, and rural development (Iember et al., 2024). The combination of agricultural and entrepreneurial activity in the agri-food and agriculture sectors that turns a farm into an agribusiness enterprise is referred to as agribusiness (Kazungu and Kumburu, 2023). The conventional activities of producing and supplying agricultural inputs, as well as producing, harvesting, processing, storing, and delivering farm produce, comprise the holistic form of agribusiness (Ramushu, 2021). It also encompasses contemporary commercial endeavours such as starting and expanding an agro-company, altering business strategy,

mergers and acquisitions, business innovations, and taking risks in light of the unstable farming environment (Singh and Misra, 2021).

Agribusiness in Nigeria have grown remarkably over the last decades. According to National Bureau of Statistics, about 40.2 million households are actively involved in agriculture with over 90% either involved in crops and livestock farming (Moss, 2024). The huge concentration of agrarian-based SMEs attest to the critical importance of agribusiness in promoting economic activities and sustained social development. Nigeria's agricultural trade increased by 304% to ₦8.2 trillion between 2020-2024 including a net export of 17% (Jaiyesimi, 2025). Notwithstanding the noble role played by agriculturally based SMEs in Nigeria, agribusiness face considerable challenges such as: high post-harvest losses, poor infrastructure, low technology adoption and poor farming practices (Ikuemonisan, 2024). Also, many of the agribusiness in the rural areas have cited lack of funding, poor government policies, and lack of access to modern equipment as some of the major challenges facing them (Jaiyesimi, 2025). Based on the above challenges, internal organisational capabilities driven by TQM (Total Quality Management) practices such as: leadership commitment, customer focus, continuous improvement and employee improvement and external capability such as network competency are gradually becoming important for agribusiness SMEs to manage the challenges. Using TQM techniques can improve operational effectiveness, product or service quality, responsiveness to market demands, and ultimately business performance in a SME setting.

Nevertheless, internal TQM practices by themselves might not ensure performance improvement in a setting like Nigeria's agro SME sector unless they are supported by solid external ties (Jaiyesimi, 2025). This introduces the concept of network competence, which is an organization's capacity to proactively create, preserve, use, and coordinate external connections with vendors, purchasers, extension services, academic institutions, financiers, regulators, and other network actors (Moss, 2024). Businesses with strong network competency are better able to access outside resources (markets, funding, and expertise), adjust to change, embrace innovations, and convert internal quality gains into a competitive edge (Iember et al., 2024). In Nigeria, agricultural setting, network competency may act as a mediator between TQM practices (leadership commitment, customer focus, continuous improvement and employee improvement) and performance of SMEs. Such combination will bring improved performance through supply chain collaboration, market access, sales growth and profitability. However, there is still a dearth of empirical study in the Nigerian agribusiness SME sector to evaluate this mediated model, despite this logical connection. In the Nigerian setting, TQM, network competency, and agribusiness success are rarely combined in a single model in current research. While agribusiness research concentrates on youth employment, financing, or innovation adoption rather than relational/quality management systems, the majority of TQM studies concentrate on manufacturing or service SMEs. This gap emphasises the current study's originality and usefulness.

The research objectives are includes: R01: To find the influence of TQM practices (leadership commitment, customer focus, continuous improvement and employee improvement) on network competency among SMEs in Nigeria; R02: To find the influence of TQM practices (leadership commitment, customer focus, continuous improvement and employee improvement) on agribusiness performance among SMEs in Nigeria; R03: To find the mediating role of network competency on the relationship between leadership commitment, customer focus, continuous improvement and

employee improvement on agribusiness performance among SMEs in Nigeria. The study makes three contributions. First, by placing TQM research in the context of agribusiness SMEs in underdeveloped nations, we broaden its scope. Second, we emphasise network competence as a crucial relational mechanism that advances knowledge of how performance is impacted by internal quality practices through external networks. Third, practically speaking, the results will advise policymakers, development organisations, and agribusiness owners on how to design interventions that integrate network-building techniques with internal quality management to improve the performance of agricultural SMEs. The rest of the paper is structured as follows: A review of the pertinent literature and theoretical framework is presented in Section 2; the study methodology is described in Section 3; the empirical findings are presented in Section 4; the practical consequences are discussed in Section 5, which also closes with limitations and future research directions.

Literature review

Theoretical foundation of the study

The Resource-Based View (RBV), the Dynamic Capabilities Theory (DCT), and the Network or Social Capital Theory (SCT) are three complementary theories that support the connection between Total Quality Management (TQM) and the agribusiness performance of Small and Medium-sized Enterprises (SMEs) (Adebayo and Ogunleye, 2024). When taken as a whole, these theories offer a strong framework for understanding how external relational skills and internal quality management techniques interact to affect agribusiness performance in developing nations like Nigeria (Alhassan et al., 2024). These theories will provide the framework to understand how internal organisational capabilities align with external relations to explain the performance of agribusiness in Nigeria.

Resource-based view (RBV)

A strategic management paradigm called the resource-based view (RBV) assesses a business's internal resources and competencies in order to obtain a long-term competitive advantage. It emphasises the "inside-out" viewpoint, contending that a company's distinctive, valuable, unusual, and inimitable assets, rather than merely market circumstances, are the basis for success. The VRIN framework (Valuable, Rare, Inimitable, and Non-substitutable) is a crucial element that aids in identifying resources that can establish and maintain a competitive advantage. In the domain of TQM, resource-based view manifests itself through leadership commitment, employee involvement, customer focus and continuous improvement culture, which drive sustained business outcomes such as performance, productivity, growth and customer satisfaction (Adebayo and Ogunleye, 2024). Current empirical research revealed that TQM practices lead to significant improvement in SME performance and productivity through operational excellence, business innovation, product quality and customer satisfaction (Anifowose et al., 2022; Ali and Johl, 2022; Igbadio and Asamber, 2021). Resource-based view suggests that TQM practices can lead to distinctive capabilities, which are the core premise of sustained performance. Although RBV is essential to account for performance improvement in the organisation, it may not fully capture the variations in performance within the dynamic agricultural environment driven by swift market changes.

Dynamic capabilities theory (DCT)

The notion of dynamic capabilities explains how businesses modify their resources and competencies to sustain a competitive edge in rapidly evolving settings. The ability of a company to integrate, develop, and reconfigure its internal and external competencies is known as dynamic capabilities (Bleady et al., 2018). It encompasses three essential processes: identifying opportunities and threats, taking advantage of those opportunities through resource configuration and value-capturing mechanisms, and rearranging the organization's assets to satisfy changing demands (Bleady et al., 2018). Teece et al. argued that, by integrating, developing and reconfiguring relevant internal and external capabilities, dynamic capabilities theory (DCT) captures how business can create value especially in the volatile agricultural sector characterised by technological disruptions, fluctuating market demands and climatic uncertainties. Because it improves a company's capacity to learn, adapt, and constantly improve processes in response to input, TQM practices can be seen as a dynamic skill. TQM practices promote organisational agility and learning orientation through benchmarking, employee empowerment, and process innovation. As a result, agripreneurial SMEs that incorporate TQM are more equipped to address client preferences, sustainability criteria, and quality standards. For instance, Nigerian agribusinesses using TQM practices demonstrated greater flexibility and innovative outcomes, according to Alhassan et al. (2024).

Network or Social Capital Theory (SCT)

The Network Theory (also known as the Social Capital Theory) complements RBV and DCT by emphasising external relationship resources. The ability of a business to establish, cultivate, and sustain positive relationships with clients, vendors, governmental organisations, and business partners is referred to as network competency (Ali et al., 2025). Social capital, which is ingrained in these networks, gives businesses access to opportunities, information, and knowledge that would not otherwise be available internally (Srećković, 2018). Network competence becomes a crucial mediator between internal capabilities and performance results in agripreneurial SMEs, because access to markets, technology, and capital is frequently restricted (Ali et al., 2025). Stronger relational networks help SMEs expand, innovate, and be more resilient, according to recent studies (Gurin et al., 2024). By encouraging cooperation, stakeholder orientation, and trust—elements crucial for creating long-lasting partnerships across the agri-value chain—TQM cultivates such network competency (Anifowose et al., 2022).

Integrating the theories

The integration of the theories (RBV, DCT and SCT) create an improved multidimensional framework to explain agripreneurial performance among SMEs in Nigeria. RBV offers insights on internal resources and capabilities. DCT gives an understanding of constant learning and adaptation to achieve competitive advantage while SCT converts internal capabilities into market-driven results based on collaboration and knowledge sharing. Essentially, agripreneurial performance arises not just from internal resources and capabilities (RBV) and its configuration (DCT) but on how to manage it effectively by linking them with external stakeholders (SCT).

Literature review and hypotheses development

This conceptualization posits that while TQM (leadership commitment, customer focus, continuous improvement and employee improvement) directly enhances performance, some of its effect functions indirectly through the development of network competence. Network competence essentially serves as a link between external market success and internal process excellence, which is an especially important dynamic for agripreneurial SMEs functioning in Nigeria's unstable agricultural industry (*Figure 1*).

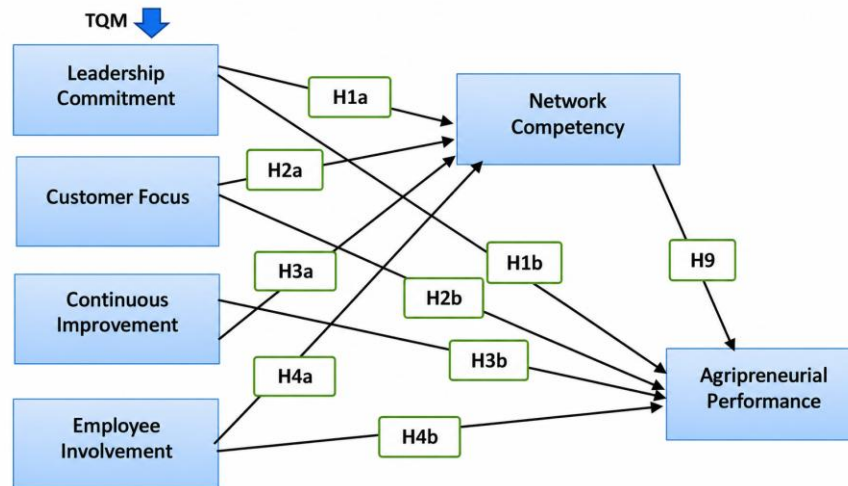


Figure 1. Conceptual framework.

The effect of leadership commitment on network competency and agripreneurial performance

Empirical studies have shown that TQM in terms of leadership commitment is deeply connected with network competency and agripreneurial performance of SMEs in achieving business success and profitability (Ahmed and Sajid, 2023). Leadership commitment which is a major dimeson of TQM is critical in achieving external relational capability such as network competency. Collectively, leadership commitment and network competency are believed to have significant effect on agripreneurial performance (Fraihat et al., 2023; Mohammed, 2020). Within the TQM framework, leadership commitment which includes the commitment of upper management to quality values, employee empowerment, and ongoing process improvement is vital in achieving organizational effectiveness (Nguyen and Nguyen, 2021). Garba et al. (2023) found with a sample of 171 SMEs in Nigeria that, TQM in the context of effective leadership have significant influence on SMEs performance. The owners and managers of small businesses were given research implications regarding the necessity of using TQM techniques to increase the impact of TQM on small business performance. Makinde et al. (2023) examined how certain food and beverage manufacturing companies in Lagos State, Nigeria, performed in relation to quality management practices. 491 was found to be the sample size. The competitive advantage of food and beverage manufacturing companies in Lagos State was found to be significantly impacted by quality management methods. From the above reviews, the followings are proposed.

H1a: Leadership commitment has a significant positive effect on network competence among agricultural SMEs.

H1b: Leadership commitment has a significant positive effect on agripreneurial performance of SMEs.

The effect of customer focus on network competency and agripreneurial performance

Customer focus is an organisation's direction and goal towards understanding and satisfying customers' needs by aligning the company's products and services to deliver superior value to the customer thereby building long term relationship (Domi et al., 2020). In the context of agripreneurial SMEs, customer focus involves adapting agricultural products to buyers' specification (quality, packaging and delivery) together with addressing customers feedback and changing market demands (Nguyen and Nguyen, 2021). Consistent with TQM, organisations with customer focus are better placed to offer improved product offerings, reduce wastages and achieve product quality, which directly impact business performance (customer loyalty, profitability and market access) (Fraihat et al., 2023; Mohammed, 2020). Empirical studies have shown that customer focus is positively and significantly related with SMEs performance (Abrokwah-Larbi, 2024; Ikuemonisan, 2024; Fakhreddin and Foroudi, 2022). Outside its direct influence on the performance of agripreneurs, customer focus also promotes organizational relational capabilities. When agripreneurs apply a customer focused philosophy with relevant stakeholders such as buyers, suppliers, processors; customer needs are met and attendant loyalty established (Abrokwah-Larbi, 2024). This attitudinal behaviour promotes information exchange, trust, collaboration and quality improvement. In the case of agricultural SMEs, customer-focused businesses are more likely to join or grow value-chain networks and improve their network competency. From the above reviews, the followings are proposed.

H2a: Customer focus has a positive and significant effect on network competence among agricultural SMEs.

H2b: Customer focus has a positive and significant effect on agripreneurial performance of agricultural SMEs.

The effect of continuous improvement on network competency and agripreneurial performance

Continuous improvement is a central theme in TQM which focuses on the incremental improvements in operations and processes aimed at improving products or services. In the domain of agripreneurial SMEs (agriculturally based SMEs), continuous improvement connotes process optimization such as improved post-harvest processes and associated farming practices and technological innovation and continuous learning, adaptation and cultural change. Organizations that embody continuous improvement are in pole position to achieve efficiency and configure its processes to respond to changing market and customer demands (Kehinde et al., 2024). Previous studies show that an organisation that practices internal process improvement will achieve strong performance in terms of profitability, customer satisfaction and loyalty. Abdulkazeem (2025) found with a sample of 48 SMEs in an agrarian city of Bida in Northern Nigeria that process improvement led to positive performance outcomes. Consequently, agripreneurial SMEs that prioritise continuous improvement would achieve higher

performance in terms of sales, profitability and value-added processing relative to peers. Ayodele and Gata (2024) examined the effect of innovation on the performance of Small and Medium Enterprises (SMEs) in Nigeria. with a sample of 335 respondents, it was found that, process innovation and business performance are positively correlated, and it was ultimately found that marketing innovation and business performance are positively correlated. According to research findings, business performance was positively impacted by product, process, marketing, and innovation. In order to boost performance, the study advised managers and owners of small and medium-sized businesses (SMEs) to create and apply innovations in their companies.

Owners and managers of small and medium-sized businesses (SMEs) should think about implementing an innovation plan to boost company performance. Continuous improvement fosters external readiness through network competency which enables an organisation such as those in the agricultural sector to thrive through effective collaboration with suppliers, information sharing with customers and extension services (Ukoha et al., 2025). Abdulkazeem (2025) study also, shows that process improvement delivers much value than technology adoption. This study suggests that, firms investing in improvement procedures are better able to adapt and network with critical stakeholders. From the above reviews, the followings are proposed.

H3a: Continuous improvement has a positive and significant effect on network competence among agricultural SMEs.

H3b: Continuous improvement has a positive and significant effect on the agripreneurial performance of SMEs in the agricultural sector.

The effect of employee involvement on network competency and agripreneurial performance

Employee involvement is the vigorous participation of employees on relevant organizational process such as decision-making, problem-solving, continuous improvement and product/service initiatives (Antony et al., 2022; Antunes et al., 2021). Within the domain of agripreneurial SMEs, employee involvement connotes agripreneurs' employees getting involved in production decision, process improvements, quality control practices and post-harvest handling issues. Yirga and Beshir (2025) examine the effect of total quality management practices on innovation. With a sample of 140 respondents, all seven of the dimensions of total quality management practices; management leadership, employee involvement, training and education, employee empowerment, customer focus, information and analysis, and continuous improvement have a positive and significant relationship with innovative performance, according to the results of multiple regression analysis. According to the study, management should grant their staff a high level of autonomy so they can perform their duties. Employee involvement is believed to influence an organisation network competency (ability to build and manage external relationships) needed to support improved performance. Lehyani et al. (2023) found with a sample of 206 respondents that employee involvement (knowledge management) has positive and significant effect on firm employee effectiveness. From the above reviews, the followings are proposed.

H4a: Employee involvement has a positive and significant effect on network competence among agricultural SMEs.

H4b: Employee involvement has a positive and significant effect on the agripreneurial performance of SMEs in the agricultural sector.

The mediating role of network competency on the relationships between leadership commitment, customer focus, continuous improvement, employee involvement and agripreneurial performance

In the agricultural setting, network competency is focused on the premise that, external relations with relevant stakeholders are needed to manage fragmented supply chains, market access and resources. Its mediating role is anchored on the basis that, effective network competency would drive improve actions which are needed to achieve profitability, quality improvement and sustained customer loyalty. While the mediation effect of network competency on TQM dimensions (leadership commitment, customer focus, continuous improvement and employee involvement) is limited in the agricultural sector in Nigeria, network competency is designed to convey the benefits of TQM practices into agripreneurial performance (Kehinde et al., 2024). Leadership commitment which is the support from the top management in terms of resources and authority create the catalyst or the strategic intent that help to achieve range of organisational outcomes. In the context of agricultural SMEs, leadership commitment fosters renewed commitment and engagement which when supported by external relations such as the network competency would provide good performance outcome. Thus, network competency brings the best of leadership commitment to bear on the performance of SMEs within the agricultural value chains. Also, agriculture being an interconnected activities involving many internal and external stakeholders requires robust network competency in order to achieve the desired results (Kehinde et al., 2024). Hence, this hypothesis is formulated.

H5: Network competence mediates the relationship between leadership commitment and agripreneurial performance.

Customer focus in the context of agripreneurial SMEs entails responding to customer feedback and shifting market demands in addition to customising agricultural products to buyers' specifications (Nguyen and Nguyen, 2021). According to TQM, businesses that prioritise their customers are better positioned to provide better product offerings, cut waste, and achieve product quality, all of which have a direct impact on business success (Fraihat et al., 2023). Empirical studies agree that, a customer focused agric-based SMEs when supported with business relations such as network competency will have a better performance outcome in terms of profitability, market access and customer loyalty (Kehinde et al., 2024; Nuryakin, 2023). This hypothesis is formulated.

H6: Network competence mediates the relationship between customer focus and agripreneurial performance.

Agribusiness SMEs are dependable network partners because of continuous improvement, which results in constant quality, predictable delivery, and documented process controls (Kehinde et al., 2024). Additionally, continuous improvement improves absorptive capacity because companies that use continuous improvement procedures better coordinate with suppliers and logistical providers and absorb technical advancements supplied by partners (Nuryakin, 2023). Agricultural studies reveal that

producers/processors with improvement routines participate more successfully in buyer-driven networks, and empirical mediation analyses in SME literature show that networking competence can transmit capability impacts into performance (Ikuemonisan, 2024).

H7: Network competence mediates the relationship between continuous improvement and agripreneurial performance.

Employee engagement fosters internal information flows and gives employees the ability to resolve operational issues, serve as boundary spanners, and engage with external partners (such as input suppliers and buyer quality inspectors) in a trustworthy manner (Kehinde et al., 2024). Employees that are engaged are more likely to represent the company in cooperative agreements and maintain the quality standards mandated by networks. Employee involvement improves the social processes required for successful external collaboration (Nuryakin, 2023).

H8: Network competence mediates the relationship between employee involvement and agripreneurial performance.

H9: Network competence will have positive and significant effect on agripreneurial performance.

Materials and Methods

The study adopted quantitative research design based on the conceptual framework which is designed to examine the mediating role of network competency on the relationships between TQM practices (leadership commitment, customer focus, continuous improvement and employee involvement) on the agripreneurial performance of SMEs. quantitative research design is most suitable due to its connection with the overall research design of problem formulation, hypothesis formulation, and its testing in relation to theory. Okigwe, Orlu, and Owerri are the three senatorial zones that comprise Imo State. Each agricultural zone has large, fertile farmlands and produces various food and cash crops, including rice, cassava, yam, cocoyam, maize, palm oil, vegetables, and fruits. Despite this, certain regions produce more crops than others because they have higher natural fertility. Oguta Local Government Area is one of the local governments within the Orlu zone, which is heavily endowed with agricultural potential. This study was conducted in the Oguta local government area due to the high number of SMEs that are involved in agricultural activities (direct farming and marketing). *Table 1* is the detailed distribution of the population of SMEs used in determining the sample size. The sample size of 256 calculated in section 3.3 was distributed proportionally (28) amongst the towns, with Oguta and Izombe getting 30 each.

Table 1. Oguta local government area agricultural-based SMEs.

Town	No of SMEs	No of SMEs based on sample size
Oguta	95	30
Awa	80	28
Egwe	70	28
Izombe	83	30
Orsu-Obodo	77	28

Nnebukwu	79	28
Egbuonu	78	28
Mgbelle	72	28
Ezi-Orsu	76	28
Total	710	256

Sample size is 256. Data were collected through the use of a questionnaire. The high response rate was attributed to quality engagement between the researcher and the farmers. The researcher visited and discussed with the farmers in their farms, marketplace and operational offices. Such interactions provided additional insights on some of the challenges which are often ignored by the mainstream press and policymakers. Finally, out of 300 copies of the questionnaire sent, 24 were not returned, while 20 were not properly completed. The final number of copies used in the analysis was 256. The entire questionnaire was adopted from the previously validated sources based on the literature and theoretical relevance. The choice of using previously validated sources is to ensure relevance and coherence within the theoretical foundation, conceptually suitability and practice direction.

Leadership Commitment was measured with 7 items adopted from Talib et al. (2013). Sample item leads "Top management provides clear direction for quality improvement in our agribusiness". All the items were measured on five-point Likert scale of 1: strongly disagree to 5: strongly agree. Customer focus was measured with 8 items adopted from Talib et al. (2013), on five-point Likert scale of 1: strongly disagree to 5: strongly agree. Sample item leads "Customer satisfaction is the main priority in all our business operations". (2) Continuous Improvement was measured with 6 items adopted from Talib et al. (2013) on five-point Likert scale of 1: strongly disagree to 5: strongly agree. Sample question leads "Continuous improvement is part of our company culture". Employee Involvement was measured with 6 items adopted from Talib et al. (2013) on five-point Likert scale of 1: strongly disagree to 5: strongly agree. Sample question leads "Employees have the freedom to make decisions related to their work". Network competency was measured with 5 items adopted on five-point Likert scale of 1: strongly disagree to 5: strongly agree. Sample question leads "Our firm maintains strong relationships with suppliers and distributors". Agribusiness performance was measured 6 items adopted on five-point Likert scale of 1: strongly disagree to 5: strongly agree. Sample question leads "Our agribusiness has achieved consistent growth in sales over the past few years".

Results and Discussion

Data analysis was performed in two distinct stages. The first stage involves the analysis of the respondents' characteristics which includes: gender, age group, education and experience (*Table 2*). The second stage focuses on the inferential statistic where PLS-SEM was used to analyse the dataset in order to test the hypotheses and achieve the study objectives. This stage was conducted in two stages of measurement model and structural model. In this study, the measurement model (measurement quality) was assessed in terms of factor loadings, validity, and reliability the structural model used bootstrapping to examine the hypotheses' validity and predictive significance.

Table 2. Respondents sample characteristics.

Category	Frequency (n)	Percentage (%)
Gender		
Male	161	62.9
Female	95	37.1
Age Group		
20–30 years	46	18.0
31–40 years	56	21.9
41–50 years	54	21.1
51–65 years	100	39.1
Education		
Primary–Secondary	131	51.2
Diploma	65	25.4
Bachelor	40	15.6
Master and above	20	7.8
Experience		
1–3 years	5	2.0
4–6 years	70	27.3
7–9 years	91	35.5
10 years and above	90	35.2

Measurement model

A measurement model explains how observable indicators in research are used to quantify unobservable constructs, or latent variables. By taking measurement error into account, it makes the connection between a theoretical idea and the data gathered clear and guarantees that the measurements are accurate and dependable. Important elements include factor loadings, reliability and validity. As shown on *Table 3*, the measurement model met the acceptable thresholds: the factor loadings, composite reliability, Cronbach alpha and average variance extracted. For the factor loadings 5 items were slightly less than 0.70 (CF2, CI5, EI1, AP2 and AP6). Their factor loadings were more than 0.60 and AVE was not violated, hence there is no need to delete them. Convergent and discriminant validity were used to evaluate the construct validity. By calculating the average variance extracted (AVE) for each construct, which should be approximately 0.50, convergent validity can be verified. (*Table 3*). On the other hand, discriminating validity is achieved when the square root values of the AVE are higher than the corresponding correlations of all factors. This indicates that the indices have a stronger relationship with their respective factors. In the current study, discriminant validity was accessed with Fornell and Larcker (*Table 4*) and Heterotrait-Monotrait Ratio of Correlations (*Table 5*). For Fornell and Larcker, AVE's square root is shown in bold are higher than inter-corelation values while HTMT values were less than 0.85. Finally, Variance Inflation Factor (VIF) values were used in multicollinearity diagnostics to make sure predictor variables weren't overly linked. The findings demonstrate that all predictors have VIF values below the suggested threshold of 5, ranging from 1.216 for continuous improvement to 1.787 for network competency. This suggests that multicollinearity between the independent variables is not a significant issue. As a result, all the variables were retained for the analysis. *Figure 2* for the measurement model.

Table 3. Loadings, reliability, and convergent validity.

Construct / Item	Factor Loadings	CR (α)	AVE	CV
Leadership Commitment (LC)		0.882 (0.875)	0.571	Yes
LC1	0.793			
LC2	0.841			
LC3	0.705			
LC4	0.738			
LC5	0.721			
LC6	0.760			
LC7	0.721			
Customer Focus (CF)		0.896 (0.893)	0.574	Yes
CF1	0.745			
CF2	0.724			
CF3	0.767			
CF4	0.763			
CF5	0.787			
CF6	0.882			
CF7	0.697			
CF8	0.738			
Continuous Improvement (CI)		0.892 (0.876)	0.620	Yes
CI1	0.787			
CI2	0.821			
CI3	0.742			
CI4	0.834			
CI5	0.664			
CI6	0.860			
Employee Involvement (EI)		0.914 (0.901)	0.671	Yes
EI1	0.695			
EI2	0.818			
EI3	0.868			
EI4	0.821			
EI5	0.856			
EI6	0.845			
Network Competency (NC)		0.864 (0.856)	0.637	Yes
NC1	0.836			
NC2	0.733			
NC3	0.825			
NC4	0.859			
NC5	0.730			
Agriprenuerial Performance (AP)		0.871 (0.849)	0.569	Yes
AP1	0.819			
AP2	0.672			
AP3	0.808			
AP4	0.748			
AP5	0.805			
AP6	0.656			

Table 4. Discriminant validity (Fornell and Larcker).

Construct	AP	CF	CI	EI	LC	NC
AP	0.754					
CF	0.272	0.758				
CI	0.236	0.288	0.787			
EI	0.218	0.292	0.306	0.819		

LC	0.241	0.265	0.195	0.319	0.765	
NC	0.349	0.445	0.385	0.529	0.417	0.798

Table 5. Discriminant validity (HTMT).

Construct	AP	CF	CI	EI	LC	NC
AP						
CF	0.303					
CI	0.258	0.318				
EI	0.234	0.316	0.332			
LC	0.265	0.294	0.214	0.356		
NC	0.384	0.503	0.44	0.591	0.471	

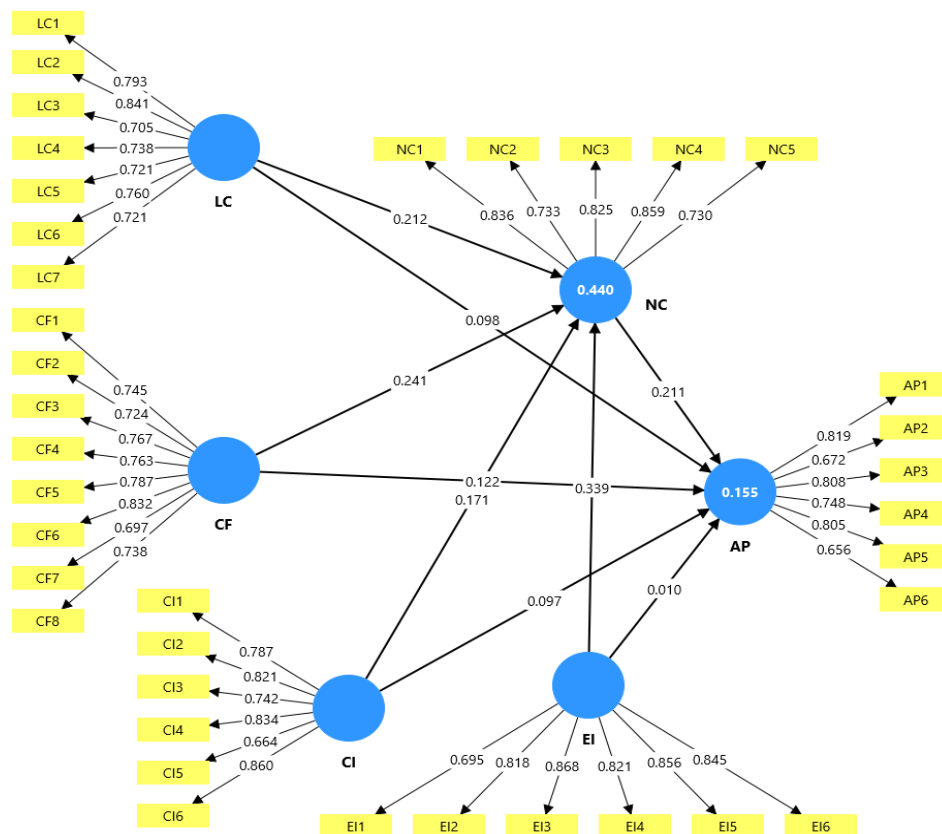


Figure 2. Measurement model.

Structural model

The proposed connections between the latent variables (constructs) in PLS-SEM are represented by a structural model. The structural model examines how these constructs affect one another, whereas the measurement model assesses the validity and reliability of the constructs. The primary goal is to use bootstrapping with 5000 subsamples and the to test the hypotheses' validity and the predictive usefulness of the suggested model. To determine whether the relationships between the model's constructs (LC, CF, CI, EI, NC, and AP) are statistically significant ($p < 0.05$), the path coefficients (β) values, t-statistics, and p-values were used. *Figure 3* for the structural model. From the information on *Table 6*, is suggests a good and predictive model. First, the R2 value of 0.16 for AP (Agriprenuerial performance) means that, all the predictors (leadership commitment, customer focus, continuous improvement, employee involvement and

network competency) explained 16% of the variance in agriprenuerial performance of SMEs. However, the four independent variables (leadership commitment, customer focus, continuous improvement and employee involvement) explained a larger variance of 44% in network competency. Finally, the predictive model was also established since (Q2) is greater than 0 for agriprenuerial performance (AP, 0.09=small) and network competency (NC, 0.42=large) respectively. The hypotheses test results (direct effect) as shown on *Table 7* indicate that, out of the 9 direct paths, 6 paths or relationships were supported while 3 paths or relationships were not supported. LC (leadership commitment) positively affect NC (network competency) ($\beta=0.21$, $T=4.29$, $p < .001$) (H1a). CF (customer focus) positively affect NC (network competency) ($\beta=0.24$, $T=4.54$, $p < .001$) (H2a). CF (customer focus) positively affect AP (agriprenuerial performance) ($\beta=0.24$, $T=4.54$, $p < .001$) (H2b). CI (continuous improvement) positively affect NC (network competency) ($\beta=0.17$, $T=3.82$, $p < .001$) (H3a). EI (employee involvement) positively affect NC (network competency) ($\beta=0.01$, $T=0.14$, $p < .005$) (H4b). Finally, NC (network competency) positively affect AP (agriprenuerial performance) ($\beta=0.21$, $T=2.66$, $p < .001$) (H9). However, LC and AP (H1b) CI and AP (H3b) and EI and AP (H4b) were not supported because their ($p > 0.05$) respectively.

Table 6. Variance and predictive relevance of the model (R2 and Q2).

Construct	β	T-value	P-value	Q^2
AP	0.16	3.72	0.00	0.09
NC	0.44	9.78	0.00	0.42

Table 7. Direct effect.

Hypotheses	Path	β	T-value	P-value	Result	F^2	Effect size
H1a	LC >> NC	0.21	4.29	0.00	Supported	0.07	Small
H1b	LC >> AP	0.10	1.52	0.06	Not Supported	0.01	Small
H2a	CF >> NC	0.24	4.54	0.00	Supported	0.09	Small
H2b	CF >> AP	0.12	1.77	0.04	Supported	0.02	Small
H3a	CI >> NC	0.17	3.82	0.00	Supported	0.05	Small
H3b	CI >> AP	0.10	1.41	0.08	Not Supported	0.01	Small
H4a	EI >> NC	0.34	9.04	0.00	Supported	0.17	Small
H4b	EI >> AP	0.01	0.14	0.44	Not Supported	0.01	Small
H9	NC >> AP	0.21	2.66	0.00	Supported	0.03	Small

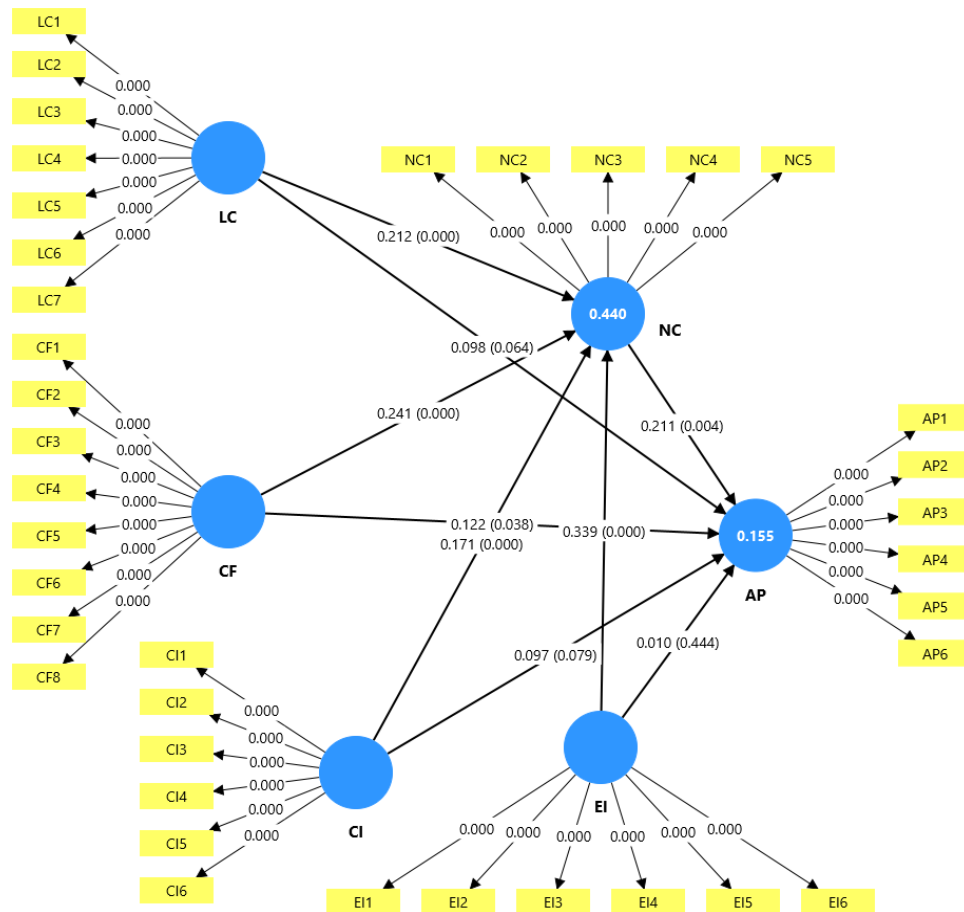


Figure 3. Structural model.

The mediation path on *Table 8* shows the indirect effect of NC (network competency) on the relationships between LC (leadership commitment), CF (customer focus), CI (continuous improvement) and EI (employee involvement). This mediation effects were observed. H5 seeks to assess the mediating role of NC on the relationship between LC and AP. The specific indirect of NC on the relationship between LC and AP was significant ($\beta=0.05$, $T=2.21$, $p < 0.001$) (*Table 8*). The path analysis indicates that, in the presence of mediator (NC), the impact of LC on AP was not significant ($p > .005$) (*Table 7*). Since, only the indirect effect was significant, it shows that NC, fully mediates the relationship between LC and AP. H6 seeks to examine the effect of mediating role of NC on the relationship between CF and AP. The specific indirect of NC on the relationship between CF and AP was significant ($\beta= 0.05$, $T= 2.15$, $p < 0.001$) (*Table 8*). The path analysis indicates that, in the presence of mediator (NC), the impact of CF on AP was also significant ($p < .005$) (*Table 7*). Since, both the indirect effect and indirect effect were significant, it shows that NC, partially mediates the relationship between CF and AP. H7 is designed to examine the mediating role of NC on the relationship between CI and AP. The specific indirect of NC on the relationship between CI and AP was significant ($\beta= 0.04$, $T= 2.17$, $p < 0.001$) (*Table 8*). The path analysis indicates that, in the presence of mediator (NC), the impact of CI on AP was not significant ($p > .005$) (*Table 7*). Since, only the indirect effect was significant, it shows that NC, fully mediates the relationship between CI and AP. Finally, H8 seeks to assess the mediating role of NC on the relationship between EI and AP. The specific indirect of NC on the relationship between EI and AP was significant ($\beta= 0.07$, $T= 2.51$,

$p < 0.001$) (*Table 8*). The path analysis indicates that, in the presence of mediator (NC), the impact of EI on AP was not significant ($p > .005$) (*Table 7*). Since, only the indirect effect was significant, it shows that NC, fully mediates the relationship between EI and AP.

Table 8. Indirect effect (Mediation).

Hypotheses	Path	β	T-value	P-value	Result
H5	LC >> NC >> AP	0.05	2.21	0.00	Supported
H6	CF >> NC >> AP	0.05	2.15	0.00	Supported
H7	CI >> NC >> AP	0.04	2.17	0.00	Supported
H8	EI >> NC >> AP	0.07	2.51	0.00	Supported

In an environment like Nigeria's agricultural SME sector, TQM procedures might not guarantee performance improvement on their own unless they are backed by strong external links (Jaiyesimi, 2025). The ability of an organisation to proactively establish, maintain, use, and coordinate external connections with vendors, buyers, extension services, academic institutions, financiers, regulators, and other network actors is known as network competence (Moss, 2024). Strong network competency enables businesses to adopt innovations, adapt to change, access external resources (markets, capital, and knowledge), and turn improvements in internal quality into a competitive advantage (Iember et al., 2024). The results of the study, underscored the overriding role of network competency in improving the role of leadership commitment, customer focus, continuous improvement, and employee involvement on agripreneurial performance of SMEs in Imo state, Nigeria. The following conclusion may be drawn from the results of the findings. Leadership commitment improves network competency by building quality collaboration with relevant stakeholders within the agricultural sector. SMEs leaders who focus on TQM practices build strategic networks of suppliers and market participants which improve business performance. This finding is consistent with the result from Iember et al. (2024) and Jaiyesimi (2025).

Likewise, customer focus supports agripreneurial performance through the influence of network competency. Agripreneurial-based SMEs that prioritise customer-centred quality practice are believed to have robust relationship with buyers which usually translate into strong performance. This finding is in agreement with previous studies which suggest that market-driven networking enables sustainability in agricultural business (Fraihat et al., 2023; Mohammed, 2020). Also, the findings show that continuous improvement positively influence network competency. Agric-based SMEs that focuses on internal learning, business innovation are believed to build quality and productive networks those key stakeholders which promote quality improvements and knowledge transfer. Such practices knowledge transfer enhances agripreneurial performance in terms of profitability, market share and quality improvement (Abdulkazeem, 2025; Kehinde et al., 2024). Finally, employee involvement shows an indirect influence on performance through network competency. Employees who are involved in the business operations build trust and confidence amongst the stakeholders which benefits business performance (Antony et al., 2022; Antunes et al., 2021).

Implications

By combining the resource-based view (RBV), network capacity theory, and TQM theory to explain agripreneurial performance among agricultural SMEs, this study adds

to the body of literature. An enhanced multidimensional framework for explaining agriprenuerial performance among SMEs in Nigeria is produced by the integration of the theories (RBV, DCT, and SCT). RBV provides information about internal assets and competencies. While SCT transforms internal capabilities into market-driven outcomes based on cooperation and knowledge exchange, DCT provides an awareness of ongoing learning and adaptation to gain competitive advantage. In essence, agriprenuerial success depends not only on internal resources and capabilities (RBV) and how they are configured (DCT), but also on how well they are managed by connecting them with external stakeholders (SCT). The findings emphasise the need for agricultural SMEs to integrate external networking tactics with internal quality management. Leadership-driven quality culture, customer-focused operations, and continuous improvement practices that improve connections with suppliers, buyers, extension agents, and government programs should be top priorities for managers. Employee responsiveness to opportunities, distribution links, and market information flow can all be greatly improved by training staff members to engage with stakeholders. Because this dual skill promotes innovation adoption, competitiveness, and agriprenuerial success, policymakers and agribusiness support organisations should create capacity-building programs that include TQM concepts with networking and market-development modules. The study is focused on agriculturally based SMEs which does not cover other SMEs. The study also focused on four dimensions of TQM (leadership commitment, customer focus, continuous improvement and employee involvement), there are other dimensions which influence TQM. Geographically, only 1 local government area was covered in one state (IMO) in Nigeria, care should be taking when generalising the findings to other jurisdictions.

Conclusion

According to this conceptualisation, TQM (leadership commitment, customer focus, continuous improvement, and employee improvement) directly improves performance, with some of its effects operating indirectly through the growth of network competence. SMEs may acquire information, adopt innovations, and position themselves competitively by fortifying their networks with suppliers, extension services, agritech providers, buyers, and regulatory bodies. In the end, the study offers managerial and theoretical proof that network competency and TQM integration are critical for long-term success in the agricultural SME sector.

Acknowledgement

This research is self-funded.

Conflict of interest

The authors confirm that there is no conflict of interest involve with any parties in this research study.

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