ACADEMIC SCIENCE PRESS

INTERNATIONAL JOURNAL OF DIGITAL ENGINEERING, ARCHITECTURE AND TECHNICAL SCIENCES
ISSN: 3143-6064

# Strategic Innovation and Distribution Network Optimization in Emerging Economies: A Case Study of Nigeria's Lubricant Market

Victor Nwakaku [1], Christopher C. Ikeogu [2], Vivian N. Ikeogu [3], Olisa B. Sunday [4*]

[1,2,3] Department of Logistics and Transport Technology, Federal University of Technology, Owerri (FUTO), Nigeria
[4] Department of Nautical Science, Faculty of Maritime Studies, Admiralty University of Nigeria (ADUN)
Email address: nwakakuv2@gmail.com, krisiikeogu@yahoo.com, vivian.ikeogu@futo.edu.ng
*Corresponding Author: olisabab@gmail.com

ARTICLE INFO

*Keywords*:
Distribution,
partnerships,
value chain,
lubricant oil industry,
emerging markets,
institutional theory,
structural modelling.

**Vol**.01, **No**.05, 2026

https://doi.org/10.5281/zenodo.23343971

Copyright © 2026 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CCBY4.0).

http://creativecommons.org/licenses/by/4.0/
Open Access

ABSTRACT

This study took cognizance of the relationship between strategic distribution partnerships and value chain innovation in Nigeria's lubricating oil business, with Conoil PLC as the major case study. Operating in one of Sub-Saharan Africa's largest lubricant marketplaces, indigenous enterprises face a slew of structural challenges, including fragmented distribution networks, limited transportation infrastructure, lax regulatory enforcement, and widespread counterfeit product penetration. Based on the Resource-Based View, Porter's Value Chain Theory, Strategic Alliance Theory, and Institutional Theory, the study adopts a mixed-methods explanatory sequential design that combines quantitative structural equation modeling (SEM) with qualitative theme analysis. Primary data were collected from 186 respondents, including managers, distributors, logistics partners, and high-volume clients. Findings reveal that strategic distribution partnerships exert a strong positive influence on value chain innovation with $\beta = 0.701$, and $p < 0.001$, which in turn significantly enhances operational efficiency, market reach, and customer satisfaction ($\beta = 0.753$, $p < 0.001$). Value chain innovation is confirmed as a significant partial mediator (indirect effect = 0.36, $p = 0.004$), while institutional conditions regulatory quality, infrastructure, and market formalization significantly moderate the partnership–innovation relationship with $\beta=0.21$, $p=0.018$. These findings advance theoretical understanding of how indigenous firms in emerging economies convert collaborative resources into competitive advantage through innovation, and provide actionable guidance for lubricant marketers, logistics firms, and policymakers seeking to optimize distribution networks in constrained institutional environments.

## Introduction

Lubricant oils constitute a fundamental input across automotive, manufacturing, agricultural, and energy sectors, serving as critical enablers of productivity and equipment longevity through friction reduction, thermal management, and wear minimisation (Bowersox, Closs, & Cooper, 2013). As economies industrialise and vehicle ownership expands, lubricant distribution efficiency transforms from a logistical afterthought into a strategic determinant of market competitiveness. This is particularly salient in emerging economies where infrastructural deficits, institutional weaknesses, and fragmented supply chains impose significant constraints on firm performance.

Nigeria represents one of the largest lubricant oil markets in Sub-Saharan Africa, driven by rapid urbanisation, growth in vehicle ownership exceeding 12 million units, mechanised agriculture, and accelerating industrial expansion (Mordor, 2023); (Ogunlela & Otun, 2020). Yet despite strong demand fundamentals, indigenous lubricant firms face systemic obstacles: fragmented distribution networks (Afolabi & Akinlo, 2020), deteriorating transport infrastructure (Ogunleye & Okunlola, 2020), inconsistent regulatory enforcement (Adebisi, 2021), and counterfeit product infiltration estimated to undermine substantial market segments (Bello, Sulaimon & Johnson, 2021). These structural failures elevate operating costs, erode service reliability, and undermine consumer trust (Oladipupo & Akinbile, 2021).

On this note, strategic distribution partnerships involving long-term collaborative arrangements among manufacturers, distributors, logistics providers, and technology firms have come into place as a

primary managerial response. According to Akinleye (2021) and Mbah, Onuoha & Okafor (2020), these inter-organisational alliances enable firms to access complementary resources, share operational risks, and achieve supply chain resilience. Simultaneously, value chain innovation through digitalization, logistics optimization, inventory management systems, and anti-counterfeit traceability mechanisms has also emerged as a critical mechanism for improving competitiveness in resource-constrained environments as opined by (Porter, 1985), (Teece, Pisano & Shuen, 1997).

It is noteworthy that there is existence of knowledge gaps, however, in understanding how these two constructs interact within the context of indigenous firms in emerging economies. Some literatures predominantly examine multinational corporations or draw from developed economy settings, the mechanisms through which partnerships enable innovation; and how institutional conditions moderate these effects; remain underexplored for indigenous firms such as Conoil PLC. This firm, as one of Nigeria's leading indigenous lubricant marketers, provides a theoretically rich and empirically relevant case for such investigation.

## 2. Literature Review

### 2.1 Conceptual framework

#### 2.1.1 Strategic distribution partnerships

Strategic distribution partnerships are characterised as long-term, trust-based, collaborative arrangements among supply chain actors designed to enhance efficiency, reduce uncertainty, and improve market responsiveness (Bowersox, Closs, & Cooper, 2013). Unlike transactional exchanges, these partnerships emphasise shared goals, joint planning, information integration, and mutual commitment (Kumar & Soni, 2018). In the lubricant oil sector, where distribution efficiency, product integrity, and geographic reach are paramount, such partnerships address fragmented channel structures and infrastructure limitations (Harland, 2020).

Sharma, Ahuja. & Choudhary (2020) demonstrated that strategic distribution partnerships significantly improved delivery performance in automotive and lubricant industries by enabling optimised transportation routes, warehouse management integration, and real-time inventory tracking. Adebayo (2022) noted that in Nigeria's fragmented lubricant market, partnerships between local distributors and logistics firms are indispensable for improving product availability and reducing delivery costs. Conoil PLC's regional depot network, established through logistics partnerships, exemplifies this dynamic (Adebisi, 2021).

The key dimensions of strategic distribution partnerships include: partnership structure (formalisation duration); governance mechanisms (contracts, monitoring); trust and commitment; and information and resource sharing. Harland (2020) argues that diversification across multiple supply partners reduces dependency on any single channel, which is particularly critical in Nigeria where economic volatility and infrastructure unpredictability are endemic. However, coordination complexity, misaligned objectives, and reluctance to share proprietary data remain significant implementation challenges (Adebisi, 2021); (Kumar & Soni, 2018). Adenigbo, Balogun & Olisa (2017) opined that petroleum product distribution and transportation involve a process of delivering products from refineries to depots, marketers, and final consumers. To reach the highest level of functioning, this process necessitates sufficient planning, coordination, monitoring, and effective management.

#### 2.1.2 Value chain innovation

Value chain innovation involves the purposeful reconfiguration or improvement of activities across the value chain to enhance efficiency, differentiation, or market responsiveness (Porter, 1985). Porter's framework identifies primary activities; inbound logistics, operations, outbound logistics, marketing and sales, and service alongside support activities encompassing procurement, technology development, human resource management, and infrastructure. Innovation can occur across any of these dimensions, generating cost efficiencies and competitive differentiation simultaneously. There must not be disruption along the chain of distribution to avoid partial or total collapse of logistics efficiency, an instance of maritime blockage in the mid-east world, where shipping markets, national energy security, and the robustness of global supply chains are all at stake as a result of geopolitical tensions in and around the Gulf. Businesses (Nwosu &Olisa, 2026)

In the lubricant sector, value chain innovation encompasses logistics digitisation, inventory and warehousing automation, process integration, and anti-counterfeit traceability systems. Oladipo & Ayinde (2022) found that Nigerian petroleum firms adopting enterprise resource planning (ERP) systems significantly reduced excess inventory and improved lead times. Mbah, Onuoha, & Okafor, (2020) demonstrated that GPS-based tracking and dynamic route planning reduced transportation costs and improved customer satisfaction in logistics-constrained environments. The integration of blockchain for supply chain traceability; addressing counterfeit penetration represents an emerging frontier with transformative potential for product integrity and consumer trust (Bello, Sulaimon & Johnson, 2021); (Meyer, 2018). Despite these opportunities, barriers to value chain innovation in Nigeria include inadequate digital infrastructure, high technology adoption costs, regulatory uncertainty, and organisational resistance to change (Ogunleye & Okunlola, 2020); (Adebayo, 2022). However, firms that invest strategically in innovation demonstrate measurable improvements in distribution reliability and competitive positioning (Oladipo & Ayinde, 2022).

### 2.2 Theoretical Framework

#### 2.2.1 Resource-Based View (RBV)

Barney (1991) stated that sustained competitive advantage derives from firm-specific resources that are valuable, rare, inimitable, and non-substitutable (VRIN). Strategic distribution partnerships constitute organisational capabilities that enable firms to access complementary logistics expertise, technology, and market networks unavailable internally. For Conoil PLC, partner-derived resources logistics infrastructure, route knowledge, and digital platforms constitute rare capabilities in Nigeria's constrained environment.

#### 2.2.2 Value Chain Theory

Porter (1985) argued that competitive advantage emerges from how efficiently a firm manages and integrates value-creating activities. Innovation in primary activities particularly inbound and outbound logistics yields cost leadership, while innovation in marketing, service, and technology development generates differentiation. As applied to the lubricant sector, optimising distribution logistics, inventory systems, and customer engagement platforms creates measurable performance advantages (Frazier, Spekman, & O'Neal, 2016).

#### 2.2.3 Strategic Alliance Theory

Kogut (1988) established that strategic alliances enable firms to share risks, access complementary resources, and achieve collective learning while retaining operational independence. In the lubricant industry, alliances with logistics providers, technology vendors, and regional distributors allow indigenous firms to overcome the scale disadvantages they face relative to multinationals (Dyer & Singh, 1998). Sharma, Ahuja, & Choudhary, (2020) demonstrated that globally, lubricant companies leveraging local distribution alliances achieved superior supply chain alignment and market penetration.

#### 2.2.4 Institutional Theory

North (1990) conceptualised institutions as 'the humanly devised constraints that structure political, economic, and social interaction,' providing stable expectations for organisational behaviour while simultaneously creating transactional frictions when weak or inconsistently enforced. Scott (2014) identifies three institutional pillars regulative, normative, and cognitive each shaping how organisations respond to environmental constraints. In emerging markets characterised by institutional voids (Khanna, Palepu, 2010) firms develop adaptive strategies such as strategic partnerships to substitute for absent public governance mechanisms.

Peng, Wang &Jiang, (2008) argued that institutional conditions in emerging economies directly determine the effectiveness of firm strategies, including innovation initiatives. This study therefore incorporates institutional quality regulatory enforcement, infrastructure, and market formalization as a moderating variable in the partnership–innovation relationship, directly addressing a gap in existing literature that acknowledges but does not formally model institutional effects.

### 2.3 Empirical Evidence

Empirical studies consistently support the positive relationship between strategic partnerships and supply chain performance in emerging markets. Mbah, Onuoha, & Okafor (2020) found that Nigerian

firms establishing alliances with local distributors and logistics providers significantly improved supply chain performance, market reach, and inventory optimization. Oladipo & Ayinde (2022) confirmed that technology-driven partnerships enhanced distribution efficiency in the Nigerian petroleum sector, reducing transportation costs through real-time tracking system integration. Concerning value chain innovation outcomes, Sharma, Ahuja, & Choudhary, (2020) demonstrated across Sub-Saharan Africa that lubricant companies leveraging local distribution alliances achieved faster delivery and more efficient inventory management. Frazier, Spekman, & O'Neal (2016) established in a global supply chain study that emerging market firms partnering with logistics and retail networks achieved improved market penetration, reduced operational risk, and enhanced customer service. Kogut (1988) confirmed that supply chain integration positively influences operational performance across diverse industry contexts. In the Nigerian lubricant market specifically, Adebayo (2022) documented Conoil PLC's strategic investments in ERP systems and GPS-based tracking through technology partnerships, yielding measurable improvements in inventory accuracy and delivery scheduling. Ogunleye & Okunlola, (2020) highlighted the role of ERP integration in enabling real-time production, inventory, and distribution management for lubricant manufacturers. Bello, Sulaimon & Johnson, (2021) demonstrated the critical role of blockchain technology and real-time traceability in combating counterfeit lubricant penetration. Collectively, these studies establish that strategic partnerships drive innovation adoption, and innovation translates into measurable performance gains. However, a persistent gap exists: the mechanisms linking partnerships to innovation to performance are rarely modelled causally, and institutional moderating effects are acknowledged but not empirically tested. This study addresses these gaps through a formal moderated mediation framework.

### 2.4 Identified Knowledge Gaps

Three primary gaps motivate this study. First, existing empirical literature is dominated by multinational firm studies from developed economies, with limited firm-level evidence from indigenous lubricant distributors in emerging markets. Second, strategic partnerships and value chain innovation are predominantly treated as parallel constructs rather than causally linked mechanisms. Third, while institutional constraints are widely acknowledged, they have not been formally incorporated as moderating variables in empirical models of the partnership, innovation and performance chain. This study addresses all three gaps through integrated quantitative modelling.

## 3. Methodology

### 3.1 Research Philosophy and Design

The study combined primary and secondary survey methods. Explanatory sequential design was employed: a quantitative phase tested hypothesised causal relationships and estimated effect sizes, followed by a qualitative phase that interpreted observed mechanisms and institutional dynamics.

### 3.2 Population and Sampling

The target population comprised stakeholders directly involved in Conoil PLC's lubricant distribution value chain across six geopolitical zones: senior and middle-level managers with n = 27, major distributors and dealers ‘n = 230’, logistics and transport partners being ‘n = 102’, and large-volume customers including fleet operators and industrial users ‘n = 203’; the total sample population yielded 562. Also, a stratified purposive sampling technique was employed to ensure proportional representation across stakeholder categories, reflecting the uneven distribution of strategic partnerships and innovation adoption across actor types. Sample size determination followed SEM guidelines requiring a minimum of 10-15 observations per estimated parameter [27]. A final usable sample of 186 respondents was obtained, exceeding the minimum threshold for stable model estimation and satisfying statistical power requirements.

### 3.3 Data Collection

Primary data were collected through a structured questionnaire consisting of five sections: respondent profile (Section A); strategic distribution partnerships (Section B, 12 Likert-scale items); value chain innovation (Section C); performance outcomes (Section D); and institutional conditions (Section E). All these models were measured on a five-point Likert scale ranging from 1 as strongly disagree to 5 as strongly agree. Semi-structured interviews were conducted with 18 key informants to

contextualize quantitative findings. Secondary data included Conoil PLC annual reports, industry performance databases, regulatory publications, and infrastructure catalogues complemented primary data for assessment and data validation. (See Table 1.)

**Table 1.** Summary of Measures and Constructs

| Construct | Role | Dimensions | Items |
|---|---|---|---|
| Strategic Distribution Partnerships (SDP) | Independent Variable | Structure, Governance, Trust, Information Sharing | SDP1-SDP12 |
| Value Chain Innovation (VCI) | Mediating Variable | Logistics Digitisation, Inventory Innovation, Process Integration, Traceability | VCI1-VCI12 |
| Performance Outcomes (PO) | Dependent Variable | Operational Efficiency, Market Reach, Customer Satisfaction | PO1–PO9 |
| Institutional Conditions (IC) | Moderating Variable | Regulatory Enforcement, Infrastructure Quality, Market Formalisation | IC1–IC9 |

**Source:** Author, 2026

### 3.5 Analytical Methods

Quantitative analysis was done through multiple complementary models. Descriptive statistics and correlation analysis provided baseline attributes. Regression analysis (Models 3 and 4) tested direct causal relationships between SDP-VCI and VCI-PO respectively. A moderation model examined the SDP × IC interaction effect on VCI. Full structural equation modelling (SEM) using SmartPLS and AMOS simultaneously estimated mediation and moderation effects. Measurement model validity was assessed through Cronbach's Alpha (≥ 0.70), composite reliability (≥ 0.70), average variance extracted (AVE ≥ 0.50), and discriminant validity via the Fornell-Larcker criterion. Qualitative data from interviews were analysed using NVivo through iterative thematic coding.

The hypotheses tested were: H1: SDP positively influences VCI; H2: VCI positively influences performance outcomes; H3: VCI mediates the SDP–performance relationship; H4: Institutional conditions moderate the SDP-VCI relationship.

## 5. Results and Discussion

Table 2 presents descriptive statistics for the four constructs and secondary operational indicators. The mean scores for SDP (M = 3.87, SD = 0.68) and VCI (M = 3.74, SD = 0.72) reflect moderate to strong levels of partnership engagement and innovation adoption respectively. Performance outcomes (M = 3.81, SD = 0.65) indicate satisfactory operational results, while institutional conditions (M = 3.22, SD = 0.80) confirm the presence of notable contextual constraints consistent with Nigeria's institutional environment.

**Table 2:** Descriptive Statistics for Key Variables

| Variable | N | Mean | Std. Deviation | Interpretation |
|---|---|---|---|---|
| Strategic Distribution Partnerships (SDP) | 186 | 3.87 | 0.68 | Moderately strong |
| Value Chain Innovation (VCI) | 186 | 3.74 | 0.72 | Moderate adoption |
| Performance Outcomes (PO) | 186 | 3.81 | 0.65 | Satisfactory |
| Institutional Conditions (IC) | 186 | 3.22 | 0.80 | Notable constraints |
| Delivery Lead Time (days) | 186 | 3.80 | 1.20 | Moderate efficiency |
| Inventory Turnover (ratio) | 186 | 5.60 | 1.50 | Improving |
| Market Coverage (%) | 186 | 72% | 8.50 | Expanding |

**Source:** Author, 2026

### 4.2 Reliability and Validity

All constructs satisfied measurement quality thresholds. Cronbach's Alpha ranged from 0.83 (IC) to 0.91 (VCI), and composite reliability from 0.88 to 0.93, confirming internal consistency. AVE values (SDP = 0.66; VCI = 0.69; PO = 0.64; IC = 0.60) exceeded the 0.50 threshold, confirming convergent

validity. Discriminant validity was established through the Fornell-Larcker criterion. Factor loadings for all indicators exceeded 0.70, as required for SEM validity (Hair, Henseler, Ringle & Sarstedt, 2014). These results confirm that constructs are well-operationalized and suitable for structural modelling.

### 4.3 Hypothesis 1: Strategic Distribution Partnerships and Value Chain Innovation (Model 3)

Table 3 reveals that the regression of VCI on SDP yielded a strong positive and significant relationship at $\beta = 0.701$, $t = 11.38$, $p = 0.001$, $R^2 = 0.412$). This confirms H1: strategic distribution partnerships exert a significant positive effect on value chain innovation. The coefficient indicates that each unit improvement in partnership quality translates into a 0.701-unit increase in innovation intensity within Conoil PLC's distribution network.

**Table 3:** Regression Results – SDP → VCI (Model 3)

| Variable | Coefficient (β) | t-value | p-value | Decision |
|---|---|---|---|---|
| Constant | 1.024 | 3.28 | 0.001 | – |
| SDP | 0.701 | 11.38 | 0.001 | H1 Supported |
| $R^2 = 0.412$ | F = 129.54 | p = 0.000 | | |

**Source:** Author, 2026

These findings align with Strategic Alliance Theory (Kogut, 1988), which posits that collaborative arrangements provide access to complementary innovation resources. They also corroborate the RBV argument that partner-derived capabilities logistics technology, process expertise, digital platforms; serve as VRIN resources enabling innovation (Barney, 1991). Consistent with (Mbah, Onuoha, & Okafor, 2020), and (Sharma, Ahuja, & Choudhary, 2020), the evidence confirms that inter-organisational partnerships are foundational drivers of value chain transformation in emerging market supply chains.

### 4.4 Hypothesis 2: Value Chain Innovation and Performance Outcomes (Model 4)

The regression of PO on VCI yielded a strong positive and significant relationship ($\beta = 0.753$, $t = 12.76$, $p = 0.001$, $R^2 = 0.487$) as shown in table 4. H2 is therefore confirmed: value chain innovation significantly enhances operational efficiency, market reach, and customer satisfaction. The $R^2$ of 0.487 indicates that innovation explains approximately 48.7% of variance in performance outcomes, with the remaining variance attributable to factors beyond this study's scope. (see Table 4)

**Table 4:** Regression Results – VCI → Performance Outcomes (Model 4)

| Variable | Coefficient (β) | t-value | p-value | Decision |
|---|---|---|---|---|
| Constant | 0.982 | 3.46 | 0.001 | – |
| VCI | 0.753 | 12.76 | 0.001 | H2 Supported |
| $R^2 = 0.487$ | F = 162.81 | p = 0.000 | | |

**Source:** Authors, 2026

These results are theoretically consistent with Porter's Value Chain Theory, which predicts that innovation in logistics and operational activities generates competitive advantage through cost reduction and service differentiation. They align with (Christopher, 2016) who argued that logistics innovation improves responsiveness and customer value creation, and (Flynn, Huo, & Zhao, 2010) confirmed positive supply chain integration effects on operational performance. Within Nigeria's infrastructure-constrained environment, these findings carry particular practical significance: targeted innovation investments in digitization and process integration yield measurable, proportional returns even without full infrastructural improvement.

### 4.5 Hypothesis 4: Institutional Moderation (Model 5)

The moderation analysis confirmed that institutional conditions significantly influence the SDP-VCI relationship. The interaction term SDP × IC was positive and significant ($\beta = 0.21$, $p = 0.018$), supporting H4. Inference here is that both the main effect of SDP ($\beta = 0.62$, $p < 0.001$) and the direct effect of IC ($\beta = 0.29$, $p = 0.012$) were also significant as indicated in table 5.

**Table 5:** Moderation Analysis – Institutional Conditions Moderating SDP → VCI

| Variable | Coefficient (β) | p-value | Interpretation |
|---|---|---|---|
| SDP | 0.62 | 0.000 | Strong positive effect on VCI |
| Institutional Conditions (IC) | 0.29 | 0.012 | Direct institutional influence |
| SDP × IC (Interaction) | 0.21 | 0.018 | Significant moderation confirmed |

**Source:** Authors', 2026

The significant interaction term indicates that the effectiveness of strategic distribution partnerships in generating value chain innovation is contingent upon institutional quality. In environments with stronger regulatory enforcement, better infrastructure, and higher market formalisation, the SDP–VCI effect is amplified. Conversely, institutional weaknesses attenuate the innovation-enabling capacity of partnerships. This finding empirically validates Institutional Theory (North, 1990); (Scott, 2014) and extends (Peng, Wang &Jiang, 2008) by formally modelling institutional moderation rather than treating it as contextual background.

### 4.6 Hypothesis 3: Mediation Analysis (Model 6 – SEM)

The SEM mediation analysis confirmed that value chain innovation significantly mediates the relationship between strategic distribution partnerships and performance outcomes. The indirect effect of SDP on PO via VCI was 0.36 (p = 0.004), exceeding the direct effect of 0.28 (p = 0.021), yielding a total effect of 0.63 (p < 0.001) as indicated in Figure 1. Partial mediation is confirmed: partnerships influence performance both directly and through the innovation mechanism.

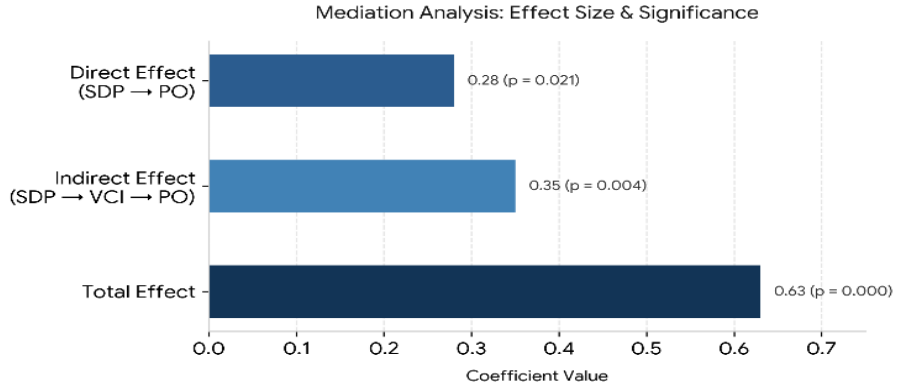


**Figure 1: Mediation Analysis Results**
**Source:** Authors', 2026

The dominance of the indirect effect over the direct effect establishes value chain innovation as the principal transmission mechanism through which partnerships generate competitive advantage, not merely a parallel construct. This integrates Strategic Alliance Theory and Value Chain Theory within a unified causal framework, confirming (Dyer & Singh, 1998). relational view that collaborative value creation mechanisms, rather than partnerships per se, drive superior performance outcomes.

### 4.7 Model Fit and SEM Results

As shown in Table 6 and Figure 2, the structural model demonstrated acceptable fit across all indices: $\chi^2$/df = 2.31 (< 3.0), CFI = 0.94 (≥ 0.90), TLI = 0.92 (≥ 0.90), RMSEA = 0.058 (≤ 0.08), SRMR = 0.045 (≤ 0.08). in Figure 2, $R^2$ values of 0.52 for VCI and 0.61 for PO confirm strong explanatory power.

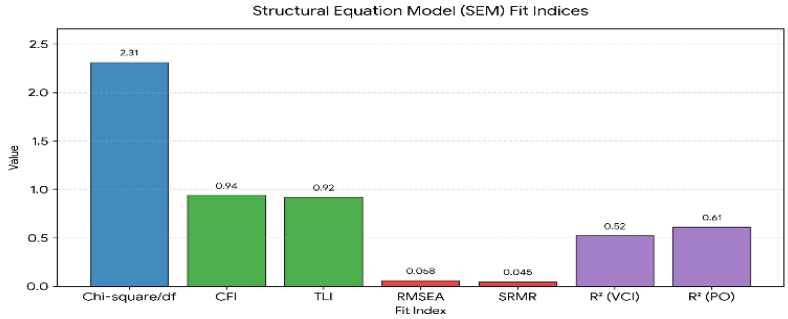


**Figure 2: The Fit Index and observed values integrated framework of partnerships, innovation, performance, and institutional moderation.**
**Source:** Author, 2026

As indicated in Table 6 and 7, these indices confirm that the hypothesized model structure accurately represents the underlying data, and that the integrated framework of partnerships, innovation, performance, and institutional moderation achieves a good fit to the empirical reality of Conoil PLC's distribution system.

**Table 6:** Structural Equation Model Threshold and assessment

| Fit Index | Threshold | Assessment |
|---|---|---|
| Chi-square/df | < 3.0 | Good fit |
| CFI | ≥ 0.90 | Acceptable |
| TLI | ≥ 0.90 | Acceptable |
| RMSEA | ≤ 0.08 | Good fit |
| SRMR | ≤ 0.08 | Good fit |
| $R^2$ (VCI) | – | Strong explanatory power |
| $R^2$ (PO) | – | Strong explanatory power |

**Source:** Author, 2026

### 4.8 Hypotheses Summary

**Table 7**: Summary of Hypothesis Testing

| Hypothesis | Statement | Result | Decision |
|---|---|---|---|
| H1 | SDP → VCI (positive effect) | β = 0.701, p < 0.001 | Supported |
| H2 | VCI → Performance (positive effect) | β = 0.753, p < 0.001 | Supported |
| H3 | VCI mediates SDP → Performance | Indirect = 0.35, p = 0.004 | Supported |
| H4 | IC moderates SDP → VCI | β = 0.21, p = 0.018 | Supported |

**Source:** Author, 2026

## 5. Conclusion and Future Scope

This study demonstrated that strategic distribution partnerships and value chain innovation constitute mutually reinforcing mechanisms for improving competitiveness in Nigeria's lubricant oil industry. The empirical findings establish three central conclusions. First, strategic distribution partnerships are necessary but insufficient conditions for superior performance; their effectiveness is primarily realised through the innovation they enable rather than through direct operational coordination alone. Second, value chain innovation; encompassing logistics digitisation, inventory systems, process integration, and traceability mechanisms which functions as the dominant pathway through which partnerships generate operational and market advantages. Third, institutional quality significantly moderates these relationships: stronger regulatory enforcement, infrastructure quality, and market

formalisation amplify the innovation-enabling capacity of partnerships, while institutional weakness constrains it.

These conclusions carry significant theoretical implications. By integrating the Resource-Based View, Value Chain Theory, Strategic Alliance Theory, and Institutional Theory within a moderated mediation framework, the study provides a comprehensive, multi-level explanation of how indigenous firms in emerging economies convert collaborative resources into competitive advantage. The formal modelling of institutional moderation advances prior literature that acknowledged but did not empirically test contextual effects. Firm-level evidence from an indigenous lubricant marketer fills a documented gap in the supply chain literature dominated by multinational and developed economy studies. Methodologically, the application of SEM with established fit indices, combined with multi-source secondary data triangulation and qualitative thematic analysis, enhances the robustness and credibility of findings. The study thereby establishes an empirically validated framework capable of guiding both academic inquiry and managerial practice in emerging market supply chain systems.

### 5.2 Recommendations

#### 5.2.1 Managerial Recommendations

Nigeria indigenous lubricant firms should prioritise the formalisation of strategic partnerships with logistics providers, technology vendors, and regional distributors through structured governance mechanisms including contractual frameworks, shared performance monitoring systems, and joint planning protocols. Firms should accelerate investment in value chain innovation, specifically targeting logistics digitization (GPS tracking, route optimisation), warehouse management systems, ERP integration, and blockchain-based anti-counterfeit traceability. These investments yield disproportionate performance returns relative to cost in infrastructure-constrained environments. In partnership negotiations, information sharing protocols should be explicitly codified. The relatively lower information-sharing scores in this study (M = 3.83) signal an opportunity area: improved data integration between partners will enhance demand forecasting accuracy and inventory optimisation. Firms should develop institutional adaptation strategies, including proactive regulatory compliance monitoring, alternative logistics routing to mitigate infrastructure gaps, and private certification mechanisms for product authenticity to reduce dependency on inconsistent public enforcement.

#### 5.2.2 Policy Recommendations

Government agencies including the Nigerian Standards Organisation (SON), the Department of Petroleum Resources (DPR), and the Standards Organisation of Nigeria should strengthen regulatory enforcement capacity against counterfeit lubricants, including investment in testing infrastructure and inter-agency coordination mechanisms.

- Federal and state governments should prioritise transport infrastructure investment in corridors critical to lubricant distribution, particularly in semi-urban and rural regions where market access deficits are most acute.
- Policymakers should develop clear, consistent technology adoption incentives for indigenous industrial firms, including tax credits for ERP investment and logistics digitalisation, to reduce the cost barrier to value chain innovation for smaller firms.
- The formalisation of lubricant distribution markets through standardised dealer certification, transparent pricing frameworks, and counterfeit product reporting systems would increase market discipline and reduce the institutional constraints that attenuate partnership effectiveness.

### 5.3 Limitations and Future Research

This study is subject to several limitations. The reliance on a single case organisation limits generalisability beyond comparable indigenous emerging market firms. Access constraints precluded inclusion of some sensitive operational performance data. The geographic focus on Nigeria, while theoretically relevant, means findings should be transferred to other contexts with appropriate caution.

Future research should pursue comparative analyses across multiple lubricant firms to assess robustness across different organisational profiles. Cross-country investigations of supply chain innovation in African emerging economies would enrich the theoretical framework. Longitudinal studies examining how innovation investments evolve across different institutional maturity stages would

complement this cross-sectional analysis. Specific investigation of artificial intelligence and blockchain implementation in lubricant distribution systems represents a timely frontier, as does consumer trust dynamics in counterfeit-sensitive markets where product authenticity concerns shape purchasing behaviour.

**Data Availability.**

The data supporting the findings of this study are available upon reasonable request from the corresponding author. Access to the data will be granted strictly for academic and research purposes and in accordance with ethical research standards and the Data Privacy Act to ensure the confidentiality and protection of participants' identities.

**Conflict of Interest**

The authors declare that there is no conflict of interest regarding the publication of this research. The study was conducted solely for academic and professional development purposes, and the researchers did not receive any financial or commercial support that could influence the results or interpretation of the findings

**Funding Source**

The publication of this research article did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

**Authors' Contributions**

Victor Nwakaku researched and conceived the study. He was responsible for the validation and analysis of the research data, development of the research methodology, and the multiple revisions and restructuring of the manuscript to meet the publication standards required for publication. Christopher C. Ikeogu developed the primary structure and content of the action research manuscript and facilitated the conceptual studies of the study. The statistical analysis was done and interpreted accordingly. Vivian N. Ikeogu secured the necessary research approvals and compliance with institutional requirements; as well as compilations of secondary data and analysed. Olisa B. Sunday contributed in data processing, statistical analysis and map production. Other contributions include but not limited to text formatting, plagiarism testing and other requirements aligning with publication standards. All authors reviewed, revised, and approved the final version of the manuscript prior to submission for publication.

**Acknowledgements**

The authors express sincere gratitude to the ConOil PLC Nigeria for their guidance and support in the conduct of this action research. The authors also extend their appreciation to the Department of Business Administration, Imo State University, Owerri, Nigeria for their cooperation and assistance throughout the implementation of the study.

**References**

1. Adebayo O. (2022). Challenges and opportunities in the lubricant oil market in Nigeria. Journal of Petroleum and Industrial Research, Vol. 18, No. 3, pp. 115–129.
2. Adebisi, A. (2021). Regulatory challenges in the Nigerian lubricants market. International Journal of Business and Management, Vol. 9 No. 2, pp 45–58.
3. Adenigbo A.J., G.T. Balogun, T. Olisa and O.O. Arigbede (2017). Transportation Challenges of Retailing Petroleum Products in Akure, Nigeria. Journal of Research in National Development (JORIND). Federal University of Technology, Owerri, Nigeria.
4. Afolabi, A. & Akinlo, A., (2020). Supply chain inefficiencies in Nigeria's lubricant oil industry: A critical review. Nigerian Journal of Logistics, Vol 13 No 4, pp 233–245.
5. Akinleye, D. (2021). Leveraging partnerships for operational efficiency in Nigeria's petroleum distribution network. Journal of Energy Economics, Vol 14 No 1, pp 22–35.
6. Bello, I., Sulaimon, A. & Johnson, M. (2021). The impact of counterfeit lubricants on the Nigerian economy. Journal of Manufacturing and Technology Management, Vol. 31 No 7, pp 854–870.
7. Barney, J. (1991). Firm resources and sustained competitive advantage. Journal of Management, Vol. 17, No. 1, pp. 99-120. https://doi.org/10.1177/014920639101700108
8. Bowersox, D.J. Closs, D.J. & M. B. Cooper, (2013) Supply chain logistics management (4th ed.). McGraw-Hill.

9. Christopher, M. (2016). Logistics and supply chain management (5th ed.). Pearson. 2016.
10. Dyer, J.H. & Singh, H. (1998). The relational view: Cooperative strategy and sources of interorganizational competitive advantage. Academy of Management Review, Vol. 23, No. 4, pp. 660-679; https://doi.org/10.5465/amr.1998.1255632
11. Flynn, B.B., Huo, B. & Zhao, X. (2010). The impact of supply chain integration on performance: A contingency and configuration approach. Journal of Operations Management, Vol. 28, No. 1, pp. 58–71. https://doi.org/10.1016/j.jom.2009.06.
12. Frazier, G. Spekman, R. & O'Neal, C. (2016). Supply chain partnerships: A theoretical approach. Journal of Business Logistics, Vol. 37, No. 4, pp. 287–302.
13. Hair, J. F., Henseler, J. Ringle, C. M. & Sarstedt, M. (2014). A primer on partial least squares structural equation modeling (PLS-SEM). SAGE Publications.
14. Harland, C. (2020). The strategic management of supply chains: A systematic approach to creating and managing partnerships. Journal of Strategic Marketing, Vol. 28, No. 1, pp. 1-14.
15. Khanna, T. & Palepu, K.G. (2010). Winning in emerging markets: A road map for strategy and execution. Harvard Business Press.
16. Kogut, B. (1988). Joint ventures: Theoretical and empirical perspectives. Strategic Management Journal, Vol. 9, No. 4, pp. 319–332. https://doi.org/10.1002/smj.4250090403
17. Kumar, S. & Soni, P. (2018). Strategic partnerships in supply chains: A study of their role in logistics optimization. Journal of Supply Chain Management, Vol. 54, No. 6, pp. 100-115.
18. Mbah, I., Onuoha, D., & Okafor, T. (2020). Strategic partnerships in supply chain management in Nigeria: A study of the lubricant oil industry. Journal of African Business, Vol. 21, No. 2, pp 109–121.
19. Meyer, M. (2018). Blockchain technology in supply chain management: Transparency, traceability, and trust. International Journal of Logistics Research and Applications, Vol. 12, No. 4, pp. 201-215.
20. Mordor (2023). Intelligence. Nigeria lubricants market – Growth, trends, COVID-19 impact,
21. and forecasts (2023–2028). Mordor Intelligence.
22. North, D. C. (1990). Institutions, institutional change and economic performance. Cambridge University Press.
23. Nwosu E. N. & Olisa B. S. (2026). Effects of Geopolitical Tensions and Blockade of the Strait of Hormuz: Implications for Shipping and Global Maritime Trade, American Journal of Innovation in Science Research and Development Vol. 3(7):746–754. (United States of America),
24. Oladipo, D. & Ayinde, L. (2022). Value chain innovation in the Nigerian petroleum sector: The role of technology. Journal of Business Strategy and Development, Vol. 10, No. 5, pp. 331–34.
25. Oladipupo, O. & Akinbile, F. (2021). The impact of industrial growth on lubricant oil demand in Nigeria. Nigerian Journal of Industrial Economics, Vol 25 No. 3, pp 178–191.
26. Ogunlela, A. & Otun, T. (2020). Lubricant consumption trends in Nigeria's automotive sector. Journal of Industrial Economics, Vol. 22 No. 1, pp 44–58.
27. Ogunleye, S. & Okunlola, M. (2020). Improving supply chain infrastructure in Nigeria's lubricant oil sector. International Journal of Logistics and Supply Chain Management, Vol. 15 No 4, pp 77–92.
28. Peng, M.W., Wang, D.Y.L. & Jiang, Y. (2008). An institution-based view of international business strategy: A focus on emerging economies. Journal of International Business Studies, Vol. 39, No. 5, pp.920–936.
29. Porter, M.E. (1985). Competitive advantage: Creating and sustaining superior performance. Free Press.
30. Scott, W. R. (2014). Institutions and organizations: Ideas, interests, and identities (4th ed.). SAGE Publications.
31. Sharma, R. Ahuja, V. & Choudhary, S. (2020). Global supply chain alliances and their impact on performance in emerging markets. Journal of Business Logistics, Vol. 41, No. 2, pp. 143-160.