

SUPPLIER OPTIMIZATION AND COMPETITIVENESS OF DOWNSTREAM OIL AND GAS COMPANIES IN NIGERIA

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Abstract

This study investigated the impact of supplier optimization on competitiveness of downstream oil and gas companies in Nigeria. Anchored on resource dependence theory, the study examined key outcomes of organizational competitiveness - cost savings, organizational responsiveness, and procurement cycle time. This study adopted causal research design with a cross-sectional approach. The population of the study comprised 20 major downstream oil and gas companies operating in Nigeria. All the companies were studied. However, the study is at organizational level therefore, 86 respondents from the 20 companies provided data through a semi-structured questionnaire designed in Likert 5-point scale. Three hypotheses were tested and the results revealed that supplier optimization has positive and significant impact on cost savings, organizational responsiveness, and procurement cycle time. Based on these findings, this study concluded that supplier optimization is a key determinant of competitiveness of downstream oil and gas companies in Nigeria. Therefore, the study recommends that downstream oil and gas companies in Nigeria that seek improved competitiveness should implement supplier optimization practices, including effective supplier selection, performance monitoring, long-term partnerships, and technology integration to enhance cost savings, organizational responsiveness, and procurement efficiency.

Keywords: supplier optimization, organizational competitiveness, cost savings, organizational responsiveness, procurement cycle time

Introduction

The downstream oil and gas sector plays a strategic role in Nigeria's economy through petroleum product distribution, energy security, revenue generation, and industrial support. Being responsible for refining, importing, storing, and marketing petroleum products, the sector directly influences transportation, manufacturing, and household energy consumption. Despite their relevance, downstream oil and gas companies operate within a highly volatile environment characterized by recurring supply chain disruptions, foreign exchange instability, regulatory uncertainty, infrastructure constraints, and intensifying competition. In response to these challenges, firms in the sector are increasingly leverage supplier optimization to enhance efficiency, ensure supply reliability, and strengthen overall organizational competitiveness (Akinola & Adepoju, 2021).

Global supply chain complexities, coupled with Nigeria's persistent dependence on imported refined petroleum products, have heightened exposure to external shocks such as fluctuations in international oil prices, shipping costs, currency volatility, and geopolitical tensions. These vulnerabilities place considerable pressure on downstream firms to strategically manage supplier relationships, sourcing structures, and procurement decisions in order to maintain operational continuity and market relevance (Olagunju et al., 2022). Supplier optimization enables firms to streamline supplier portfolios, strengthen coordination across supply networks, reduce procurement-related risks, and improve responsiveness to market and policy changes, all of which are critical for sustaining competitive advantage in turbulent environments.

Empirical studies indicate that effective supplier-related strategies significantly enhance organizational competitiveness by improving cost leadership, operational efficiency, service quality, and delivery reliability (Christopher, 2016; Mentzer et al., 2019). In the downstream oil and gas context, optimized supplier arrangements support uninterrupted product availability, minimize logistics bottlenecks, and enhance adaptability to frequent regulatory adjustments and market fluctuations (Chukwu & Igwe, 2021). As competition intensifies following deregulation initiatives and reforms within Nigeria's petroleum industry, the capacity of downstream firms to strategically manage supplier dependencies has become increasingly essential for performance sustainability and long-term survival.

Despite increasing scholarly attention to supply chain and procurement management, existing studies in Nigeria have predominantly focused on upstream activities, logistics efficiency, or general supply chain integration, with limited empirical emphasis on supplier optimization in the downstream oil and gas sector. Additionally, few studies have explicitly examined the relationship between supplier optimization practices and organizational competitiveness outcomes such as cost efficiency, market responsiveness, and strategic positioning within the Nigerian downstream context. This reveals a significant contextual and empirical gap in the literature.

This study sought to address this gap by examining the impact of supplier optimization on competitiveness of downstream oil and gas companies in Nigeria. The specific objectives were to examine the impact of supplier optimization on:

- 1) cost savings of downstream oil and gas companies in Nigeria;
- 2) organizational responsiveness of downstream oil and gas companies in Nigeria; and
- 3) procurement cycle time of downstream oil and gas companies in Nigeria.

By concentrating on firm-level supplier strategies within a regulated and import-dependent operating environment, the study provides context-specific evidence that advances understanding of how supplier optimization influences competitive outcomes in emerging economies.

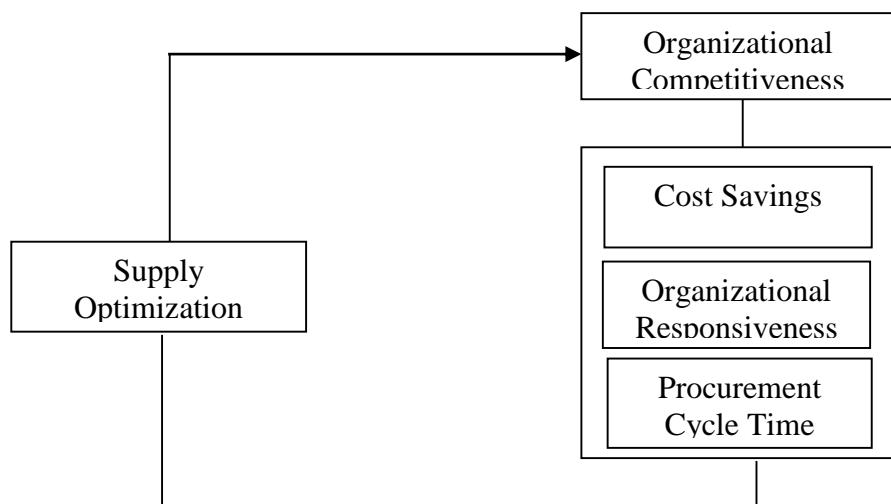


Fig. 1: Conceptual Framework of impact of supplier optimization on organizational competitiveness of downstream oil and gas companies in Nigeria

Source: Adapted from Eze and Onyekachi (2022).

Theoretical Foundation: Resource Dependence Theory (RDT)

RDT posits that organizations rely on external resources for survival and sustained performance, and that such reliance creates dependencies that shape organizational behavior (Pfeffer & Salancik, 1978). These dependencies generate power imbalances between organizations and the external actors that control critical resources. To remain competitive, firms must strategically manage and restructure these relationships. Within this context, supplier optimization emerges as a key strategic mechanism through which organizations manage external resource dependencies and enhance organizational competitiveness.

RDT emphasizes that organizations operate within interdependent networks comprising suppliers, regulators, governments, and other stakeholders (Pfeffer & Salancik, 1978). Critical resources such as raw materials, technology, capital, and information are often controlled by external entities, thereby influencing organizational decisions and outcomes. Because suppliers wield considerable power over access to these resources, firms must adopt deliberate strategies to reduce uncertainty and vulnerability. Supplier optimization addresses this challenge by enabling firms to rationalize supplier bases, diversify sourcing channels, strengthen strategic supplier relationships, and negotiate cost-effective and reliable supply contracts.

In Nigeria's downstream oil and gas sector, supplier optimization is particularly significant due to structural constraints within the industry. Despite abundant crude oil reserves, inadequate domestic refining capacity necessitates heavy reliance on imported refined petroleum products. This dependency exposes downstream firms to global price volatility, foreign exchange fluctuations, logistics disruptions, and geopolitical risks (Akinola, 2020). Through supplier optimization strategies such as supplier diversification, long-term supplier partnerships, and increased engagement with local suppliers, firms can reduce overreliance on foreign suppliers, improve supply continuity, and enhance cost efficiency.

Government regulation represents another critical source of dependency in the downstream sector. Access to operating licenses, import permits, pricing frameworks, and subsidy regimes is largely controlled by government institutions. Policy shifts related to fuel subsidies, import duties, or deregulation can significantly alter procurement costs and supplier arrangements. Consistent with RDT, downstream firms must strategically manage these regulatory dependencies by aligning supplier optimization decisions with evolving policy environments, engaging regulatory stakeholders, and designing flexible supply arrangements that can absorb regulatory shocks (Chukwu & Igwe, 2021).

Overall, RDT underscores that organizations that successfully reduce excessive dependence on external actors gain greater strategic autonomy and improved performance outcomes. For downstream oil and gas firms in Nigeria, supplier optimization serves as a critical instrument for managing resource dependencies, minimizing supply risks, and strengthening competitive positioning. Additionally, collaborative arrangements such as strategic alliances and joint ventures enable firms to pool supplier-related resources and share risks. By applying RDT principles through effective supplier optimization, firms in the sector can enhance operational resilience, control costs, and sustain competitiveness in an environment characterized by uncertainty and volatility.

Concept of Supplier Optimization

Supplier optimization has become an important strategic practice for organizations operating in competitive and uncertain environments. It focuses on how firms manage their suppliers in ways that improve efficiency, reduce costs, and support smooth operations. Rather than dealing

A major aspect of supplier optimization is careful supplier selection and evaluation. Organizations increasingly assess suppliers based on their ability to deliver on time, maintain stable prices, meet quality requirements, and comply with regulatory standards. This helps firms avoid unreliable suppliers and reduce disruptions in their operations (Monczka et al., 2020). Closely related to this is supplier base rationalization, where firms reduce the number of suppliers they deal with and focus on a smaller group of capable and dependable partners. This approach lowers administrative costs, improves coordination, and strengthens bargaining power.

Supplier optimization also emphasizes supplier relationship management. Long-term and cooperative relationships with key suppliers allow organizations to build trust, share information, and resolve problems quickly. Such relationships improve flexibility and make it easier for firms to respond to changes in demand or operating conditions (Mentzer et al., 2019). In addition, supplier diversification remains an important component. By sourcing from multiple suppliers, organizations reduce the risk of overdependence on a single source and protect themselves against supply interruptions caused by market or environmental shocks.

Contract negotiation and management further support supplier optimization by ensuring that pricing, delivery schedules, and performance expectations are clearly stated and monitored. Well-managed contracts help firms achieve cost savings and reduce disputes that can slow down procurement processes (Cousins et al., 2018). Continuous supplier performance monitoring is also essential, as it allows organizations to track supplier outcomes and take corrective action where necessary.

Finally, the integration of local suppliers and the use of digital procurement systems enhance supplier optimization efforts. Local sourcing reduces lead times and exposure to external risks, while technology improves information sharing, visibility, and coordination across supply networks (Olagunju et al., 2022). Overall, supplier optimization enables organizations to manage supplier relationships more effectively, improve operational outcomes, and remain competitive in challenging business environments.

Organizational Competitiveness

Organizational competitiveness refers to the ability of a firm to perform better than rivals and remain relevant in a changing business environment. In highly competitive industries, firms must continually improve how they use resources, respond to market conditions, and deliver value to customers. Competitiveness is not achieved by chance; it develops over time through deliberate managerial decisions and consistent operational improvements (Porter, 2008).

In today's business environment, organizations face increasing pressure from globalization, technological changes, and market uncertainty. These pressures require firms to operate efficiently while remaining flexible. Organizations that fail to adjust to changes in customer needs, regulatory policies, or competitive actions often experience declining performance and weakened market positions (Barney, 2018). As a result, competitiveness has become a central concern for managers seeking to ensure long-term survival and growth.

Scholarly discussions emphasise that competitiveness depends on how well organizations align their internal processes with external demands. Firms that effectively coordinate their activities,

manage uncertainty, and make timely decisions are better positioned to outperform competitors (Teece, 2014). Strong organizational systems allow firms to anticipate changes, minimize disruptions, and sustain performance even in volatile environments.

In many developing economies, organizational competitiveness is further influenced by infrastructural limitations, policy instability, and resource constraints. Firms operating in such contexts must adopt strategies that enhance efficiency and resilience in order to compete both locally and internationally (Adeleye et al., 2020). The ability to navigate these challenges often distinguishes competitive organizations from less successful ones.

Research also suggests that competitiveness is dynamic rather than static. What gives a firm an advantage today may not guarantee success in the future. Continuous learning, adaptation, and innovation are therefore essential for maintaining competitiveness over time (Porter & Heppelmann, 2015). Organizations that invest in improving their capabilities and refining their operational practices are more likely to sustain strong competitive positions.

Overall, organizational competitiveness reflects a firm's capacity to operate effectively in complex and uncertain environments. By strengthening internal processes and responding proactively to external pressures, organizations can improve their ability to compete, grow, and remain sustainable in the long run.

In dynamic and high-risk industries such as the downstream oil and gas sector, competitiveness is shaped by multidimensional factors that determine how effectively organizations respond to market and supply chain challenges (Porter, 1990; Christopher, 2016). Among these dimensions, cost savings, organizational responsiveness, and procurement cycle time are particularly critical. Cost savings highlight a firm's ability to reduce operational expenses through efficient supply chain practices, supplier risk abatement, and resource optimization, thereby strengthening profitability and market position (Eze et al., 2022).

Organizational responsiveness, on the other hand, underscores the capacity of firms to adapt swiftly to disruptions, regulatory shifts, and customer demands, a capability that enhances resilience and sustains competitive advantage (Okoro & Nwaogbe, 2021). Finally, procurement cycle time, which measures the speed and efficiency of sourcing activities, directly influences delivery reliability, cost efficiency, and customer satisfaction (Zhou, Chong, & Ngai, 2015). Together, these measures provide a comprehensive framework for assessing how firms sustain competitiveness in volatile environments such as Nigeria's downstream oil and gas sector.

Cost savings

Cost savings is a central concern for organizations seeking to improve performance, maintain competitiveness and achieve long-term sustainability. Across industries, effective cost management allow firms to protect profit margins, withstand market pressures, and create room for strategic investments. In operations and supply chain management, cost savings are commonly realized through efficient resource utilization, reduction of waste, improved coordination with external partners, and better control of operational risks (Porter, 1985). By lowering avoidable expenses, organizations are better positioned to allocate resources toward innovation, capacity improvement, and market expansion.

Supply chain optimization plays a significant role in driving cost savings by reducing transaction costs, inventory holding costs, and inefficiencies associated with poor coordination (Christopher, 2016). Firms that establish stable and well-managed supplier relationships often

benefit from price stability, reduced uncertainty, and economies of scale, which translate into lower procurement and operational costs (Krause et al., 1998). In addition, improved planning and coordination reduce emergency purchases and last-minute sourcing decisions, which are often more expensive.

Technology adoption further strengthens cost-saving efforts. The use of enterprise resource planning systems, digital procurement tools, and data analytics improves visibility across operations and supports better decision-making (Brintrup et al., 2016). These technologies reduce duplication of tasks, minimize human error, and streamline processes, leading to lower administrative and operational costs. In sectors such as oil and gas, where cost structures are heavily influenced by logistics, foreign exchange exposure, and infrastructure constraints, effective cost management becomes even more critical.

Risk abatement strategies also contribute to cost savings by preventing losses associated with disruptions, delays, and quality failures. Practices such as supplier diversification, contractual safeguards, and contingency planning help firms avoid penalties, downtime, and reputational damage (Tang, 2006). Although some risk management practices may increase short-term expenses, they often prevent far greater financial losses in the long run (Khan & Burnes, 2007). Overall, cost savings not only reduce financial pressure but also strengthen organizational competitiveness by enabling firms to operate more efficiently while delivering value to customers.

Organizational responsiveness

Organizational responsiveness reflects a firm's ability to sense changes in its environment and respond quickly and effectively. In volatile markets marked by uncertainty, regulatory shifts, and changing customer expectations, responsiveness is a key determinant of sustained competitiveness (Atuahene-Gima, 2005). Responsive organizations are better equipped to adjust strategies, reallocate resources, and exploit emerging opportunities while mitigating risks.

A major driver of organizational responsiveness is the ability to process information efficiently. Firms that collect timely data on market trends, competitor actions, and regulatory developments are more likely to make informed and rapid decisions (Eisenhardt & Martin, 2000). When information flows smoothly across departments, delays in response are reduced and coordination improves. In the downstream oil and gas sector, responsiveness to supply disruptions, policy changes, and foreign exchange movements directly affects operational continuity and performance (Okoro & Nwaogbe, 2021).

Organizational flexibility further supports responsiveness by enabling firms to reconfigure processes and resources as conditions change. Flexible structures, decentralized decision-making, and adaptive work cultures allow organizations to respond without excessive bureaucracy (Grewal & Tansuhaj, 2001). Firms that encourage collaboration and learning are also more capable of adjusting to uncertainty. Strong relationships with external stakeholders, particularly suppliers and customers, enhance responsiveness by providing early signals of changes and enabling joint problem-solving (Jayachandran et al., 2004). Overall, organizational responsiveness is not merely a reaction to change but a strategic capability built through information management, flexibility, and collaboration. Firms that develop and sustain this capability are more likely to remain competitive in dynamic business environments.

Procurement cycle time

Procurement cycle time represents the total time required to complete the procurement process, from the identification of needs to final delivery and payment. It is a critical performance indicator because lengthy procurement cycles often lead to operational delays, increased costs, and reduced service quality (Monczka et al., 2016). Shorter procurement cycle times enhance responsiveness, reduce the risk of stockouts, and support smooth operational flow (van Weele, 2018).

Several factors influence procurement cycle time, including supplier reliability, internal process efficiency, technological capability, and regulatory requirements. The adoption of digital procurement systems has significantly improved procurement speed by automating sourcing, documentation, and communication processes (Basheka, 2017). Conversely, bureaucratic procedures, poor supplier performance, and infrastructure challenges tend to prolong procurement cycles, particularly in developing economies (Odeyale & Ogunyemi, 2020).

Effective procurement cycle time management require continuous process improvement, coordination with suppliers, and the use of technology for real-time tracking and monitoring (Kaur & Singh, 2018). In the downstream oil and gas sector, where delays can disrupt fuel supply and inflate costs, efficient procurement cycle time management is especially critical (Okoro & Nwaogbe, 2021). Ultimately, reducing procurement cycle time improves operational efficiency, strengthens organizational resilience, and enhances competitive advantage.

Supplier Optimization and Organizational Competitiveness

Empirical studies on supplier optimization have consistently highlighted its role in enhancing organizational competitiveness across various industries. Research indicates that effective supplier management practices, including strategic selection, relationship management, and performance monitoring, improve cost efficiency, responsiveness, and operational reliability (Christopher, 2016; Monczka et al., 2016).

In the downstream oil and gas sector, where firms operate in highly volatile and regulated environments, supplier optimization is particularly critical. Several studies have shown that optimized procurement strategies reduce supply disruptions, shorten procurement cycle times, and enhance firms' ability to respond to market and regulatory changes (Olagunju et al., 2022; Okoro & Nwaogbe, 2021).

Empirical evidence further suggests that firms implementing supplier optimization strategies achieve measurable gains in competitiveness, often reflected in improved cost savings, operational efficiency, and market responsiveness (Brintrup et al., 2016; Krause et al., 1998). While much of the literature focuses on manufacturing, logistics, and general supply chain contexts, studies specific to the Nigerian downstream oil and gas sector remain limited, highlighting the need for context-specific investigation.

In this regard, Ibrahim and Yusuf (2021) investigated competitive strategies in Nigeria's oil downstream sector and assessed how supplier optimization affects cost efficiency, operational effectiveness, and competitiveness. Using surveys, interviews, and regression analysis, they found that effective supplier selection, long-term partnerships, and performance monitoring positively influenced cost reduction and operational efficiency. Firms implementing these strategies experienced improved competitiveness in both local and international markets,

Furthermore, Adekunle and Umeh (2020) explored supply chain challenges in Nigeria's oil and gas sector, focusing on supplier optimization and its impact on supply chain performance. Using descriptive statistics, factor analysis, and expert interviews, they found that practices such as reducing supplier lead times and improving communication significantly enhanced supply chain efficiency, leading to stronger competitive positioning.

Additionally, Okonjo (2019) examined strategic supplier management in emerging economies' oil and gas sectors using structural equation modeling. The study revealed that optimized supplier networks increased firms' ability to adapt to market changes, improve cost efficiency, and ensure timely product delivery, thereby strengthening competitiveness in domestic and global markets.

Eze and Onwuka (2022) investigated the role of digital tools in supplier management within Nigeria's oil and gas industry. Using case study analysis, the study found that technologies such as real-time tracking and predictive analytics improved supplier management, reduced procurement cycle times and costs, and enhanced overall competitiveness.

More also, Lee and Kim (2018) conducted a multi-country study on supplier optimization in the global oil and gas industry. Using econometric modeling and interviews, the research showed that strategic supplier partnerships and collaborative innovation enhanced cost efficiency, production speed, and product quality, significantly improving competitiveness internationally.

Overall, these studies indicate that supplier optimization enhances competitiveness by improving efficiency and enabling firms to respond effectively to dynamic market conditions. However, the following hypotheses will be tested:

- H₀₁:** Supplier optimization does not significantly impact cost savings of downstream oil and gas companies in Nigeria.
- H₀₂:** Supplier optimization does not significantly impact organisational responsiveness of downstream oil and gas companies in Nigeria.
- H₀₃:** Supplier optimization does not significantly impact procurement cycle time of downstream oil and gas companies in Nigeria.

Methodology

This study employed a causal research design with a cross-sectional approach to examine the impact of supplier optimization on organizational competitiveness of downstream oil and gas companies in Nigeria. The population comprised 20 major downstream oil and gas companies, representing key players engaged in refining, distribution, and marketing of petroleum products. Given the relatively small population, all companies were included in the study.

86 respondents, including procurement managers, supply chain managers, finance managers, risk management officers, and ICT managers provided data for the study. Data were collected using semi-structured questionnaire consisting 16 measurement items, designed in a five-point Likert scale ranging. To ensure the reliability of the instrument, a pilot study was conducted, and reliability was tested using Cronbach's Alpha, with a threshold of 0.70 adopted in line with Nunnally (1978). Construct validity was assessed through Exploratory Factor Analysis (EFA)

to confirm that each item appropriately measured the intended construct. The results of reliability and validity tests are presented in Table 1.

For hypothesis testing, the simple regression model was employed to assess the impact of supplier optimization on measures (cost savings, organizational responsiveness, and procurement cycle time.) of organizational competitiveness. The significance of the results was evaluated at a 5% probability level ($p < 0.05$). All statistical analyses were conducted using IBM SPSS version 25, and the results are presented in the subsequent tables.

Table 1: Results of Reliability and Validity Tests

S/N	Variables	Number of Items	Cronbach's Alpha Coefficients	Factor Loadings
1	Supplier Optimization	4	0.797	0.705
2	Cost Savings	4	0.759	0.714
3	Organizational Responsiveness	4	0.782	0.848
4	Procurement Cycle Time	4	0.763	0.874

Source: SPSS Output form field data, 2025

Results of the Cronbach's alpha analysis in Table 1 revealed that all the variables in the study produced high Cronbach's Alpha coefficients. This shows that there is inter-item consistency among the variables in the study. In other words, if this study is conducted again in a similar condition, the results will be comparable to the results of this study. Again, all the variables have high factor loadings greater than 0.4, indicating that the items and variables in the questionnaire measured what they were supposed to measure. These loadings indicated that there is no cross-loading, hence there is discriminant validity.

Test of Hypotheses and Results

Table 2: Coefficients^a of impact of Supplier Optimization on Cost Savings

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1	(Constant) 13.994	1.722		9.127	.000
	Supplier Optimization .676	.076	.818	7.966	.000

a. Dependent Variable: Cost Savings

Source: Field Survey, 2025.

A simple regression analysis was conducted to determine the impact of supplier optimization on cost savings in downstream oil and gas companies in Nigeria. The results, presented in Table 2, illustrate how variations in supplier optimization affect cost savings. The intercept (B_0) is 13.994, representing the predicted value of cost savings in the absence of supplier optimization. This means that when no supplier optimization practices are applied, cost savings is expected to be approximately 13.994 units. The slope coefficient (B_1) is 0.676, indicating that a one-unit increase in supplier optimization results in an estimated 0.676-unit increase in cost savings. This shows a positive and significant impact of supplier optimization on cost savings.

The standardized Beta coefficient is 0.818, which signifies that supplier optimization has a strong and substantial impact on cost savings in the sector. Furthermore, the p-value of 0.000 is below the 0.05 significance level, leading to the rejection of the null hypothesis. This confirms that supplier optimization significantly impacts cost savings in downstream oil and gas companies in Nigeria.

These findings demonstrate that implementing effective supplier optimization practices - such as strategic supplier selection, performance monitoring, and collaborative management - can substantially increase cost-saving outcomes. By enhancing procurement efficiency, reducing operational redundancies, and minimizing supply risks, supplier optimization directly contributes to organizational competitiveness.

Table 3: Coefficients^a of impact of Supplier Optimization on Organizational Responsiveness

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
1	(Constant) 12.917	2.692			4.799	.000
	Supplier Optimization .400	.118	.472		3.379	.001

a. Dependent Variable: Organizational Responsiveness

Source: Field Survey, 2025.

A simple regression analysis was conducted to examine the impact of supplier optimization on organizational responsiveness in downstream oil and gas companies in Nigeria. The results, presented in Table 3, show how changes in supplier optimization influence organizational responsiveness. The intercept (B_0) is 12.917, representing the predicted value of organizational responsiveness when supplier optimization is absent. This indicates that without any supplier optimization practices, organizational responsiveness is expected to be approximately 12.917 units. The slope coefficient (B_1) is 0.400, suggesting that a one-unit increase in supplier optimization leads to a 0.40-unit increase in organizational responsiveness. This demonstrates a positive and measurable impact of supplier optimization on the organization's responsiveness.

The standardized Beta coefficient is 0.472, indicating that Supplier Optimization has a moderate impact on Organizational Responsiveness within the sector. Furthermore, the p-value of 0.000 is below the 0.05 significance threshold, leading to the rejection of the null hypothesis. This confirms that Supplier Optimization significantly impacts Organizational Responsiveness in downstream oil and gas companies in Nigeria.

These findings indicate that implementing Supplier Optimization practices—such as supplier performance monitoring, strategic procurement planning, and process coordination—directly enhances a firm's ability to detect, interpret, and respond to internal and external changes. By improving responsiveness, firms are better equipped to manage market volatility, regulatory changes, and operational challenges, ultimately strengthening their competitiveness.

Table 4: Coefficients^a of impact of Supplier Optimization on Procurement Cycle Time

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
1	(Constant) 8.317	2.430			3.423	.001
	Supplier Optimization .598	.107	.643		5.589	.000

a. Dependent Variable: Procurement Cycle Time

Source: Field Survey, 2024.

The results, presented in Table 4, show the extent to which supplier optimization influences the efficiency of the procurement process. The intercept (B_0) is 8.317, representing the predicted value of procurement cycle time when supplier optimization is absent. This indicates that in the absence of supplier optimization practices, the average procurement cycle time is

approximately 8.317 units. The slope coefficient (B_1) is 0.598, suggesting that a one-unit increase in supplier optimization results in an estimated 0.60-unit increase in procurement cycle time. This demonstrates a positive and significant impact of supplier optimization on the procurement process.

The standardized Beta coefficient is 0.643, which indicates that supplier optimization has a strong impact on procurement cycle time in the sector. Moreover, the p-value of 0.000 is below the 0.05 significance threshold, leading to the rejection of the null hypothesis. This confirms that supplier optimization significantly impacts procurement cycle time in downstream oil and gas companies in Nigeria.

These findings suggest that effective supplier optimization practices - such as strategic supplier selection, performance monitoring, and process coordination - directly enhance procurement efficiency. By improving the timeliness and predictability of procurement activities, firms can minimize delays, reduce operational bottlenecks, and enhance overall supply chain performance.

Discussion of Findings

The findings of this study reveal that supplier optimization significantly impacts organizational competitiveness in downstream oil and gas companies in Nigeria, as measured by cost savings, organizational responsiveness, and procurement cycle time. The analysis indicates that implementing effective supplier optimization practices leads to measurable improvements in cost efficiency, operational agility, and procurement efficiency. These findings provide strong evidence that supplier management is a critical driver of competitiveness in the sector.

Cost savings was found to be strongly impacted by supplier optimization, with a standardized Beta of 0.818 and a statistically significant p-value of 0.000. This finding aligns with earlier studies by Krause et al. (1998), who reported that firms implementing supplier development and performance monitoring strategies experienced reduced input costs and supply disruptions. Similarly, Brintrup et al. (2016) observed that technology-assisted supplier optimization enhances cost efficiency through better decision-making and operational efficiency. The current study therefore corroborates these findings within the Nigerian downstream oil and gas context, demonstrating that Supplier Optimization directly contributes to cost reduction and improved competitiveness.

For organizational responsiveness, the study found a moderate yet significant impact of supplier optimization ($Beta = 0.472, p < 0.05$). This is consistent with Okoro and Nwaogbe (2021), who emphasized that firms with strong supplier management capabilities are better able to respond to regulatory changes, foreign exchange volatility, and supply disruptions. Similarly, Ibrahim and Yusuf (2021) highlighted that optimized supplier networks enhance a firm's ability to adapt to internal and external environmental changes. The findings also extend these prior studies by demonstrating empirically that supplier optimization enhances responsiveness in a regulated, import-dependent downstream sector, reinforcing the strategic role of suppliers in organizational agility.

Regarding procurement cycle time, supplier optimization was shown to have a strong and significant impact ($Beta = 0.643, p < 0.05$). This aligns with Eze and Onwuka (2022), who found that digital tools integrated with supplier management significantly reduced procurement cycle times and improved operational efficiency. It also supports Adekunle and Umeh's (2020) observation that reducing supplier lead times and improving supplier communication enhances supply chain performance. The current study adds context-specific evidence from Nigerian

Overall, the study confirms that supplier optimization positively impacts key competitiveness measures, consistent with global findings (Lee & Kim, 2018; Tang, 2006). However, the magnitude of impact on organizational responsiveness was moderate compared to cost savings and procurement cycle time, suggesting that while supplier management significantly enhances agility, other organizational factors may also influence responsiveness. This nuance adds a new perspective to existing literature, emphasizing the need for firms to complement supplier strategies with internal process improvements to maximize responsiveness. Thus, the findings demonstrate that Supplier Optimization is a critical driver of competitiveness in the Nigerian downstream oil and gas sector. The results largely align with previous studies, providing both corroboration and context-specific evidence, while also highlighting areas such as responsiveness where additional organizational interventions may be necessary to achieve optimal performance outcomes.

Conclusion

Based on the findings of this study, it is concluded that Supplier Optimization has a positive and significant impact on the Organizational Competitiveness of downstream oil and gas companies in Nigeria. The study demonstrates that implementing effective supplier optimization practices such as strategic supplier selection, performance monitoring, long-term partnerships, and the integration of digital tools significantly enhances key competitiveness outcomes, including cost savings, organizational responsiveness, and procurement cycle time.

The results indicate that firms that optimize their supplier networks are better able to manage operational costs, improve efficiency, and respond swiftly to market and regulatory changes. This confirms that supplier optimization is not only a critical operational practice but also a strategic driver of sustained competitiveness in a highly volatile and regulated sector.

Overall, the study underscores the importance of supplier optimization as a core strategy for downstream oil and gas firms in Nigeria, highlighting that firms investing in effective supplier management are more likely to achieve efficiency, resilience, and a stronger competitive position both locally and internationally.

Recommendations

Based on the findings of this study, the following recommendations are made to enhance organizational competitiveness of downstream oil and gas companies in Nigeria:

1. Strengthen Strategic Supplier Selection: Downstream oil and gas firms should implement rigorous supplier selection criteria to identify suppliers capable of delivering high-quality products and services consistently. Prioritizing suppliers with proven reliability, financial stability, and technological capability can enhance operational efficiency, reduce procurement risks, and support long-term competitiveness.
2. Develop and Maintain Long-Term Supplier Partnerships: Companies should foster long-term, collaborative relationships with key suppliers. Strategic partnerships allow for better coordination, improved communication, and joint problem-solving, which can enhance responsiveness to market changes and reduce procurement cycle time. Building trust and mutual commitment with suppliers ensures a more stable and resilient supply chain.
3. Integrate Digital Tools in Supplier Management: The adoption of technology-driven solutions, such as real-time tracking systems, predictive analytics, and enterprise

resource planning (ERP) software, is essential. These tools can streamline procurement processes, improve monitoring of supplier performance, reduce operational delays, and ultimately increase cost savings.

4. Enhance Supplier Performance Monitoring: Regular evaluation of supplier performance against agreed benchmarks should be institutionalized. This includes monitoring delivery timelines, quality standards, and compliance with contractual terms. Effective performance monitoring ensures accountability and enables companies to proactively address inefficiencies before they impact organizational competitiveness.
5. Diversify Supplier Base to Mitigate Risks: Firms should avoid over-reliance on a single supplier by diversifying their supplier networks. A diversified supplier base minimizes the impact of supply disruptions, geopolitical risks, and market volatility, thereby maintaining stability in procurement and operational processes.
6. Invest in Supplier Development Programmes: Downstream oil and gas companies should support capacity-building initiatives for critical suppliers. Providing training, technical assistance, or knowledge-sharing programs can improve supplier capabilities, enhance supply chain efficiency, and create mutual value for both the firm and its suppliers.
7. Align Supplier Optimization with Organizational Strategy: Supplier management practices should be integrated into the company's overall strategic planning. By aligning supplier optimization initiatives with business goals, firms can ensure that supplier activities contribute directly to cost reduction, operational efficiency, and improved market responsiveness.

Implementing these recommendations will enable downstream oil and gas firms in Nigeria to maximize the benefits of Supplier Optimization, strengthen competitiveness, and build resilience against the uncertainties inherent in the industry.

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