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**Impact of E-Procurement Implementation on Supply Chain
Performance: A Case Study of Nigeria**

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PROCUREMENT

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Abstract

Purpose: The aim of the study was to analyze the impact of e-procurement implementation on supply chain performance: a case study of Nigeria.

Methodology: This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

Findings: E-procurement implementation in Nigeria has notably enhanced supply chain performance by streamlining processes, reducing costs, and improving transparency. It has strengthened supplier relationships, facilitated data-driven decision-making, and led to tangible benefits despite challenges such as infrastructure limitations and cybersecurity concerns.

Unique Contribution to Theory, Practice and Policy: Transaction cost theory, resource dependency theory & institutional theory may be used to anchor future studies on analyze the impact of e-procurement implementation on supply chain performance: a case study of Nigeria. Provide training and capacity-building programs to enhance the technical skills and digital literacy of procurement professionals and stakeholders involved in e-procurement implementation. Advocate for the development and implementation of supportive regulatory frameworks and policies that promote e-procurement adoption and usage in Nigeria.

Keywords: *E-Procurement Implementation, Supply Chain Performance*

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INTRODUCTION

In developed economies like the USA and Japan, supply chain performance is often characterized by efficiency, reliability, and responsiveness. For instance, in the USA, the average inventory turnover ratio across industries has been steadily increasing over the past decade, indicating improved inventory management and supply chain efficiency (Smith, 2017). Additionally, the on-time delivery rate in the US manufacturing sector has shown a positive trend, with a steady increase in recent years, reflecting enhanced supply chain reliability and responsiveness to customer demands (Jones & Lee, 2018). These statistics highlight the focus of developed economies on optimizing supply chain operations to meet customer expectations while minimizing costs and maximizing efficiency.

Similarly, in Japan, supply chain performance metrics such as lead time reduction and defect rate improvement have been key areas of focus for companies. For example, Toyota, a leading Japanese automaker, has significantly reduced its lead times through the implementation of lean manufacturing and just-in-time production principles (Suzaki, 2018). Moreover, Japan's logistics performance index (LPI) has consistently ranked among the top countries globally, reflecting the country's efficient logistics infrastructure and supply chain management practices (Arvis, 2018). These examples underscore the commitment of developed economies like the USA and Japan to continuously improve supply chain performance through innovation, optimization, and collaboration.

In developing economies, supply chain performance often faces unique challenges related to infrastructure limitations, market volatility, and resource constraints. For example, in India, a key developing economy, logistics costs as a percentage of GDP have remained relatively high compared to developed countries, indicating inefficiencies in the supply chain (Banerjee, 2019). Additionally, supply chain disruptions due to factors such as inadequate transportation infrastructure and regulatory complexities have been prevalent, leading to increased lead times and inventory holding costs (Sharma & Sachan, 2017). These challenges highlight the need for developing economies to focus on improving supply chain resilience and efficiency to drive economic growth and competitiveness.

Similarly, in Brazil, another prominent developing economy, supply chain performance has been impacted by factors such as political instability and infrastructure bottlenecks. Despite efforts to improve logistics infrastructure, Brazil continues to face challenges related to port congestion, road quality, and regulatory hurdles, leading to supply chain inefficiencies and increased costs (Jansen & Conti, 2018). Moreover, supply chain visibility and collaboration among stakeholders have been identified as areas requiring improvement to enhance overall performance and competitiveness (Gutierrez, 2016). These examples underscore the importance of addressing systemic challenges and investing in infrastructure, technology, and process optimization to enhance supply chain performance in developing economies.

In China, one of the world's largest developing economies, supply chain performance has been influenced by rapid industrialization and urbanization. While China has made significant progress in infrastructure development, challenges such as supply chain fragmentation and quality control issues persist, particularly in sectors like manufacturing (Fang, 2019). Despite efforts to enhance

supply chain efficiency, disparities between urban and rural areas, as well as regional inequalities, continue to impact logistics costs and overall supply chain performance (Xu, 2018). Furthermore, the need for environmental sustainability has emerged as a critical factor influencing supply chain practices, with increasing pressure on companies to adopt green supply chain initiatives to mitigate environmental impacts (Zhang, 2020). Addressing these challenges requires a comprehensive approach that integrates infrastructure development, technology adoption, and sustainability measures to improve supply chain performance and competitiveness.

In Nigeria, a prominent developing economy in Africa, supply chain performance has been affected by factors such as inadequate infrastructure, regulatory complexities, and security concerns. Limited transportation infrastructure, including poor road networks and port congestion, has contributed to supply chain inefficiencies, leading to increased costs and delivery delays (Ogunsanya, 2019). Moreover, supply chain disruptions due to factors like political instability and security threats have further exacerbated challenges, hindering the smooth flow of goods and services (Udejaja, 2018). To address these issues, there is a growing recognition of the need for investment in infrastructure development, policy reforms, and capacity-building initiatives to enhance supply chain resilience and competitiveness in Nigeria (Oluwatayo, 2020). By addressing these challenges and fostering collaboration among stakeholders, Nigeria can improve supply chain performance and contribute to sustainable economic development.

In South Africa, supply chain performance is influenced by a combination of factors including infrastructure constraints, regulatory challenges, and socioeconomic disparities. Limited transportation infrastructure, particularly in rural areas, poses challenges for logistics operations, leading to increased costs and delivery lead times (Van Rensburg, 2018). Additionally, regulatory complexities, such as customs procedures and trade regulations, can result in delays and inefficiencies in cross-border trade, impacting supply chain performance (Sayed, 2019). Furthermore, socioeconomic disparities, including income inequality and access to education and healthcare, affect the resilience and responsiveness of supply chains, particularly in addressing the needs of underserved communities (Matumba, 2020). Addressing these challenges requires a multi-faceted approach that includes investments in infrastructure, policy reforms, and social development initiatives to improve supply chain performance and promote inclusive economic growth in South Africa.

In Indonesia, another prominent developing economy, supply chain performance is influenced by factors such as geographical complexity, infrastructure limitations, and environmental sustainability concerns. Indonesia's vast archipelago presents logistical challenges, with transportation infrastructure often inadequate to support efficient supply chain operations, particularly in remote areas (Susilowati, 2019). Moreover, environmental sustainability has emerged as a key consideration, with growing pressure to adopt green supply chain practices to mitigate environmental impacts such as deforestation and pollution (Pramudita, 2018). Additionally, regulatory complexities and corruption have been identified as barriers to supply chain efficiency, highlighting the need for governance reforms and transparency initiatives to improve performance (Herdiansyah, 2017). By addressing these challenges and fostering collaboration among stakeholders, Indonesia can enhance supply chain performance and sustainability, contributing to long-term economic development.

In Brazil, supply chain performance is influenced by a combination of factors such as infrastructure challenges, regulatory complexities, and market volatility. The vast geographical size of Brazil poses logistical challenges, with transportation infrastructure often inadequate to support efficient supply chain operations, particularly in remote regions (Ribeiro, 2020). Additionally, regulatory hurdles, including complex tax laws and bureaucratic procedures, can lead to delays and inefficiencies in supply chain processes, impacting overall performance (de Oliveira, 2019). Moreover, Brazil's market volatility, characterized by fluctuations in demand and currency exchange rates, poses challenges for supply chain planning and inventory management, affecting cost control and profitability (de Mattos, 2018). To improve supply chain performance, Brazil needs to invest in infrastructure development, streamline regulatory processes, and adopt agile supply chain strategies to adapt to market dynamics and enhance competitiveness.

In Mexico, supply chain performance is shaped by factors such as trade integration, infrastructure development, and security concerns. Mexico's strong trade integration with the United States and other countries in the region presents opportunities for supply chain optimization and efficiency gains (Bautista, 2019). However, infrastructure limitations, including inadequate road and rail networks, pose challenges for logistics operations, particularly in rural areas (Gomez-Lopez, 2017). Additionally, security issues, such as theft and organized crime, can disrupt supply chain operations and increase risks for businesses operating in certain regions (Leal-Rodríguez, 2018). Addressing these challenges requires a concerted effort to invest in infrastructure, enhance security measures, and promote collaboration among stakeholders to improve supply chain resilience and performance in Mexico.

In Sub-Saharan Africa, supply chain performance is influenced by a myriad of factors including infrastructure deficiencies, political instability, and socio-economic challenges. Countries in this region often grapple with inadequate transportation networks, unreliable power supply, and poor access to technology, which impede the smooth flow of goods along the supply chain (Aluko, 2017). Additionally, political instability and governance issues contribute to regulatory uncertainties and corruption, further hindering supply chain efficiency and transparency (Lun, 2018). Moreover, socio-economic challenges such as poverty, unemployment, and lack of education exacerbate supply chain vulnerabilities by limiting access to skilled labor and market opportunities (Nhamo, 2019). Addressing these challenges requires a holistic approach that encompasses investments in infrastructure, institutional reforms, and social development initiatives to build resilient and sustainable supply chains in Sub-Saharan Africa.

Furthermore, in countries like Kenya and Nigeria, which are major economic hubs in the region, supply chain performance is also influenced by factors such as urbanization, population growth, and environmental sustainability concerns. Rapid urbanization and population growth place strains on existing infrastructure and resources, leading to congestion, pollution, and environmental degradation (Karanja, 2019). Additionally, environmental sustainability concerns, including deforestation, water scarcity, and climate change, pose risks to agricultural supply chains, affecting food security and livelihoods (Ochieng, 2020). Therefore, efforts to improve supply chain performance in Sub-Saharan Africa must prioritize sustainable development practices, including eco-friendly logistics, renewable energy adoption, and natural resource management, to ensure long-term resilience and prosperity.

E-procurement implementation involves the adoption of electronic platforms and technologies to streamline the procurement process, from sourcing suppliers to managing contracts and payments. This conceptual analysis highlights four key E-procurement implementation strategies: (1) Supplier Relationship Management (SRM) systems, which facilitate better communication and collaboration with suppliers, leading to improved supplier performance and reduced lead times (Jones & Stevens, 2019); (2) E-sourcing tools, which automate the supplier selection and bidding process, resulting in increased efficiency and cost savings (Croom, 2016); (3) E-catalogs, which provide centralized access to products and services, enabling faster purchasing decisions and reducing maverick spending (Kraemer & Dedrick, 2002); and (4) E-payment systems, which streamline the payment process, reduce errors, and improve cash flow management, contributing to overall financial performance (Brigham, 2017).

Linking these E-procurement implementation strategies to supply chain performance, SRM systems enhance supply chain collaboration and coordination, leading to improved supplier responsiveness and product quality, ultimately resulting in reduced lead times and increased customer satisfaction (Jones & Stevens, 2019). Similarly, E-sourcing tools enable organizations to identify and onboard suppliers more efficiently, leading to a broader supplier base, better pricing, and reduced supply chain risk, thereby enhancing overall supply chain performance (Croom, 2016). Additionally, E-catalogs centralize purchasing information, enabling better inventory management, faster order processing, and reduced procurement cycle times, all of which contribute to improved supply chain efficiency and responsiveness (Kraemer & Dedrick, 2002). Lastly, E-payment systems streamline financial transactions, reducing administrative overheads, minimizing payment errors, and improving cash flow management, ultimately enhancing the financial health and resilience of the supply chain (Brigham, 2017).

Problem Statement

Despite the increasing adoption of e-procurement systems in Nigeria's public and private sectors, there remains a gap in understanding the extent to which these implementations impact supply chain performance. While e-procurement promises streamlined processes, cost savings, and enhanced efficiency, empirical evidence on its actual influence on supply chain performance within the Nigerian context is limited (Adenuga & Adebisi, 2020). Furthermore, factors such as infrastructure challenges, limited technical expertise, and resistance to change may hinder the successful implementation and utilization of e-procurement systems, potentially affecting their effectiveness in improving supply chain performance (Ojo, 2019). Therefore, there is a pressing need for comprehensive research that examines the impact of e-procurement implementation on supply chain performance in Nigeria, considering the unique challenges and opportunities inherent in the country's socio-economic and technological landscape.

Theoretical Framework

Transaction Cost Theory

Transaction cost theory, proposed by Ronald Coase in his seminal work "The Nature of the Firm" (1937), examines the costs associated with conducting transactions in a market economy. The theory suggests that firms exist to minimize transaction costs, which include the costs of searching for information, negotiating contracts, and enforcing agreements. By internalizing certain

transactions within the firm, organizations can reduce these costs and achieve greater efficiency. Transaction cost theory is highly relevant to the study of e-procurement implementation in Nigeria. E-procurement systems aim to streamline procurement processes, reduce transaction costs, and enhance efficiency by digitizing and automating purchasing activities. By applying transaction cost theory, researchers can analyze how e-procurement adoption influences transaction costs within supply chains, ultimately impacting supply chain performance (Williamson, 1985).

Resource Dependency Theory

Resource dependency theory, developed by Jeffrey Pfeffer and Gerald R. Salancik in "The External Control of Organizations" (1978), explores how organizations depend on external resources to survive and thrive. The theory posits that organizations seek to minimize uncertainty and dependency on external entities by controlling critical resources. Organizations engage in strategies such as vertical integration, collaboration, and resource diversification to manage dependencies effectively. Resource dependency theory offers insights into the relationship between e-procurement implementation and supply chain performance in Nigeria. E-procurement systems can reduce dependency on external suppliers by optimizing procurement processes, improving supply chain visibility, and enhancing supplier relationships. By applying resource dependency theory, researchers can examine how e-procurement adoption influences the management of external dependencies and its impact on supply chain performance (Pfeffer & Salancik, 1978).

Institutional Theory

Institutional theory, initially proposed by Meyer and Rowan in "Institutionalized Organizations: Formal Structure as Myth and Ceremony" (1977), focuses on how organizations conform to institutional norms, values, and practices to gain legitimacy and social acceptance. The theory suggests that organizations adopt structures, processes, and behaviors that align with prevailing institutional expectations to maintain legitimacy. Institutional theory provides valuable insights into the organizational factors influencing e-procurement implementation in Nigeria. Organizations may adopt e-procurement systems not only for efficiency gains but also to conform to institutional pressures and norms surrounding technological adoption and modernization. By applying institutional theory, researchers can explore how institutional factors shape e-procurement implementation strategies and their impact on supply chain performance (Meyer & Rowan, 1977).

Empirical Review

Adekunle (2017) assessed the impact of e-procurement implementation on supply chain performance within Nigerian public sector organizations. Employing a mixed-method approach involving surveys to gather quantitative data and interviews for qualitative insights, the researchers aimed to capture a holistic view of the phenomenon. Their findings revealed significant improvements in procurement process efficiency, reduction in lead times, and enhanced collaboration with suppliers following e-procurement adoption. Recommendations stemming from their study emphasized the necessity for continuous training programs, stakeholder engagement initiatives, and investments in technology infrastructure to sustain these benefits over the long term. Furthermore, the study underscored the importance of effective change management

strategies to mitigate resistance to e-procurement adoption and maximize its positive impact on supply chain performance.

Ojo (2018) investigated the enduring effects of e-procurement implementation on supply chain performance in Nigerian manufacturing firms. Combining quantitative analysis of operational metrics with qualitative insights from interviews, the researchers aimed to provide a comprehensive understanding of the phenomenon. Their research revealed substantial improvements in inventory turnover rates, order fulfillment efficiency, and cost savings attributable to e-procurement adoption. To ensure the sustainability of these performance gains, the study recommended continuous monitoring and evaluation of e-procurement initiatives, alongside ongoing investments in technology infrastructure and human capital development. Additionally, the researchers emphasized the importance of organizational commitment and leadership support in driving successful e-procurement implementation efforts.

Yusuf (2019) delved into the influence of e-procurement on supply chain resilience in Nigerian small and medium enterprises (SMEs). Through a mixed-methods approach combining case studies with resilience assessments, the researchers sought to explore the multifaceted impact of e-procurement adoption. Their findings indicated that e-procurement implementation led to enhancements in supply chain visibility, agility, and responsiveness, thereby bolstering overall resilience. Recommendations stemming from the study included integrating e-procurement systems with risk management practices, fostering collaborative relationships with suppliers, and investing in employee training to build resilience capabilities. Moreover, the study underscored the need for SMEs to leverage e-procurement technologies to navigate uncertainties effectively and ensure the continuity of operations in dynamic market environments.

Adenuga and Adebisi (2020) investigated the impact of e-procurement on cost reduction and operational efficiency in Nigerian healthcare organizations. Employing a comparative analysis of pre- and post-e-procurement adoption periods, the researchers sought to quantify the tangible benefits of e-procurement implementation. Their research revealed significant reductions in procurement costs, inventory holding costs, and cycle times following e-procurement adoption. Recommendations stemming from the study included prioritizing investments in e-procurement training programs, upgrading technology infrastructure, and implementing change management initiatives to sustain these performance improvements. Additionally, the researchers emphasized the importance of organizational readiness and stakeholder buy-in for successful e-procurement implementation efforts in healthcare settings.

Lawal (2021) examined the role of e-procurement in enhancing sustainability practices within Nigerian supply chains. Employing a mixed-methods approach encompassing quantitative analysis and qualitative interviews, the researchers aimed to uncover the nuanced effects of e-procurement adoption on sustainability outcomes. Their findings indicated improvements in environmental sustainability, ethical sourcing practices, and corporate social responsibility initiatives following e-procurement implementation. Recommendations stemming from the study included leveraging e-procurement data analytics for sustainability reporting, promoting supplier diversity and compliance, and integrating sustainability considerations into procurement decision-making processes. Moreover, the researchers emphasized the importance of collaboration among

stakeholders to drive sustainable procurement practices and mitigate environmental and social risks across supply chains.

Yusuf and Ojo (2022) examined the impact of e-procurement on supply chain risk management practices in Nigerian construction firms. Through surveys and case studies, the researchers sought to elucidate the multifaceted relationship between e-procurement adoption and risk management capabilities within the construction industry. Their findings indicated that e-procurement implementation led to improvements in risk identification, mitigation, and response capabilities, thereby enhancing overall supply chain resilience. Recommendations stemming from the study included integrating e-procurement systems with enterprise risk management frameworks, fostering a culture of risk awareness and collaboration among stakeholders, and investing in employee training to build risk management competencies. Additionally, the researchers emphasized the importance of leveraging e-procurement technologies to proactively identify and mitigate risks, thereby safeguarding project timelines, budgets, and quality standards.

Ahmed (2022) assessed the overall impact of e-procurement implementation on supply chain performance across various sectors in Nigeria. Employing a systematic review of existing literature combined with empirical case studies, the researchers aimed to synthesize key findings and identify common success factors and challenges. Their research highlighted the transformative potential of e-procurement in enhancing procurement efficiency, reducing costs, and improving collaboration across supply chains. Recommendations stemming from the study included developing standardized e-procurement guidelines, promoting interoperability among e-procurement platforms, and enhancing supplier capacity-building initiatives. Moreover, the researchers emphasized the importance of continuous monitoring and evaluation to ensure the effectiveness and sustainability of e-procurement initiatives in driving supply chain performance improvements.

METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low-cost advantage as compared to field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

FINDINGS

The results were analyzed into various research gap categories that is conceptual, contextual and methodological gaps

Conceptual Research Gap: Adekunle's study (2017) provides valuable insights into the impact of e-procurement implementation on supply chain performance within Nigerian public sector organizations. However, despite the depth of analysis in this study, there remains a notable gap in the conceptualization of the underlying mechanisms driving the observed relationships. The study lacks a clear theoretical grounding or conceptual framework to guide the research process. By not employing established theories or conceptual models from fields such as supply chain management or organizational theory, the study misses an opportunity to delve deeper into the complex dynamics involved in e-procurement adoption and its subsequent impact on supply chain

performance. Without a robust theoretical foundation, the study's findings may lack depth and could be limited in their applicability to other contexts or settings. Therefore, addressing this conceptual research gap would contribute to a more nuanced understanding of the mechanisms through which e-procurement influences supply chain performance.

Contextual Research Gap: While Adekunle's study (2017) offers valuable insights specific to e-procurement implementation within Nigerian public sector organizations, there exists a significant contextual research gap regarding comparative analysis with organizations from other regions or countries. The study's focus on the Nigerian context provides valuable insights into the challenges and opportunities unique to this setting. However, without comparative analysis with organizations from other geographical contexts, the study's findings may lack broader applicability and generalizability. Comparative analysis across different regions or countries could reveal context-specific factors influencing e-procurement outcomes and shed light on best practices applicable across diverse settings. Therefore, addressing this contextual research gap by conducting comparative studies would enhance the understanding of how contextual factors shape the relationship between e-procurement adoption and supply chain performance.

Geographical Research Gap: Despite the comprehensive analysis provided by Adekunle's study (2017) within the Nigerian public sector context, there remains a geographical research gap concerning the representation of studies conducted outside Nigeria. While the study offers valuable insights into e-procurement practices and outcomes within Nigeria, it neglects insights from other regions or countries. This geographical focus limits the diversity of perspectives and hinders the exploration of potential variations in e-procurement practices and outcomes across different geographical contexts. Including studies from diverse geographical contexts would enable researchers to compare and contrast e-procurement practices, identify commonalities, and discern contextual nuances. Therefore, addressing this geographical research gap by incorporating studies from other regions or countries would provide a more comprehensive understanding of the global implications of e-procurement implementation on supply chain performance.

CONCLUSION AND RECOMMENDATIONS

Conclusions

In conclusion, the implementation of e-procurement systems has a significant impact on supply chain performance in Nigeria. Through the case study analysis conducted in this research, it is evident that e-procurement adoption contributes to improved efficiency, transparency, and cost-effectiveness within supply chains. By digitizing and automating procurement processes, organizations can streamline operations, reduce transaction costs, and enhance collaboration with suppliers. Furthermore, e-procurement systems facilitate better inventory management, demand forecasting, and supplier relationship management, leading to overall improvements in supply chain performance indicators such as delivery times, inventory turnover, and cost savings. However, challenges such as infrastructure limitations, technical expertise gaps, and resistance to change must be addressed to maximize the benefits of e-procurement implementation in Nigeria. Organizations need to invest in infrastructure development, capacity building, and change management initiatives to overcome these barriers effectively. Additionally, regulatory

frameworks and policies supporting e-procurement adoption need to be strengthened to create an enabling environment for sustainable implementation.

Recommendations

Theory

Conduct further research to explore the underlying mechanisms and theoretical frameworks that explain the relationship between e-procurement implementation and supply chain performance in the Nigerian context. This could involve longitudinal studies to analyze the long-term effects and dynamic interactions between various factors. Investigate the applicability of existing supply chain theories such as transaction cost theory, resource dependency theory, and institutional theory in the context of e-procurement adoption in Nigeria. This could lead to the development of a more nuanced theoretical understanding of e-procurement's impact on supply chain performance.

Practice

Provide training and capacity-building programs to enhance the technical skills and digital literacy of procurement professionals and stakeholders involved in e-procurement implementation. This would ensure effective utilization of e-procurement systems and maximize their potential benefits. Encourage collaboration and knowledge sharing among organizations and sectors to disseminate best practices and lessons learned from successful e-procurement initiatives. This could facilitate the adoption of proven strategies and approaches tailored to Nigeria's unique socio-economic and technological context.

Policy

Advocate for the development and implementation of supportive regulatory frameworks and policies that promote e-procurement adoption and usage in Nigeria. This includes measures to address infrastructure challenges, data security concerns, and legal barriers hindering e-procurement implementation. Engage with relevant government agencies, industry associations, and international organizations to foster public-private partnerships and initiatives aimed at accelerating e-procurement adoption and mainstreaming best practices. Conduct regular evaluations and assessments of e-procurement initiatives to monitor their effectiveness, identify areas for improvement, and inform evidence-based policy decisions. This would ensure that policy interventions are responsive to evolving market dynamics and technological advancements.

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