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AGILE SUPPLY CHAIN STRATEGIES AND PROCUREMENT PERFORMANCE OF STATE CORPORATIONS IN TRANSPORT SECTOR, KENYA

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ABSTRACT

This study examined the effect of agile supply chain strategies on procurement performance of state corporations in Kenya's transport sector. Despite procurement reforms, many state corporations face persistent inefficiencies, including project delays, cost overruns, and supplier underperformance, mainly due to limited supply chain visibility, rigid procurement systems, poor market responsiveness, and weak internal process integration. Notable examples include procurement-related losses by Kenya Airports Authority and delays within Kenya Railways Corporation. These challenges necessitated exploring agile strategies to enhance procurement outcomes. The general objective of the study was to determine the effect of agile supply chain strategies on procurement performance. Specifically, the study aimed to assess the influence of market sensitivity, and process integration on procurement performance. The study was guided by Market Orientation Theory and Resource-Based View (RBV). A descriptive survey design was adopted, targeting a census of 108 procurement staff from state corporations in the transport sector. Data was collected using a structured questionnaire designed around the study variables. A pilot test involving 11 respondents was conducted to assess the instrument's validity and reliability using Cronbach's Alpha and AVE analysis. Data was analyzed using descriptive statistics (means and standard deviations) and inferential statistics (Pearson's correlation and multiple linear regression) with diagnostic tests for multicollinearity, normality, and heteroscedasticity. The findings revealed that all agile supply chain strategies had a positive and statistically significant effect on procurement performance. Process integration ($\beta = 0.398$, $p = 0.000$) had the greatest influence, followed by market sensitivity ($\beta = 0.364$, $p = 0.000$). The study concludes that adopting agile supply chain strategies—particularly enhancing process integration and market responsiveness—significantly improves procurement performance. It recommends investing in market monitoring, and strong inter-departmental integration. These findings contribute to supply chain literature and offer practical recommendations for policy and procurement reform in Kenya's public transport sector.

Key Words: State Corporations, Transport Sector, Agile Supply Chain Strategies, Market Sensitivity, Process Integration, Procurement Performance

Background to the Study

An agile supply chain is a responsive, dynamic structure designed to quickly adjust to shifting consumer demands, evolving market conditions, and unforeseen disruptions (Centobelli et al., 2020). Unlike traditional supply chains, which prioritize efficiency and cost minimization, an agile supply chain focuses on speed, adaptability, and customer satisfaction (Dahinine et al., 2024). It leverages advanced technology, such as automation and real-time data analytics, to enhance supply chain visibility, supplier collaboration, and operational efficiency (Müller & Schmidt, 2024). In today's fast-paced and unpredictable business environment, organizations are increasingly turning to agile supply chain strategies to improve responsiveness and flexibility (Chowdhary, 2022). Research indicates that supply chain agility enables organizations to swiftly adapt to changing consumer needs and market conditions, ultimately enhancing procurement performance and overall operational effectiveness (Stank et al., 2022). The transport sector, which plays a vital role in economic growth and service delivery, particularly benefits from agility-driven procurement to manage demand fluctuations, optimize supplier relationships, and reduce procurement inefficiencies (Oksanen, 2023).

The transport sector in Kenya faces persistent procurement inefficiencies, leading to project delays, financial losses, and service disruptions (Mbula & Wainaina, 2023). While organizations like the Kenya Ports Authority (KPA) have successfully implemented e-procurement systems, others, such as the Kenya Railways Corporation (KRC) and the Kenya Airports Authority (KAA), struggle with inefficient procurement processes, bureaucratic hurdles, and contract mismanagement (Business Daily Africa, 2023). These inefficiencies have resulted in increased costs, procurement-related fraud, and delayed infrastructure projects, such as the JKIA expansion and railway maintenance initiatives (Office of the Auditor-General, 2024). In response to these challenges, agile supply chain strategies offer a viable solution by emphasizing market sensitivity, and internal process integration, all of which contribute to enhanced procurement performance (Viitanen, 2024).

Market sensitivity plays a critical role in procurement by enhancing organizations' ability to anticipate customer needs, respond to external disruptions, and adjust procurement planning accordingly (Aljanabi & Ghafour, 2021). Lastly, internal process integration ensures seamless communication and collaboration across departments, improving decision-making and procurement efficiency (Tarigan, Siagian, & Jie, 2021). Together, these agile principles streamline procurement operations, reduce lead times, and enhance supplier relationships—critical factors for public sector organizations aiming to optimize their procurement functions (Shaikh, 2025).

Despite the potential benefits of agile supply chain strategies, their adoption in Kenya’s transport sector remains limited due to bureaucratic challenges, financial constraints, and technological limitations (Obura, 2024). According to Mwania and Kyule (2024), inadequate infrastructure and restricted access to digital procurement systems make it difficult for state corporations to implement real-time data tracking and supplier integration. Financial constraints further slow the adoption of agile systems, as public enterprises often lack the budgetary flexibility to invest in advanced procurement technologies (Karani, 2022). Moreover, supplier dependency, resistance to change, and insufficient employee training hinder efforts to build an agile procurement framework, increasing the risk of supply chain disruptions and inefficiencies (Moshtari et al., 2021). These challenges underscore the urgent need for innovative procurement strategies that align with global best practices while addressing local constraints within Kenya’s transport sector (Letikash, 2022).

Given these gaps, there is a growing need for research and policy interventions that explore the effectiveness of agile procurement strategies in state corporations within the transport sector (Wanyama & Osoro, 2024). Scholars emphasize that integrating agile principles into procurement processes can reduce lead times, lower costs, and enhance service quality (Dahinine et al., 2024). However, empirical studies examining the relationship between agile supply chain strategies and procurement performance in Kenya's transport sector remain scarce. This study sought to bridge this gap by investigating how market sensitivity, and internal process integration influence procurement performance in Kenya's state corporations within the transport sector.

Statement of the problem

The procurement performance of state corporations in Kenya's transport sector presents a mixed picture, despite various reforms aimed at enhancing public procurement efficiency and transparency. Some state corporations, such as the Kenya Ports Authority (KPA), have made notable progress by adopting digitization and automation, including e-procurement systems, which have improved transparency, reduced lead times, and enhanced resource allocation efficiency (Mbula & Wainaina, 2023). A report by the Public Procurement Regulatory Authority (PPRA, 2023) indicates that the implementation of e-procurement at KPA has led to a 15% reduction in procurement cycle times and a 20% increase in procurement efficiency. Similarly, Karanja and Ruguru (2023) argue that the Kenya Roads Board (KRB) has been recognized for compliance with public procurement laws, effectively managing supplier contracts, and improving infrastructure project completion rates. However, many state corporations in the transport sector still struggle with procurement inefficiencies, leading to delayed infrastructure projects, financial mismanagement, and increased operational costs.

The Kenya Railways Corporation (KRC), for instance, has faced recurrent project delays, particularly in the maintenance of the Standard Gauge Railway (SGR), due to bureaucratic bottlenecks, budget constraints, and procurement mismanagement (Kamwere, 2023). The Kenya Railways 2023 Annual Report highlighted that procurement delays contributed to a 30% increase in project costs, with an estimated KES 2.7 billion in additional expenses incurred due to late procurement of railway maintenance equipment. Additionally, the Ethics and Anti-Corruption Commission (EACC, 2023) reported that procurement-related issues at KRC have led to non-compliance with contract timelines, affecting the delivery of locomotives, railcar spare parts, and signaling systems. Similarly, the Kenya National Highways Authority (KeNHA) has suffered from inefficient procurement processes, including delays in contract awarding, mismanagement of tenders, and corruption allegations. The EACC (2023) revealed that procurement irregularities in road construction contracts resulted in KES 12 billion in stalled projects, negatively impacting infrastructure development and transport efficiency.

Another significant example is the Kenya Airports Authority (KAA), which recorded financial losses of KES 4.2 billion in June 2023 due to procurement inefficiencies (Business Daily Africa, 2023). The Office of the Auditor-General (2024) reported that mismanaged supplier contracts and exaggerated tender pricing led to the postponement of major projects, including the Jomo Kenyatta International Airport (JKIA) Expansion Project, Greenfield Terminal Project, and Air Traffic Control Modernization Initiative. These inefficiencies increase operational costs, reduce service quality, and weaken investor confidence in Kenya's transport infrastructure development. According to the Kenya Public Investment Management Report (2023), procurement inefficiencies contribute to an average delay of 18–24 months in transport infrastructure projects, leading to cost escalations of up to 35%.

Furthermore, corruption and fraud in procurement remain a persistent challenge in Kenya's transport sector. The 2023 Transparency International Kenya Corruption Perceptions Index ranked public procurement as one of the most corruption-prone areas, with 63% of surveyed

procurement officers acknowledging the existence of irregularities in tender allocation. Additionally, restricted supplier diversity and lack of market competition increase the risk of supply chain disruptions, particularly during economic downturns and emergencies (Letikash, 2022). These inefficiencies undermine service delivery, escalate procurement costs, and reduce the effectiveness of Kenya's public investment in transport infrastructure.

Despite there being a number of studies on agile supply chain strategies and procurement performance, most research has focused on private sector organizations, multinational corporations, and global best practices (Centobelli et al., 2020; Müller & Schmidt, 2024). Additionally, studies within Kenya have primarily examined public procurement efficiency, digitization of procurement processes, and regulatory compliance, with limited focus on the specific role of agile supply chain strategies in enhancing procurement performance in state corporations within the transport sector (Mbula & Wainaina, 2023; Obura, 2024). While research has highlighted procurement inefficiencies, corruption risks, and bureaucratic delays in Kenya's public sector, few empirical studies have explored how agile supply chain practices such as market sensitivity, and internal process integration directly influence procurement performance in state-owned transport enterprises (Mwania & Kyule, 2024). Therefore, this study sought to fill this gap by investigating the relationship between agile supply chain strategies and procurement performance in Kenya's state corporations within the transport sector. Specifically, the study examined how market sensitivity, and internal process integration impact procurement efficiency, cost management, supplier relationships, and service delivery.

Objectives of the Study

The general objective of the study was to establish the relationship between agile supply chain strategies and the procurement performance of state corporations in transport sector in Kenya.

The study specifically sought to;

i. To evaluate the relationship between market sensitivity and procurement performance of service state corporations in Kenya.
ii. To determine the relationship between internal processes integration and procurement performance of service state corporations in Kenya.

LITERATURE REVIEW

Theoretical Review

Market Orientation Theory

The theory proposed by Kohli and Jaworski (1990, shows the importance of understanding and responding to customer needs and market dynamics as a means to enhance organizational performance. The main tenets of Market Orientation Theory include customer orientation, competitor orientation, and inter-functional coordination, which collectively foster a culture of responsiveness to market changes. Critiques of the theory include failing to adequately measure market orientation (Deshpandé et al., 1993) and for stressing too much on external market characteristics at the expense of internal capabilities (Harris, 2002). However, the theory has strengths, according to Narver and Slater (1990), it has capacity to offer a thorough grasp of how market dynamics impact organizational strategies. Similarly, the theory focuses on cultivating a customer-centric culture that can result in improved performance (Kohli & Jaworski, 1990). Market Orientation Theory is relevant to this study as it allows for an exploration of how heightened market sensitivity can directly influence procurement

performance, enabling service state corporations in Kenya to adapt their strategies effectively in response to changing market conditions.

Resource-Based View (RBV)

Resource-Based View was proposed by Wernerfelt (1984) and further developed by Barney (1991). It posits that a firm's unique resources and capabilities are fundamental to achieving competitive advantage and superior performance. The main tenets of the RBV include the importance of valuable, rare, inimitable, and non-substitutable resources, which collectively enable firms to create and sustain competitive advantages. Scholars have used RBV to explore how internal resources, such as organizational capabilities and processes, influence performance outcomes, including procurement efficiency and effectiveness. However, the RBV has faced criticisms, including its tendency to overlook the role of external factors in shaping firm performance (Priem & Butler, 2001) and the challenge of operationalizing and measuring the constructs of resources and capabilities effectively (Newbert, 2007). The RBV has advantages in spite of these critiques, including a strong framework for comprehending how internal resources can be used to improve performance (Barney, 1991) and focusing on the strategic significance of resource management for long-term success (Teece, 2007). The RBV is highly relevant to this study since it examines in detail how internal process integration can improve procurement performance, allowing Kenyan service state corporations to maximize resource use and boost operational effectiveness.

Conceptual Framework

A conceptual framework is a methodical depiction of the variables, concepts, and connections between them in a particular study setting (Cu et al., 2021). It functions as a visual or narrative tool that lists the essential components of a study in order to help define the research focus and direct the investigation (Ngai & Wu, 2022). The independent variables include market sensitivity and internal processes integration while the dependent variable is procurement performance of state corporations in transport sector.

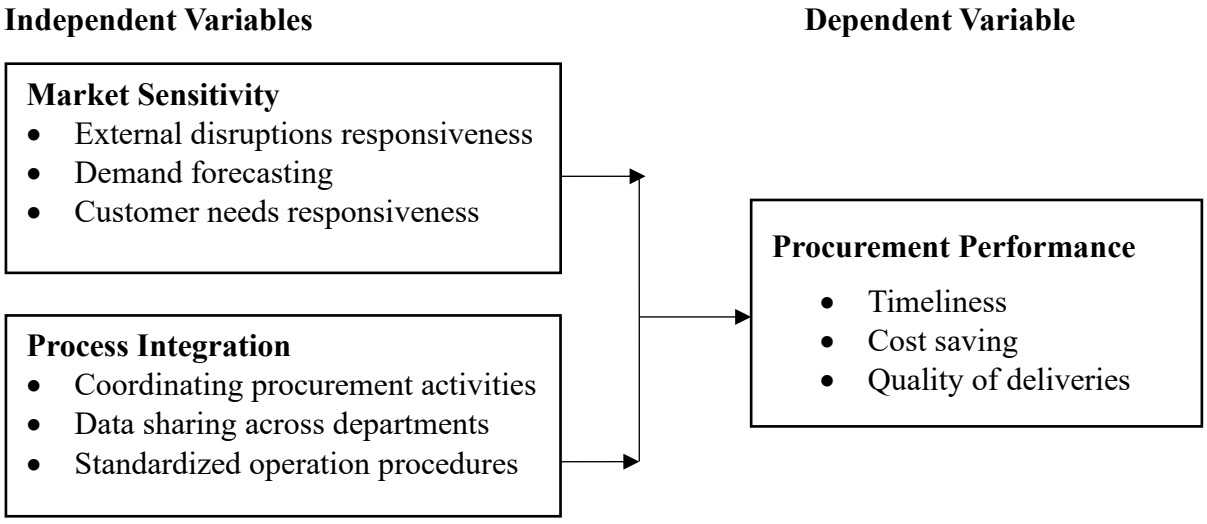

Figure 2. 1: Conceptual Framework

Market Sensitivity

Market sensitivity refers to an organization's ability to anticipate, identify, and respond swiftly to changes in the market environment, including price fluctuations, supply shortages, shifts in consumer demand, and technological advancements (Reimann et al., 2021). In the rapidly

evolving global and local supply chain landscape, market sensitivity is critical for ensuring procurement efficiency, cost optimization, and service continuity. According to Aljanabi and Ghafour (2021), market sensitivity is driven by three key components: external disruptions responsiveness, demand forecasting, and customer needs responsiveness, all of which contribute to strategic procurement decision-making and enhanced operational agility.

External disruptions responsiveness refers to an organization's ability to adjust procurement processes in response to unexpected market changes such as economic fluctuations, geopolitical tensions, supplier disruptions, and regulatory changes (Shaikh, 2025). Studies indicate that organizations with high disruption responsiveness experience 30-40% lower procurement costs and 20% faster supplier recovery times during crises (Freichel et al., 2022). In Kenya's transport sector, where procurement challenges frequently arise due to exchange rate volatility, global supply chain disruptions, and raw material shortages, having a proactive response mechanism ensures that state corporations can quickly re-strategize sourcing decisions and mitigate procurement risks (Mutua, 2024).

Demand forecasting plays a crucial role in predicting procurement needs based on market trends, consumption patterns, and historical data (Tahri, 2024). Advanced forecasting techniques, such as machine learning algorithms and predictive analytics, allow procurement teams to reduce stockouts, avoid overstocking, and minimize waste (Viitanen, 2024). Studies show that organizations using data-driven demand forecasting can achieve inventory cost reductions of up to 25% while improving supply chain responsiveness by 35% (Obura, 2024). In Kenya's transport sector, where fluctuations in fuel prices, spare parts availability, and infrastructure demands affect procurement planning, effective demand forecasting helps state corporations align procurement strategies with projected needs, ensuring timely and cost-efficient procurement operations (Mwania & Kyule, 2024).

Customer needs responsiveness is the ability of an organization to understand and fulfill end-user demands in real time, ensuring that procurement decisions align with service expectations and operational goals (Aljanabi & Ghafour, 2021). Research suggests that organizations that prioritize customer needs responsiveness experience higher procurement efficiency, reduced lead times, and improved supplier relationships (Sandberg, 2021). In the Kenyan transport sector, responsiveness to passenger demands, infrastructure maintenance needs, and regulatory standards ensures that procurement teams can adjust supply chain strategies accordingly, leading to better service delivery and cost savings (Njehia, 2023).

Therefore, market sensitivity is essential for agile procurement operations, enabling organizations to stay competitive, reduce procurement inefficiencies, and optimize costs. As Kenya's transport sector faces increasing procurement challenges, integrating external disruptions responsiveness, demand forecasting, and customer needs adaptability is crucial in achieving long-term procurement sustainability and efficiency.

Process Integration

Process integration refers to the harmonization of internal functions across departments such as procurement, finance, operations, and logistics, ensuring seamless coordination, efficiency, and compliance within an organization (Tarigan et al., 2021). In the public sector, particularly in Kenya's transport corporations, fragmented operations and lack of synchronization between departments often lead to procurement inefficiencies, delays, and budgetary constraints (Basana et al., 2022). Effective process integration enhances interdepartmental collaboration, reduces operational bottlenecks, and optimizes procurement performance by ensuring real-time data sharing, activity coordination, and adherence to standardized procedures (Viitanen, 2024).

Coordinating procurement activities ensures that various departments work in sync, preventing duplication of tasks, miscommunication, and resource wastage (Freichel et al., 2022). A well-integrated procurement system aligns supply needs with financial budgets and operational requirements, ensuring that procurement decisions are strategically planned and executed on time (Reimann et al., 2021). Studies show that organizations with effective procurement coordination experience up to a 25% reduction in procurement cycle times, leading to enhanced efficiency and cost savings (Shaikh, 2025). In Kenya's transport sector, where procurement inefficiencies contribute to delays in infrastructure projects, strengthening procurement coordination helps streamline supply chain activities and improve service delivery (Mutua, 2024).

Data sharing across departments is another key element of process integration, facilitating real-time information access and collaboration between procurement, finance, and operations teams (Basana et al., 2022). Digital procurement platforms such as Enterprise Resource Planning (ERP) systems and Integrated Financial Management Information Systems (IFMIS) have been widely adopted to centralize procurement data, improve transparency, and enhance accountability (Mwania & Kyule, 2024). Research indicates that data-driven procurement decisions lead to 30% higher accuracy in demand planning and budget forecasting, reducing procurement inefficiencies and financial mismanagement (Obura, 2024). However, in Kenya's state corporations, challenges such as limited technology adoption and resistance to data-sharing initiatives hinder full integration, necessitating further investment in capacity-building and digital infrastructure (Tarigan et al., 2021).

Standardized operating procedures (SOPs) are critical in ensuring consistency, regulatory compliance, and efficiency in procurement operations (Sandberg, 2021). SOPs establish clear guidelines on procurement workflows, approval hierarchies, and reporting mechanisms, ensuring that all procurement activities adhere to national and organizational policies (Aljanabi & Ghafour, 2021). A study by Viitanen (2024) found that organizations implementing structured procurement policies achieve 20% faster procurement processing times and reduced risks of financial irregularities. In Kenya's transport sector, where corruption and mismanagement have led to financial losses and project delays, enforcing standardized procurement frameworks is crucial for improving governance, reducing inefficiencies, and enhancing procurement accountability (Kiliru, 2023).

Process integration therefore plays a vital role in enhancing procurement efficiency, transparency, and cost-effectiveness within state corporations in Kenya's transport sector. By fostering interdepartmental coordination, strengthening data-sharing mechanisms, and implementing standardized procurement policies, organizations can streamline procurement workflows, reduce inefficiencies, and improve service delivery.

Procurement Performance of State Corporation in Kenya

Procurement performance refers to the efficiency and effectiveness with which an organization manages its procurement operations, encompassing planning, sourcing, contract administration, and supplier management (Aulia & Isvara, 2021). In state corporations, procurement performance is critical for ensuring cost efficiency, timely project execution, and high-quality service delivery (Jama, 2023). Given that Kenya's transport sector plays a crucial role in economic development and public service delivery, optimizing procurement performance is essential for ensuring smooth infrastructure development and operational efficiency (Kendagor, 2023). Three key metrics—timeliness, cost-saving, and quality of deliveries—are widely used to assess procurement performance in state corporations.

Timeliness in procurement ensures that goods and services are delivered as scheduled, preventing delays that could disrupt infrastructure projects and essential transport services (Freichel et al., 2022). Research shows that public sector projects in Kenya often suffer from procurement-related delays, with up to 45% of major transport projects exceeding their expected completion timelines due to inefficiencies in procurement processes (Office of the Auditor-General, 2024). Delays in procuring spare parts, construction materials, or key services have resulted in stalled infrastructure projects, increased costs, and disruptions in service delivery (Mutua, 2024). By adopting agile supply chain strategies, state corporations can improve procurement timelines through better supplier coordination, enhanced visibility, and proactive demand forecasting (Shaikh, 2025).

Cost-saving measures in procurement focus on reducing waste, implementing competitive sourcing strategies, and improving operational efficiency (Jama, 2023). In Kenya's public sector, procurement inefficiencies and mismanagement contribute to substantial financial losses. The Ethics and Anti-Corruption Commission (EACC, 2023) reported that procurement-related corruption and inflated contract costs accounted for an estimated KES 21 billion in financial losses across various state corporations in 2023. Poor contract negotiations, limited supplier diversity, and bureaucratic delays often lead to cost overruns in infrastructure projects, straining public resources (Mwania & Kyule, 2024). Research suggests that organizations that adopt competitive bidding, supplier performance monitoring, and digital procurement platforms can achieve cost savings of up to 30%, improving overall financial sustainability (Viitanen, 2024).

Quality of deliveries ensures that procured goods and services meet the required standards, contributing to reliable project execution and enhanced public service delivery (Sandberg, 2021). Substandard materials and delayed supplier deliveries have negatively impacted major transport projects, such as the Jomo Kenyatta International Airport (JKIA) expansion and Standard Gauge Railway (SGR) maintenance (Office of the Auditor-General, 2024). A study by Aljanabi & Ghafour (2021) found that state corporations with robust supplier evaluation mechanisms experience up to 40% improvement in delivery quality, reducing cases of defective goods and costly rework. Implementing supplier audits, real-time tracking, and contractual compliance measures can significantly enhance procurement performance by ensuring that state corporations receive high-quality products and services (Obura, 2024).

Empirical Review

Market Sensitivity and Procurement Performance

Grant (2024) investigated the role of market sensitivity in supplier risk management and procurement performance in e-commerce businesses across North America and Europe. The study employed a quantitative approach, collecting survey data from 300 procurement managers in leading e-commerce companies. It focused on how market dynamics, real-time supplier performance monitoring, and automated procurement systems influence procurement efficiency. The findings indicated that companies with high market sensitivity reduced procurement risks by 40%, improved supplier compliance by 35%, and minimized sourcing delays by 30%. The study concluded that market-sensitive procurement systems enhance resilience to supplier disruptions and improve operational agility, recommending that firms integrate AI-based risk monitoring tools to optimize procurement decision-making (Grant, 2024).

Cooper (2024) explored the relationship between market sensitivity and supplier development strategies in the retail sector, focusing on the UK and Germany. Using a mixed-method approach, the study collected survey responses from 200 procurement managers and conducted

case studies of five leading retail chains. The study assessed how real-time market analysis, demand forecasting, and adaptive contract terms improve procurement performance. The results showed that retailers with advanced market sensitivity mechanisms reduced procurement costs by 20%, achieved 25% faster supplier response times, and experienced a 15% improvement in contract renegotiation efficiency. The study recommended greater investment in digital procurement analytics to enhance demand prediction and market responsiveness (Cooper, 2024).

Lind (2024) conducted a study on market sensitivity and procurement efficiency in the European energy sector, specifically examining Transmission System Operators (TSOs) and Distribution System Operators (DSOs) across the EU. The research employed a longitudinal study approach, analyzing procurement records, market trend reports, and interviews with 50 procurement officers over five years (2019-2024). Findings indicated that energy firms with high market sensitivity were able to adjust procurement strategies in response to energy price fluctuations, resulting in 18% cost savings and a 22% improvement in supplier negotiation outcomes. The study emphasized the need for dynamic procurement policies that align with changing energy market trends to enhance supply chain adaptability (Lind, 2024).

Yadav, Bakhshi, and Shafique Uddin (2024) investigated data-driven decision-making in market-sensitive procurement strategies, focusing on India's manufacturing sector. The study employed big data analytics and AI-driven modeling, analyzing historical procurement data from 100 manufacturing firms. Using predictive analytics, the study examined how market sensitivity factors such as price volatility, demand fluctuations, and supplier reliability influence procurement performance. Results showed that companies that leveraged AI-driven market analytics experienced 28% lower procurement costs, improved supplier diversification by 32%, and reduced lead times by 25%. The study recommended greater adoption of AI and machine learning in procurement systems to enhance market adaptability and cost-efficiency (Yadav et al., 2024).

Kong, Huang, Kang, and Xu (2025) explored market sensitivity in sustainable procurement strategies in China's construction industry, focusing on recycled and remanufactured materials. The study used a combinatorial group-buying double auction model to analyze procurement efficiency in response to fluctuating market conditions. Data was collected from procurement transactions of 50 major construction firms and analyzed using econometric modeling. Findings indicated that companies with market-sensitive procurement models reduced procurement costs by 30%, improved supplier coordination by 35%, and achieved a 40% increase in sustainability compliance. The study emphasized the need for government incentives to encourage the adoption of market-sensitive procurement mechanisms in sustainable construction (Kong et al., 2025).

Process Integration and Procurement Performance

Ajayi (2025) examined the role of predictive analytics in supplier relationship management and process integration in public procurement systems in Nigeria. The study used a quantitative approach, collecting procurement trend data and supplier performance metrics from 100 government agencies. Primary data was collected through structured interviews with procurement officers, while secondary data was obtained from public procurement records. The findings indicated that organizations using predictive analytics for supplier relationship management experienced a 30% improvement in procurement efficiency, a 20% reduction in contract processing times, and a 25% decrease in supplier disputes. The study recommended that government agencies should adopt AI-driven procurement platforms to enhance supplier integration and streamline procurement workflows (Ajayi, 2025).

Muhando, Ngala, and Machuki (2025) explored the effect of supply chain integration on procurement performance in county governments in the Western Region of Kenya. Using a mixed-method approach, the study surveyed procurement officers from 30 county government departments and analyzed procurement performance reports from 2018-2024. Key variables examined included information sharing, interdepartmental coordination, and supplier collaboration. Findings showed that counties with high levels of process integration achieved a 40% reduction in procurement cycle times and improved cost efficiency by 30%. However, challenges such as bureaucratic inefficiencies and resistance to digital procurement systems hindered full integration. The study recommended mandatory adoption of digital procurement platforms and process standardization across county governments (Muhando et al., 2025).

Kamarkor (2025) investigated the impact of process integration on the performance of road construction projects in Nairobi City County, Kenya. The research employed a case study approach, examining procurement records from 20 ongoing road projects and conducting interviews with project managers and procurement officers. The study focused on coordination between procurement and project management teams, real-time data sharing, and standardization of procurement procedures. Findings indicated that projects with strong process integration recorded a 35% decrease in procurement-related delays and a 25% improvement in supplier contract execution. The study recommended that county governments should establish integrated procurement dashboards to enhance transparency and efficiency in public road projects (Kamarkor, 2025).

Ghanbaripour, Tumpa, and Skitmore (2025) examined the role of process integration in project delivery success in Australia's construction industry. The study used a longitudinal research design, analyzing procurement and project management data from 50 construction firms between 2019 and 2025. Data was collected through expert panel discussions, structured interviews, and performance tracking reports. The study found that companies with fully integrated procurement systems experienced a 30% reduction in cost overruns, a 25% increase in contract compliance, and a 20% improvement in supplier performance. The authors concluded that enhancing process integration in procurement workflows is key to achieving sustainable project outcomes (Ghanbaripour et al., 2025).

Siwawa and Mukelabai (2025) assessed the efficiency of procurement-to-pay (P2P) systems in nonprofit organizations in Zambia, focusing on Catholic Relief Services (CRS). The study applied statistical analysis using Pearson correlation to measure the impact of process integration on procurement cycle times and cost savings. Data was gathered from procurement transaction logs, supplier evaluation reports, and interviews with procurement managers. Findings showed that organizations with well-integrated procurement systems achieved a 35% reduction in procurement costs and a 40% improvement in supplier payment accuracy. The study recommended that nonprofits should invest in cloud-based procurement platforms to enhance real-time coordination between finance and procurement departments (Siwawa & Mukelabai, 2025).

RESEARCH METHODOLOGY

The study adopted a descriptive survey research design to systematically collect, analyze, and interpret data on the impact of agile supply chain strategies on procurement performance in Kenya's transport sector state corporations. Descriptive design is suitable for studies aimed at obtaining factual, detailed, and accurate information about existing conditions, behaviors, and opinions without manipulating variables (Doyle et al., 2020). The target population for this study was the procurement staff in the corporations in the transport sector in Kenya. These include the Chief Accounts Officer, Director of Procurement, Procurement Manager, Inventory department Heads, supply chain manager Procurement Analyst and their assistants. The study

adopted a census approach as the sampling technique, which involves collecting data from every member of the target population to ensure comprehensive coverage and eliminate sampling bias (Kenny et al., 2021).

The study employed a structured questionnaire as the primary data collection instrument, designed to systematically capture data on the study's key variables. The pilot targeted 10% of the study sample, in line with Kothari (2013), which recommends pilot testing on 10% of the sample for accuracy and instrument refinement. Therefore, the pilot involved 11 staff drawn from target population and excluded from the actual study. The study utilized both descriptive and inferential statistical techniques to analyze the quantitative data collected. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarize the respondents' demographic characteristics and provide an overview of responses on each study variable. For deeper analysis, inferential statistics were employed. Specifically, Pearson's correlation analysis was conducted to determine the strength and direction of the relationships among the variables. Additionally, multiple linear regression analysis was performed to establish the effect of each independent variable on procurement performance.

RESEARCH FINDINGS AND DISCUSSION

A total of 97 questionnaires were distributed to procurement staff across selected state corporations within Kenya's transport sector. This number excludes the 11 questionnaires used for the pilot study. Out of the 97 distributed, 86 questionnaires were completed and returned, representing a response rate of 88.7%. According to Mugenda and Mugenda (2003), a response rate of 70% or higher is considered adequate and reliable for data analysis and drawing valid research conclusions.

Descriptive Analysis

This section presents the descriptive analysis of responses based on the study variables: market sensitivity, process integration, and procurement performance. The analysis is guided by mean scores and standard deviations for each statement under the respective constructs. Mean scores represent the general level of agreement among respondents, while standard deviations indicate the extent of variation in the responses. A mean score above 3.5 suggests that respondents agreed or strongly agreed with the statement. The responses were measured on a 5-point Likert Scale, where: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree. For interpretation, mean scores between 1.0 and 2.4 indicate disagreement, 2.5 to 3.4 reflect neutrality or moderate agreement, while 3.5 to 5.0 show agreement or strong agreement. The descriptive results provide insights into the extent to which agile supply chain strategies are implemented and their impact on procurement performance within Kenya's transport sector state corporations.

Market Sensitivity

The second objective was to evaluate the relationship between market sensitivity and procurement performance of service state corporations in Kenya. The study evaluated the impact of market sensitivity on procurement performance. Table 1 summarizes the findings.

Table 1: Descriptive Statistics on Market Sensitivity

Statement	Mean	Std. Dev
1. My organization regularly conducts market analysis to track price fluctuations.	4.165	0.701
2. Procurement decisions are influenced by demand forecasting data.	4.138	0.743
3. Supplier relationships are adjusted based on changing market conditions.	4.119	0.711
4. There are mechanisms to respond quickly to external disruptions.	4.180	0.693
5. My organization adopts new procurement technologies to stay competitive.	4.206	0.685
6. Procurement processes are aligned with emerging industry trends.	4.121	0.717
7. My organization adapts procurement budgets based on market fluctuations.	4.147	0.728
Aggregate Mean Score	**4.154**	**0.711**

Regular market analysis scored well (mean = 4.165, SD = 0.701), confirming strategic market monitoring. Demand forecasting impacted decisions (mean = 4.138, SD = 0.743), showing data-driven planning. Adjusting supplier relationships based on market conditions was practiced (mean = 4.119, SD = 0.711). Quick response mechanisms to market disruptions scored high (mean = 4.180, SD = 0.693). Adoption of new procurement technologies received the highest mean (mean = 4.206, SD = 0.685), reflecting innovation. Alignment with industry trends scored moderately (mean = 4.121, SD = 0.717), while budget adjustments based on market conditions were also strong (mean = 4.147, SD = 0.728).

The Market Sensitivity aggregate score of 4.154 demonstrates that organizations in the sector are highly responsive to market dynamics, embracing demand forecasting, market analysis, and technology adoption. This affirms Grant (2024), who reported that market-sensitive procurement minimizes risks and enhances responsiveness, and Yadav et al. (2024), who concluded that AI-driven market analytics improve supplier diversification and reduce lead times, outcomes reflected in this study's high sensitivity ratings.

Process Integration

The study also sought to determine the relationship between internal processes integration and procurement performance of service state corporations in Kenya. The study analyzed the role of process integration in procurement performance. Table 2 presents the descriptive results.

Table 2: Descriptive Statistics on Process Integration

Statement	Mean	Std. Dev.
1. Procurement activities are well-coordinated across departments.	4.187	0.681
2. Data is shared in real-time between procurement, finance, and operations teams.	4.165	0.709
3. My organization follows standardized procurement procedures.	4.140	0.731
4. Supplier performance data is integrated into procurement planning.	4.121	0.712
5. Internal audits ensure procurement compliance with policies.	4.195	0.697
6. Procurement decisions involve input from multiple departments.	4.113	0.723
7. There is seamless coordination between procurement teams and logistics units.	4.172	0.698
Aggregate Mean Score	**4.156**	**0.707**

Respondents strongly agreed on inter-departmental coordination (mean = 4.187, SD = 0.681), reducing silos. Real-time data sharing was also affirmed (mean = 4.165, SD = 0.709). Standardized procurement procedures were consistently practiced (mean = 4.140, SD = 0.731), ensuring compliance. Supplier performance integration into planning was acknowledged (mean = 4.121, SD = 0.712). Internal audits were highly rated (mean = 4.195, SD = 0.697), reinforcing accountability. Involvement of multiple departments in procurement scored moderately (mean = 4.113, SD = 0.723), while coordination with logistics was good (mean = 4.172, SD = 0.698).

For Process Integration, the aggregate mean score of 4.156 reflects strong coordination, data sharing, and standardized procedures in procurement. These findings align with Muhando et al. (2025), who found that county governments with high process integration significantly reduced procurement cycle times and improved cost efficiency. Likewise, Ghanbaripour et al. (2025) confirmed that integrated systems reduce project delays and supplier risks — consistent with this study's results indicating operational cohesion in Kenya's transport state corporations.

Procurement Performance

The general objective of the study was to establish the relationship between agile supply chain strategies and the procurement performance of state corporations in transport sector in Kenya. The study therefore assessed procurement performance based on timeliness, cost efficiency, and quality. Table 3 presents the descriptive statistics.

Table 3: Descriptive Statistics on Procurement Performance

Statement	Mean	Standard Deviation
1. Procurement processes are completed within set timelines.	4.119	0.692
2. My organization consistently meets cost-saving procurement targets.	4.138	0.703
3. Supplier contracts are managed efficiently to avoid unnecessary costs.	4.187	0.684
4. Procurement decisions align with service delivery objectives.	4.172	0.679
5. Procurement errors and inefficiencies are minimized.	4.126	0.716
6. Procurement processes comply with regulatory requirements.	4.212	0.701
7. My organization consistently achieves high-quality procurement outcomes.	4.180	0.687
Aggregate Mean Score	**4.162**	**0.695**

Procurement timelines were largely met (mean = 4.119, SD = 0.692), showing efficiency. Cost-saving targets were achieved (mean = 4.138, SD = 0.703). Supplier contract management had strong support (mean = 4.187, SD = 0.684). Alignment with service delivery objectives scored well (mean = 4.172, SD = 0.679). Errors and inefficiencies were generally minimized (mean = 4.126, SD = 0.716). Regulatory compliance was highly rated (mean = 4.212, SD = 0.701), ensuring adherence to laws. High-quality procurement outcomes were consistently achieved (mean = 4.180, SD = 0.687).

The Procurement Performance aggregate score of 4.162 confirms that agile strategies collectively contribute to timely, cost-effective, and compliant procurement outcomes. This echoes Ebadi et al. (2025), who found that procurement agility improves contract execution and cost savings. Similarly, Siwawa and Mukelabai (2025) emphasized that process integration and compliance enhance procurement outcomes in public sector projects, a conclusion well-aligned with the strong performance levels reported in this study.

Having established through descriptive analysis that the respondents agreed on the strong presence and practice of agile supply chain strategies across all variables, the study proceeded to compute inferential analysis to further examine the relationships and statistical significance between the independent variables (market sensitivity, and process integration) and the dependent variable (procurement performance). Inferential analysis, specifically Pearson's correlation and multiple linear regression, was used to determine the strength, direction, and predictive power of these relationships. This analysis provides deeper insights into how each agile supply chain strategy influences procurement performance in Kenya's transport sector state corporations beyond descriptive trends.

Correlation Analysis

This section presents the correlation analysis between agile supply chain strategies (market sensitivity, and process integration) and procurement performance in Kenya's transport sector state corporations. The analysis used the Pearson correlation coefficient (r) to measure the strength and direction of the relationship, while the p-value assessed the statistical significance. A correlation value close to +1 indicates a strong positive relationship, and a p-value less than 0.05 signifies statistical significance.

Table 4: Correlation Analysis

		Procurement Performance	Market Sensitivity	Process Integration
Procurement Performance	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	86		
Market Sensitivity	Pearson Correlation	.679**	1	
	Sig. (2-tailed)	.000		
	N	86	86	
Process Integration	Pearson Correlation	.693**	.193	1
	Sig. (2-tailed)	.005	.090	
	N	86	86	86

Market Sensitivity (r = 0.679, p = 0.000). The strong positive correlation between market sensitivity and procurement performance underscores the importance of demand forecasting, market analysis, supplier relationship adjustments, and technology adoption. Organizations that remain responsive to market dynamics are better positioned to optimize costs, avoid supply shortages, and align procurement with service delivery demands. This finding resonates with Grant (2024), who highlighted that market-sensitive procurement practices minimize risks and enable organizations to anticipate supply fluctuations. Yadav et al. (2024) further noted that market-driven procurement strategies enhance lead-time reduction and improve supplier reliability.

Process Integration (r = 0.693, p = 0.000). Among the variables, process integration had the strongest correlation with procurement performance. This finding indicates that coordinated procurement activities, real-time interdepartmental data sharing, standardized procedures, and supplier performance integration are critical in achieving superior procurement outcomes. Integration reduces redundancy, enhances compliance, and ensures that procurement aligns with operational and financial goals. These findings align with Ghanbaripour et al. (2025), who concluded that process integration minimizes project delays, improves supplier coordination, and enhances contract execution. Similarly, Muhando et al. (2025) found that integrated procurement systems improve efficiency and reduce operational costs in public sector procurement.

Multiple Regression Analysis

Table 5 presents the regression coefficients showing the individual influence of each agile supply chain strategy.

Table 5: Regression Coefficients

Variable	Unstandardized B	Std. Error	Standardized Beta	t-Statistic	Sig. (p-value)
Constant	0.476	0.185	-	2.573	0.012
Market Sensitivity	0.364	0.070	0.322	5.206	0.000
Process Integration	0.398	0.068	0.348	5.853	0.000

Regression Equation:

Procurement Performance = 0.476 + 0.364(Market Sensitivity) + 0.398(Process Integration)

Market Sensitivity (B = 0.364, p = 0.000). The market sensitivity coefficient indicates that every unit increase results in a 0.364 improvement in procurement performance. This underlines the importance of proactive market monitoring, demand forecasting, and alignment with technological trends. These findings are consistent with Viitanen (2024), who found that organizations that embed market sensitivity into their procurement systems improve their agility and reduce vulnerability to market volatilities. Furthermore, Aljanabi and Ghafour (2021) established that continuous market scanning enables state-owned enterprises to anticipate price fluctuations, supplier shortages, and new technologies, resulting in better procurement performance and value for money.

Process Integration (B = 0.398, p = 0.000). Process integration recorded the highest impact on procurement performance. A unit increase in integration leads to a 0.398-unit improvement in procurement efficiency. This indicates that coordinated procurement activities, real-time data sharing, standardized operations, and cross-departmental collaboration are critical drivers of procurement success. This aligns with Tarigan, Siagian, and Jie (2021), who emphasized that integration reduces bureaucratic delays and improves decision-making speed in state corporations. Basana et al. (2022) further noted that process integration strengthens internal controls and ensures compliance with procurement regulations, thereby minimizing risks of fraud, errors, and project delays.

Conclusions

The study confirms that market sensitivity significantly influences procurement performance by enabling state corporations to stay attuned to market dynamics and emerging industry trends. Regular market analysis, effective demand forecasting, and rapid adoption of new procurement technologies empower organizations to make proactive and strategic procurement decisions. These practices help minimize cost overruns, secure quality supplies, and align procurement activities with evolving service delivery needs. By remaining sensitive to market conditions, these corporations enhance their ability to anticipate external disruptions, optimize procurement costs, and maintain competitiveness within a fast-changing transport sector environment.

Finally, the study concludes that process integration exerts the strongest influence on procurement performance among the agile supply chain strategies assessed. Effective coordination across departments, real-time data sharing, standardized procedures, and incorporation of supplier performance data into planning result in streamlined procurement processes and stronger regulatory compliance. Process integration reduces duplication, eliminates silos, and ensures that procurement decisions are aligned with both financial and operational objectives. This seamless integration is particularly critical in complex transport

sector projects where delays or inefficiencies can significantly impact service delivery. As such, process integration stands out as the most impactful strategy for driving procurement efficiency, compliance, and overall performance in Kenya's transport sector state corporations.

Recommendations

Market Sensitivity

To strengthen market sensitivity, state corporations should institutionalize regular market intelligence and demand forecasting exercises within their procurement departments. Establishing dedicated market research units or outsourcing market studies can ensure up-to-date information on price fluctuations, emerging suppliers, and technological advancements is available to inform procurement decisions. The adoption of advanced data analytics and predictive modeling tools is recommended to enhance demand forecasting accuracy and responsiveness to market changes. Additionally, procurement teams should prioritize continuous training on emerging industry trends, digital procurement tools, and market analysis techniques to maintain competitiveness. By embedding market sensitivity into procurement processes, these corporations can better anticipate external changes, optimize costs, and secure high-quality supplies.

Process Integration

Given its strong influence on procurement performance, the study recommends that state corporations prioritize full integration of procurement processes with other organizational functions such as finance, operations, and project management. Implementing centralized and automated procurement management systems will enhance real-time data sharing, eliminate process duplication, and improve decision-making speed. Regular cross-departmental meetings and joint planning sessions should be institutionalized to strengthen collaboration and ensure alignment of procurement activities with broader organizational objectives. Additionally, supplier performance data should be fully integrated into procurement planning to enhance supplier selection and contract management decisions. The study further recommends reinforcing internal audit functions to monitor compliance and ensure continuous improvement of procurement processes. Strengthening process integration will significantly improve efficiency, reduce procurement cycle times, and enhance accountability across the sector.

Suggestions for Further Research

While this study established that agile supply chain strategies significantly influence procurement performance in Kenya's transport sector state corporations, future research could explore additional factors such as stakeholder engagement, technological adoption, and regulatory compliance, which may also impact procurement outcomes. Comparative studies across different sectors, such as health or education, would help determine if similar agile strategies apply universally within the public sector. Additionally, longitudinal studies assessing the long-term effects of agile strategies on procurement sustainability and resilience are recommended to provide deeper insights into how these practices evolve and influence performance over time. This would enrich understanding and guide policy formulation for improved public procurement practices in Kenya.

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