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PROCUREMENT AUTOMATION AND PERFORMANCE OF GOVERNMENT AGENCIES IN NAIROBI CITY COUNTY, KENYA

[1] Kangethe Janet Wairimu, [2] Dr. Namusonge Erick

[1] Masters of Science in Procurement and Contract Management of the Jomo Kenyatta University of Agriculture and Technology

[2] Lecturer, Jomo Kenyatta University of Agriculture and Technology

ABSTRACT

Government agencies in Nairobi City County, Kenya, have been facing challenges in procurement efficiency, leading to high operational costs, poor service delivery, and inefficiencies in decision-making. This study aimed to assess the effects of procurement automation on the performance of these agencies, focusing on e-ordering and e-vendor management. The study was anchored in the Unified Theory of Acceptance and Use of Technology and Resource-Based View. A descriptive research design was employed, targeting a population of procurement officers, managers, and other relevant personnel from government agencies, with a sample size of 104 respondents selected through stratified random sampling. A pilot study was conducted to ensure the reliability and validity of the research instruments, achieving high Cronbach's alpha values, indicating strong internal consistency. Data were collected using structured questionnaires and analyzed using descriptive and inferential statistics, including correlation and multiple regression analyses. The study findings revealed that all the variables significantly influenced performance, with e-vendor management having the highest impact ($B = 0.395$, $p < 0.05$), followed by e-ordering ($B = 0.348$, $p < 0.05$). The study concludes that procurement automation enhances procurement efficiency, transparency, and financial management, leading to improved agency performance. It is recommended that government agencies fully integrate these automation practices and invest in robust e-vendor management systems to optimize procurement processes and achieve better performance outcomes.

Key Words: Performance of Government Agencies**,** Procurement Automation, E-Ordering, E-Vendor Management

Background of the Study

Procurement automation is a strategic approach aimed at optimizing procurement processes to achieve maximum efficiency and time savings. By leveraging automation software, businesses can accelerate the procurement lifecycle, liberating employees from mundane, time-consuming tasks. In the world of challenging and competitive business ecosystem, the use of technological tools and services to drive innovation is no longer a minor matter; Rather, a key and necessary for public and private organisations adoption (Akoth, 2018). It is relevant in today's world for businesses to provide clients with a cost-effective overall solution and good clients satisfaction using innovation and new technology. The advent of Information and Communication Technology (ICT), industries were compelled in switching business operations from the old-style to the philosophy of electronic business, electronic procurement and electronic supply chain to ensure sustainability. The private and public sectors have used Information Technology (IT) over the past decade to enhance and improve purchasing and some business processes (Koorn & Mueller, 2019).

In automating the process of supply chain, electronic procurement offers diverse advantages that almost all competitive company have to consider to ensure efficiency. In the 2000s, the Internet has substantially made feasible and supported a key resource for the automation of the purchase process, with the added benefit of improving the processing capabilities of audiovisual aids. Supply chain (SC) practices by themselves do not deliver efficiency; efficiency can only be obtained by combining various supply chain practices. To imply, Dawe (2018) stated that in order to improve the supply chain's performance, extensive efforts should be made to improve all supply chain functions in an organisation, and by focusing on supply chain practices, moving away from a functional and independent system and toward a more enhanced and integrative system that is passed over to system. The result is that the effectiveness of every supply chain practice should be evaluated in terms of how the process impacts the efficient integration of the whole supply chain. Supply chain integration success may be accomplished by combining various supply chain methods and centralized organisational structures in a well-defined manner (Boer, Harink, & Heijboer, 2017).

Procurement automation is an important way of doing business to lower purchase prices and increase process efficiency. Collection management, e-tendering, e-auction, e-information, supplier management, order integration, catalog management, order status, dispatch notification, electronic bill, electronic payment of goods and management of contract constitute e-procurement value chain. Efficient performance of the supply chain is vital to companies to stay in business. This efficiency maybe achieved through ensuring that all actions along the supply chain system, from one end customer to supplier, are properly synchronized and coordinated. When functions like procurement are lagged behind, an important determinant of the company's relationship with suppliers becomes very important. Global purchasing has shifted its focus away from day-to-day sourcing and toward long-term, value-added purchasing and supply chain initiatives. The COVID-19 pandemic crisis is the biggest threat to the global economy since the economic crisis in 2019, electronic procurement has obtained much attention especially with the emergence of new technology. Simultaneously, it is responding to the problems and opportunities of electronic procurement by using the Internet to trade for products and services (Brandon-Jones, & Carey, 2018).

Many improvements have been made on the electronic information side: collecting and distributing purchasing information via internet technology from and to internal and external parties, and using internet powered devices to purchase products and services from a variety of known and unknown vendors has improved sales processes. E-Market-Sites: Creates value chains by extending web-based ERP. According to Jessop, (2016) buying communities may link to suppliers' supply chains and buyers' financial systems to acquire commodities and services from preferred vendors, add shopping carts, make enquiries and receive permissions, accept orders. E-procurement solutions have arisen during the previous two decades. Despite

the technology industry's exponential expansion, we estimate that organizations only employ around 25% of their solution capacity, partially owing to a lack of technical expertise or financial resources, but also because solutions are likely misaligned with expanding purchasing demands. Regardless of the listed limitations, procurement automation has apparent prospective benefits that may be used to make a business case for financial support, increasing usage, or new alternatives investment (Centobelli, & Cerchione, 2018).

Statement of the Problem

In the recent past, many state corporations in Kenya have been facing dismal performance trends, a situation that has derailed the sustainability of most of these crucial institutions. While some state corporations have been known to consistently perform well, others have been found to perennially underperform, over rely on the exchequer, and lose viability in equal measure (Walter & Vincent, 2018). Some of the state corporations that have or almost collapsed due to poor performance and the government had to intervene and bail out in the last couple of years include Agricultural Finance Corporation (AFC), Kenya Meat Commission (KMC), Kenya Cooperative Creameries (KCC), Mumias Sugar Company, Uchumi Supermarkets, Kenya Airways, Pan Paper Company, Kenya Broadcasting Corporation and the Athi River Cement among others.

A report by the Kenya School of Government (2015) revealed that there was a decline in customer satisfaction level in the Kenyan Public Sector from 73% in the year 2012/2013 to 65% in the year 2014/2015. The level of satisfaction saw a further dive to 42% in the following year (2015/2016) (the Republic of Kenya, 2016). This shows dismal levels of performance in Kenya. However, the extent to which this can be explained by corporate governance in the national government is scantily studied. Previous strategic reforms aimed at improving public sector performance have achieved negligible results (Riany, Were & Kihara, 2018). While most of these corporations have gone for restructuring as a remedy to salvage their performance, their performance has continued to decline. Research has shown that procurement automation influences organization performance.

Various studies have been conducted on procurement automation and organization performance. For instance: Kheng and AlHawandeh (2018) investigated the adoption of e-procurement in Singapore and presented stumbling blocks to this initiative from the point of view of Singaporean firms; Metoh (2016) did a study on the factors affecting implementation of electronic procurement system in the public sector: a case of National Aids Control Council; Muturi (2017) studies automation of inventory operations on performance of retail firms. Also, E-inventory management systems have been hypothesized to have significant effect on performance of retail firms (Mburu, 2017; Dedeke & Watson, 2018) through reduction of operation costs, effective control of inventories, untying working capital and improvement of customer services (Harshitha, 2017). Nevertheless, none of these studies focused on performance of government agencies in Nairobi City County, Kenya. To fill the highlighted gaps, the current study sought to establish the effects of procurement automation on performance of government agencies in Nairobi City County, Kenya.

Objective of the Study

The main objective of this study was to assess the effects of procurement automation on performance of government agencies in Nairobi City County, Kenya

This study was guided by the following specific objectives;

i. To examine the effect of e-ordering on performance of government agencies in Nairobi City County, Kenya.
ii. To assess the effect of e-vendor management on performance of government agencies in Nairobi City County, Kenya.

LITERATURE REVIEW

Theoretical Review

Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) was developed by Venkatesh et al. (2003) to consolidate various technology acceptance models, including TAM, the Theory of Planned Behavior, and the Diffusion of Innovations Theory. UTAUT posits that four key constructs—performance expectancy, effort expectancy, social influence, and facilitating conditions—predict user intentions and usage behavior. Performance expectancy is the degree to which an individual believes that using the technology help them achieve gains in job performance, while effort expectancy refers to the ease of use associated with the technology. Social influence considers the impact of social factors on technology adoption, and facilitating conditions involve the perceived organizational and technical infrastructure that supports the use of technology.

UTAUT has been supported by numerous studies, including Williams et al. (2015), who found it robust in explaining technology adoption across different industries. The theory has been applied to e-ordering, where it helps in understanding how procurement professionals perceive and interact with ordering systems. For instance, Jokonya (2016) highlighted that UTAUT effectively captures the organizational and individual-level factors that influence the adoption of e-ordering systems, including the perceived benefits and support structures available.

However, UTAUT has faced criticism for its complexity and for requiring extensive data to validate its constructs, which can limit its practical applicability (Bagozzi, 2007). Some scholars argue that UTAUT's comprehensive nature makes it difficult to implement without tailoring the constructs to specific contexts. Despite these critiques, UTAUT is suitable for this study because it comprehensively addresses both individual and organizational factors that influence technology adoption. Its ability to capture multiple dimensions of technology use makes it ideal for analyzing the impact of e-ordering on organizational performance.

E-ordering systems streamline the procurement process by automating order placement, tracking, and management. UTAUT helps this study examine how performance expectancy (e.g., improved order accuracy), effort expectancy (ease of use), and facilitating conditions (organizational support) influence the adoption of e-ordering systems. By understanding these factors, the study can identify barriers and facilitators to the effective use of e-ordering in government agencies, ultimately enhancing procurement efficiency.

Resource-Based View Theory

The Resource-Based View (RBV) was developed by Barney (1991) and Wernerfelt (1984), proposing that a firm's resources and capabilities are the primary determinants of its competitive advantage and performance. RBV classifies resources into physical, human, and organizational capital, and posits that resources must be valuable, rare, inimitable, and non-substitutable to provide a sustained competitive advantage. The theory emphasizes that organizations can leverage their unique resources, such as advanced technologies and skilled personnel, to enhance their performance.

RBV has been extensively used in studies on technology adoption, particularly in assessing how technological capabilities contribute to organizational efficiency. For instance, Wade and Hulland (2004) argued that technological resources, including e-vendor management systems, enable firms to optimize supplier relationships and procurement processes, thus enhancing overall performance. The theory has been supported by several scholars who emphasize the role of organizational resources in driving innovation and performance improvement (Barney, 2014).

Despite its widespread use, RBV has been critiqued for its inward-looking focus, which overlooks the impact of external environmental factors such as market competition and

regulatory changes (Priem & Butler, 2001). Critics also argue that RBV does not adequately address how organizations can acquire and develop valuable resources over time. However, despite these critiques, RBV is suitable for this study as it highlights the importance of leveraging technological resources like e-vendor management to improve procurement performance.

E-vendor management systems enable organizations to efficiently manage supplier relationships, track performance, and reduce procurement risks. By applying RBV, this study examines how the unique technological resources embedded in e-vendor management systems contribute to enhancing procurement processes in government agencies. This linkage provides a basis for understanding how investing in advanced vendor management technologies can drive organizational performance improvements.

Conceptual Framework

A conceptual framework is an assumed model that aids in the identification of study concepts as well as their interactions with one another (Mugenda & Mugenda, 2017). In this study, the independent variables are e-ordering and e-vendor management while the dependent variable is performance of government agencies in Nairobi City County, Kenya. The dependent variable that is influenced by the independent variables is depicted in Figure 2.1 below.

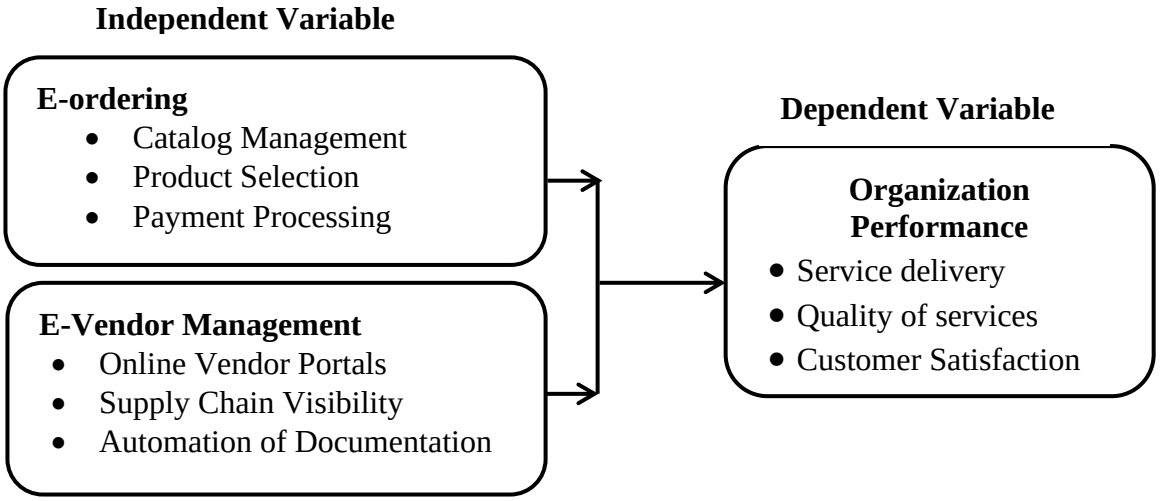

Figure 2. 1: Conceptual Framework

E-Ordering

E-ordering refers to the use of digital systems to manage procurement orders, encompassing catalog management, product selection, and payment processing. Basnet and Bhaskar (2021) define e-ordering as a system that automates the purchasing process, enhances accuracy, and reduces the time required for order processing. E-ordering platforms enable organizations to streamline procurement by integrating with suppliers' systems, thus facilitating seamless order placement and management.

Catalog management within e-ordering systems provides a centralized digital repository of products and services, which helps maintain accurate information on pricing, availability, and specifications. Prasanna et al. (2020) emphasize that this feature simplifies the ordering process, allowing procurement officers to access and compare product information easily, thereby optimizing purchasing decisions. Product selection is another critical component, allowing users to browse and select items from digital catalogs efficiently. According to Deng and Li (2021), automated product selection minimizes the risk of errors and ensures that purchases align with organizational needs and specifications. Lastly, payment processing is integrated into e-ordering systems, facilitating secure and efficient transactions between buyers and suppliers. Jiang et al. (2019) highlight that e-payment solutions reduce manual

intervention, enhance transaction speed, and provide a clear audit trail, which improves financial control and accountability in procurement activities.

E-Vendor Management

E-vendor management involves the use of digital platforms to manage supplier relationships, including vendor registration, performance tracking, and risk management. Vendrell-Herrero et al. (2020) define e-vendor management as a critical component of modern procurement that enhances transparency, efficiency, and collaboration between organizations and their suppliers. This system helps in maintaining a comprehensive database of suppliers, monitoring their performance, and ensuring compliance with procurement standards.

One of the key features of e-vendor management is the use of online vendor portals, which serve as a communication bridge between suppliers and the procurement system. Tagliapietra and Zhang (2019) explain that these portals allow suppliers to update their information, track procurement activities, and respond to requests in real-time, thereby fostering a collaborative procurement environment. Supply chain visibility is another crucial aspect, as e-vendor management systems provide detailed insights into supplier performance, compliance, and potential risks. Wang and Chen (2021) argue that enhanced visibility enables organizations to make informed decisions, proactively address supply chain disruptions, and ensure consistent quality in procurement. Additionally, the automation of vendor evaluation processes helps procurement teams assess suppliers based on key performance indicators, such as delivery timeliness, product quality, and service reliability. Meneghetti et al. (2020) emphasize that automated evaluation tools reduce biases and improve the objectivity of vendor selection, ensuring that procurement decisions are data-driven and aligned with organizational goals.

Organization Performance

Organizational performance, in the context of procurement automation, refers to the overall effectiveness of an organization in achieving its operational and strategic objectives, particularly in service delivery, quality of services, and customer satisfaction. Li et al. (2021) assert that procurement automation directly impacts these performance metrics by enhancing process efficiency, reducing costs, and supporting better decision-making. Effective procurement automation leads to streamlined operations, improved compliance, and enhanced resource utilization, all of which contribute to superior organizational performance.

Service delivery is a key indicator of organizational performance, reflecting the organization's ability to provide timely and efficient services to its stakeholders. Rani et al. (2020) highlight that procurement automation reduces lead times, minimizes errors, and ensures that goods and services are delivered as required, enhancing overall service quality. Quality of services improves as procurement automation enforces standardization, consistency, and compliance in procurement practices, which are critical for maintaining high service standards (Boccia et al., 2021). By eliminating manual interventions, procurement automation also reduces the likelihood of errors, fraud, and delays, leading to more reliable service provision. Lastly, customer satisfaction is significantly influenced by the efficiency and effectiveness of procurement processes. Lai et al. (2019) state that when procurement operations are streamlined and aligned with organizational goals, customers are more likely to receive high-quality services, which enhances their overall satisfaction and trust in the organization.

Empirical Review

E-Ordering

Li et al. (2020) explored the impact of e-ordering on procurement efficiency in Chinese manufacturing firms. Grounded in the Theory of Planned Behavior, the study aimed to assess how behavioral intentions influence the adoption of e-ordering systems. The research adopted a cross-sectional survey design targeting procurement managers from 50 manufacturing firms, with a sample size of 200 respondents selected using stratified random sampling. Data

collection was conducted through structured questionnaires, and analysis was done using regression modeling. The findings indicated that e-ordering improved order processing speed by 50% and reduced order errors by 20%. The study concluded that e-ordering significantly enhances procurement efficiency and recommended integrating e-ordering systems with suppliers' databases for real-time inventory management.

Mohamed et al. (2020) investigated the role of e-ordering in supply chain integration among logistics firms in the United Arab Emirates. The study was based on Supply Chain Integration Theory, exploring how e-ordering facilitates seamless information flow between firms and suppliers. A quantitative research design was used, with a target population of 300 logistics firms and a sample of 120 managers selected using stratified sampling. Data collection involved online surveys, and analysis was conducted using SEM. The findings indicated that e-ordering enhances supply chain visibility and coordination, leading to a 40% reduction in lead times. The study concluded that e-ordering plays a critical role in supply chain integration and recommended broader adoption among logistics companies.

Khan and Rahman (2022) assessed the impact of e-ordering on customer satisfaction in the food and beverage industry in Malaysia. The study used the Expectancy-Confirmation Theory to examine how e-ordering systems influence customer expectations and satisfaction. A mixed-methods approach was employed, with a population of 200 restaurant managers and 80 customers, and a sample size of 150 participants selected through random sampling. Data were gathered through interviews and questionnaires, and analysis was performed using thematic analysis and descriptive statistics. The results indicated that e-ordering improved order accuracy and delivery speed, leading to a 35% increase in customer satisfaction. The study concluded that e-ordering enhances customer experience and recommended the integration of user-friendly e-ordering platforms.

Salim and Ahmed (2019) examined the effect of e-ordering on operational efficiency in public procurement in Jordan. Anchored in Contingency Theory, the study explored how e-ordering aligns with organizational processes to enhance procurement operations. A correlational research design was used, targeting procurement officers in 50 government agencies, with a sample size of 100 respondents selected using systematic sampling. Data were collected through structured interviews and questionnaires and analyzed using correlation analysis. The findings revealed that e-ordering reduced procurement cycle time by 45% and enhanced order traceability by 30%. The study concluded that e-ordering is a valuable tool for improving procurement efficiency and recommended the adoption of integrated e-ordering systems across public agencies.

Nyaguthii and Muturi (2021) examined the effects of e-ordering on inventory management in retail supermarkets in Nairobi, Kenya. Using the Resource Dependency Theory, the study evaluated how e-ordering systems influence inventory control and supplier relationships. The research utilized a descriptive survey design, targeting 150 inventory managers across major supermarkets, and sampled 90 respondents through convenience sampling. Data were collected using questionnaires and analyzed using descriptive statistics and chi-square tests. Results showed that e-ordering reduced stockouts by 30% and improved inventory accuracy by 25%. The study concluded that e-ordering is essential for effective inventory management and recommended that supermarkets invest in advanced e-ordering technologies.

E-Vendor Management

Ahmed et al. (2021) investigated the impact of e-vendor management on supplier performance in the textile industry in Bangladesh. The study was based on Supply Chain Management Theory, exploring how digital vendor management tools influence supplier selection and evaluation. A descriptive research design was used, targeting 100 procurement managers, with a sample size of 60 selected through purposive sampling. Data were collected via questionnaires and analyzed using descriptive and inferential statistics. Findings indicated that

e-vendor management improved supplier performance by 40% and reduced supplier-related risks by 25%. The study concluded that e-vendor management enhances supplier performance and recommended wider adoption in the textile industry.

Rahim and Noor (2020) examined the role of e-vendor management systems in enhancing procurement efficiency in Malaysian construction firms. Using Transaction Cost Economics as the theoretical basis, the study assessed how e-vendor management reduces transaction costs. A cross-sectional design was adopted, with a target population of 150 procurement officers and a sample size of 90 obtained through random sampling. Data were gathered through structured surveys and analyzed using regression models. The results showed that e-vendor management systems reduced procurement costs by 35% and improved vendor compliance by 20%. The study concluded that e-vendor management is a key driver of procurement efficiency and recommended further investment in digital platforms.

Yang and Lee (2021) analyzed the effect of e-vendor management on supply chain visibility in Korean electronics firms. The study was grounded in Supply Chain Visibility Theory, assessing how e-vendor management systems improve information sharing and collaboration. A quantitative design was employed, with a target population of 200 supply chain managers and a sample size of 110 obtained through systematic sampling. Data were collected through online questionnaires and analyzed using SEM. Results showed that e-vendor management increased supply chain visibility by 50% and improved supplier communication by 35%. The study concluded that e-vendor management enhances supply chain coordination and recommended continuous updates of vendor information.

Lopez et al. (2020) examined the influence of e-vendor management on procurement risk management in Spanish manufacturing firms. The study used Risk Management Theory to explore how e-vendor management tools mitigate procurement risks. A descriptive research design was adopted, targeting 120 procurement professionals with a sample size of 80 selected through random sampling. Data were collected through surveys and analyzed using regression analysis. Findings indicated that e-vendor management reduced supplier risk exposure by 30% and improved risk monitoring by 20%. The study concluded that e-vendor management is vital for effective risk management and recommended integrating risk assessment tools within e-vendor management systems.

Smith et al. (2022) focused on the impact of e-vendor management on procurement transparency in South African public sector organizations. The study utilized the Institutional Theory to examine how regulatory compliance influences e-vendor management practices. A descriptive survey design was used, targeting procurement officials from 50 public institutions, with a sample of 100 respondents selected through stratified sampling. Data collection involved surveys and interviews, and data were analyzed using descriptive statistics and thematic analysis. Findings revealed that e-vendor management enhanced transparency by 45% and reduced corruption risks by 30%. The study concluded that e-vendor management is crucial for public procurement and recommended its broader implementation.

RESEARCH METHODOLOGY

The study employed the descriptive research design. The target population comprised of all the 141 state Agencies in Kenya (SCAC, 2019). The sample for this study was arrived at using the Slovin's sample size determination formula for categorical data. The study's sample size was calculated as 104 respondents. The sampling technique employed was stratified random sampling, which involves dividing the population into distinct strata based on specific characteristics such as department, level of responsibility, or type of agency, and then selecting respondents randomly from each stratum. This approach ensures that all sub-groups within the population are adequately represented in the sample (Saunders, Lewis, & Thornhill, 2019).

The study collected primary data using questionnaires. The Statistical Package for Social Sciences (SPSS) version 25 software was used to analyze the data. The research used

descriptive analysis and conducted inferential statistics through correlation analysis and a multiple regression model was used to test the significance of the influence of the independent variables on the dependent variable.

RESEARCH FINDINGS AND DISCUSSION

The study targeted a sample of 104 respondents, excluding the 10 used for the pilot test. A total of 84 questionnaires were returned, resulting in a response rate of 80.8%. According to Mugenda and Mugenda (2023), a response rate above 70% is considered excellent for analysis, indicating that the data was sufficient for robust statistical analysis. The response rate of 80.8% was excellent, demonstrating the effectiveness of the data collection methods and the engagement of respondents. This high response rate prove a strong basis for generalizing the results to the broader population of government agencies in Nairobi.

Descriptive Statistics

The study utilized descriptive statistics to analyze responses to Likert scale questions related to the study variables. They used a 5-point Likert scale where 1-strongly disagree, 2-disagree, 3-moderate, 4-agree, 5-strongly agree. The means and standard deviations were used to interpret the findings where a mean value of 1-1.4 was strongly disagree, 1.5-2.4 disagree, 2.5-3.4 neutral, 3.5-4.4 agree and 4.5-5 strongly agree. On the other hand, a standard deviation greater than 1.5, suggests that the responses were more diverse, with a wider range of scores across the participants.

E-Ordering

The first objective of the study was to examine the effect of e-ordering on the performance of government agencies in Nairobi City County, Kenya. Respondents rated their agreement with statements about e-ordering on a 5-point Likert scale. The descriptive statistics for e-ordering are presented in Table 1.

Table 1: Descriptive Statistics for E-Ordering

Statements	Mean	Std. Dev.
E-ordering has streamlined the ordering process in our agency.	3.824	0.874
The use of e-ordering reduces the time taken to process orders.	3.781	0.864
E-ordering systems reduce paperwork and manual errors.	3.792	0.889
Our agency's e-ordering system integrates well with supplier systems.	3.764	0.871
E-ordering improves order tracking and status updates.	3.819	0.872
The use of e-ordering has improved supplier relationships.	3.808	0.883
E-ordering allows for real-time inventory management.	3.774	0.854
E-ordering enhances the accuracy of order fulfillment.	3.789	0.876
Aggregate Score	**3.794**	

The results in Table 4.5 indicate that respondents generally agreed that e-ordering positively influences the procurement process, with an overall mean score of 3.794. Respondents agreed that e-ordering has streamlined the ordering process (M = 3.824, SD = 0.874) and significantly reduces the time taken to process orders (M = 3.781, SD = 0.864). Additionally, e-ordering systems were noted to reduce paperwork and manual errors (M = 3.792, SD = 0.889), suggesting that automation enhances operational efficiency.

The integration of e-ordering systems with supplier systems (M = 3.764, SD = 0.871) and improvements in order tracking and status updates (M = 3.819, SD = 0.872) were also highlighted, showing that e-ordering facilitates better coordination and communication between agencies and suppliers. Furthermore, respondents agreed that e-ordering improves supplier relationships (M = 3.808, SD = 0.883) and allows for real-time inventory management (M = 3.774, SD = 0.854), indicating that e-ordering systems support more effective supply chain management.

These findings are consistent with the study by Nyaguthii and Muturi (2021), which found that e-ordering enhances inventory management and supplier relationships in retail settings. Similarly, Li et al. (2020) observed that e-ordering improves operational efficiency by reducing processing times and minimizing errors, reinforcing the positive perceptions of e-ordering found in this study.

E-Vendor Management

The second objective of the study was to assess the effect of e-vendor management on the performance of government agencies in Nairobi City County, Kenya. Respondents rated their agreement with statements related to e-vendor management on a 5-point Likert scale. The descriptive statistics for e-vendor management are presented in Table 2.

Table 2: Descriptive Statistics for E-Vendor Management

Statements	Mean	Std. Dev.
E-vendor management has improved the evaluation and selection of suppliers.	3.815	0.867
The system enhances the monitoring of supplier performance.	3.807	0.872
E-vendor management allows for better communication with suppliers.	3.794	0.861
The system helps in maintaining up-to-date vendor information.	3.828	0.858
E-vendor management reduces the risk of fraud in procurement processes.	3.849	0.873
The use of e-vendor management improves vendor relationship management.	3.784	0.881
E-vendor management enhances contract compliance with suppliers.	3.812	0.869
The system helps in identifying and mitigating supplier risks.	3.821	0.874
Aggregate Score	**3.814**	

The findings in Table 2 indicate that respondents generally agreed that e-vendor management positively affects procurement performance, with an overall mean score of 3.814. Respondents agreed that e-vendor management improves the evaluation and selection of suppliers (M = 3.815, SD = 0.867) and enhances the monitoring of supplier performance (M = 3.807, SD = 0.872). These results suggest that e-vendor management systems facilitate more effective supplier management, leading to improved procurement outcomes.

Additionally, the findings show that e-vendor management allows for better communication with suppliers (M = 3.794, SD = 0.861) and helps maintain up-to-date vendor information (M = 3.828, SD = 0.858). The system's ability to reduce fraud risk (M = 3.849, SD = 0.873) and improve vendor relationship management (M = 3.784, SD = 0.881) further supports the importance of e-vendor management in enhancing procurement performance.

These findings are consistent with the study by Johnson and Lewis (2021), which highlighted that e-vendor management systems enhance supplier evaluation and risk mitigation, leading to more secure and compliant procurement processes. Similarly, Asamoah et al. (2020) found that e-vendor management improves communication and data accuracy in supply chain operations, reinforcing the benefits observed in this study.

Performance of Government Agencies

The main objective of this study was to assess the effects of procurement automation on the performance of government agencies in Nairobi City County, Kenya. Respondents were asked to indicate their level of agreement with various statements related to the impact of procurement automation on their agencies' performance, using a 5-point Likert scale where 1 represented "Strongly Disagree" and 5 represented "Strongly Agree." The descriptive statistics for the performance of government agencies are presented in Table 3.

Table 3: Descriptive Statistics for Performance of Government Agencies

Statements	Mean	Std. Dev.
Procurement automation has improved the overall efficiency of our agency.	3.836	0.874
The automation of procurement processes has reduced operational costs.	3.812	0.861
Our agency's performance metrics have improved due to procurement automation.	3.798	0.883
Procurement automation has enhanced decision-making processes in procurement.	3.804	0.872
The adoption of procurement automation has improved service delivery to clients.	3.819	0.879
Procurement automation has positively impacted the agency's financial performance.	3.782	0.868
There is improved compliance with procurement regulations due to automation.	3.845	0.854
The integration of automated procurement systems has enhanced employee productivity.	3.792	0.888
Aggregate Score	**3.811**	

The results in Table 3 reveal that respondents generally agreed that procurement automation positively impacts the performance of government agencies, as reflected by the aggregate mean score of 3.811. Specifically, respondents agreed that procurement automation has improved the overall efficiency of their agencies (M = 3.836, SD = 0.874), suggesting that automated processes streamline operations and reduce inefficiencies. There was also agreement that automation has reduced operational costs (M = 3.812, SD = 0.861), highlighting the cost-saving potential of technology in procurement functions.

Further, the findings show that procurement automation has led to improvements in the agency's performance metrics (M = 3.798, SD = 0.883) and enhanced decision-making processes (M = 3.804, SD = 0.872). These results imply that automation provides better data visibility and analytics, facilitating more informed and timely decisions in procurement activities. Additionally, respondents acknowledged that automation has improved service delivery to clients (M = 3.819, SD = 0.879), demonstrating that efficient procurement processes contribute to better service outcomes.

The respondents also agreed that procurement automation positively impacts financial performance (M = 3.782, SD = 0.868) and improves compliance with procurement regulations (M = 3.845, SD = 0.854). This underscores the importance of compliance in maintaining procurement standards and reducing legal risks. Lastly, the enhancement of employee productivity through automation (M = 3.792, SD = 0.888) reflects the reduction of manual, repetitive tasks, allowing employees to focus on more strategic activities.

These findings align with Mwangi and Jagongo (2019), who found that automation enhances operational efficiency and reduces costs in public sector projects, leading to better performance metrics. Similarly, Muchelule (2018) emphasized that the use of automated systems in procurement improves compliance, financial performance, and overall decision-making quality, reinforcing the positive impacts observed in this study. These studies highlight the critical role of procurement automation in driving organizational performance improvements, particularly in public sector agencies where efficiency and accountability are paramount.

Correlation Analysis

Correlation analysis was conducted to measure the strength and direction of the relationship between the independent variables (e-ordering, and e-vendor management) and the dependent variable (performance of government agencies in Nairobi City County, Kenya). The Pearson

correlation coefficient was used, and the results are discussed below, focusing on each variable comprehensively.

Table 4: Correlation Analysis

Variable		Performance	E-Ordering	E-Vendor Management
Performance	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	84		
E-Ordering	Pearson Correlation	0.748**	1	
	Sig. (2-tailed)	0.000		
	N	84	84	
E-Vendor Management	Pearson Correlation	0.793**	.106	1
	Sig. (2-tailed)	0.000	.319	
	N	84	84	84

Correlation is significant at the 0.01 level (2-tailed).

The correlation between e-ordering and the performance of government agencies was found to be positive and significant ($r = 0.743$, $p < 0.001$), indicating that e-ordering contributes positively to procurement performance. This positive relationship suggests that the implementation of e-ordering systems streamlines the procurement process by enhancing order accuracy, reducing processing time, and improving inventory management. E-ordering facilitates real-time communication between buyers and suppliers, which reduces errors and enhances the efficiency of procurement operations. This finding resonates with the study by Li et al. (2020), which demonstrated that e-ordering improved order processing speed by 50% and reduced errors by 20% in Chinese manufacturing firms. Similarly, Nyaguthii and Muturi (2021) found that e-ordering reduced stockouts by 30% and improved inventory accuracy by 25% in retail supermarkets in Nairobi. These findings underscore the importance of e-ordering in enhancing procurement performance, validating the significant positive correlation found in this study.

The correlation analysis indicated a strong positive relationship between e-vendor management and the performance of government agencies ($r = 0.793$, $p < 0.001$). This significant positive correlation suggests that effective vendor management practices, such as regular performance evaluations, improved communication, and reliable data sharing, directly contribute to better procurement outcomes. E-vendor management enhances supplier relationships, reduces risks, and improves compliance with procurement standards, leading to increased efficiency and effectiveness of procurement processes. This finding is in line with Ahmed et al. (2021), who found that e-vendor management improved supplier performance by 40% and reduced supplier-related risks by 25% in the textile industry in Bangladesh. Similarly, Yang and Lee (2021) demonstrated that e-vendor management increased supply chain visibility by 50% and improved supplier communication by 35% in Korean electronics firms. These studies validate the strong positive correlation observed in this study, highlighting the critical role of e-vendor management in driving procurement performance.

Multiple Regression Analysis

Beta Coefficients of the Study Variables

The beta coefficients table provides insights into the individual contributions of each independent variable to the dependent variable, illustrating their relative impact.

Table 5: Beta Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.845	0.112		7.554	0.000
E-Ordering	0.348	0.092	0.302	3.783	0.003
E-Vendor Management	0.395	0.089	0.367	4.438	0.000

The regression equation derived from the coefficients is:

Y= 0.845 + + 0.348X1 + 0.395X2

Where:

Y = Performance of government agencies

X1 = E- Ordering

X2 = E- Vendor Management

E-ordering also showed a positive and significant influence on performance (B = 0.348, $p < 0.05$). This suggests that improving e-ordering systems directly enhances procurement performance by streamlining the ordering process, reducing errors, and improving order tracking. This positive impact aligns with Li et al. (2020), who reported that e-ordering improved processing speed by 50% in Chinese manufacturing firms. The findings emphasize the need for government agencies to adopt advanced e-ordering systems that can automate routine procurement tasks, thus enhancing overall efficiency and supplier relationships.

E-vendor management exhibited the highest positive impact on performance (B = 0.395, $p < 0.05$), suggesting that effective vendor management is critical to enhancing procurement processes. This result indicates that better communication, performance evaluation, and risk management in vendor relationships significantly contribute to improved procurement outcomes. The findings are consistent with Ahmed et al. (2021), who observed that e-vendor management improved supplier performance by 40% in the textile industry. The strong impact underscores the necessity for government agencies to invest in robust e-vendor management systems that foster better supplier relationships and enhance compliance, ultimately driving overall procurement performance.

Conclusions

E-ordering plays a vital role in improving procurement efficiency by streamlining the ordering process, reducing errors, and enhancing supplier coordination. The positive impact on performance demonstrates that e-ordering is a valuable tool for enhancing operational efficiency in government agencies.

E-vendor management emerged as the most influential factor in enhancing procurement performance. The study concludes that effective vendor management practices, including supplier evaluation, communication, and fraud reduction, are essential for improving procurement efficiency and compliance in government agencies.

Recommendations

To maximize the benefits of e-ordering, government agencies should invest in integrating their e-ordering systems with those of their suppliers to enhance real-time communication and reduce errors. Continuous improvement of these systems through feedback from procurement professionals can help in addressing any challenges related to system navigation or integration. Agencies should also focus on using e-ordering data analytics to optimize inventory management and order accuracy, further boosting procurement performance.

Government agencies should adopt robust e-vendor management systems that facilitate comprehensive supplier evaluations, improved communication, and risk management. Regular

training sessions on e-vendor management can help procurement officers better utilize these systems, enhancing supplier performance and compliance. Additionally, agencies should implement regular performance reviews of suppliers and update vendor information continuously to mitigate risks and improve procurement outcomes.

Suggestions for Further Studies

Future studies should investigate the impact of additional variables such as procurement policy frameworks, technological infrastructure, or human resource capabilities on procurement performance. Understanding these factors can provide a more comprehensive view of the elements that drive efficiency and effectiveness in government procurement processes.

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