EFFECT OF ELECTRONIC PROCUREMENT SYSTEMS ON ORGANIZATIONAL PERFORMANCE OF FREIGHT FIRMS IN MOMBASA COUNTY

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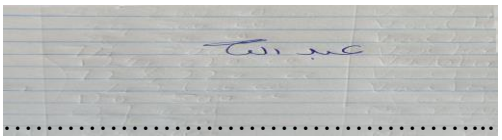
DECLARATION AND APPROVAL

Declaration

This thesis/project is my original work and has never been presented for any academic award in any institution.

Signed  ..... Date **30/10/2024**

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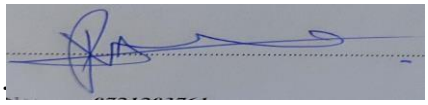
Approval

This thesis/project is being submitted for examination with our approval as University supervisors

Signed……  …… Date **30/10/2024**

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DEDICATION

I dedicate this project to God for ensuring am healthy to undertake this project. Also to my wife Khadija and daughter Rahma for their support.

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ABSTRACT

Businesses' performance is greatly impacted by the use of electronic procurement systems, particularly in the freight industry. But because of current issues like the industry's vertical segmentation, which gives major organizations a client market share, smaller businesses struggle to survive and continue to serve the few clients they can handle. Thus, the goal of this research was to find out how Mombasa County's freight companies' organizational performance was impacted by the electronic procurement system. The purpose of the study was to investigate the effects of electronic marketplaces, electronic tendering, electronic sourcing, and electronic material management on the organizational performance of freight firms in Mombasa County. Additionally, the study employed stratified sampling and a descriptive approach to choose samples that were representative of the population. 254 workers, including department heads and general managers, from 80 Mombasa County freight companies were included in the study's sample. Questionnaires sent via email were the suitable means of gathering data and should be used accordingly. As part of a procedure for gathering data for analysis, the literature of relevant studies was examined. Furthermore, as methods and processes for data analysis, descriptive statistics of variance, means, standard deviation, and frequencies were applied. The statistical package for social sciences (SPSS) was utilized as the analytical tool, and inferential statistics such as Pearson correlation and linear regression were also employed as analysis techniques. The organizational performance of freight companies in Mombasa County was shown to be positively and considerably impacted by correlation analysis of electronic procurement systems, with regression analysis indicating a weak positive significance. Given that these computerized processes are interconnected with the procurement systems of the majority of these freight companies, the report

advised policymakers to place greater emphasis on standardizing and optimizing these processes across various departments. Also, the management of the freight firms can review the electronic procurement strategies to enhance competitive advantage by training employees on the usage and application of electronic procurement systems. Moreover, the public procurement regulatory authority could use the findings of the study to set guidelines and benchmarks for utilizing electronic technologies. The study findings provided researchers with the need to improve on the knowledge and methodological gaps.

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LIST OF ABBREVIATIONS AND ACRONYMS

DOI	Diffusion of Innovation Theory
EOQ	Economic Order Quantity
GPS	Global Positioning System
ICT	Information and Communication Technology
JIT	Just-in-time
KPA	Kenya Ports Authority
KPIs	Key Performance Indicators
PEU	Perceived Ease of Use
PU	Perceived Usefulness
SGR	Standard Gauge Railway
STOPE	Strategy-Technology-Organization-People-Environment
TAM	Technology Acceptance Model

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Electronic procurement system is definitely among the crucial technologies contributing to the improvement of firms' performance. Electronic procurement, as defined by Asumba (2010, pg. 3), is a computer-internet-based system that is used to carry out individual or group procurement procedures, such as sourcing, search, negotiation, ordering, reception, and post-purchase review. Globally, electronic procurement positively impacted the performance of firms when implemented on a large-scale operation. The use of electronic procurement by Indonesia's industrial sector has had a notable impact on organizational performance (Masudin, Aprilia, Nugraha, & Restuputri, 2021). The study findings provide comprehensive basis of technology acceptance and use in large scale operation. However, the adoption rate of electronic procurement technologies is still relatively low or unknown as noted by various studies but majority of researchers agree that there has not been a full realization on the impact of electronic procurement technologies (Quesada, González, Mueller, & Mueller, 2010).

On the other hand, a research in India focusing on the electronic procurement system of e-market place reveals that amalgamating e-commerce and the transport industry leads to a significant benefit firm through improved organizational performance (Shetty, Raju, Ayedee, Singla, Naik, & Pavithra, 2020). Although an essential technology, the electronic procurement system needs to be more adequately adopted by freight firms. This can be explained by Cherian, Munuswamy, and

Jasim (2020) study in India that adopted electronic procurement in the improvement of efficiency to the vendor transactions of the cement companies thus revolutionizing their management process system.

Using the strategy-technology-organization-people-environment (STOPE) framework, Nani and Ali (2020) also investigated the factors that contribute to successful electronic procurement systems in Indonesian local governments. The study revealed that implementing the strategies and integrating organizations and systems improved their effectiveness as a performance measure thus aligning with this study's objective of improving organizational performance of freight firms. Coincidentally, a study in South Korea on company performance shows each type of electronic marketplace and buyer-supplier relationship advantages significantly correlate with financial performance of the companies as to be exemplified in this study (Jung and Wook, 2011).

In a similar vein, a study conducted in Saudi Arabia offers a favorable viewpoint on how electronic procurement might influence the performance of SMEs in the Middle East by acting as a mediator between electronic supply chain performance and SMEs (Al Naim & Bhatti, 2022, pg. 5). This evidence in Saudi Arabia shows that e-procurement can also be adopted even by small firms. Furthermore, a study in Indonesia, reveals the possibility of success of electronic procurement that can be determined by trust, user satisfaction, and service quality as the performance measures (Aminah, Ditari and Kumaralita, Hidayanto, Phusavat, & Anussornnitisarn, 2018).

Oppong (2020) focused on determining the impact of e-procurement adoption on the organizational performance of Ghanaian government commercial organizations on a regional level. The results provide a subtle to the positive effect of adopting electronic procurement with

performance measures of cost reduction, improved transparency and accountability as required by this study's objective. Similarly, in Ghana, Desmond (2022) study noted positivity and significance effect in e-procurement towards the supply chain performance of health service departments that can be adopted by different hospitals. This result is intuitive to construe the extent to which electronic performance impacts operational performance of firms. However, electronic procurement has been harnessed to ensure the automation of procurement processes such as the tendering and contract awarding were seamless.

Charnor, and Quartey (2024) conducted a research on e-procurement and procurement performance in Ghana. The outcomes of the research showed positiveness and significance effect towards electronic procurement towards procurement performance. Subtly, the adoption of electronic procurement positively and significantly affected institutional quality which is a performance measure. On the other hand, in Nigeria, according to Agorzie, Ekpudu, and Adewumi's (2020) analysis of the effects of material management practices on operational performance as implemented by cited food, beverage, and brewing companies, managing materials has a major influence on an organization's operational performance.

Based on a study in Uganda, electronic procurement has mainly been constructed in the form electronic data interchange (EDI) where substantial data indicate an early stage of e-procurement adoption in the corporate world (Dantiye, 2016). Reduced costs of movements to suppliers, reduced documentation, improved communication and information flow, increased access to wider markets, creation of fast and reliable services, convenience of procurement process and reduction in the long run, according to study results, are just a few of the benefits of electronic procurement.

The benefits of e-procurement have been well acknowledged, and they are particularly noteworthy now that enterprises have fully embraced it.

Furthermore, Stephen's (2015) research on the connection between Bidco Uganda Limited's organizational performance and e-tendering found that e-tendering was crucial to providing services to clients. However, there were challenges encountered in the electronic tendering process but were solved with strategies in place. Imperatively, electronic tendering offers speedy services leading to quick and efficient service delivery as it models customers pattern by availing products as ordered by clients.

Locally, in Kenya, there have been significant studies that have tried to determine, analyze and establishing how electronic procurement affects various sectors' organizational effectiveness. Songok (2018) was certain that implementing electronic procurement management practices would largely impact on the cost and reliability which are part of performance measures of institutions. On the other hand, Chebet and Kihara (2022) study in Nairobi County findings show that electronic procurement had positivity in influencing the procurement performance of manufacturing companies. The influence of the electronic procurement towards performance leads to the need of its implementation to connect suppliers and employees of the firms. Still in the public sector, Njeru and Muthini (2023) discovered the positive influence of electronic practices towards the performance through the electronic supplier sourcing and tendering.

According to a study on the impact of electronic procurement on organizational performance in Nairobi County's major supermarkets, electronic sourcing helps supermarkets find information about products from suppliers, saves time, makes price lists and catalogs easier to access, requires

online communication between suppliers and customers, and gathers customer preferences and tastes (Munubi, Kinanga, & Ondiba, 2017). Therefore, the study results advocated a positive impact of e-sourcing as part of the electronic procurement systems towards the increased sales performance of major supermarkets in Nairobi County.

Chegugu and Yusuf (2017) study sampled 367 respondents from 5 public hospitals in Uasin Gishu County. The study noted various outcomes. To begin with, the research outcomes revealed increasing competitiveness of e-tendering in the tendering bids for the health facilities. Adoption of electronic invoicing on the other hand indicated charges from purchasers to suppliers. In addition, electronic payment enables cheaper services and ensures prompt payment to suppliers upon delivery of supplies outstanding on less charges when transacting funds through electronic banking. Generally, the research found that electronic procurement practices were effective especially in the performance improvements at public hospitals in Uasin Gishu County.

The effects of electronic procurement have also been significant to supply chain management that informs performance of organizations. Barngetuny and Kimutai, (2015, pg. 1) surveyed 40 employees from "Elgeyo-Marakwet County and Iten County Referral Hospital." Findings of the study revealed that electronic tendering increased tendency towards market structures. Electronic invoicing also ensured security and low costing of procurement transactions. Moreover, electronic payment provides a convenient environment for employees' usage. Therefore, the complete implementation of website usage has integrated profoundly and effectively supply chains depicting bursting evidence of transparency and optimum allocating value addition processes (Barngetuny & Kimutai, 2015).

Furthermore, Mwangeka (2020) noted that the Standard Gauge Railway (SGR) was a major threat to freight companies that have invested in electronic procurement systems for a lean supply chain in their procurement processes. This challenge affects the implementation of electronic procurement systems in logistic firms to improve operational performance. Significantly, as explained by Waithaka and Kimani (2021), electronic procurement system practices contribute to the success of an organization's performance through the competitiveness purchase and quality goods acquisition in the market thus effectively. Comparatively, Hajir (2021) was skeptical on the impacting electronic procurement practices towards performance of firms with results disapproving of skepticism with a strong positive and significant effect of the electronic tendering, sourcing, and payment in retail supermarkets in Nairobi. Therefore, implementing electronic procurement systems on operational performance of firms especially freight firms in Mombasa County will have a positive effect as explained in the empirical review studies from a geographical perspective.

1.2 Statement of the Problem

Information technology is the driving force behind the thriving business environment, particularly when an electronic procurement system is implemented to improve organizational performance. According to Kiusya (2018), firms adopting electronic procurement systems have experienced immense operational performance including reduced business costs, and access to wider markets. However, existing challenges such as the vertical segmentation of the industry that allows big players to enjoy a market share of clients, smaller firms suffer as they remain to serve the few clients they can manage (Baraza, 2021). In addition, increased taxation by the government and poor road networks affects operational performance of freight firms. Oppong (2020) on the other hand, believes that most firms still need to be more skeptical about applying electronic procurement systems in their procurement process as it’s still a new technology. Nonetheless,

freight companies have identified electronic procurement as a transactional enhancing technology that improves the efficiency of operations.

In Mombasa County, established freight firms have exercised dominance over their counterparts, creating issues in client satisfaction and needing more operational performance objectives (Baraza, 2021). Electronic procurement systems such as e-tendering, e-sourcing, e-marketplace and ematerial management are perceived to be costly to operate, thus leading to operational inefficiencies and increased cycle time ((Ruzindana & Kalaskar, 2016). Also, suitable procedures for issuing supplier contracts lead to unprecedented corruption, which weakens the operational performance of firms with increased cycle time, poor quality products, and deteriorating relationships with clients (Kiusya, 2018). In addition, some freight firms still use manual systems that result in inefficiencies, creating poor operational performance metrics (Waithaka & Kimani, 2021). Moreover, electronic procurement system challenges are associated with cargo delays at the port due to technical issues hampering the seamless procurement process (Mwangeka, 2020).

Numerous research has been occasion and studied on electronic procurement systems. For instance, Njeru and Muthini (2023) established the influence of electronic procurement practices on performance counties in Kenya and revealed a significant influence between the two constructs. However, the study could have done better on the contextual gap as it focused on the public sector and Meru County. Similarly, Oppong (2020) focused on stated corporations, which is the public sector, creating a methodological gap to fill in this study. Also, Nani and Ali (2020) investigated the determinants of an effective electronic procurement system, which resulted in the improvement of accountability, transparency, and efficiency. However, the study suffered an empirical gap.

The impact of electronic procurement on organizational performance in Kenya's largest supermarkets was assessed by Munubi et al. (2017). With a sample of 124 employees using descriptive design, result showed that e-sourcing saved times and enables supermarkets to interact with customers online. However, with a confined focus on supermarkets provides the need to fill the contextual gap by focusing on freight firms in Mombasa County. Chegugu and Yusuf (2017) investigated how electronic procurement affected Uasin Gishu County public hospitals' organizational performance. Findings from the sampled 367 employees revealed increased competitiveness in tendering bid for the hospitals with a 0.000 significance on organizational performance. However, there has been reduced quality services due to lack of e-procurement systems. This informs the need to fill the knowledge gap by exploring additional e-procurement systems. With the existing knowledge and contextual gaps the research seeks to establish the electronic procurement systems that affect the organizational performance of freight firms in Mombasa County by answering the question: How does the electronic procurement system affect the organizational performance of freight firms in Mombasa County?

1.3 Purpose of the Study

The purpose of the research was to establish the electronic procurement system on the organizational performance of freight firms in Mombasa County.

1.4 Specific Objectives

The following were the specific objectives of the study.

i. To examine the effect of the electronic marketplace on cost-effectiveness of freight firms in Mombasa County. ii. To evaluate the effect of electronic tendering on efficiency among freight firms in

Mombasa County.

iii. To assess the effect of electronic sourcing on the transparency of freight firms in Mombasa

County.

1.5 Research Questions

The following were the questions answered by the study findings:

i. To what extent did electronic marketplace affect the cost-effectiveness of freight firms in Mombasa County?

ii. What was the effect of electronic tendering on the efficiency of freight firms in Mombasa County?

iii. How much did electronic sourcing affect transparency among freight companies in Mombasa County, Kenya?

1.6 Significance of the Study

The derivative of the study's significance is the problem statement that is imperative to the challenges experienced when using electronic procurement systems and the general gaps from other related studies. With these analogies of whether electronic procurement is effective on the organizational performance of freight firms in Mombasa County, the results are significant to the following select groups:

Outcomes from the research will enable the management of freight firms to review their electronic procurement strategies to enhance their supplying networks' competitiveness and procurement operations. The study desires to enlighten the management team with various electronic procurement systems and applications for enhancing and improving their operational performance. Also, the management will train employees on the usage and application of electronic procurement systems. These trainings equip employees with skills to handle the new technology of procurement as the process tends to be tedious if not automated and correctly applied.

This research outcome can be used in policy formulation as it provides more information on the need for implementation of e procurement of freight firms. Policy makers will use these findings to formulate and deliver policies that align with the training of employees and ensure a high standard of professionalism to achieve the goal of operational performance of efficacy and productivity.

Additionally, with empirical analysis of the study, policy makers will be informed of the need to enforce guidelines that promote the use of electronic procurement systems to promote service quality and practices that improve customer satisfaction, such as allowing feedback and guest recommendations after they consume services. Therefore, policies that bind freight firms in Mombasa to conform to efficiency and effectiveness of service delivery should be enforced, as the study findings provide.

The outcomes of this research paper will benefit legislators and governing bodies, such as the public procurement regulatory authority, who could use the findings to set guidelines and benchmarks for utilizing electronic technologies such as electronic procurement on corporates, including logistics and freight firms, to ensure applicability of transparency and accountability. Moreover, the national and county governments will use the outcomes of this study to invest in a seamless electronic procurement system that detects fraud and corruption and reports to the relevant agencies for prosecution and indictment of the accused. Therefore, the system enables the government to enforce laws that protect clients and customers from malice and theft both in private and public sectors.

Researchers can use the findings in their further studies as it will offer more information and hypotheses in information technology in procurement. Aspiring researchers and academicians need to underpin the outcomes of this research to improve their knowledge and fill the

methodological gaps also found in this research. Also, the application of the electronic procurement system will be tested using empirical studies to determine more effects towards other constructs, fields and methodology apart from operational performance of freight companies in Mombasa County.

Given that freight firms operate in a community, this research outcome will provide the dwellers of the area with information on how procurement can be harnessed through automation for effectiveness and efficiency. Also, the integration of the electronic procurement system and the end users who are communities will enhance connections between the employees and customers. Since the community plays an essential role in shaping the culture of the organization, the results of this research will enable people to understand how service delivery and customer satisfaction will be implemented.

1.7 Scope of the Study

The presentation of the time, place, and subject matter as presented below constitutes the scope of the study. The crucial focus in this case was figuring out the study's boundaries or limit while ignoring a small or unmanageable scope. Consequently, Mombasa County's freight companies were the study's geographic focus area since it serves as the hub and headquarters for the majority of these companies, which depend on the Mombasa port for daily operations. The study's scholarly focus was on the organizational performance of freight businesses in Mombasa County as well as the electronic marketplace, electronic tendering, and electronic sourcing. Moreover, the study was confined to a target population of 310 employees of the freight firms, as there were more 80 registered freight firms in Mombasa County (Feaffa, 2021). The time frame of the investigation was restricted to June 2024. The time setting is selected due to it’s the period of more purchase, orders and traffic at the Mombasa port for freight firms’ operations in Mombasa County, Kenya.

1.8 Study Limitations

The electronic administration of survey questionnaires was challenging as some participants failed to acknowledge the emails. This was attributed to the workflow at the firms and strict work procedures. In addition, time constraint was a critical determinant of the study administration of survey questionnaires as some of the respondents took long to respond due to the nature of the traffic during the administration of the questionnaires. Also, explained variance was weak during analysis of the research results demanding additional factors that were not included in this research investigated for better comprehension of the study objective. Restriction from the firms to managers in providing confidential information was a limitation to the study as the firm treated any sensitive information with utmost care and privacy that led to victimization and termination of employee's contracts. Incomplete questionnaires were also a challenge for the research as they reduced the target sample affecting the outcomes of the study.

1.9 Delimitation

The study allocated adequate time to respondents to ensure completeness in answering and returning the questionnaires for effective data analysis. Additionally, a pilot study was discussed in order to determine the study's validity. However, the study was restricted to the 310 target participants, who included general managers and the ICT, operations, and procurement departments of freight companies in Mombasa County.

1.10 Assumptions of the Study

The research presumed that information provided by respondents was free of bias, correct, and verifiable. The research also assumed that time allocated for the study was sufficient. In addition, the study's assumption was that all the questionnaires were filled with a lower number as incomplete or with distorted data.

1.11 Operational Definition of Key Terms

Electronic Marketplace: Platform that allows the integration of buyers, sellers, and stakeholders for the purpose of communication, choosing, buying, and completing transactions with additional services as bonus.

Electronic Material Management: It is the preparation and readiness of the supply chains to accommodate a corporation's material requirement through monitoring and controlling.

Electronic Procurement: defined as the electronic procurement system as among the electronic government innovations that allow end-users to alleviate operational tasks.

Electronic Sourcing:

web-based platform that allows buyers and suppliers to interact for auction and negotiation by placing requests for goods and services they need and offer.

Electronic Tendering:

an online system that allows professionals to take control of the process of raising requisition, connecting, selecting to payment of the supplier through a secure, time saving, data accuracy, and facilitation of supplier performance improvements.

Operational Performance: is conceptualized as a firm's performance against set standards such as cycle time, productivity, and compliance with regulations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The literature on electronic procurement systems and operational performance is thoroughly reviewed in this chapter. Nonetheless, the theoretical and conceptual frameworks, empirical review, and literature review summary comprise the chapter's primary portions. The following is a discussion of these sections:

2.2 Empirical Review

Many empirical studies reviewed focused on how electronic procurement relates to the supply chain performance, procurement performance, organization performance, and vendor transaction efficiency which are exceptionally documented. Despite many focusing on the electronic procurement practices, none was specific on the freight firms in Mombasa County. Also, most of the studies focused on the electronic procurement practices overlooking the e-procurement system concept. Therefore, the effect of the electronic procurement system on the organizational performance of freight firms has been scantily studied.

For instance, Njeru and Muthini (2023) examined the effect of e-procurement practices on performance of Kenyan counties. In addition, the outcome showed that e-procurement practices influenced performance of counties in Kenya. As such, the study suffered a contextual gap as it focused on the public sector. On the other hand, Chebet and Kihara (2022) established costiveness of the influencing electronic procurement on procurement performance of manufacturing companies in Nairobi County. The research had an empirical gap in comparison to this research as it focused on the general e-procurement aspect rather than narrowing to the e-procurement system.

Furthermore, there was a methodological gap in this study compared to freight enterprises in Mombasa County because Songok (2018) focused on the performance of public universities in Kenya and e-procurement. Desmond (2022, pg. 1) examines the connection between supply chain performance and e-procurement in the Ghanaian health services sector, while the present study highlights methodological and empirical shortcomings. However, few studies focused linking electronic procurement and organizational performance relative to this study but still suffered methodological gaps (Hajir, 2021; Kiusya, 2018). Therefore, this research focuses on filling the methodological gap experienced in previous studies.

2.2.1 Effects of Electronic Marketplace on Organizational Performance

Electronic marketplace has been denoted as a third party of electronic commerce that allows the "interaction, exchange, and flow of information" directly or indirectly (Shetty et al., 2020, pg. 3). Furthermore, electronic markets are described by Varadarajan and Yadav (2002) as a network of information systems that support a buyer-seller infrastructure for information exchange, transaction, and other transaction-related activities. As typical e-commerce, electronic marketplace stems in enhancing institutional frameworks, facilitation of exchange services, and matching purchasers and vendors to improve cost-effectiveness of firms. Profoundly, greater potential of emarketplace is realized through the transparency, reduced ambiguity, and large supplier and sellers base to firms (Shetty et al., 2020).

The creation of electronic marketplaces is enabled by information systems attending to intermediaries connecting buyers and sellers. The main influence of these electronic marketplaces can be felt in the typical reduction in searching costs as buyers are obliged to pay in obtaining information about the pricing and available offerings in the market (Standing, Standing, & Love,

2010). A previous study demonstrating a strategic analysis of electronic marketplaces revealed that reduction in search costs on buyers led to direct efficiency gains of inter organizational transactions (Bakos, 1991). Primarily, electronic marketplace systems play a critical role in airline ticket reservation systems as it allows ticketing and billing in addition to their market-related functionality (Bakos, 1991). Therefore, e-market place enables individual participants to benefit from increased membership to the organization, and imposition of significant switching costs.

Jung and Wook (2011) analyzed the role and advantages of each electronic marketplace relating to company performance in South Korea. Using empirical and content analysis, the study found that each type of electronic marketplace and buyer-supplier relationship advantages significantly correlated with financial performance of the companies. On the other hand, da Silva Ramos (2021) analyzed one of the compositions of e-market place -sellers towards the operational performance of the e-commerce industry in Portugal. A weighted score using contemporary key performance indicators (KPIs) revealed a low seller operational performance having a negative and direct effect on customer satisfaction.

Electronic marketing platforms are pivotal giving companies' opportunities of access to millions of consumers as they encompass e-market place systems. Wanjiru (2015) determined the impact of adopting electronic marketing techniques on Kenyan mobile phone firms' organizational performance. Findings of the research revealed a greater influence of organizational performance by social network marketing determined by Kenya mobile company's adoption of Facebook and X (formerly Twitter). In addition, there were several electronic marketing platforms found including; the internet, websites, email, and social network, mobile phone, and search engine marketing which moderately influenced organizational performance.

Business-to-business (B2B) electronic communication marketplaces has revolutionized the operations of numerous establishments. Son and Benbasat (2007) looked at how institutional theories and transaction costs affected the initial adoption and degree of engagement of organizational purchasers from 98 potential and 85 current adopter companies. They found two categories of characteristics: efficiency and legitimacy factors.

Outcomes showed an exhibited significance in influencing acceptance committed or contribution level from "efficiency-oriented factors" characterized by uncertain demand and volatile markets. Meanwhile, B2B electronic marketplaces offer significant procurement cost reduction with sellers broadening their customer bases to realize new profitable customers. Thus, improving transaction effectiveness and efficiency motivating organizations in adopting and transacting in a B2B electronic marketplaces has proven paramount (Farrell & Saloner, 1986).

Lancastre and Lages (2006) investigated how much information and communication technology (ICT) affected the interactions between buyers and sellers in an electronic market setting. Cost termination was positively impacted by supplier relationship rules and procedures, communication, and cooperative information sharing, according to the findings of a survey of nearly 400 procurement managers from small and medium-sized (SME) companies. However, cooperation had a negative effect on product prices and opportunistic behavior. Therefore, the distinct features of electronic markets including interactivity and real time functionality sometimes hinders direct translation of constructs in other relationships (Kalyanam & McIntyre, 2002).

Businesses' success is greatly impacted by electronic business, a system that incorporates electronic marketplace technologies. Migdadi et al. (2016) conducted an empirical assessment of

Saudi Arabian firms' experiences implementing electronic commerce and the resulting organizational performance. The outcomes showed a strong positive correlation with organizational learning skills, including training options, technical proficiency, degree of knowledge, and adoption of electronic business. Nonetheless, knowing the elements that are conducive to the adoption of electronic commerce offers convincing proof of the competitive agility, operational effectiveness, and organizational performance all of which are crucial (Zhu, Kraemer, & Xu, 2006).

In Nigeria, a study assessed electronic business impact on the performance of Jumia Limited Lagos by sampling 158 employees (Romanus et al., 2023). Study findings revealed a positive effect of electronic business on performance. Subtly, electronic marketing which is an antecedent of electronic market place significantly affected organizational performance as it resulted in higher performance. This outcome was in line with Nour's (2015) assessment of how electronic marketing affected organizational performance in Jordanian insurance companies and his recommendation that the business upgrade its computer system and information requirements in order to use electronic marketing. A wide range of businesses are significantly impacted by electronic business, including but not limited to those engaged in front-end and back-end system integration issues, management information systems analysis, e-business system design and implementation, human resource management, especially in relation to hiring, online banking, and auditing (Akhimien, 2017).

Additionally, to investigate the connection between electronic marketing mix strategies (EMMS) and organizational success, Alqudah (2023) polled 250 Jordanian SMEs. According to the study's findings, e-marketing tactics comprising product creation, pricing strategies, advertising

campaigns, and online distribution channels significantly improve organizational performance (Alqudah, 2023, pg. 7). The research played a crucial role in highlighting the importance of electronic marketing, which is taken into consideration in e-market places and calls for smart strategies that encourage SMEs to grow and compete in the contemporary digital environment. In order to increase organizational efficiency, electronic marketplace systems combine digital marketing and e-commerce by utilizing the marketing mix (product, price, promotion, and placement) (Jarrah & AL Jarrah, 2022).

The impact of electronic marketing on the performance of particular corporate organizations in Oyo State, Nigeria, was examined by Folasade, Ranti, and Samuel (2018). 50 participants were sampled for the study using a descriptive approach. The results of the study demonstrated that effective decision-making, customer happiness, and sales volume were all indicators of how well a business performed when electronic marketing was used. Internal records, marketing research, and intelligence are just a few of the marketing information systems components that subtly impact the adoption of the e-marketplace. Integrating these electronic marketing systems ensures efficiency and transparency in organizations.

Furthermore, electronic marketplaces have a wide range of benefits which are classified in five categories that include; job enrichment, performance measurement and competitiveness, standardization of methods and globalization of suppliers, reduction in supply delays and transaction costs, and internal and external communications and knowledge management. The study clarifies that some firms have adopted electronic marketplace due to the benefits derived from its implementation. Considerably, the results of the study proved that the substantial benefits of electronic marketplaces were significant for improved procurement performance of firms.

2.2.2 Effects of Electronic Tendering on Organizational Performance

Some several research findings have defined electronic tendering as the adoption of technology in improving the functionality of procurement marketplaces using electronic procurement systems in enhancing transparency and accountability in organizations. According to Tayebwa (2015), electronic tendering represents a secure "online tender documentation, pre-qualifying, inviting and receiving closed bids with messaging, auditing trails and global daily access using new web" technologies. Essentially, electronic tendering systems offers reduction in tendering time to days rather than weeks, thus significantly improving current non-automated working practices by revolutionizing procurement (Tayebwa, 2015). Although tendering is mostly practiced in public institutions, technological advancement has enhanced e-tendering to seamlessness, effective and efficient thus improving the operational performance of other firms other than government parastatals.

While it is essential for organizations to adopt electronic tendering systems, some find they encounter challenges during implementation. Otieno, Aliata and Midida (2021) established the effects of tendering on supply chain performance of 196 sampled staff of the County Government of Homabay with conditioning of the disruptive innovation and technology acceptance theories. The study findings revealed positivity and significance effect of electronic tendering towards supply chain performance. Justified by Ndiiri (2016), electronic tendering provides economic growth by reducing poverty as well as manifestation of significant service delivery to Kenyans. Although 25 percent of organizations in Kenya fail to implement electronic tendering, the majority have yielded improved performance from their full implementation (Otieno et al., 2021).

Profoundly, the adoption of e-tendering system practices such as the total quality management (TQM), Just-in-time, and risk management magnifies the accountability, transparency, efficiency of organizations (Maruti & Otinga, 2019).

Globalization and technology advancement have enabled electronic procurement thus leading to innovation of systems such as electronic tendering to hasten customer deliveries in organizations. Contextually, Gichuhi and Waruguru (2020) investigated the influencing nature of electronic tendering on procurement performance in Geothermal Development Company in Kenya. By sampling 97 respondents, the study outcomes showed that electronic tendering positively and significantly related to procurement performance of geothermal development companies. Related studies revealed electronic tendering systems practices including electronic notices, electronic selection, and electronic rewarding as critical determinants of successful electronic procurement implementation (United Nations, 2011). Essentially, e-tendering is associated with great time saving and improved efficiency due to its enabling capabilities of relationships with suppliers, eliminating trivial activities, great data accuracy and facilitation of supplier performance improvements (Mahdillou & Akbary, 2014).

Amin (2012) determined the extent to which state corporations in Kenya have embraced electronic procurement and noted the implications for the operating efficiency of commercial state businesses. The study used a descriptive methodology and sampled 40 participants. In the end, the research results indicated that although computerized procurement has become more common, many tasks are still done by hand.

Tendering process was found to be manually performed. Significantly, there was reduced cost, improved transparency and accountability with the adoption of electronic procurement. Relatively,

Chopra and Meindl (2001) noted the significance of the electronic tending system as exemplified by Toyota during the implementation in inventory management and sales as it used Just-in-time in delivery and acquisition of tenders and products to customers.

Electronic tendering has undoubtedly played an essential role in ensuring the best selection process of suppliers for better quality products and services. Nyokabi, Biraori, and Wacera (2023) looked on how parastatals in Nakuru County integrated computerized tendering and how it affected their organizational performance.

By using a sampled 91 employees in five selected state-owned organizations, the findings confirmed statistical significance between electronic tendering and organizational performance with an outstanding supplier management tool role. The study also identified "automated initial screening, electronic registration, automated supplier selection and evaluation, and bid evaluation and selection" as electronic tendering system practices. These practices improved the efficiency and reduced costs of the organizations. Relatively, Abdullahi et al. (2019) findings on the electronic tendering process of selecting consultants being conducted by group decision making in the bidding process eliminating fraud and corruption coincided with these outcomes.

On the other hand, the public tendering process has experienced challenges with the government working on mitigation measures such as mandatory online tendering to ensure fairness in expenditure in public funds enhancing performance. Gathima and Njoroge (2018) examined the effects of electronic tendering on the performance of Nairobi County Government. The diffusion and transaction cost theory contemplated the findings of the study with a sampled 75 respondents revealing positivity and significance relations with the performance of Nairobi County Government. Substantially, research shows that the justification of electronic tendering is based

on the reducing off-contract expenditures through the adoption of technologies in increasing awareness of the available contract facilities. Therefore, adopting e-tendering practices like supplier posted their “bids online, tender specification and sending documents online, receipt of tender responses online and tender notices” available to the public significantly improves performance.

Furthermore, the literature review of Munyao and Moronge (2018) on the influence of electronic procurement practices towards the performance in Kenyan public universities revealed that, electronic tendering through its system of e-information request and e-mailing required a profound influence on the procurement performance with operational performance of transparency and accountability. These elements of electronic tendering have proven significant in improving the operational performance of these organizations. Notwithstanding the technical challenges the system might encounter, suppliers’ requests are met efficiently with the adoption of e-tendering. Kibet and Ayuma (2017) looked into how Moi Teaching and Referral Hospital's organizational performance was affected by tendering processes. With sample of 384 respondents and adoption of institutional and socio-economic theories, the study found positivity in correlating electronic tendering and performance of organizations. However, since service delivery is a focal point of hospitals, public institutions need to show transparency in the tendering process thus a potential contender must prove financial stability and required resources during the duration of contract implementation (Byatt, 2022). Notably, electronic tendering shortens the physical tendering process to partial reduction of the placement cycle time and transactional costs. Compliance by internal users, candidates having adequate record of business ethics and integrity are vital in the electronically tendering process (Kibet & Ayuma, 2017).

On the other hand, Stephen (2015, pg.1) established the present relations existing between electronic tendering and organizational performance of Bidco Uganda Limited. The study findings revealed unparalleled benefits of electronic tendering on delivering services to customers. Although there were emerging challenges, they were subdued by the strategies in place. Moreover, efficiency and quick response tasks were realized with adoption and full implementation of electronic tendering by Bidco Uganda Limited (Stephen, 2015). Therefore, recommendations from the study permeate the implementation of e-tendering through training of employees and involvement in decision making.

Songok (2018) established application of electronic procurement in public universities using descriptive and inferential statistics resulting in quality, cost, timeliness, and responsiveness having a positive impact on performance of these institutions. Moreover, electronic tendering had a large impact on the performance of public universities. Desmond (2022) on the other hand was determined to find the effect of electronic procurement on organization performance in Ghana using a descriptive design. The study's results revealed positivity and significance in effecting of electronic procurement on supply chain performance with literature review showing electronic tendering positively influencing performance and effectiveness in performance.

2.2.3 Effects of Electronic Sourcing on Organizational Performance

Since operational performance is coined on the pretest of firms set standards of cycle time, productivity, and quality, electronic sourcing adoption enhances these achievements. Empirically, operational performance is based on firms construed internal operational capacity towards enhanced product quality, developing new products, and cost-effective practices. As such,

electronic sourcing is essential in the procurement process in delivering the added value of supply chain management.

Kimutai and Ismael (2016) assessed the role of strategic electronic sourcing on supply chain performance in state corporations. The study focused on the Kenya Generating Company Limited using 187 top level management as the target population with descriptive statistics as the research design. The findings from the linear regression revealed that cost reduction in organizations was crucial in customer service provided by the electronic sourcing system services such as e-tracking and e-contracting. In addition, speed of delivery is essential in influencing return on investment as part of the operational performance. Therefore, the study was certain that integration of electronic sourcing with other e-procurement systems will contribute immensely to the supply chain performance.

A study was conducted in India with focus on measuring the impact of electronic procurement practices for the improvement of efficiency to vendor transactions among cement companies (Cherian et al., 2020). 126 employees from five different cement companies were interviewed. However, the outcomes from the confirmatory factor analysis from the responses of employees revealed significant factors that included respondents finding comfort using e-procurement with adequate training on electronic technology. In addition, the literature review of the study revealed that e-sourcing is essential especially when requesting goods and services electronically as buyers and sellers are integrated.

Electronic sourcing has been outlined as a subconstruct of electronic procurement that is essential in mitigating risk and improving performance. It was reasonable for Kim (2010) to look into how

supply chain integration, electronic business technologies, and strategic sourcing affected supply chain risk reduction. The results of an empirical survey with 152 experts in the sample demonstrated that supply chain risk was reduced via strategic sourcing. Moreover, the strategic sourcing emphasized the purchasing function in alignment with the firm's strategy of improving relationships with suppliers through sharing information and their development. Significantly, the study results support supply chain integration chain risk and improvement of performance.

Although many studies still focus on the general electronic procurement and organizational performance, focus needs to be directed to the constructs of e-procurement such as electronic sourcing. Looking at Dantiye (2016) focus on finding out the level of electronic procurement on purchasing of the organization performance of Roofings Uganda Limited, it was evidenced that eprocurement enables timely deliveries and cost saving due to the adoption of electronic sourcing. Subtly, there was a positive impact of e-procurement including reduction of costs in the "movement to suppliers, reduced documentation, improved communication and information flow, increased access to wider markets, creation of fast and reliable services," and ensuring convenience.

Electronic procurement practices have a great influence on organizational performance. Ntooki and Alexander (2021) investigation on influences of electronic procurement practice towards the organizational performance of the Kenyan Judiciary. By utilizing the Technology Acceptance Model and Resource Based theories with 141 sampled employees of the Judiciary, the findings positively and significantly affected organizational performance. However, related studies provide the importance of adopting electronic sourcing as it enables charging steps of competition and delivery of strategic objectives of procurement (Barbara & Maxfield, 2013). Profoundly, esourcing

provides feedback on orders placed by customers online creating a faster and efficient delivery of goods (Chopra et al., 2006). Also, one of the previous studies interpreted electronic sourcing as a strategic and comprehensive process integrating different functions of firms such as "engineering, purchasing, operations, logistics and marketing," selection, motivation, evaluation and development of suppliers (Gargeya & Jin Su, 2012, pg.11).

2.2.4 Effects of Electronic Material Management on Organizational Performance

As previously noted, the performance of any firm is monitored and measured for improvement quality of the product and productivity. Karingithi et al. (2020), a company's resources enable it to increase its operational performance. As such electronic material management provides the suitable resources (such as material receipt, acquisition and warehousing that enable firms to run efficiently and effectively as part of their operational performance. To understand electronic material management, first a definition of material management is essential. Manekul (2019), defines material management as an active control program allowing management of sales, purchases and payments. In addition, inventory is part of the material management impacting the cost of sales.

In the plight of improved performance, electronic material management is essential. JerutoKeitany, and Richu (2014) focused on assessing on the protagonist of materials management towards organizational performance. The study empirically sampled 49 New KCC Limited Eldoret employees. Findings from descriptive statistics pointed out significantly increased organizational performance due inventory control systems integrated in electronic management systems. However, previous studies show evidence of benefits of material management including the introduction of a total systems method in managing the entire information flow, materials and

services with success in effective material management (Chase et al., 2009; Osotimehin, 2006). Purchasing decisions, material procurement, inventory management, personnel, store and warehouse management, and the cost-effective manufacture and distribution of completed goods are all noteworthy aspects of material management.

The impact of inventory management on organizational performance and its indirect effects on performance were both studied by Phyo (2024) at Commercial Plastics Company Limited. The influence of vendor management and computerized inventory management on organizational performance was shown to be significant and positive using empirical data from a sample of sixty business employees. Furthermore, the findings showed that competitive advantage acted as a mediator in the relationship between vendor management and organizational performance. Similar studies found that strategic inventory management had a significant impact on a company's success (Anantadjaya et al., 2021). As a result, businesses become more efficient when they combine electronic material management with the inventory management subconstruct.

The integration of electronic material management with other information systems has been mentioned in previous studies. Information systems (IS) for material management, according to Yuthas and Young (1998), have been predicated on improving policymaking performance through lower costs, higher turnover, and better services. The study looked at a lab experiment on the relationships between system usage, user happiness, and materials management performance. As a result, the experiment's results showed that while usage and satisfaction were strongly correlated with performance, the correlations between the measures themselves were not strong enough. Nonetheless, a few studies have examined why electronic material management system adoption has not increased in order to boost performance (Cale & Cudey, 1987).

Agorzie, Ekpudu, and Adewumi (2020) examined material management practices on operational performance as adopted by "quoted food, beverages, and breweries firms" using descriptive design in Nigeria. With a sample of 234 management and executive employees, the research used descriptive and inferential statistics of regression analysis to reveal significance effects of material management practices on operational performance. On the other hand, Materials management is a critical aspect that boosts operation performance. As a result, effective material uses as well as handling do have significant impact on a firm's earnings and can prevent possible setbacks (Tumewu, 2015). Profoundly, global positioning system (GPS), just in time (JIT), as well as economic order quantity (EOQ) are some of the techniques that are utilized to improve the management of material while employing E-material management (Sushil & Martin, 2014).

2.3 Theoretical Framework

The theoretical basis defines the theories that align with the study's objectives. These theories provide a link that explains the origin of the independent variable for critical evaluation of the research. According to Bhola (1995), a theoretical framework is structured to hold or even support a theory of a study with a hypothetical illusion of creating a contemplation on whatever potential answers. Profoundly, existing literature on electronic procurement and performance of the private sector embraced the theoretical review that discusses its implementations and effects on firms (Chebet & Kihara, 2022). However, this research is anchored by the technology acceptance model (TAM), diffusion of innovation theory, principal-agent theory and institutional theory as discussed in the following sections.

2.3.1 Technology Acceptance Model (TAM)

The establishment of the technology acceptance model (TAM) was coined by Davis (1989). This model existed to examine the various factors interrelated to the acceptance of advanced technology in functional organizations. According to Kiusya (2018), TAM has been useful in explaining the utilization of technology that has mostly impacted the user expectations on the technology. These expectations widen as a result of the positive or negative attitude portrayed by users in specific adopted technologies. As such, the general determinants for adopting this technology and the behavior of users across the spectrum of technologies and populations are well explained and analyzed (Audu, 2018).

Also, the theory provides a frugal theoretical explanatory model, describing aspects affecting technology acceptance and usage behavior (Bertrand & Bouchard, 2008). As explained by Davies et al. (1989), the theory predicts the factors influencing behavioral intentions to use information through the tracing of external factors including beliefs, attitudes, and intentions. The perceived usefulness explains that a specific innovation will improve organizational work performance (Gentry & Calantone, 2002). Nevertheless, Singh and Punia (2011) believes that users' attitude depended on their view of the ease-of-use PU.

Perceived utility (PU) and perceived ease of use (PEU) form the cornerstones of the TAM model. TAM identifies perceived usefulness and ease of use as the key factors influencing a system's actual use, according to Chebet and Kihara (2022). However, Davis (1989) definitive nature of perceived usefulness poised that a prospective user’s subjective probability to enhance job performance depends on their use of a specific application. On the other hand, Lai (2017) noted the definition of perceived ease of use to include the extent of prospect customer anticipation that a new system will be efficient, effective and seamless. Other studies have demonstrated that

perceived usefulness can be linked to faithful representation and trust by customers towards the system capability to improve effectiveness and efficiency in their operations. Therefore, perceived ease of use can be identified from the user's perspective of free and effortless performance of tools or systems of operations.

The success of deploying information and communication technology is primarily dependent on how advanced technology behaves, which highlights the relevance of the technology acceptance model (TAM) (Chatterjee, Grewal & Sambamurthy, 2012). As a result, TAM provides a more thorough explanation for the perceived utility and application of the fundamental factors influencing the use of technological systems, as well as for forecasting attitudes on their use (Romanus et al., 2023). As a result, the elements that impact Mombasa County freight companies' use of electronic procurement systems such as e-marketplace, e-tendering, e-sourcing, and ematerials management amplify organizational performance.

With respect to the TAM theory, it is easier for firms to predict innovation acceptance and usage in operations when implemented in the electronic procurement system. Also, TAM posits that adopting essential elements of electronic procurement can be critical in the expansion of operational performance of firms. Significantly, the theory is categorical in explaining the benefits of using the electronic procurement systems which are perceived to be ease of use which are mostly adopted by the management of firms to improve operational performance. As such, the technology acceptance model has shown its relevance to be chosen as it investigates the effects of the electronic procurement system on the operation performance of freight firms in Kenya despite the few limitations highlighted by critics of the theory.

2.3.2 Diffusion of Innovation Theory (DOI)

Rogers (1995) pioneered the development of the diffusion of innovation theory (DOI) suggesting that innovations are perceptions, processes or tools thought or seen to be new by an adoption unit or a user. The theory removed the confusion around innovation through the procedure of distributing innovative ideas using communication tools to users of the system. According to Alomar and Visscher (2017), communications rely on the preferred conventional mass media including radio, newspaper and interactive interpersonal channels. However, the DOI theory suggests that when the adopter is an organization, the internal structures and the organizational transparency influence the adoption rate. Also, as conceptualized by Everett and Rogers (1962), the DOI theory clarifies that diffusion is the operation that makes an innovation disseminated throughout time between people in a social system. Nonetheless, the theory categorizes innovation adopters into five classes including; innovators, early adopters, early majority, late majority and laggards.

The DOI theory posits a factual analytical and conceptual framework description of adopting innovation from the conceptualization to the implementation phase. However, Rogers (1995) explained the adoption rate of innovation being an intuitive pace for the integration of these innovations into the social system. Perhaps the pace is influenced by the perceived features of the innovation including derived benefits, suitability, flexibility, complexity, and tech capability. On the other hand, the user's adoption of new technology depends on the available time. As such, innovation diffusion theory provides for the actions of the end users when using technologies. However, these actions depend on organizations' positions when disseminating innovation that allows them to acquire a competitive advantage and safeguard user accounts and confidential information.

Despite the limitation of inclusivity on the well-being of users as exemplified in the previous theory that featured user acceptance and other characteristics, DOI focuses on the implementation of the new technologies that underpins its relevance to the electronic procurement systems. With DOI theory, organizations find it easier to integrate technologies such as the electronic procurement system as they are backed by an effective framework of investigation (Rogers, 2003).

The significance of the theory manifests from how it describes new technologies and other advances that are spread across companies, especially electronic procurement in freight firms. Profoundly, the argument in this study is that organizations strive to improve their operational performance through the adoption of new technologies, in this case electronic procurement systems that enhance the sharing of information, speed of transactions, and supplier coordination (Kiusya, 2018). Therefore, theory is relevant in this study through its capability to integrate new technologies that firms adopt such as the electronic procurement system.

2.3.3 Principal-Agent Theory

Advocated by Kuloba (2007), the principal-agent posits that procurement managers play a critical relationship role. However, the findings of the theory are based on the buyer/supplier connection and the necessity of the buyer being the primary, has the potential to minimize the risks given by the agent (Chegugu & Yusuf, 2017).

Fundamentally, procurement managers are obliged to play as agents. However, there is susceptibility of sabotage occurrence with respect to a broken relationship between the principal and agent thus leading for need to systems (Chegugu & Yusuf, 2017).

In relation to this study, electronic procurement systems ensure a legitimized actions on of an organization that are desirable, proper and appropriate within a construed systems of norms, values, beliefs and definition. Nevertheless, organizations are beneficiary of credible perceptions, persistence and meaningfulness thus increasing the survival nature. This theory is relevant in explaining the main objective of the study of establishing the effect of electronic procurement systems with focus on organizational performance.

2.3.4 Institutional Theory

According to Blair (2010), institutional theory is a traditional method applied on the examination of public procurement. Fundamentally, the theory is coined on three pillar of institutions including regulatory, normative and cultural cognitive (Barngetuny, & Kimutai, 2015). At a glance, regulatory pillar emphasizes on rules, laws and sanctions enforcement mechanism, with expedience as baseline for compliance. Profoundly, institutions exist on the elements of culturalcognitive and regulations and associated activities that give light to life. On the other side, normative pillar refers to the norms in the organization and values existing that lead to social obligation as the basis of compliance.

The relevance of this theory manifests in the organization performance of freight firms. However, realizing cultivated norms and laws, rules and sanctions in the organization is as a result of implementing electronic procurement systems of e-marketplace, e-tendering and e-sourcing. Profoundly, procurement in Kenya is guided by the Public Procurement Oversight Authority that ensure compliance and regulation even by the private entities and providers. This is in tandem with the organization performance measurements of operational efficiency and improved service delivery as the study objective.

2.4 Conceptual Framework

A conceptual framework fundamentally is a text based and pictorial portrayal of how factors should interface. These factors that researchers expect to instigate are alluded to be variables. As such, this study sought to investigate the effect of the electronic procurement system on the operational performance of freight firms. According to Hajir (2021), a conceptual framework plays the role of illustrating electronic procurement systems as a variable and its anticipated impact to the firm. Therefore, Figure 2.1 below illustrates e-market place, e-tendering, e-sourcing, and ematerial management as independent variables while organizational performance as the dependent one.

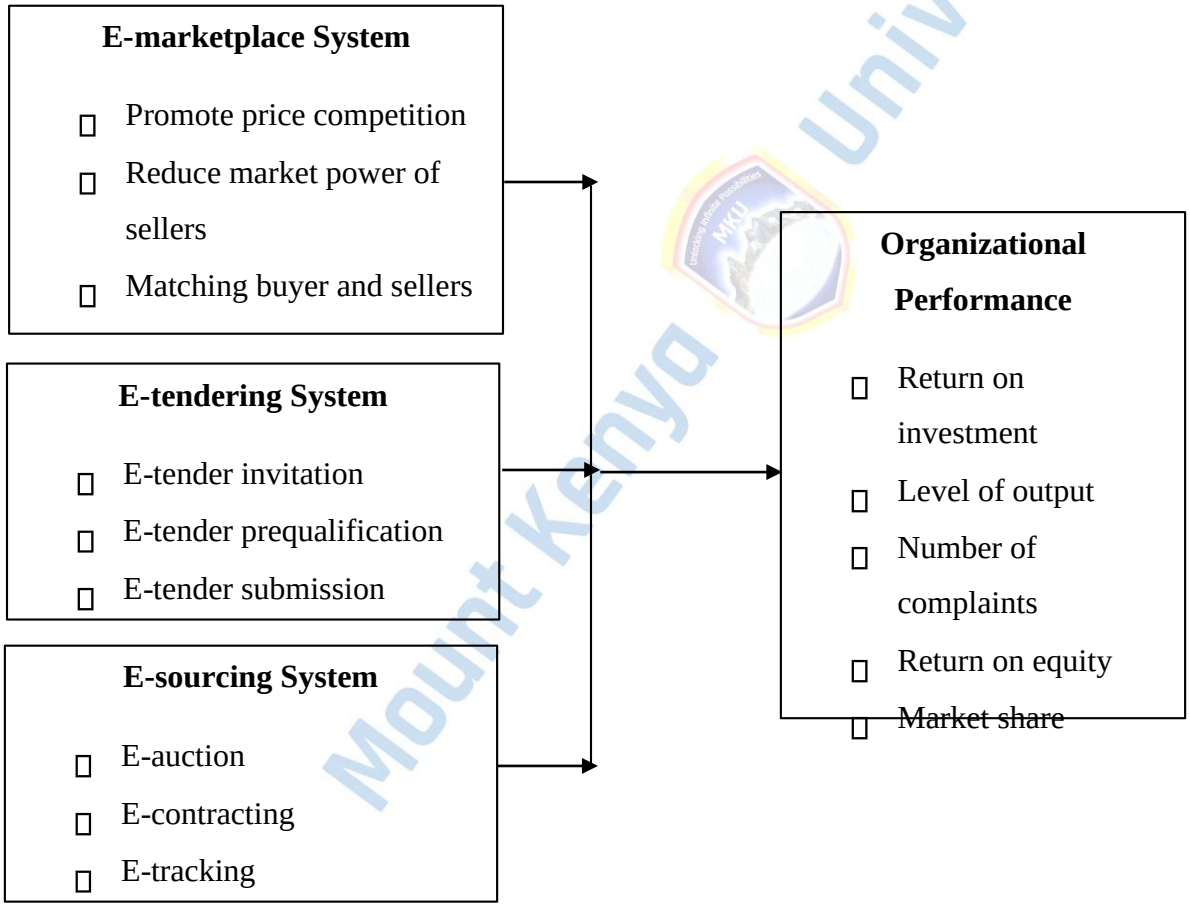

Figure 1. *Conceptual Framework*

Electronic procurement provides the various systems including e-marketplace that allows transfer and exchange of services, ensures there is enhanced institutional framework and capability of matching buyers and sellers. E-tendering system on the other side allows the activities of e-tender invitation, e-tender prequalification and e-tender submission. For e-sourcing systems, prerequisite activities such as e-auction, e-contracting, and e-tracking. Finally, organizational performance involves transparency, quality, cost-effectiveness, return on equity and return on investment.

2.4.1 Electronic Procurement System

There are various definitions of electronic procurement. According to Njera and Muthini (2023), electronic procurement system operations are based on websites and manage tenders in organizations. Nani and Ali (2020) defined the electronic procurement system as among the electronic government innovations that allow end-users to alleviate operational tasks. On the other hand, electronic procurement was referred to as one of the e-commerce implementations.

Nonetheless, a further study revealed that the electronic procurement system was part of an integrated communication system that allows the performance of all purchase processes on the web. In addition, Chebet and Kihara (2022) defined electronic procurement as a system involved in purchasing and selling products, supplies, and services through a network of systems. This means the suppliers and employees of firms are interconnected with the purchasing network of companies dealing with buying programs, thus aggregating across all the multiple divisions concerning pricing and quality products.

The electronic procurement system has been beneficial in various aspects of the organization's operations. According to Aminah et al. (2018), electric procurement has been useful in combating corruption, specifically in Indonesia. The merits of electronic procurement provide transparency

and easy monitoring in the supply chain. Also, the underlying issues in the organization, such as the lack of information access during procurement affecting operational performance, have been addressed by electronic procurement. Nonetheless, using information technology such as the electronic procurement system has made organization operations efficient and cost-effective. In addition, a study by Njeru and Muthini (2023) revealed that e-procurement system factors influenced operational performance. Moreover, there is a reduction of the efficiency barriers and stimulation of vendor participation. These findings assert that an electronic procurement system is critical in improving dwell time and transparency in organizations.

The application of electronic procurement systems in organizations has been measured using various approaches. According to Chebet and Kihara (2022), systems such as enterprise resource planning (ERP), automatic identification, and electronic data modules have been adopted as part of web-based procurement. On the other hand, Aminah et al. (2018) noted that measuring the success of information systems is critical, especially electronic procurement, which can be measured through effectiveness and supplier satisfaction. Adopting e-procurement systems, including resource search, negotiation, ordering, and purchasing, contributes to the system's efficiency.

However, electronic procurement systems such as “supplier selection, e-sourcing, e-tendering, eawarding, e-negotiation, e-ordering, e-invoicing, and e-payment” provide a pivotal measurement approach. Also, Songok (2018) believes that e-procurement integrates functions such as “tendering, catalogs, generation and management, supplier contracting, and general communication” (p.11). Therefore, this study adopted the e-procurement system processes of electronic marketplace, tendering, sourcing, and material management.

2.4.2 Organizational Performance

According to Kiusya (2018, pg.14), operational performance is conceptualized as a firm's performance against set standards such as "cycle time, productivity, and compliance with regulations." Also, the concept is based on firms' construed internal operational capacity towards enhanced product quality, developing new products, and cost-effective practices. Meanwhile, the performance of any firm is monitored and measured for the improvement quality of the product and productivity. According to Bhattacharya and David (2018), performance is a measure of the constructed metrics that quantify the effectiveness and efficiency of operations. As part of understanding the operation performance of firms, it is important to provide a holistic assessment of the entire organization rather than the mere basis of some metrics.

According to Ntooki and Alexander (2021), the main organizational goal is increasing efficiency and effectiveness. Consequently, organizations place targets on a continuous improvement of efficacy, that involves the setting organizational goals and objectives process in as on a continuous cycle. Profoundly, the organizational performance initiatives involve evaluation, planning, implementing, and continuity (Ntooki & Alexander, 2021). Also, the key performance measures in the organization performance include; "strategic focus, customer value, leadership and team performance, culture, value and ethics process excellence, talent management and knowledge management" (Ntooki & Alexander, 2021, pg. 22).

Amin (2012) established the effects of electronic procurement on the performance of commercial state corporations in Kenya. However, the focus organizational performance was intrinsic. Perhaps, organizational performance has proven the widely used dependent variable in organizational research. However, according to a related study, there are external environments

that challenges arise such as political, economic, socio-cultural, environmental, and technological that affect organizations (Snider & Rendon, 2001). An integration of organizational processes yields a moderate corporate performance. Also, collaborations among departments in an organization in departmental processes provide maximum value to the firm. Empirical evidence agrees that a positive electronic effect exists in their relationship firm performance (Narasimhan et al., 2003; Flynn et aal., 2010).

To improve operational performance, firms must adopt transparency, improved cycle time, and efficiency measures. According to Karingithi, Aosa, Ogollah, and Njihia (2020), a firm's resources enable it to increase its operational performance. This assertion implies that having the right resources will lead to quality products and effectiveness in production. Just as Elmi and Paul (2020) found that competitive strategies such as cost reduction, improved security, and increased customer base, operational performance depends on such metrics for assessment. Therefore, having predetermined measuring constructs of performance improves the operations of firms.

Measuring the organizational performance of firms has proven critical in understanding organizations' core activities and objectives. As Carlan, Sys, and Vanelslander (2019) mentioned, operational performance can be measured using cost-effective practices such as reducing operational costs. Also, Pan, Dresner, and Xie (2019) asserted that operational performance can be achieved by monitoring a company’s advantageous competition against its peers in the industry. Essentially, the financial outcomes assessment from firms' operations are measured using profits, assets, and equity returns.

The electronic procurement system can integrate organizational performance metrics such as effectiveness, efficiency, transparency, dwell time or cycle time, productivity, and customer satisfaction. This system offers cost-reduction strategies and productivity improvements and ensures operational efficiency in firms. Other benefits of e-procurement on operational performance are the reduction in corruption, monitoring of quality, and effectiveness of operations in firms. Also, electronic procurement systems activities such as information sharing, buyersupplier interaction, and tendering have been integrated to provide a seamless process of procurement that ensures efficiency and reduced operations costs in firm performance.

Gardenal (2013) focused on assessing a classical measure of electronic procurement impact towards organizational performance. It is evidenced that electronic procurement generated positive impacts particularly efficiency, effectiveness, dematerialization, competitiveness and transparency impacting dimensions. Notably, the study developed an electronic procurement performance measurement model (EPPMM) measuring the effectiveness, transparency, dematerialization, competitiveness, and efficiency of organizations.

Focusing on organizational performance, the measurement metrics of information quality, “efficiency, sales performance, customer satisfaction, and relationship development” are critical to the success of firms. Similarly, Aminah et al. (2018) believe measuring organizational performance using trust and supplier satisfaction proves transparency in most firms. Moreover, organizational performance measurement through efficiency metrics has proven the impact on firm vendor transactions. With adopted measures from various studies, his study adopted flexibility, dwell time, cost-effectiveness, efficiency, and transparency as the organizational performance measurement metrics.

2.5. Recap of Literature Review and Research Gap

This section has highlighted and discussed the empirical review with focus on several studies conducted relative to the research. Their review of different studies has indicated that no study had focused on Mombasa County freight firms. Also, specific e-procurement system effects such as the electronic marketplace had a greater potential to affect organizational performance especially cost-effectiveness. E-tendering on the other hand was found to influence transparency and accountability as stated by reviewed studies. In addition, e-material management measures the quality and productivity of firms when applied in the supply chain.

Theoretical framework involved the discussion of the technology acceptance model (TAM) that exists in examining the various aspects related to the acceptance of advanced technology applied in the e-procurement system in freight firms' operations. The diffusion on innovation theory on the other hand removed the confusion around innovation through the procedure of distributing innovative ideas using communication tools to users of the system such as the electronic procurement systems. Arguably, the DOI theory enhances the sharing of evidence, speediness of transactions, and supplier synchronization.

The conceptual framework in this study provided an illustration of the relationship between the electronic procurement system and organizational performance. As the independent variable, emarketplace, e-tendering e-sourcing, and e-material management illustrated the various effects such as the transfer or exchange services, e-tender invitation, e-auction, and material acquisition respectively. Organizational performance convincingly demonstrates the flexibility, dwell time, cost-effectiveness, efficiency, transparency, and speed. There two variables interlink to demonstrate the possible attainment of the research objective.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The study approaches that are useful are covered in great detail in this chapter. This chapter also describes the search, selection, processing, and analysis techniques used to gather data. The target population, location, sampling techniques, sample size, data collection methods and procedures, research design, reliability and validity testing, data analysis techniques and procedures, and ethical considerations were covered in the chapters.

3.2 Research Design

A research design explains the goal, data collection, and methods of analysis. This study employed a descriptive research design that generally aids in comprehending phenomena and their resolution. However, Kothari (2014) states that the effectiveness of the selected design is attributable to its ability to demonstrate the connections between the study variables using data gathered over a brief period. Also, this design was valid for the study as is cheaper and quicker than other types of analysis methods.

The independent variable of the electronic procurement system was tested on how it affects the organizational performance. Specifically, e-marketplace system effects were analyzed using this descriptive design towards the flexibility and cost-effectiveness of freight firms in Mombasa County. In addition, the descriptive design adopted provided the predominant relationship between e-sourcing, e-tendering, and e-material management on the efficiency, transparency, and dwell time of freight firms.

3.3 Location of the Study

Mombasa County is an ideal and strategic investment hub for logistics and freight services due to the availability of the port of Mombasa. Located on the longitudes 39039' 48.92" E and latitudes 40 03' 16.78" S, and with an estimated total area of 229.5 Km^2 of land and 65 km^2 of water mass, the county plays a pivotal role in the operations of freight firms (Mombasa County, 2019). Therefore, targeting 310 employees from the operations, ICT, general managers and procurement departments of the registered freight firms in Mombasa County was substantive and essential for the study as provided by (Feaffa, 2021).

3.4 Target Population

A population can be defined as persons or units that transmit the researched attribute . The study's target population was 310 employees with 95 from the procurement department, 75 general managers, 105 operations department and 35 in the information and communication department (ICT) freight firms in Mombasa County. According to Business Directory (2024), there are 732 logistics companies in Mombasa County, with the County government records showing 80 large registered firms. Table 3.1 illustrates the target population.

Table 3.1. *Target Population*

	Target Population
Procurement departmental heads	95
Information and communication technology (ICT) departmental heads	35
General managers	75
Operations departmental heads	105
Total	**310**

3.5 Sampling Technique

A stratified random sampling technique allows for grouping subgroups for precise conclusions (Simplilearn, 2021). This study adopted a stratified sampling procedure for the four strata that include the procurement department and the information and communication technology department managers that were used population representation. By dividing the population in departments is relative to the stratified sampling technique requirements as the departments had employees with similar attributes.

3.6 Sample Size

A sample size of 254 freight firm's employees was used from the Krejcie and Morgan estimates table with each department and general managers being represented by a sample size of 80 (Krejcie & Morgan, 1970). This sample is essential in comprehending the effect of the electronic procurement system on organizational performance. Table 3.2 illustrates the sample size of employees of 80 freight firms in Mombasa County.

Table 3.2. *Sample size*

	Population	**Sample**
Procurement departmental heads	95	76
Information and communication technology (ICT) departmental heads	35	32
General managers	75	63
Operations departmental heads	105	83
Total	**310**	**254**

Source: Krejcie and Morgan (1970)

Also, the sample size was determined using Yamane formula (1967). This formula assumes a normal distribution. The following is the Yamane's formula.

$$n = \frac{N}{(1 + N(e)^2}$$

Where n is the sample size, N being the population size and e is the margin of error. With a subpopulations of 95, 35, 75, and 105, the Yamane formula calculations provided sample sizes of 76, 32, 63, and 83 for the procurement, ICT, general managers, and operational departmental heads respectively.

3.7 Data Collection Instruments

The process of gathering and organizing structured data on specific characteristics is called data collection. According to Bless and Smith (2000), survey questionnaires, interviews, and observation are the three main methods used to collect data. Survey questionnaires were the most effective method for acquiring preliminary data. Primary data from the research population was gathered using standardized survey questionnaires from freight firm managers.

The survey questionnaires contain six sections: A, B, C, D, and E. The general characteristics of freight firms in Mombasa County were covered in Section A. however, the independent variables relating to the study's goal of investigating, assessing, evaluating, and determining the effects of e-marketplace, e-tendering, and e-sourcing on the organizational performance for sections B, C, and D respectively. On the other hand, section E focused on the organizational performance measures.

3.8 Testing for Validity and Reliability

3.8.1 Instrument Reliability

According to Kothari and Greig (2014), reliability is the extent to which surveys measure the variables and produce trustworthy results. As a result, the pilot study test is necessary to determine the research question's dependability. A Cronbach Alpha factor score above 0.7, however, is considered acceptable since it indicates excellent reliability, according to Kothari and Garg (2014). Reliability has notably been assigned a coefficient between 0 and 1.00.

3.8.2 Instrument Validity

Here, pilot study was conducted on questionnaire responses as a 10% representation of the target population. According to Kothari (2014), a 10% representation of the questionnaire responses of the target population was applicable to conduct a pilot study. Therefore, 22 responded questionnaires were subjected to a pilot study for freight firms in Mombasa County since they have similar characteristics to validate the study findings.

3.9 Data Collection Procedures

Survey questionnaires were used as the data collection procedures. Significantly, Likert scaling rate was used as it is effective in measuring perception, attitude and values for qualitative responses (Upagade & Shende, 2013). Due to their well-known capability to offer the researchers the needed information, the questionnaires were administered to freight firms' general managers and departmental heads.

3.10 Data Diagnostics

This section provides the diagnostic tests to be conducted, such as the normality tests for the parametric and non-parametric, the linearity test, and multicollinearity tests. Table 3.3 below indicates the diagnostics tests conducted.

Table 3.3. *Data Diagnostics*

Test	Test Statistic	Decision Criteria	Conclusion

Normality Tests	Shapiro-Wilk	$p > 0.05$	Normal distribution
Linearity Tests	Scatter plot diagrams	Sig. Deviation >0.05	Linear relationship
Homoscedasticity	Koenker Test	$p > 0.05$	Homoscedasticity satisfied
Multicollinearity	Variance Inflation Factor	VIF<10	No multicollinearity;

3.10 Data Analysis and Presentation

Data analysis relied on descriptive statistics of mean, standard deviation, and frequency to accomplish the goals of examining, evaluating, and ascertaining the effects of e-marketplace, etendering, e-sourcing, and e-material management on the operational performance. Data was entered into SPSS version 20 and presented in various tables to give it a visual impression of the results. Tables offers a simple pictorial representation of data for any user. Thus the suitability in this research.

In order to accomplish goal one, which examined the impact of electronic procurement on organizational performance of freight firms in Mombasa County, data was also analyzed using inferential statistics of correlation and linear regression analysis, with the e-procurement system serving as the independent variable and operational performance as the dependent variable.

Multiple regression analysis and Pearson correlation are examples of inferentiality's that were applied from the normality test conducted.

The analytical model used by the researchers was:
$Y= \beta_0 +\beta_1X_1+\beta_2X_2+\beta_3X_3+\varepsilon$ Where:

Y= Organizational performance β_0

= Regression constant

Then:

X_1= e-marketplace ε= Error term of the regression

X_2= e-tendering

X_3= e-sourcing

3.12 Ethical Considerations

The study was guided by integrity and ethics accepted and required for the conduct of this study by assuring the safety of respondent's rights. Upholding integrity is the responsibility of the researcher as respondents' information will be treated with utmost standards required. Moreover, confidentiality was upheld with assurance that no respondents' names were indicated on the questionnaires and their answers provided must not be wrong or right to be valid and honest. Just as provided in the questionnaire, there is no section where a respondent was required to prove their bios and other sensitive information as the study respected and acknowledge the anonymity of respondents. Essentially, study used simple, standardized language as was provided in the questionnaire for ease of use by the respondents.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

The data analysis and interpretation of the effect of electronic procurement systems on the organizational performance of freight firms are compiled and presented in this section. In data analysis, descriptive statistics like frequency, mean, and standard deviation are used in complex

ways. Furthermore, data evaluated using multi-linear regression and Pearson correlation inferential statistics are shown in this part. Tables with the analyzed data were shown.

4.2 Response Rate

The participants in the study were emailed a total of 254 questions as part of the survey. However, as Table 4.1 shows, only 220 complete and returned questionnaires were complete, while 34 were not. Based on the research, this indicated an 87% response rate, which is deemed sufficient and noteworthy, with only 13% not needed. A response rate of more than half of the target questions is considered satisfactory and substantial, according to Mugenda & Mugenda (1999). **Table 4.1** *Response Rate*

Questionnaire response	**Rate (%)**
Completely filled	87%
Incomplete	13%
Total	**100%**

4.3 Reliability Tests

The study conducted a reliability test using Cronbach's alpha in the examination of study variables since according to Leech et al. (2014), a coefficient value above 0.90 were considered outstanding, 0.80 considered very good while coefficient values around 0.70 were adequate and acceptable because it shows high reliability. Also, a pilot study of 22 (10%) of the respondents was conducted for consideration of reliability and validity tests.

Findings from Table 4.2 revealed that the electronic marketplace was highly reliable and outstanding with a coefficient value of 0.869 while electronic tendering had a very good reliability with a coefficient value of 0.835. However, electronic sourcing and organizational performance were adequate and acceptable for the study with coefficient values of 0.762 and 0.745 respectively. Consequently, all the inter-item correlation values were above 0.70 hence considered for examination by the researcher.

Table 4.2. *Reliability Test Statistics*

	No. of items	Cronbach's Alpha	Remarks
Electronic marketplace	254	.869	Adequate
Electronic tendering	254	.835	Adequate
Electronic sourcing	254	.762	Adequate
Organizational performance	254	.745	Adequate

4.4 General Information

General characteristics of the study are crucial in providing insights and information on the research topic. The knowledge gap existing from previous literature is clarified by examining the fundamental features of the study. Therefore, this sought in establishing the general characteristics of the period of the existence and the number of employees of the freight firms as discussed in the following sections.

4.4.1 Period of Existence of the Firm

Participants were obligated to provide information on the period of the existence of their firms. Table 4.3 illustrates the responses from the participants.

Table 4.3. *Period of Existence of the Firm*

		Frequency	Valid Percent
Valid	Less than a year	11 50	5
	2 - 5 years	60	23
	6 - 10 years		27
	More than 10 years	99	45
	Total	220	100

Findings from Table 4.3 revealed that 99 (45%) responses on freight firms that existed for more than 10 years were the highest, while only 11 (5%) had existed for less than a year. However, 50 (23%) of freight firms had existed between 2 to 5 years while 60 (27%) responses showed an existence between 6 to 10 years. These findings showed that most respondents agreed that most freight firms existed for more than 10 years.

4.4.2 Number of Employees in the Firm

Findings from Table 4.4 illustrate that of the 220 sampled respondents, there were 108 (49%) responses of more than 100, 92 (42%) being between 51 to 100 while 20 (9%) were less than 50 in freight firms. By analysis of data, there were more than 100 employees for freight firms in Mombasa County.

Table 4.4. *Number of Employees in the Firm*

		Frequency	Valid Percent
Valid	Less than 50 employees	20	9.1
	51 - 100 employees	92	41.8
	More than 100 employees	108	49.1
	Total	220	100.0

4.5 Descriptive Statistics for Electronic Procurement Systems

Examining how electronic procurement systems affect the organizational performance of Mombasa County freight companies was the primary goal of the study. But the researchers also asked the respondents to provide information on each of the following specific goals: to find out how Mombasa County's electronic marketplace affected the cost-effectiveness of the county's freight companies; to gauge how Mombasa County's electronic tendering affected the productivity

of those companies; and to determine how Mombasa County, Kenya's electronic sourcing affected the transparency of the county's freight companies.

A five-point rating system was used to ask respondents to rate how much electronic procurement systems affected the organizational performance of freight companies. One point represented "strongly disagree," two represented "disagree," three represented "neutral," four represented "agree," and five represented "strongly agree."

The ensuing subsections go over the findings.

4.5.1 Descriptive Statistics for Electronic Marketplace Systems

The primary objective of the study was investigating the effect of the electronic marketplace on cost-effectiveness of freight firms in Mombasa County. Table 4.5 presents findings from the investigation of electronic marketplace systems.

Table 4.5. *Descriptive Statistics of Electronic Marketplace Systems*

	N	SD	D	N	A	SA	Mean	Std. Deviation
The firm has an electronic system for transfer or exchange services.	220	0%	0%	0%	37%	63%	4.6273	.48463
The firm ensures institutional frameworks are maintained electronically.	220	0%	0%	4%	33%	63%	4.5955	.56129
The firm has a web system that matches buyers and sellers.	220	0%	0%	4%	29%	67%	4.6273	.56308

Sellers and buyers meet and exchange products electronically.	220	0%	0%	5%	45%	49%	4.4364	.59721
The firm's online businesses are enhanced through e-marketplace.	220	0%	0%	3%	45%	53%	4.5000	.55311
Average	**220**						**4.5573**	**.27926**

Key: N- Number of observations, SD- Strongly disagree, D-disagree, N-neutral, A-agree, SA-Strongly agree

Results from Table 4.5 indicate freight firms in Mombasa County have electronic systems for transfer or exchange of services (Mean = 4.6273, SD = .48463). The firms also have a web system that matches buyers and sellers (Mean = 4.6273, SD = .56308). Relatively, these freight firms ensure institutional frameworks are maintained electronically (Mean = 4.5955, SD = .56129). Moreover, the firm's online businesses are enhanced through e-marketplace (Mean = 4.5000, SD = .55311). However, sellers and buyers meet and exchange products electronically but at a lower capacity (Mean = 4.4364, SD = .59721).

The average mean of 4.5573 illustrates that the implementation of electronic marketplace systems was moderately satisfactory. This is a crucial step in improvement of electronic procurement systems adoption by the freight firms in Mombasa County for cost-effectiveness. Profoundly, a lower standard deviation of 0.27926 was attributable to the high implementation of electronic marketplace systems by freight firms.

4.5.2 Descriptive Statistics for Electronic Tendering System

The next objective focused on evaluating the effect of electronic tendering on efficiency among freight firms in Mombasa County. Table 4.6 presents findings from the electronic tendering implementation.

Table 4.6. *Descriptive statistics for electronic tendering system*

	N	SD	D	N	A	SA	Mean	Std. Deviation
The firm requests information electronically.	220	0%	0%	1%	31%	68%	4.6636	.50164
The firm meets supplier requests electronically.	220	0%	0%	6%	45%	49%	4.4227	.61073
Tender invitations are conducted electronically in the firm.	220	0%	0%	0%	41%	59%	4.5955	.49192
Tenders are electronically submitted by bidders.	220	0%	0%	4%	31%	65%	4.6045	.56776
The firm prepares and invites tenders online.	220	0%	1%	12%	35%	52%	4.3682	.74997
Average	**220**						**4.5309**	**.30929**

Table 4.6 outcomes reveal that freight firms in Mombasa County request information electronically (Mean = 4.6636, SD = .50164). On the other hand, these firms allow the electronic submission of tenders from bidders (Mean = 4.6045, SD = .56776). Also, freight firms' tender invitations are conducted electronically (Mean = 4.5955, SD = .49192). In addition, the firms meet supplier requests electronically (Mean = 4.4227, SD = .61073). However, the Mombasa County based

freight firms prepare and invite tenders online (Mean = 4.3682, SD = .74997) being at lower implementation capacity.

Generally, with an average mean of 4.5309 as compared to the electronic marketplace and electronic sourcing, electronic tendering has the lowest implementation in meeting the efficiency of freight firms. Relatively, a standard deviation of 0.30929 indicates a higher variability in meeting firm's efficiency suggesting a lower implementation of electronic tendering by freight firms in Mombasa County.

4.5.3. Descriptive Statistics for Electronic Sourcing

The study was intensive on the third goal of assessing the effect of electronic sourcing on the transparency of freight firms in Mombasa County, Kenya. However, the outcomes are illustrated in Table 4.7.

Table 4.7. *Descriptive Statistics for Electronic Sourcing*

	N	SD	D	N	A	SA	Mean	Std. Deviation
The firm provides an electronic auction for its products.	220	0%	0%	1%	44%	55%	4.5364	.52651
The firm's contracts are electronically modified.	220	0%	0%	1%	55%	43%	4.4182	.52136
The firm tracks products and services on an online system.	220	0%	0%	0%	41%	59%	4.5864	.49361
The firm has adopted an electronic sourcing software.	220	0%	0%	0%	41%	59%	4.5909	.49279

The firm has a database of pre-qualified suppliers with online access to essential information.	220	0%	0%	3%	41%	56%	4.5318	.55219
Average	**220**						**4.5327**	**.24814**

Table 4.7 findings reveal that freight firms in Mombasa County have adopted electronic sourcing software (Mean = 4.5909, SD = .49279). Also, firms tracked products and services on an online system (Mean = 4.5864, SD = .49361). In addition, freight firms provided an electronic auction for their products (Mean = 4.5364, SD = .52651). Profoundly, the firms had databases of prequalified suppliers with online access of essential information (Mean = 4.5318, SD = .55219) while the firms contracts were electronically modified at a very lower implementation capacity (Mean =

4.4182, SD = .52136).

Comparably, electronic sourcing systems had an average mean 4.5327 which is considered moderate for implementation towards electronic marketplace and electronic tendering. Consequently, a higher standard deviation of 0.24814 indicates a variability that inhibits the realization of transparency among freight firms in Mombasa County. This in turn affects the implementation of electronic sourcing due to a moderate adoption by the firms.

4.6 Normality Test

Table 4.8 represents the Kolmogorov-Smirnov test statistics that was suitable for the normality test of this study as the sample size was more than 100. Findings from the Table 4.8 indicate that Kolmogorov-Smirnov test statistics for the for organizational performance, electronic marketplace, electronic tendering, and electronic sourcing were 0.000. This means that the p-value of 0.000 is

less than the significance value of (p = .05) thus rejecting the null hypothesis since residuals are of a normal distribution. The normality test results are shown as follows.

Table 4.8. *Normality Test*

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Organizational performance	.248	220	.000	.910	220	.000
Electronic marketplace	.156	220	.000	.932	220	.000
Electronic tendering	.193	220	.000	.921	220	.000
Electronic sourcing	.211	220	.000	.925	220	.000

a. Lilliefors Significance Correction

4.7 Multicollinearity Test

The multicollinearity was checked using the correlation coefficient between electronic procurement systems and organizational performance (r = 2.262, p-value = 0.002) and the variance inflation factors (VIF) as shown in Table 4.13. Meanwhile, there is absence of multicollinearity between electronic procurement system and organizational performance since the p-value is less than 0.05. Moreover, the variance inflation factors (VIF) of 1.040, 1.090, and 1.131 for electronic marketplace, electronic tendering and electronic sourcing respectively show that multicollinearity is not a problem since they are less than 5.

4.8 Homoscedasticity Test

This study tested the homoscedasticity by running a macro syntax by Gwilym Pryce on BreuschPagan and Koenker in SPSS providing the following output:

Run MATRIX procedure:

BP&K TESTS

==========

Regression SS 0.871, residual SS 11.857, total SS 12.727, r-squared 0 .068, sample size (N) 220, Number of predictors (P) 3, Breusch-Pagan test for Homoscedasticity (CHI-SQUARE df=P) 0.290, significance level of Chi-square df=P (H0: homoscedasticity) 0.002, Koenker test for Homoscedasticity (CHI-SQUARE df=P) 12.727, Significance level of Chi-square df=P (H0: homoscedasticity) 0.002.

------ END MATRIX -----

Since there was a large sample size of 254, the Koenker Test for homoscedasticity was suitable as explained in the following:

The study conducted test statistics where H_0 (p-value > 0.05) showed absence of homoscedasticity in the data while H_1 (p-value < 0.05) indicated presence of homoscedasticity in the data. Also, the level of significance was tested and indicated a ($\alpha = 0.05$) level of significance that was required. However, the study would reject the null hypothesis if the p-value was less than 0.05, and fail to reject the null hypothesis if the p-value was greater than 0.05. Therefore, the Koenker test statistic was found to be 12.727 and p-value = 0.002 thus failing to reject the null hypothesis due to the absence of homoscedasticity.

4.9 Linearity Test

A linearity test was conducted using a scatter plot and analytical statistics as shown in Table 4.9.

Table 4.9. *Linearity Test*

			Sum of Squares	df	Mean Square	F	Sig.
EPS * OP	Between Groups	(Combined)	8.300	21	.395	11.857	.032
		Linearity	3.987	1	3.987	119.612	.002
		Deviation from Linearity	4.313	217	.216	6.469	.074

	Within Groups	.100	3	.033
	Total	8.400	219	

Table 4.9 shows the significance deviation of 0.074 which is greater than 0.05 thus linearity between the variables.

4.10 Inferential Statistics

As discussed in the preceding subsections, the study used Pearson correlation and multi-linear regression analysis to investigate how electronic procurement systems affected the organizational performance of freight businesses in Mombasa County, Kenya.

4.10.1 Pearson Correlation

Table 4.10 illustrates the correlation analysis linking electronic procurement systems on organizational performance. The results show that, at the two-tailed level, the correlation is significant (p = 0.01). The electronic marketplace system and organizational performance, however, have a weakly positive and significant association with each other (r = 205, p = 0.002). Electronic tendering and organizational performance have a weakly positive and significant link, according to the results (r = 0.157, p = 0.020). On the other hand, there is a modest positive and negligible association (r = 0.022, p = 0.743) between electronic sourcing links and organizations.

Table 4.10. *Pearson Correlation*

		Electronic marketplace	Electronic tendering	Electronic sourcing	Organizational performance
Electronic Marketplace	Pearson Correlation	1			
	Sig. (2tailed)				
	N	220			

	Pearson Correlation	.040	1		
	Sig. (2tailed)	.558			
Electronic tendering	N	220	220		
	Pearson Correlation	.196**	.287**	1	
	Sig. (2tailed)	.004	.000		
Electronic sourcing	N	220	220	220	
	Pearson Correlation	.205**	.157*	.022	1
	Sig. (2tailed)	.002	.020	.743	
Organizational performance	N	220	220	220	220

A significant correlation is found at the 2-tailed 0.01 level, A significant correlation is found at the 2-tailed 0.05 level.

4.10.2 Regression Analysis

Organizational performance variables of cost-effectiveness, efficiency, transparency, speed, and flexibility were regressed against electronic procurement systems of electronic marketplace, electronic tendering and electronic sourcing. The outcomes of regressed data analysis are presented in Table 4.11, 4.12 and 4.13 as shown in the following sections.

Table 4.11. *Model Summary*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.262[a]	.068	.055	.23429	2.315

a. Predictors: (Constant), Electronic sourcing, electronic marketplace, electronic tendering

b. Dependent Variable: Organizational performance

Table 4.11 shows R-square as 0.068. These findings of the R-square indicate the independent variables of electronic sourcing, electronic marketplace, and electronic tendering explain 6.8 percent change in organizational performance representing efficiency, speed, transparency, and cost-effectiveness. However, the remaining 91.2 percent is accounted for by the factors not included in the model. This outcome posits a model with an insignificant explanatory power. Nonetheless, the coefficient of correlation (R) of 26.2 percent imply a weak positive relationship between the electronic procurement system and organizational performance.

To determine the significance of correlation coefficient (r), a t-test was conducted:

H_0: r = 0.0 (correlation is not significant)

H_1: r ≠ 0.0 (correlation is significant)

Using the formula $t = r\sqrt{\frac{n-2}{1-r^2}}$ r = 0.262, N = 220, r^2 = 0.068. Therefore, t = -2.03

Since the analysis finds that -2.03 is less than the crucial value of -1.86, we reject the null hypothesis (r = 0), indicating that there is a marginally positive correlation between organizational performance and electronic procurement systems.

Table 4.12. *Analysis of Variance-ANOVA*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.871	3	.290 .055	5.288	.002[b]
	Residual	11.857	216			
	Total	12.727	219			

a. Dependent Variable: Organizational performance

b. Predictors: (Constant), Electronic sourcing, electronic marketplace, electronic tendering

Source: Research data

Based on Table 4.12 ANOVA results, the significant p-value was 0.002 which is less than the significance level of 0.05. This indicates that there is a statistical significance in the relationship between electronic sourcing, electronic marketplace and electronic tendering. Also, the F critical value of 5.288 which is a greater one supports the overall significance of the model. Therefore, pvalue of 0.02 being less than the significance level of 0.05 thus statistically significant model of the study (F = 5.288, p = 0.02), explained the relationship between electronic procurement system and organizational performance.

4.10.3 Coefficients of Estimate

A stepwise regression model that regulated the relationships between the variables of electronic marketplace, electronic tendering and electronic sourcing is illustrated in Table 4.13.

Table 4.13. *Coefficients of Estimate*

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3.452	.389		8.866	.000		
	Electronic marketplace	.183	.058	.212	3.165	.002	.961	1.040
	Electronic tendering	.131	.053	.168	2.449	.015	.918	1.090
	Electronic sourcing	-.065	.068	-.067	-.964	.336	.884	1.131

a. Dependent Variable: Organizational Performance Source: Research data

From Table 14, the model would appear as follows:

$\underline{Y = 3.452 + 0.183X_1 + 0.131X_2 + -0.065X_3}$

Where:

X_1= Electronic marketplace

X_2= Electronic tendering

X_3= Electronic sourcing

Y= Organizational performance

The model shows that organizational performance measured by transparency, cost-effectiveness, efficiency, and speed would decrease by 3.452, given that all the other factors are held constant at zero (electronic marketplace, electronic tendering and electronic sourcing). In addition, result in Table 14 indicates that a unit increase in electronic marketplace would lead to positive increase in organizational performance by 0.183 with a t-value of 3.165 and a statistically significant increase at 0.002. This positive coefficient suggests an increase in the embracing of electronic marketplace by freight firms based in Mombasa County.

The findings on the electronic marketplace coefficients relates with Shetty et al. (2020) where an increase in the adoption of e-commerce enhanced institutional frameworks, facilitated exchange services, and matched buyers and sellers thus improving the cost-effectiveness of freight firms. Also, Jung and Wook (2011) found that each type of electronic marketplace and buyer-supplier relationship advantages significantly correlated with financial performance of the companies. However, critics such as da Silva Ramos (2021) argued that sellers being one of the marketplace components had a lower operational performance having a negative and directly affected customer satisfaction.

On the other hand, Table 4.13 indicates that a unit increase in electronic tendering leads to a positive increase in organizational performance by 0.131 having a higher t-value of 2.449 and statistical significance at 0.015. This results means that any increase in the adoption of electronic tendering by freight firms in Mombasa County would increase the organizational performance. Findings from this study relate to Munyao and Moronge (2018) outcome where electronic tendering through the systems of e-information request and e-mailing had a significant impact on the procurement performance with operational performance of transparency and accountability.

In addition, Desmond (2022) was determined to find the effect of electronic procurement on organization performance in Ghana using a descriptive design. The study's results revealed a positive and significant effect of electronic procurement on supply chain performance with literature review showing electronic tendering positively influencing performance and effectiveness in performance. Similarly, Songok (2018) found that tendering had a significant impact on the performance of public universities in Kenya.

However, a unit increase in electronic sourcing would decrease in organizational performance by negative 0.065 with a t-value of negative 0.067 and statistically insignificant p-value of 0.336. The findings of this coefficient were conflicted by Cherian et al. (2020) revealing significant factors that included respondents finding comfort using e-procurement with adequate training on electronic technology. In addition, the literature review of study revealed that e-sourcing is essential especially when requesting goods and services electronically as buyers and sellers are integrated. Kimutai and Ismael (2016) contrary found that cost reduction in organizations was crucial in customer service provided by the electronic sourcing system services such as e-tracking and e-contracting especially in the Kenya Generating Company Limited.

There are two tolerance and variance inflation factor values in the collinearity diagnostics. A tolerance of less than 0.10 implies that Multicollinearity needs to be performed if the variability of the designated independent variable cannot be explained by the independent variable in the model. But according to the VIF, Multicollinearity is indicated by values more than 10. Since the VIF values of 1.040, 1.090, and 1.131 support the tolerance values of 0.961, 0.918, and 0.884 for the electronic marketplace, electronic tendering, and electronic sourcing, respectively, the table shows that these values fall within the Multicollinearity assumption.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

The research findings, conclusions, suggestions for more research, and recommendations are all included in this chapter. The judgments on the results from the perspective of the research objectives are also the main focus. Furthermore, the explanations for the results provide a foundation for intelligible findings and are relevant from an empirical standpoint. Nonetheless, the summarization of the research variables and the formulation of findings relied heavily on literature studies and the descriptive and inferential statistics of linear regression analysis.

5.2 Summary of Findings

The purpose of the study was to look into how Mombasa County freight companies' organizational performance was affected by electronic procurement systems. Nonetheless, there are particular goals that include examining how Mombasa County's electronic marketplace affects the costeffectiveness of the county's freight companies, assessing how Mombasa County's electronic

tendering affects efficiency, and evaluating how Mombasa County's electronic sourcing affects the transparency of the county's freight companies.

Profoundly, the study found on the general characteristics that most freight firms had existed for more than 10 years with a 45 percent representation. On the other hand, there were more than 100 employees in the freight firms based in Mombasa County with a rate of 49 percent. Correlation analysis indicated that electronic procurement systems positively and significantly affected the organizational performance of freight firms in Mombasa County with regression analysis showing a weak positive and significant p-value. The outcomes are consistent with Dantiye's (2016) research, which showed a weakly negative regression association between organizational effectiveness at Roofing's Uganda Limited and electronic procurement. Similar results were also found by Charnor and Quartey (2024), who found that the Greater Accra Region of Ghana's public procurement bodies' performance in procurement was positively and considerably impacted by the use of electronic procurement. As a result, a summary of the various findings can be found in the specific objectives in the following sections.

5.2.1 Investigating the effect of electronic marketplace on cost-effectiveness of freight firms in Mombasa County

Organizational performance measures of cost-effectiveness and others were subjected to a regression analysis by the researcher to determine their relationships. Results revealed that electronic procurement systems had a positive coefficient on organizational performance. Due to an increase in the electronic procurement system with an enhanced organizational performance per unit, a favorable association between e-marketplace and its effect on organizational performance on freight firms in Mombasa County was realized. On the other hand, the electronic marketplace had a statistically significant p-value and a higher t-value with a standardized positive coefficient.

Furthermore, a weak positive and significant connection was found between organizational performance and the electronic marketplace system.

In addition, the study findings on electronic marketplace correlated with Migdadi et al. (2016). The findings suggested that organizational factors such as availability of training, technical expertise and knowledge application and acquisition influenced electronic market place implementation thus affecting performance. Also, Romanus et al. (2023) noted that the electronic marketplace had a positive effect on the performance of Jumia Limited, Lagos Nigeria as it improved organizational marketing.

5.2.2 Evaluating the effect of electronic tendering on efficiency among freight firms in Mombasa County

Based on the results of regression analysis, electronic tendering significantly affects the efficiency of freight firms in Mombasa County. A coefficient a positive was calculated for the electronic tendering. This result demonstrated a favorable correlation between organizational performance and electronic tendering. In addition, a statistically significant effect was found for the probability and a lower significant p-value. Meanwhile, electronic tendering showed a weak positive and significant correlation against returns on assets. These results meant that electronic tendering was significant on the efficiency as the organizational performance measure of freight firms based in Mombasa County.

However, the findings of the study do not coincide with Chegugu and Yusuf (2017) as it revealed that electronic tendering increased competitiveness, reduced work load and enabled speedy selection of the right supplier reducing the cost of tendering. Also, there was significant reduction in the operational costs and the adoption of electronic procurement practices.

5.2.3 Assessing the effect of electronic sourcing on the transparency of freight firms in Mombasa County, Kenya

Utilizing an inferential statistics method of regression, the researchers found that electronic sourcing substantially decreased organizational performance of freight firms based in Mombasa County. Meanwhile, electronic sourcing scored a negative coefficient by focusing on coefficient, thus showing that it negatively affected organizational performance. Consequently, a positive pvalue was assigned to the association between electronic sourcing and organizational performance, which was presented by an unacceptable negative probability.

Additionally, the transparency measure, which is a measure of the organizational effectiveness of freight companies situated in Mombasa County, was negatively impacted by electronic sourcing in a statistically insignificant way. There was a marginally positive and negligible association between electronic sourcing and organizational performance when taking into account the expectations of businesses for enhanced organizational performance. Significantly, the study's conclusions differ significantly from those of Tanooki and Alexander (2021), who concluded that the Judiciary in Kenya had a favourable and significant impact on organizational performance. This leaves room for more research on the variables that may have influenced the findings.

5.3 Conclusion

Outcomes of the study showed that electronic procurement positively and significantly affected the organizational performance of freight firms based in Mombasa County. However, while the freight firms have made strides in the implementation of electronic procurement systems, few systems such as modification of contracts electronically, preparation and tender invitations online, there has been a tremendous success in adoption of other systems. Therefore, this means that freight firms performance can improve with adoption of these procurement systems.

Electronic marketplace has been found to be integral in the reduction of costs and improvement of effectiveness. Providing an enabling online marketplace where sellers and buyers meet and exchange will immensely contribute to improvement of organizational performance. Also, freight firms' continuous engagement online businesses enhance improved performance. Finally, electronic maintenance of institutional frameworks improves the organizational performance of freight firms.

Grounded on the study findings, it is concluded that electronic tendering positively and significantly affects organizational performance of freight firms based in Mombasa County. With the capability of these firms to electronically allow bidders to submit tenders, request information, and conduct tender invitations online, the implementation objective of the systems has been achieved. Despite having the lowest mean of the three systems, electronic tendering has proven crucial in determining the efficiency of freight firms in Mombasa County.

Finally, despite the negative and insignificant effect of electronic sourcing on organizational performance of freight firms based in Mombasa County as found by the study, this system's software has been critical in showing transparency in the companies. Also, the procurement system's relatively higher mean than e-tendering is attributable to the capability of freight firms to track products and services online. Nevertheless, the substantial impact on other measures of organizational performance of freight firms by electronic sourcing systems cannot be ignored. Therefore, the outcomes of the study demonstrate that e-marketplace and e-tendering positively and significantly affected the organizational performance of freight firms in Mombasa County with only e-sourcing showing a negative and insignificant effect.

5.4 Recommendations

Based on the study findings electronic procurement systems positively impacted the organizational performance of freight firms in Mombasa County. Therefore, these freight firms should prioritize the development and implementation of electronic marketplace, electronic tendering and electronic sourcing systems for improved performance. This can be done through training, capacity building, adopting electronic procurement software and research and development of new technologies for enhanced performance.

Study findings revealed that freight firms need to focus on the electronic marketplace to improve the development of online markets where buyers and sellers meet. Also, adoption of electronic marketplace systems by other firms that do not have will improve their performance. Among the issues to improve is allowing buyers and sellers to access the marketplace at their convenience. In addition, procurement professionals need to be equipped with new skills on how to handle these new technologies through training and benchmarks in other companies or even well-advanced nations.

Priority should be given to the improvement of the electronic sourcing system since findings show its negative and insignificant effects on performance. Meanwhile, freight firms from Mombasa County should meet supplier requests electronically as part of implementing e-sourcing. Also, these firms should prepare and invite tenders online. This therefore, requires the support of financial institutions including government waivers and incentives to promote the adoption of these electronic procurement systems. Moreover, efforts should be made by policymakers to standardize and streamline electronic processes across different departments since they are

interlinked with the procurement systems in most of these freight firms. This will contribute to speedy, efficiency, cost-effectiveness, and transparency.

5.5 Further Research Recommendations

The study should be expounded to other countries with near ports in Kenya, and other regions for comparison of findings. Also, the variables under consideration in this study did not fully explain the variation in electronic procurement systems of freight firms in Mombasa County. As such further research should be conducted to focus on factors affecting organizational performance of freight firms in Mombasa County. Moreover, future researchers should also include more control variables in addition to those considered in this research in obtaining more accurate coefficient on the effect of electronic procurement systems on organizational performance of freight companies in Mombasa County.

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APPENDICES

APPENDIX I: RESEARCH QUESTIONNAIRE

This questionnaire focuses on collecting information from managers of freight firms in Mombasa County about the effect of the electronic procurement system on operational performance. Profoundly, the information in this survey is free from bias and allows all kinds of feedback on the questions presented. Therefore, feel free to respond as provided in the spaces. The questionnaire has six sections:

Section A: General Information

Kindly tick in the appropriate spaces from the information provided.

1. Period of the existence of the firm.

a) Less than a year [ ]

b) 2 – 5 years [ ]

c) 6 – 10 years [ ]

d) More than 10 years [ ]

2. The number of employees in the firm.

a) Less than 50 employees [ ]

b) 51 – 100 employees [ ]

c) More than 100 employees [ ]

Section B: Effects of Electronic Marketplace System

Please identify the electronic marketplace systems used by the firm by providing your response in the spaces provided using the Likert scaling rate of 1=Strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree are the first five options.

Electronic Marketplace System (EM)	**1**	**2**	**3**	**4**	**5**
The firm has an electronic system for that promote price competition.					
The firm ensures electronic system reduces the market power for sellers. .					
The firm has a web system that matches buyers and sellers.					
Sellers and buyers meet and exchange products electronically.					
The firm's online businesses are enhanced through e-marketplace.					

Section C: Effects of Electronic Tendering System

3. Kindly identify the electronic tendering systems used by the firm by providing your response in the spaces provided using the Likert scaling rate of 1=Strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree are the first five options.

Electronic Tendering System (ET)	**1**	**2**	**3**	**4**	**5**
The firm requests information electronically.					
The firm meets supplier requests electronically.					
Tender invitations are conducted electronically in the firm.					
Tenders are electronically submitted by bidders.					
The firm prepares and invites tenders online.					

Section D: Effects of Electronic Sourcing System

4. Kindly identify the electronic sourcing systems used by the firm by providing your response in the spaces provided using the Likert scaling rate of 1=Strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree are the first five options.

Electronic Sourcing System (ES)	**1**	**2**	**3**	**4**	**5**
The firm provides an electronic auction for its products.					
The firm's contracts are electronically modified.					
The firm tracks products and services on an online system.					
The firm has adopted an electronic sourcing software.					
The firm has a database of pre-qualified suppliers with online access to essential information.					

Section E: Organizational Performance

5. Kindly identify the organizational performance measures that influence electronic procurement systems by providing your response in the spaces provided using the Likert scaling rate of 1=Strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree are the first five options.

Organizational Performance (OP)	**1**	**2**	**3**	**4**	**5**
The firm has improved return on investment (ROI).					
The firm has improved the overall level of output.					
The firm has reduced the number of complaints of suppliers.					
The firm has increased return on equity (ROE).					
The firm operations have improved market share.					

Thank You for Participating

APPENDIX II: ERC CERTIFICATE

APPENDIX III: INTRODUCTION LETTER FROM MOUNT KENYA UNIVERSITY

Mount Kenya University

DIRECTORATE OF GRADUATE STUDIES

MPSM/2023/43436

22nd May, 2024

National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki Way, Upper Kabete,
P.O Box 30623- 00100
NAIROBI, KENYA

Dear Sir/Madam,

RE: MOHAMED ABDALLA SULEIMAN- REGISTRATION NO. MPSM/2023/43436

The purpose of this letter is to introduce the above named student who is pursuing **Master of Science in Procurement and Supplies Management** in the **Department of Management** in the school of **Business and Economics.**

The title of the research is **"Effect of Electronic Procurement Systems on Organizational Performance of Freight Firms in Mombasa County.** It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **June, 2024 and August, 2024.**

Any assistance accorded to the student will be highly appreciated.

Thank you.

Mount Kenya University
P.O. Box 342 - 01000, THIKA
Office of the Director,
Graduate Studies

Dr. Samuel M. Karenga, PhD
Director, Graduate Studies
Enc.

APPENDIX IV: NACOSTI RESEARCH LICENSE

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **120751**

Date of Issue: **18/June/2024**

RESEARCH LICENSE

This is to Certify that Mr.. MOHAMED ABDALLA SULEIMAN of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Mombasa on the topic: EFFECT OF ELECTRONIC PROCUREMENT SYSTEMS ON ORGANIZATIONAL PERFORMANCE OF FREIGHT FIRMS IN MOMBASA COUNTY for the period ending : 18/June/2025.

License No: **NACOSTI/P/24/37070**

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Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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See overleaf for conditions

APPENDIX V: RESEARCH AUTHORIZATION

Mount Kenya University

REF: **MKU/ISERC/3732**
TO: **MOHAMED ABDALLA SULEIMAN**

Date: 21 May 2024

REG: **MPSM/2023/43436**

Dear Sir/Madam,

RE: EFFECT OF ELECTRONIC PROCUREMENT SYSTEMS ON ORGANIZATIONAL PERFORMANCE OF FREIGHT FIRMS IN MOMBASA COUNTY

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **2776.** The approval period is **21/05/2024 - 20/05/2025.**

This approval is subject to compliance with the following requirements;

i. Only approved documents including informed consents, study instruments, MTA will be used
ii. All changes including amendments, deviations and violations are submitted for review and approval by **Mount Kenya University**
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **Mount Kenya University** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal
vii. Submission of an executive summary report within 90 days upon completion of the study to **Mount Kenya University**

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely,

Dr. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC

Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
Cell: +254 709 153 000 | +254 709 153 200
Email: info@mku.ac.ke, Web: www.mku.ac.ke
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APPENDIX VI: TURNITIN REPORT

MOHAMED ABDALLA SULEIMAN

EFFECT OF ELECTRONIC PROCUREMENT SYSTEMS ON ORGANIZATIONAL PERFORMANCE OF FREIGHT FIRMS IN M...

Thesis and Projects
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Mount Kenya University

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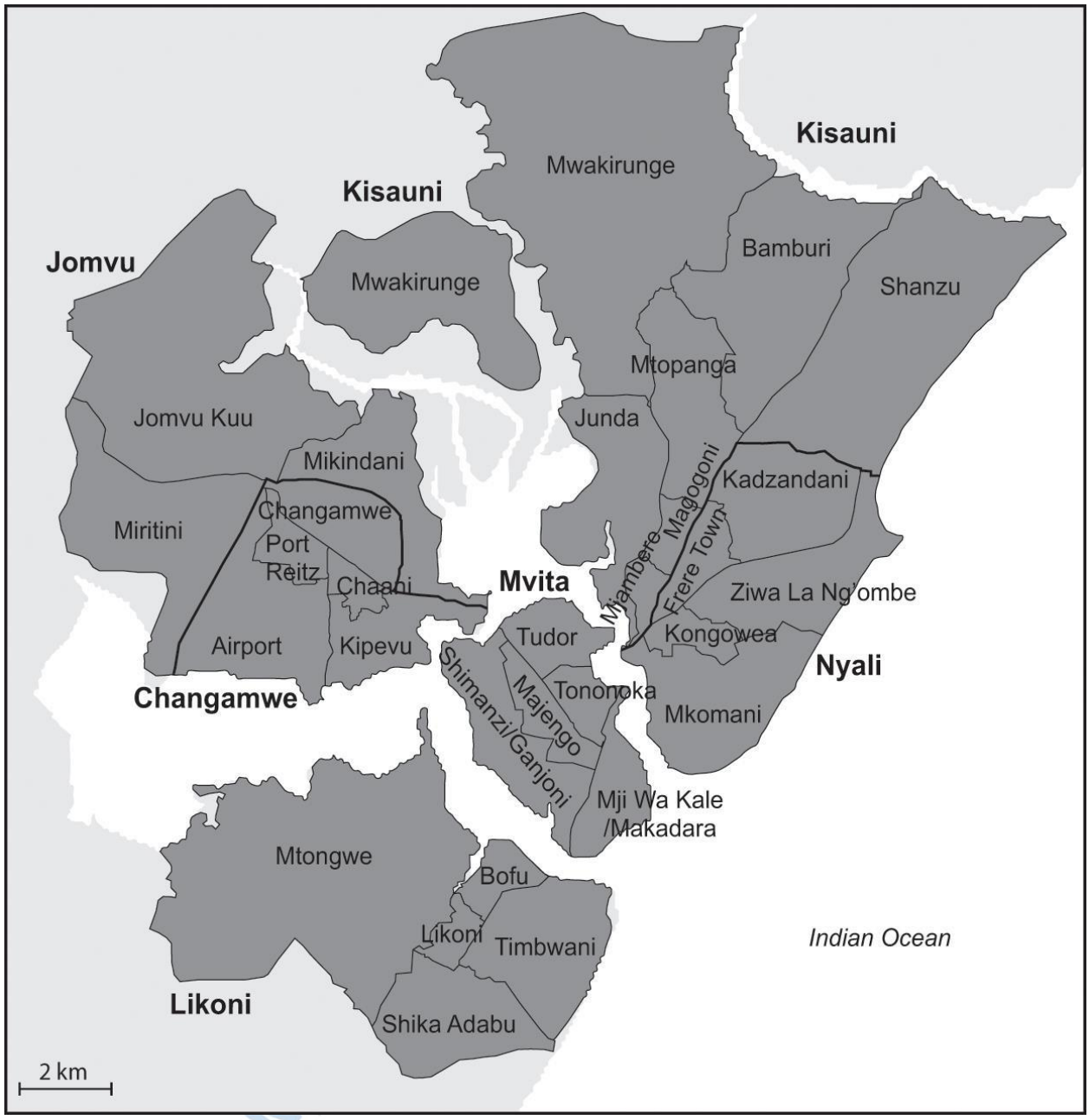
APPENDIX VII: RESEARCH SITE MAP



APPENDIX VIII: KREJCIE AND MORGAN TABLE OF ESTIMATES

Table for Determining Sample Size from a Given Population

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368