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INFLUENCE OF ELECTRONIC PROCUREMENT ADOPTION ON THE PERFORMANCE OF MANUFACTURING FIRMS' SUPPLY MANAGEMENT IN KENYA. CASE OF NAIROBI COUNTY

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Abstract

The implementation of efficient management of the supply network has been determined as a potentially beneficial way for achieving a competitive edge and enhancing overall organizational performance. This study investigates the effect that electronic procurement (e-procurement) has on the operational success and effectiveness of supply management in the manufacturing sector in Kenya. The objective of this research is to evaluate the influence of e-supplier appraisal, electronic resource planning (ERP), and electronic order processing on the supply management outcomes and performance within the select firms. The goal of this investigation is to establish a conceptual model and define three key dimensions that include e-supplier appraisal, e-order processing, and electronic resource planning. The research methodology employs descriptive research, utilizing a sample size of 120 participants that were be chosen using stratified sampling methodology. The acquisition of primary data was facilitated by employing questionnaires of which 92 respondents participated. The gathered data was subjected to analysis using SPSS statistical software and subsequently presented in the form of graphical representations and tabular formats. Furthermore, a regression analysis was administered to ascertain the correlation between e-procurement dimensions and supply management results. The results showed that e-supplier appraisal, electronic resource planning, and e-order processing had significant effects on supply management performance.

Keywords

Electronic Procurement, E-Supplier Appraisal, Electronic Resource Planning (ERP), Electronic Order Processing, Supply Management Performance

1. Introduction

1.1 Background of the study

The prominence of the supply network has emerged as an important issue for organizations, driven by their pursuit of enhanced quality and heightened customer satisfaction (Chopra & Meindle, 2001). The recognition among firms that prioritizing the performance of individual departments or functions may result in suboptimal overall performance has underscored the importance of effectively managing the entire supply network. This holistic approach is crucial for optimizing overall performance and ensuring long-term competitiveness. Therefore, the utilization of a systems thinking and performance measurement becomes necessary (Mentzer et al., 2001).

With time, the procurement function has evolved into a crucial component of competitive success for all organizations (Reck & Long, 1998). The measurement of performance is a fundamental aspect of procurement management that cannot be examined in isolation. In the absence of a well-defined vision for the procurement function, inadequate development of procurement outsourcing plans, and the absence of management reporting, the task of systematically measuring and evaluating performance becomes challenging, if not unattainable.

Monczka, Trent, and Hanfield (2010) assert that it is imperative to acknowledge the distinction between supply management and purchasing. Procurement encompasses both a functional group and a functional activity within an organization. Its primary objective is to deliver value by undertaking various activities, including supplier identification and selection, purchasing, contracting and negotiation, research on supply market, supplier assessment and enhancement, and the development of purchasing systems. In some cases, firms may choose to

outsource this role rather than maintaining an in-house procurement department. In contrast, supply management is in charge of efficiently managing and optimization of the purchases of inputs from suppliers, production, and the subsequent distribution of these products to consumers.

1.1.1 Historical Perspective of the Study

The origins of managing supply chain is founded on historical military campaigns. Prior to the phrase "supply chain," the prevailing terminology employed to describe the management and transportation of goods and services was "logistics." The military in ancient times initially spearheaded the evolution of logistics. This can be found in the utilization of a versatile system by the Roman legions, which encompassed provisions, storage facilities, and magazines (Britannica, 2009). The magazines were equipped with provisions and weaponry, well-developed road networks, portable maintenance facilities, specialized engineering and armory units, and comprehensive organization and strategizing. As a consequence, the army became highly efficient, displaying remarkable speed and strength, which enabled it to achieve numerous victories and successfully conquer extensive territories in both Europe and Asia, maintaining control over them for an extended period of time. Recently, studies on green manufacturing have increased, which has now encompassed green supply chain management. Most of the studies conducted in this field aims at the evaluation of environmental practices of existing or potential suppliers, the analysis of the economic advantages and disadvantages linked to the implementation of a green supply network, and the examination of reverse logistics. The significance of this matter extends to all companies that have the potential to utilize recycled materials. However, the impact of these modifications is particularly notable within the corrugated cardboard industry, which serves as the fundamental emphasis of this study. This is due to the widespread presence of vertical integration and the existence of numerous interconnections among suppliers, customers, and competitors within the supply chain.

According to Kharbanda and Stallworthy (1990), post-consumer waste (PCW) is widely recognized as the primary source of recycled material. This substance is commonly referred to as "previously utilized" prior to undergoing the recycling process. Given that the term "used" can also encompass materials or items intended for repair or remanufacture, we opt to utilize the term "recycled" in order to establish a clear distinction. The demand for environmentally sustainable goods has led to advancements in the technology used to convert post-consumer waste (PCW) into novel products, accompanied by the implementation of additional recycling initiatives. The demand for recycled materials and the availability of products containing recycled content have been on the rise for a number of years (Britannica, 2009). Recently, there has been a proposition by scholars that Supply Chain Management serves as a fundamental infrastructure for E-businesses (Saraja, 2013). Supply Chain Management places a considerable emphasis on the integration of supply network operations and information flows. The primary objective is to enhance the reliability and sustained competitive advantage of the chain by strengthening existing connections (Laudon, 2002). The supply chain is a range of tasks engaged in the delivery and making of goods, commencing from the purchasing of inputs and extending to the presentation of final products to the ultimate clients.

1.1.2 Global View of the Research

The increasing intensity of international competition within a dynamic business landscape underscores the significance of industrial manufacturing enterprises' ability to adjust and thrive amidst an unpredictable external context. Hence, to achieve the expectations of their consumers and maintain a competitive edge, contemporary businesses must adopt an appropriate strategy, such as the adoption of Supply Chain Management (SCM) . SCM allows organizations to efficiently and competitively operate within a rapidly changing global market. The primary aim of SCM is to efficiently incorporate and synchronize diverse operational activities within and across organizations, with the ultimate goal of offering increased value to consumers. This should be expanded to encompass academic institutions that operate as non-profit organizations. The primary objective is to enhance the societal benefits by cultivating a cohort of exceptional graduates and producing impactful research results. The establishment of an integrated educational supply chain necessitates the active participation and effective communication among all relevant parties involved in the entire process. The integration of technology in facilitating the dissemination of information allows for the development of a highly organized supply chain that efficiently fulfils the strategic planning and operational goals of educational institutions. Furthermore, it involves the development of efficient and sustainable connections both within and in and out (Sandelands, 1994).

The US Department of Défense (DOD) has minimized costs and lead time in the management of logistics and adoption of SCM activities (Kariuki & Ismael, 2017). Moreover, the UK's Office of Government Commerce (OGC) presents yearly updates on best strategies in SCM in the public industry.

Soares Aguiar and Palma dos Reis (2006) investigated the variables that contributed to the implementation of e-procurement structures in Portugal in a recent European survey. Participants were executives from 240 significant organizations in the manufacturing, service, and commerce industries. The researchers based their ideas on Tomatzky and Fleischer's (1990) framework, which identifies three factors of a company's setting that can

impact the implementation of technical innovations: environmental, technological, and organizational contexts. The researchers discovered favourable connections between technology capabilities (technological context), business size (organizational context) and trading partner preparedness (environmental context).

The study conducted by Kheng and Al-Hawandeh (2002) explored the E-procurement implementation in Singapore and identified obstacles to its successful adoption as perceived by local businesses in Singapore. Initially, it should be noted that the legislation pertaining to business-to-business (B2B) commerce and electronic procurement (e-procurement) is still under development. For instance, investigations regarding the efficacy and validity of email-based contracts and the objectives of electronic procurement reveal that approximately 50% of the surveyed individuals had implemented any formal expenditure analysis tool. Furthermore, among those who had adopted such tools, only 50% of their total expenditures were evaluated. Furthermore, the integration of electronic inventories from multiple vendors is hindered by technical obstacles associated to conversion, data interchange, and data. These challenges include inadequacies in retrieving data from the internet through search engines and the absence of standardized protocols. Furthermore, apprehensions were raised regarding the confidentiality and security of the data pertaining to procurement transactions. Additionally, engagement in E-procurement required a substantial allocation of resources towards the acquisition of hardware, software, and personnel training, resulting in costs that were deemed excessively high.

Regardless of the recent expansion of online sales in numerous African nations, the overall extent of business-to-business (B2B) and business-to-customer (B2C) e-commerce in Africa remains limited (Walker and Harland, 2008). The implementation of E-procurement in firm for Economic Cooperation and Development (OECD) nations has not met expectations and is steadily increasing, despite the anticipated commercial benefits (Pires & Stanton, 2005).

1.1.3 Kenyan Perspective of the Study

Within the Kenyan scope, the supply chain cold be categorized into four key industries : supply chain management (SCM) in the private sector, SCM in the public industry, SCM in the donor sector, and SCM in non-governmental organizations (NGOs). The aforementioned industries have made significant contributions to management of supply network management because of the critical requirement for enhanced efficiency and adaptability. As a result, the necessity for effective supply chain management has become imperative. The report titled "Economic Recovery Strategy for Employment and Wealth Creation" highlights the significant contribution of the manufacturing sector in Kenya towards promoting development and providing favourable conditions for both growth and investment. The central aim of the manufacturing sector, as outlined in the Vision 2030 framework, is to facilitate economic expansion and augment the availability of job prospects. Galvanized iron sheets, cigarettes, cement, wheat flour, and beer are some of the important Kenyan manufacturing subsectors that have seen a surge in demand recently. Between 2003 and 2005, these boosted manufacturing, especially cement, which is an accurate predictor of the economy's performance. Stationery and beauty products are the examples of locally created consumer goods (KAM, 2018).

Since independence, Kenya's economy has been dominated by agricultural, with industrialization retaining an important component of the nation's growth initiatives. The manufacturing sector’s role to the monetary Gross Domestic Product (GDP) has consistently remained between 15-16%, while the manufacturing industry has consistently accounted for approximately 10% of the overall GDP. Manufacturing operations have constituted the predominant share of industrial production output over the last two decades and serve as the central component of various sectors (KAM, 2018). The Public Procurement System in Kenya has experienced substantial evolution over the past few decades. The sluggish rate of expansion during the 1960s can be attributed to the lack of established criteria for establishing collaborative relationships with supply chain partners. In contrast, the subsequent decades witnessed the implementation of regulations outlined in treasury circulars, which governed the system and contributed to its growth throughout the 1970s, 1980s, and 1990s. The associated failures include inability to establish strategies to monitor partnerships, failure to increase the supply network goals above purchasing manufacturing and delivery to involve bigger entrepreneurial procedures, failure to incorporate the firm's internal procedures, absence of trust both within and without the firm, organizational opposition to the idea, and absence of comprehensive information systems.

1.1.4 Manufacturing Firms in Nairobi

Manufacturing companies are any businesses that use machinery, labour, and tools to convert raw materials into completed or semi-completed commodities. They encompass food, textile, chemicals, equipment, and machineries production (Briens & Williams, 2004). Manufacturing involves converting (a raw material) into a finished good, typically through a large-scale industrial operation. Awino (2011) states that manufacturing is a significant industry in Kenya that contributes significantly to the nation's economic growth.

Manufacturing companies are under the Kenya Association of Manufacturers (KAM) umbrella. .According to the KAM, the elimination of foreign exchange controls, price controls, and the creation of investment initiatives have not led to significant improvements in the general economy, particularly in the manufacturing

sector. To construct a self-sustaining manufacturing industry, strategic linkages in the domestic economy must be established. The expansion of the manufacturing industry has been linked mostly to an increase in the output of the agro-processing industry. Subsectors in this category include milk, sugar, fish, grain milling, oils and fats, and tea fats processing. Other significant industrial sub-sectors that do well include galvanized sheet production, cigarette production, batteries (both automobile and dry cells), automobile vehicle assembly, and cement production.

Manufacturing enterprises in Kenya are classified as small-sized (assets less than Kshs 40 million), medium-sized (assets between Kshs 40 million), and large-sized (assets exceeding Kshs 100 million) (KAM, 2018).These companies have high performance in regards to equipment needs, labour force needs (both capital and labour demanding), and mobilization of resources needed to manufacture the final product. Big capacity is required for big scale manufacturing enterprises to continue operating, therefore it is no surprise that the majority of manufacturing companies are situated on the outskirts of Nairobi, since there is greater room and opportunity for growth.

According to Benchmark Index, manufacturing enterprises are lowering the vendors number from which they purchase. Negotiating better unit rates by investing more with less vendors while reducing continuing administrative expenses in their procurement and accounts payable divisions as a result of supplier proliferation capacity in manufacturing enterprises can also represent the level of dependence on outside resource for component manufacture and activities for adding value input, which is accessible compared to output needs at a given time (Lei & Hitt, 1995).

Because of the ever-changing consumer wants and tastes, manufacturing enterprises are more adaptable in their operations. These businesses have the capability to change with the changes in the environment as well as economic developments such as inflation in the business in which they operate. In Kenya, manufacturing enterprises have faced various obstacles that have grown difficult to address, particularly contrabands and counterfeits items, which have disproportionately decreased the market share for locally created products (Domberger, 1998). Counterfeit and substandard items with relatively lower pricing have unfairly diminished the market share of locally created food products. Counterfeit trading has also inhibited innovative efforts and lowered food manufacturers' revenue base/ (KAM, 2018).

1.2 Statement of the Problem

The key issues associated to supply management among manufacturing organizations in Kenya are mainly associated to how procurement practices affect the performance of supply management. These issues form the underlying problem that this research seek to explore. Koech and Ronoh (2015) did a study on the issues experienced in the adoption of management of supply networks within the manufacturing industry. The result showed that some of the key challenges include complicated networks, distorted information and mistrusts, lack of responses by suppliers. challenges related to decision-making, high cost of operations, and little capacity and stock reserves due to late deliveries. Bala (2014) also explored the issues and challenges in the management of supply network. The findings showed that problems of supply networks integration in reference of system association (relationship between supply chain management and business strategies, and relationship between sub-systems), information sharing, and supply chain network design.

Chepkemoi (2012) did research on the barriers to the adoption of e-procurement within tea organizations in Kericho. The results identified security, cost, supplier enablement, and legal infrastructure as the key issues to e-procurement adoption. These research, are evidence of the challenges that affect the implementation and practices supply management performance and e-procurement. The insight from the studies give an idea of the challenges that manufacturing firm experience in relation to supply management performance and procurement and help form the basis for this study. It is important to understand these challenges. To understand the association between e-procurement and supply management outcome.

1.3 Purpose of the Study

A lot of previous studies on procurement and other relevant issues have been conducted, but not much study has been conducted by previous academics to explore the link between supply management performance and e-procurement in Kenya's industrial sectors. Chang and Wong (2010) investigated business reasons for implementing e-procurement for their market activities and analysed their performance to evaluate its advantages. The findings revealed that enterprises that used e-procurement are more inclined to engage in the e-marketplace, and that this involvement improved the company's outcomes. Orukoh (2007) investigated Numerical Machining Complex Ltd.'s SCM procedures. He found that the firm had not formalized a partnership with its vendors and proposed that strong supply chain management methods included efficient communication, ongoing enhancement of competitiveness, quality control, and review and culture. Mogire (2011) investigated Supply Chain Practices in Kenyan five-star hotels. He identified the primary impediments as cooperation during planning and an absence of knowledge about the Supply Chain Management Concept. The research also discovered strategic links between vendors and consumers in the hotel business, but it did not disclose long-term partnerships between vendors and consumers.

Despite being pertinent to this research topic, these investigations failed to reveal the correlation between e-procurement and supply management outcomes.

The preceding discourse show evidence that little is known concerning the relation between e-procurement implementation and performance of supply management. As indicated by the preceding investigations, no previous research has concentrated on closing this gap. Consequently, the study intends to examine the influence of electronic procurement implementation on performance of supply management performance Kenyan manufacturing enterprises.

1.4 Objectives of the Study

1.4.1 General objectives

The main goal of the investigation is to explore manufacturing firms within Nairobi to determine how their adoption of electronic procurement has impacted the performance of their supply management practices.

1.4.2 Specific objectives

i) To explore the degree to which e-supplier appraisal impacts supply management performance among Kenyan manufacturing companies in Nairobi.
ii) To explore the impact of electronic resource planning on supply management performance among Kenyan manufacturing companies in Nairobi.
iii) To identify the effect of e-order processing on supply management performance among Kenyan manufacturing organizations in Nairobi.

1.5 Research Questions

i) What is the degree to which e-supplier appraisal impact supply management performance among Kenyan manufacturing companies in Nairobi?
ii) What is the influence of electronic resource planning on supply management performance among Kenyan manufacturing organizations in Nairobi?
iii) What is the influence of e-order processing on the performance of supply management performance among Kenyan manufacturing companies in Nairobi?

1.6 Significance of the Research

The project's outcome are important in improving the procurement sector's efficacy and efficiency. It will assist manufacturing organizations in determining how the implemented procurement methods are contributing to their performance and in identifying potential performance bottlenecks. Procurement officers will receive information and a greater grasp of the significance of putting procurement best practices into action. The analysis will also shed light on procurement blunders that should be avoided at all costs. Future researchers, as well as the general public, will benefit as well.

The investigation will also be necessary to firms because it will assist them in determining the advantages of using procurement outsourcing. It would also help them figure out how to enhance the outcome of the supply chains using procurement outsourcing. Manufacturing enterprises in Nairobi, will benefit from this study since it will assist them in determining the correlation between e-procurement and supply management success. Manufacturing companies will recognize the advantages of this research, and those who are yet to embrace e-procurement will see the worth of doing so in order to get more competitive. The study would be valuable to other companies wanting to adopt SCM given it will allow them to recognize and avoid barriers encountered while using best practices.

The results of the research will also act as a foundation for future academics working on similar themes by identifying areas that require additional inquiry. The project will be valuable for future studies on e-procurement outsourcing and outcomes of supply chain for scholars and researchers. The outcomes of this research could be highly valuable to procurement students since they would allow them to completely understand this topic and utilize it as a foundation for future studies. Lastly, successfully completing the research will allow the study to partially meet the demands for Mount Kenya University's Master's degree in science procurement and supply.

1.7 Scope of the Study

This project look at the impact of electronic procurement on supply management outcomes in Kenyan manufacturing enterprises. The research was exclusive to Kenyan industrial enterprises and concentrated on Nairobi County. Participants were restricted to employees of manufacturing enterprises who make up the target population. This is important while gathering data because secondary sources only cannot be depended on. The research was conducted over a six-month period.

1.8 Study Limitations

In conducting this research study, the researcher may face some limitations including; some of the respondents may be hesitant to divulge their organization information for being scared of giving out organizations secrets. Because of sensitive data included there could be some reluctance in providing information specifically by the employees in the management. Assurance will be provided to management that all data will be employed for data reasons only and the information given will be handled with strong confidence and their identification will remain private.

1.9 Delimitations

Permission was sought in advance. The geographical location selected for the research will be easily accessible and there are no insecurity issues like clashes from tribal or border issues. The method selected for the research will be also well comprehended by the researcher and with the assistance of the expert supervisors' interpretation will be meaningfully carried out to arrive at the right conclusion. The population chosen for the research will be readily accessible.

1.10 Assumption of Study

There are several assumptions made for this research on the effect of electronic procurement implementation on manufacturing firms' supply management outcome in Nairobi County, several key assumptions can guide research. These assumptions include the availability of robust technology infrastructure, the capacity of the government to support policies, and organizational readiness for electronic procurement adoption. Additionally, other assumptions that have been made on this study include how ready supplier are in adopting e-procurement, data security measures associated to e-procurement, and the capacity to integration of electronic procurement into supply chains. These assumptions provide a foundational understanding for the study's framework and findings, albeit requiring validation through comprehensive research and analysis.

2. Literature Review

2.1 Empirical Review

This portion of the chapter looks at researches that have been undertaken in the field of study domain. Several researches have been done to explore the unique research aims and limitations.

Internal customer satisfaction via the E-Procurement role can typically translate to an organization's competitive edge in a variety of measures other than cost-cutting. Van Weele (2005) lists a handful of these examples: E-procurement has the potential to reduce quality costs by ensuring that selected vendors adhere to rigorous quality control measures, thereby minimizing the production of substandard products or services. E-Procurement has the potential to minimize quality expenses by confirming that the elements purchased don't result in concerns from the consumer office or the end products received by the consumer. The implementation of E-procurement can enhance product uniformity and internal customer satisfaction due to the concept of product diversity (Kipyego, 2012). This objective could be accomplished by implementing product standards that restrict the variety of elements and/or vendors involved. Suppliers play a significant role in driving innovation of product and design within the sector, as well as in facilitating the outcomes of extensive collaborations between users and suppliers across various business domains. By deliberately fostering these kinds of connections, E- procurement can help to accelerate and sustain user and product satisfaction innovation.

E-Procurement system is a complex program that integrates numerous beneficial functionalities aimed at facilitating purchasing transactions within a corporation. The implementation of a Web-based procurement program has the potential to improve search functionality, supports quicker and higher accurate data exchange, present expedited and more comprehensive information, and gain cost-effective communication and coordination. Accordingly, the utilization of Web-based procurement significantly affect four essential business-to-business (B2B) responsibilities within the company, namely monitoring and control, purchase processing, coordination, and search (Subramaniam and Shaw, 2002). E-procurement has addressed the automation of internal systems and the establishment of partnerships among suppliers for inter-organizational procedures. The first phase of the process manages an automated and digital internal workflow, starting from the selection of items by end consumers, and progressing through the generation and processing of purchase requests and approvals, culminating in the creation and receipt of purchase orders. The latter pertains to the establishment of vendor connectivity for electronic catalogues, the management of transaction administration, and the maintenance of ongoing relationship management. In order to fully benefit from the significance of Web-based e-procurement, it is necessary to possess an in-depth comprehension of the aspects that contribute to the creation of value. This understanding is crucial for the development of a viable solution that facilitates the adoption of a Web-based e-procurement structure (Subramaniam and Shaw, 2002).

Thomson and Singh (2001) argue that enterprises are moving beyond monitoring the buying of office equipment and commodities for repairs and maintenance in order to take leverage of the rewards of E-procurement in the field of direct products. Amongst the advantages are better management over expenditure planning, the

reduction of redundant purchases, and simplified processing of transactions. Raw materials, components, and parts for production are among the targets for the utilization of E-procurement technologies. Sinha et al. (2005) stipulates that the scheme's emphasis on the final relationship of inventory levels and just in time (JIT) activities are realistic characteristics. The primary objective is to minimize inventory investment and enhance responsiveness to customer demands, thereby enabling an organization to operate competitively in real-time, characterized by the absence of any delay between the identification and fulfilment of requirements. Business enterprises have implemented strategies to reduce the duration of queuing, particularly in shopping centres, as opposed to waiting in line. Trevitt (2002) asserts that electronic purchasing has demonstrated enduring efficacy, particularly during periods of economic instability.

According to Nuwahereza (2015), the Public Trading Exchange (PTE) on electronic markets is still grappling with administrative purchases and acquiring major providers. A public trade exchange is a network that is web based contact point that enables external and internal connection via interactive and extra-net apps. Typically, this collaboration and communication is to across a select group of endorsed member firms in the private electronic market to offer this basically with readily available and process incorporated within businesses, firms automatic strategic supply and exchange supply the need availability and securities.

According to Turban (2004), there being a substantial amount of sellers and purchasers is deemed necessary to warrant the financial and personal investment needed for the establishment of a crucial working relationship. Moreover, considerable attention is being directed towards the selection and prospective outcomes to ensure the efficacy of the procurement process. The utilization of electronic purchasing methods has exhibited positive and robust associations between customers and suppliers. According to Smith and Flanegin (2004), electronic procurement refers to the comprehensive online procedure encompassing the generation, distribution, provision, and remuneration for services and commodities. The economic model stimulates entrepreneurship and creative thinking, resulting in a large number of businesses and consumers. Electronic purchasing procedures pose a significant and complicated problem to businesses and financial institutions in developing efficient, adaptable, and secure payment systems for online purchases. In contrast, Kheng & Al-Hawamdeh, 2002). highlight that electronic buying, when supplemented by external and internet apps, ensures accessibility to inventory data bases, particularly for large clients. A cooperative employed sales representative assists in obtaining consumer's better decisions about managing inventory levels, that is, the line of goods needs to be introduced or removed.

According to O'Callghan and Turner (1995) data exchange reflects a wide range of business documents related to transactions with an explicitly defined process that must be adhered to by individual firms that subscribe to EDI (Electronic Data Interchange) amenities. This structure type is a typical illustration of computerized procurement automation. Following a developed protocol by vendors, manufacturers, and customers, a presently formatted data is passed over network associated directly between computers without using of paper documentation or intervention of human. Nevertheless, it is worth noting that direct network links between trading parties' computers are not commonly utilized due to concerns about privacy and safety. Companies are extremely active in sectors such as marketing, distribution, and production. Every effort is made to ensure that goods are supplied with a greater level of consumer satisfaction.

In summary, this empirical study focuses on certain research studies within the area of e-procurement, highlighting their unique objectives and constraints. It emphasizes the vital role of internal customer satisfaction in driving competitive advantages beyond mere cost reduction. Research by Van Weele (2005) underscores how e-procurement can mitigate quality pricing and improve product uniformity, thereby boosting internal customer satisfaction. Additionally, the implementation of web-based procurement systems, as discussed by Subramaniam and Shaw (2002), significantly influence key business-to-business (B2B) functions like purchase processing, monitoring, and coordination, causing process automation and streamlined the relationships between vendors.

Additionally, Thomson and Singh (2001) suggest the expansion of e-procurement beyond office equipment to add direct goods procurement, citing benefits such as control expenditures and minimizing transaction processing complexities. Sinha et al. (2005) highlight the scheme's focus on just-in-time (JIT) practices and inventory management allowing firms competitively operate in real-time. Nuwahereza (2015) presents the obstacles of the adoption of Public Trading Exchanges (PTEs), with a focus on the need for collaborative networks and effective integration of the supply chain. Furthermore, Turban (2004) presents the significance of a strong buyer-seller ecosystem for successful e-procurement initiatives, while Smith and Flanegin (2004) emphasize the entrepreneurial opportunities and the demand for secure payment systems. O'Callaghan and Turner (1995) elaborate on the responsibility of Electronic Data Interchange (EDI) in automating procurement processes, albeit with privacy and security concerns. These studies give an empirical framework that present the multifaceted nature of e-procurement, indicating its capacity to drive operational efficiencies, improve supplier relationships, and develop value across various business functions.

2.1 Theoretical Framework

This project is founded on Agency Theory, the Model of Innovation Diffusion Adoption, and Operation Management Theory.

2.1.1 Agency Theory

Agency relationship is described by Jensen and Meckling (1976) as a contractual arrangement wherein principals entrust the performance of tasks to an agent, who acts on their behalf. The agent is obligated to fulfil responsibilities within the framework of the principal-agent relationship, while given actions that have influence for both the agent and the principal. They went on to explain that these implications can have both bad and beneficial effects on every actor. Agent and principle and intentions and aims are two issues that can occur, and it is hard for the principle to check what the agent is doing. According to this view, contracts and work supervision should be in place to minimize opportunism from vendors, yet this could not be enough to deal with the issue because consultants are better knowledgeable about the issue than the procuring body. According to agency theory, procurement is divided into two segments with distinct aims. It entails a client and one or more suppliers competing for the contract. With this in consideration, this research propose to use primary agent theory to illustrate why having the proper supplier in the market is critical. This is due to how it can aid in the evaluation of results and supplier decision making.

The incorporation of agency theory into the discussion of procurement and supply management adds depth and insight into the dynamics of principal-agent relationships within the context of e-procurement. Agency theory focuses on the significance of aligning the goals and incentives of the (principal) buyers and the (agent) suppliers to prevent conflicts of interest and facilitate collaboration. In the e-procurement context, this means creating contracts and performance metrics that encourage suppliers act in the best interests of the buyer (Chrisidu-Budnik & Przedańska, 2017). Through the alignment of these incentives, firms can encourage suppliers to provide high-quality goods or services, align with to contractual obligations, and collaborate effectively throughout the procurement process.

Agency theory acknowledges the presence of information asymmetry between agents and principals, where agents or supplier could have superior knowledge or information about the goods or services being procured. In e-procurement, this can cause adverse selection, where buyers may inadvertently select suppliers that do not align with their quality or expectations in terms of performance (Zu & Kaynak, 2012). To address this challenge, organizations can take up mechanisms like supplier qualification criteria, due diligence processes, and supplier performance evaluations to mitigate information asymmetry and reduce the risk of adverse selection.

Additionally, agency theory highlight the significance of monitoring and control mechanisms to make sure that suppliers fulfil their obligations and act in the best interests of buyers. In e-procurement, this involves implementing strong governance structures, management of contractual processes, and performance monitoring systems to track supplier performance and compliance with contractual terms (Fayezi et al., 2012). Through the effective controlling and monitoring of supplier behaviour, firms could help remove agency risks and protect their interests throughout the procurement lifecycle.

The theory also advocates for the utilization of contractual safeguards and enforcement mechanisms to prevent opportunistic behaviour and make sure compliance with contractual agreements. When it comes to e-procurement, this may include specifying clear deliverables, performance standards, and dispute resolution mechanisms in procurement contracts to hold suppliers accountable for their actions. The contractual safeguards and enforcement mechanisms, organizations can develop a framework for overcoming disputes, handling breaches of contract, and enforcing compliance with contractual obligations (Zu & Kaynak, 2012) . This minimizes the likelihood of opportunistic activities from suppliers.

The significance of strategic supplier selection and relationship management in mitigating agency risks and achieving procurement objectives are also aspects that are facilitated by the Agency theory. In reference to e-procurement firms can employ the agency theory principals to present guidance on the selection of supplier based on aspects like reliability, reputation, and interests alignment (Fayezi et al., 2012). Through effective and strong supplier relations that have been built on trust, mutual benefit, and transparency firms can facilitate innovation, collaboration, and creation of value creation through process of procurement process.

Agency theory could also help in felicitating continuous adaptation and improvement. The theory recognizes that agency relations are dynamic and subject to change over time. Firm needs to explore, adapt, and monitor their procurement practices to address evolving market status, technological advancements, and companies' needs. This mindset could help enhance the effectiveness and efficiency of their procurement processes, prevent risk associated to the suppliers, and optimizes the value creation for involved stakeholders (Bendickson et al., 2016). Essentially, using agency theory principles into e-procurement practices present an understanding the complexities and challenge of buyer-supplier (principal-agent) relations in procurement and supply management. These concepts including relationship management, incentive alignment, monitoring and control, information asymmetry, contractual safeguards, and supplier selection, could help organizations in optimizing their procurement processes, prevent agency risks, and gain strategic objectives in today's dynamic business environment.

Based on this understanding the following research question is raised: *to what extent does e-supplier evaluation influence the performance of supply management among Kenyan manufacturing firms in Nairobi?*

2.1.2 Operation Management Theory

Operations are roles or tasks that are made up of a number of components or subtasks and are often executed in a single location. Operations convert resource or data inputs into desirable services, goods, or outcomes, and deliver value to consumers. The design, enhancement, and administration of transformation procedures that produce value by turning inputs like as labour, raw materials, and/or consumers into outputs like services and goods is referred to as operations management (Walker et al., 2015). Essentially, operations management is involved with systems and how to improve their performance, whether it is more effectively, efficiently, at a higher quality level , at a cheaper cost, or with lower carbon footprints, using the relevant criteria defined by the business.

The use of operations management theory into the study of e-procurement and supply emphasizes the significance of transforming inputs into outputs. When applied to e-procurement this theory can help in streamlining procurement processes to reduce waste, minimize lead times, and make the best out of resource. Taking advantage of e-procurement technologies and best practices, organizations can significantly impact organizations efficiency in their procurement operations, leading in in cost savings and enhanced service delivery (Salah et al., 2023). The operations management theory suggest the continuous enhancement and the use of Lean principles to reduce waste and take full advantage of creation of value. This includes regularly optimization and reviewing of the e- procurement processes to determine any obstacles or inefficiencies Using this approach of continuous improvement and including the Lean principles like collaboration with suppliers, and just-in-time inventory management, manufacturing firms can improve the responsiveness and agility of the supply chain as stipulated by Salah et al., (2023).

Additionally, this theory emphasizes the significance of quality management in making sure that outputs align and meet the expectations of the buyers. This could translate to the implementation of a strong and reliable quality control measures throughout the procurement process, from supplier selection to order fulfilment. The theory suggest the adoption of Total Quality Management (TQM) and taking advantage of the e-procurement systems that have built-in quality monitoring and assurance capacities functions (Macharia & Mwangangi, 2016). This enables firms to maintain high quality standards of and consistency in their procurement.

The model also shows the need for coordinating activities across various functional areas within a firm and integrating processes with external partners in the supply chain. This could mean aligning procurement practices with other functions such as inventory management, planning for production, and logistics. Essentially, teamwork and implementation across the supply network can enable firms to achieve greater visibility, responsiveness, and efficiency in all procurement practices (Salah et al., 2023). Operations Management Theory also recognizes the importance of sustainability and environmental management in operations. In procurement, this could means considering the effect of procurement and adopting sustainable sourcing practices(Oladimeji et al., 2021). Environmental considerations during procurement decisions could help firms to reduce their carbon footprint and be part of conserving the environmental.

Moreover, the theory emphasizes on the importance of risk management and building resilience in operations, which involves determining and handling any obstacles linked with supplier disruptions, market functions, and supply chain vulnerabilities. In implementing risk management strategies and taking into account e-procurement technologies for real-time monitoring and the assessment of risks, firms are able to improve their procurement operations resilience and the focus on dressing any disruptions that may arise (Emrouznejad et al., 2023). Generally, the application of the Operations Management Theory into the e-procurement and supply management context offers a framework for comprehending how to develop, manage, and optimize procurement processes to gain strategic objectives and ensure that stakeholder gain value. Through the principals of this theory , firms are able to gain efficiency, resilience, quality management, supply chain integration, sustainability, and risk management, which improves their performance and effectiveness of their e-procurement functions in current 's business dynamics.

This insight helps to establishes the second research question: *what influence does electronic resource planning have on the performance of supply management in Kenyan manufacturing companies in Nairobi?*

2.1.3 Roger's innovation diffusion adoption Model

According to Rogers (1995), technology adoption is influenced by technological features like relative advantage, system compatibility, and system simplicity. It also takes into account communication channels, innovation, and the process through which decisions on implementation are taken. Evan and Wruster (1991) indicate that ICT allows larger data to be publicly accessible, with the potential to provide accessibility to huge catalogues of vendors, a greater range of services and products accessible to workers, who consequently offer wider range flexibility. This enables E-order processing using systems like EDI and VMI that enable a well-integrated system. Rogers stresses the social system's composition by emphasizing network connection and user inter-relationships. The size and interconnectedness of the industrial network in which the business operates may also impact decisions (Lundblad, 2003).

The Rogers' Innovation Diffusion Adoption Model provides a comprehension of the factors impacting technology adoption and implementation in the context of e-procurement by emphasizing on the necessity of relative advantage, which points to the perceived advantages of adopting a new technology compared to existing alternatives. This relative advantage can be seen in various forms, like saving of costs, efficiency gains, enhanced decision-making, and improved competitiveness. System compatibility, on the other hand, involves to the level to which a new technology aligns with current processes, systems, and workflows within an organization (Aizstrauta et al., 2014). Organizations are more probably to implement e-procurement technologies that have compatibility with their existing infrastructure and align with their strategic objectives.

The model also highlights the significance of system simplicity, or the ease of using and implementing of a new technology. E-procurement systems that are intuitive, user-friendly, and require minimal training are more likely to be adopted by organizations that want to enhance their procurement process. Moreover, usability factors like navigation, interface design, and accessibility play a critical role in enabling technology adoption and acceptance among users (Jwaifell & Gasaymeh, 2013). From another perspective, the Rogers' model indicates the significance of communication channels in enabling the diffusion of innovation within social systems. In the e-procurement context, effective communication channels like online platforms, collaboration tools, and electronic data interchange (EDI) systems allows easy and smooth exchange of information between the suppliers and buyers (Scott & McGuire, 2017) . These communication channels improve transparency, teamwork, and information sharing across the procurement process, leading to enhanced decision-making and performance results.

From a different perspective, innovation decision-making process is another aspect that Roger's model support. This involves phases such as knowledge, persuasion, decision, implementation, and confirmation. Usually, firms go through a systematic assessment process when considering new e-procurement technologies. Key decision-makers assess the potential benefits, risks, and implications of adopting e-procurement systems prior to making informed decisions (Walitzer et al., 2015). Effective change management techniques and stakeholder involvement initiatives are vital to facilitate the easy implementation of e-procurement innovations as well as their adoption.

Evan and Wurster's (1991) ICT has a transformative potential in revolutionizing information access, collaboration and collaboration in supply chain., ICT can enable e-procurement in organization to access broad repositories of vendor catalogues, align procurement procedures, and encourage smooth communication between buyers and suppliers. Emerging technologies like electronic data interchange (EDI), e-order processing systems, and vendor-managed inventory (VMI) improve the integration, effectiveness, and efficiency of e-procurement operations.

The model also emphasizes on the role of social systems in shaping technology adoption behaviours and outcomes. The composition of social networks, user inter-relationships, and network connections influence individuals' perceptions, attitudes, and behaviours towards adopting e-procurement technologies. Manufacturing firms that operate within interconnected industrial networks could experience network impacts, where the decisions to adopt one entity impacts the adoption decisions of others. Networks for collaboration , partnerships, and alliances within an industry could accelerate the adoption and diffusion of e-procurement innovations across supply chains process (Elsanosi, 2020). Through the integration these additional insights into the discussion of Rogers' Innovation Diffusion Adoption Model, manufacturing firms could gain an in-depth comprehension of the multifaceted elements impacting technology implementation and integration in e-procurement initiatives. This holistic perspective enables firm to create tailored techniques, address barriers, and leverage enablers to optimize the adoption and utilization of e-procurement technologies, ultimately driving value creation and competitive advantage in today's digital economy.

Based on this information, the final research question is: *what influence does e-order processing have on the performance of supply management in Kenyan manufacturing companies in Nairobi?*

2.3 Conceptual Framework

The subsequent conceptualization facilitates the researcher in addressing the inquiries of this study. The conceptualization of reference context determines the approach to data gathering for the project. The conceptual framework acts as the foundation for the questionnaire developed to gather data and ascertain the relationship between the variables both independent and dependent. The variables are illustrated in Figure 2.1.

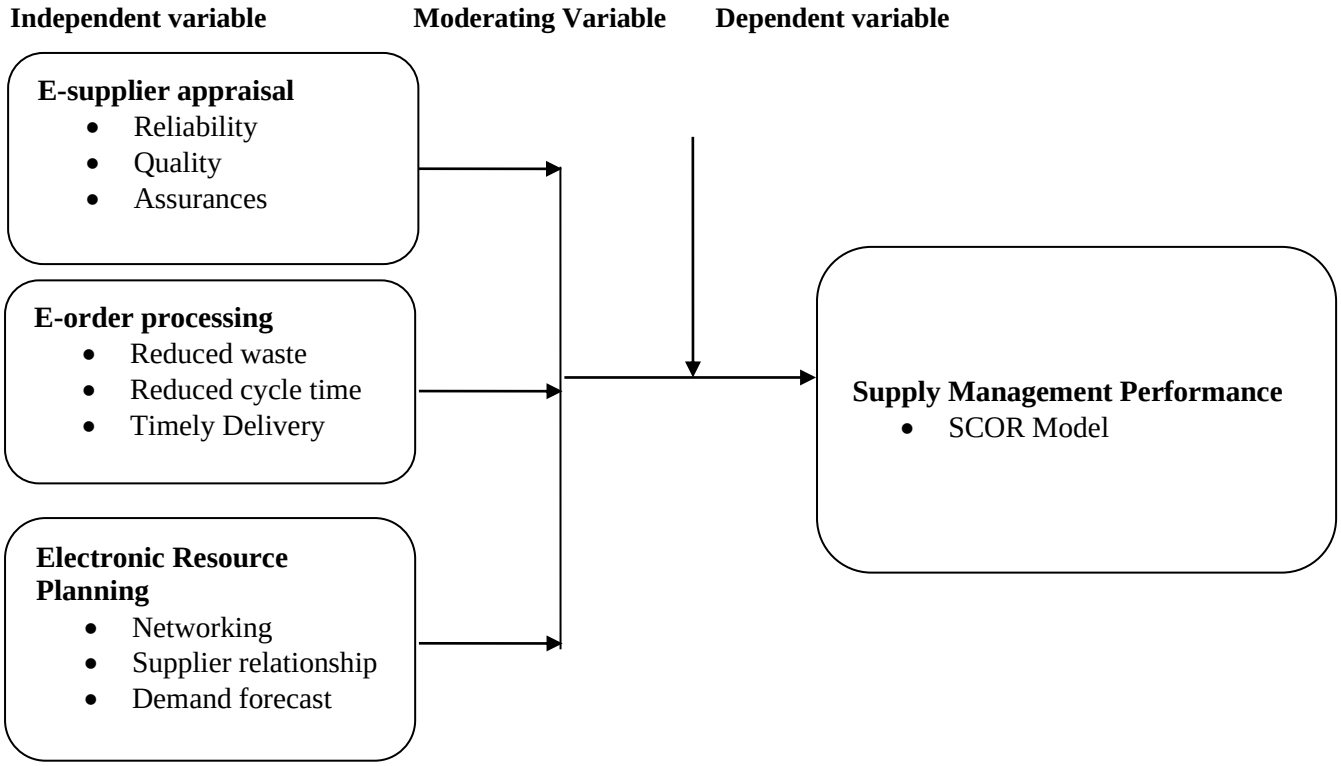

Figure 1 : Conceptual Framework

2.3.2 E-supplier appraisal

Supplier appraisal is the assessment of the prospective supplier's capacity to regulate price, quality, quantity, delivery, and every other contract-related variable. Supplier assessment, according to Arsan (2011), can take a variety of ways, all of which affect the standard of data collected by suppliers and reflect the genuine picture of the suppliers.

2.3.2 Electronic Resource Planning (ERP)

ERP is a useful tool for streamlining corporate processes. The major goal of these packages is to enhance information exchanges within firms. By equipping themselves with enough information, electronic resource planning allows them to make sure that they are acquiring the best answer for their businesses. The combination of supply chain management and ERP enables distribution and manufacturing firms to get deeper insight into all processes while enhancing speed, effectiveness, and overall client satisfaction. ERP is at the heart of business information processing. The backbone of most businesses' information systems landscape is an ERP system. This system manages all important business operations (Kurbel, 2013).

2.3.3 E-order processing

E-ordering was created to improve existing order-related communication flows. The typical order procedure entails a large amount of external and internal paper flow, packing notes, order response, and invoicing. These external and internal paper flows will soon be replaced by electronic papers as a result of the e-ordering procedure.

2.3.4 Organizational Culture

Culture, according to Schiffman and Kanuk (2004), is a total of taught values, beliefs, and conventions that drive the consumer behaviour of individuals of a specific society. Culture is established by a company's leaders, particularly those that established it in the past. As companies grow outside the borders of their home country, they bring their culture with them, as it could be difficult to acquire the culture of a foreign market all at once. To further encourage this culture, many companies bring expatriates from their home nation to assist operate the firm in the new location for a period of time.

2.3.5 Working Environment

Workplace refers to the environment in which an employee executes his or her duties (Chapins, 1995). An efficient workplace is one in which management's desired outcomes can be realized. The physical space impacts the way people collaborate, accomplish jobs, and are led in a company. The physical space, as an element of the job environment, has had a direct influence on the human senses, changing interpersonal connections and consequently

productivity. This is because the qualities of a room or meeting space for a group have an impact on satisfaction and productivity levels. In the modern business environment, one of the aspects that make an employee satisfied is the office atmosphere. The modern workplace is unique, diverse, and ever-changing.

2.3.6 Supply Management Performance

Supply management involves practices employed to efficiently link suppliers, manufacturers, and sellers to manufacture and deliver goods in the appropriate amounts, to the appropriate locations and at the proper time to reduce budgets at the same time providing to consumers' needs. Supply management performance is the effectiveness of every supply chain stage in optimizing cost, meeting customers' expectations, enhancing speed, and reducing inefficiencies (Lotfi et al., 2023). The Supply Chain Operations Reference (SCOR) Model is used as the instruments for measuring supply management performance. According to Putri, Huda, and Sinulingga (2019) this model is a standardized methodology for evaluating and describing a supply chain flow. It is made up of five processes that include plan, source, make, deliver, and return, with three process levels that include process type-level 1, process configuration-level 2, and SCOR process element-level 3. SCOR involves two parts that include metrics and performance attributes. The performance attributes are linked to a firm's strategy, and every attribute has its benchmark in the metric. SCOR acknowledge five performance attributes which are responsiveness, costs, agility, assets management, and reliability. The metric can be verified and can be in qualitative or quantitative form and is described against a given reference point. The following is figure is a depiction of the SCOR Model

	Level		Examples	Comments
	#	Description		
Within scope of SCOR	1 	Process Types (Scope)	Plan, Source, Make, Deliver, Return and Enable	Level-1 defines scope and content of a supply chain. At level-1 the basis-of-competition performance targets for a supply chain are set.
	2 	Process Categories (Configuration)	Make-to-Stock, Make-to-Order, Engineer-to-Order Defective Products, MRO Products, Excess Products	Level-2 defines the operations strategy. At level-2 the process capabilities for a supply chain are set. (Make-to-Stock, Make-to-Order)
	3 	Process Elements (Steps)	• Schedule Deliveries • Receive Product • Verify Product • Transfer Product • Authorize Payment	Level-3 defines the configuration of individual processes. At level-3 the ability to execute is set. At level-3 the focus is on the right: • Processes • Inputs and Outputs • Process performance • Practices • Technology capabilities • Skills of staff
Not in scope	4 	Activities (Implementation)	Industry-, company-, location- and/or technology specific steps	Level-4 describes the activities performed within the supply chain. Companies implement industry-, company-, and/or location-specific processes and practices to achieve required performance

Figure 2: Hierarchy of SCOR Model, (Putri, 2019)

2.4 Literature Review Recap and Research Gap

Several studies have been carried out to investigate the alignment between electronic procurement adoption and the outcomes of supply management, nevertheless the proof is mixed. Kenya's manufacturing climate has altered dramatically as a result of government rules and intense competition. Mwirigi (2007) explored green supply chain management techniques in Kenyan manufacturing enterprises. She investigated four GSCM methods in the research: design for the environment, green purchasing, green marketing, and reverse logistics. The research findings showed that environmental issues caused by GSCM activities led to environmental difficulties in the same proportion that manufacturing enterprises do. This research also had a few drawbacks since it did not investigate how supply chain procedures affect service delivery performance. Mwilu(2013) found that public research institutions had adopted certain supply chain management (SCM) techniques to a significant degree that others were implemented to a moderate extent, resulting in gaps in the execution of SCM operations. The researcher also identified significant correlations between logistics, lean suppliers, information technology, and company performance within publicly funded research organizations. The aforementioned studies primarily aimed at the procedures and performance of supply SCM. However, their scope was limited as they only examined one public health facility. Consequently, there is a necessity to expand the scope of future research to encompass a broader range of healthcare facilities. Additionally, the latter study specifically emphasized public research organizations.

However, both of these studies did not make an effort to establish a link between the utilization of electronic purchasing and the outcomes of supply management within Kenya's manufacturing sector.

3. Research Method

This study follows a quantitative research methodology which involve gathering numerical data related to electronic procurement adoption, supply management performance metrics, and other relevant variables as provided in the conceptual framework. The advantage of using the quantitative methodology is because it help collect numerical data, which is easy to collect using surveys, and questionnaires, and then analysed using statistical techniques. This is the most appropriate research method to identify correlations between the variables, quantify the impact of electronic procurement adoption, and draw conclusions about its effects on manufacturing firms' supply management performance in Nairobi County.

3.1 Research Design

This research employs quantitative as well as qualitative methods, involving behavioural and both numerical data. We shall employ a descriptive research design. Cooper and Saunders (2003) define descriptive research as determining a phenomenon's what, where, and how. It is used to get information about a situation based on variables or circumstances in the context. It entails a field survey in which a researcher engages a target population to learn about specific concerns relating to the research being conducted. The goal is to collect data without manipulating the research situation, and it is non-intrusive and includes naturally happening occurrences over which the researcher has no influence (Cooper and Saunders, 2003). As a result, the findings from Nairobi manufacturing enterprises are generalizable in this research.

3.2 Target Population

Kothari (2004) defines the population of research as the whole range of all items, cases, units, or factors with regard to which research inferences are reached. The research is aimed at employees of Nairobi-based industrial enterprises. Nairobi is home to about 499 manufacturing enterprises, based on the Kenya Association of Manufacturers (KAM). A population of 120 people were identified from 12 big, medium, and small sized. Table 3.1 summarizes the population characteristics.

Group	Target population
Large sized	
Kenafric Industries LTD	10
Abyssinia Iron and Steel LTD	10
Crown Paints Kenya LTD	10
Afripipes Kenya LTD	10
Medium sized	
RSA Kenya LTD	10
Premier Industries LTD	10
Maroo Polymers LTD	10
Ideal Manufacturing Company LTD.	10
Small sized	
Eco Steal Africa LTD	10
General Plastics LTD	10
Budget Shoes LTD	10
Economic Industries LTD	10
Total	**120**

Table 1: Target Population

Source: Researcher (2018)

3.3 Sampling Procedure and Techniques

Kothari (2004) defines sampling design as the method or approach used by the researcher to choose some sampling units based on which conclusions regarding the population are generated. Stratified random sampling was used in this investigation. Because the target population is divided into strata, stratified sampling approaches are acceptable, and random sampling processes was used to choose samples from every segment (Cohen, Manion, & Morrison, 2007). Because of the stratification, it was feasible to draw significant conclusions from the subgroups. A sample size of 120 participants was chosen following the given sampling guideline.

3.4 Sample Population

According to Shukla (2020), a sample is utilized to collect representative data regarding a population. The sample size was identified utilizing Slovin's formula, which is expressed as:

n = N / (1 + Ne^2) where

n = Samples numbers

N = Total population and

e = Error tolerance

Supposing margin error I of 0.05, and N = 120, n is obtained as n =92.3 that presents a sample size as presented in the table 3.2;

Group	Target population	Sample	Percentage (%)
Large sized	40	31	33.7
Medium sized	40	31	33.7
Small sized	40	30	32.6
Total	120	92	100

Table 2: Sample Size

3.5 Construction of Research Instruments

The investigator gathered information by asking a combination of closed- and open-ended questions. The questionnaire were intended to capture both qualitative and quantitative information. The data was gathered through questionnaires that the researcher administered. There are open and closed-ended queries on the form. Partially closed and open ended questionnaires facilitate data analysis, analysis, and processing (Mugenda & Mugenda, 2003). The secondary data that was the source of literature was acquired from appropriate procurement publications, newsletters, in-house periodicals, annual reports, journals, and books.

3.6 Testing for Reliability and Validity

Validity assesses the precision of tools used as part of an application to obtain information that may accomplish the investigation's objectives (Kothari, 2004). The expert ensured that the poll captures crucial data that answers the investigation's objectives. The level of constancy with which a tool quantifies a variable is defined as an instrument's unwavering quality (Mugenda & Mugenda, 2003. The objective of this research is to improve the reliability of the tool's estimation. According to Yin (2003), dependability points to the degree to which a study could be replicated and give findings that are consistent. The survey was implemented as a pilot study in a select number of manufacturing companies. The selection of companies for the pre-test was conducted using a systematic and non-standardized scrutiny process. To improve the credibility of the survey tool, the researcher intended to convene a focus group consisting of five to ten experts in the subject of e-procurement. The focus of this exercise was to solicit their valuable insights and constructive criticism regarding the survey.

3.7 Piloting of Research Instruments

Questionnaire pre-testing offered significant details on the rate of response and the chance to see the appropriateness of the question language in the local context of culture. Pilot research was done on a small cohort of the target demographic. This was done by the researcher, who reached out to participants via email to clarify the purpose of the study and invite them to take part. This enabled the investigator to document demands for further clarification and to record comments demonstrating participant challenges with the sequence of the question or other variables.

3.8 Data Collection Method and Procedures

Mugenda and Mugenda (2003) describe gathering of data as the process of acquiring data from the topic of a study. Throughout this study, both secondary and primary data was gathered. The questionnaire included both open- and closed-ended questions. The queries were followed by a choice of potential answers from which respondents must choose the one that most accurately defines their circumstances. 120 questionnaires were spread to participants. The surveys was done via the drop and pick approach. The questionnaires were employed because they enabled participants to provide feedback freely and assist the researcher obtain details that were not be accessible when interviews were employed. Some of the participants completed the questionnaire on their own. Secondary data was gathered from reports and other materials gathered within these institutions.

3.9 Ethical Consideration

The study sought and received permission for carrying out the study from participants; a sample consent letter of request is provided with the questionnaire. The researcher fully disclosed the objective of the study as well as the study's procedure. A significant degree of privacy and confidentiality of data was retained, and the outcomes were used solely for academic purposes.

3.10 Data Analysis Techniques

The researcher revised the data every day to guarantee the logical consistency and completeness of the responses. Mistakes and data gaps were corrected as soon as possible. After editing, the data was assessed and descriptive evaluation techniques was employed to assess the quantitative data.

The gathered data was examined, due to the fact that qualitative analysis gives detailed information about the research, whereas quantitative analysis allows for the application of statistics to convey a deeper comprehension of the data acquired. The final data was displayed through percentages and tables. The quantitative questionnaire data was examined with the Statistical Package for the Social Sciences (SPSS) and Microsoft Excel. Correlation and regression analysis were also carried out to identify the connection between the dependent variable (supply management performance) and the independent variables (E-order processing, E- supplier appraisal, and ERP). As a result, the regression model used was as presented:

$$\mathbf{Y= \beta_0+ \beta_1X_1+\beta_2X_2+ \beta_3X_3+ e}$$

Where,
Y = dependent (supply management performance),
β_0 = regression coefficient,
β_1, β_2, and β_3 = the regression equation slopes,
X_1, X_2, X_3,= independent variables (X_1= e-supplier appraisal, X_2= ERP response and, X_3= and e-order processing).
E =error term normally distributed about a mean of 0 (the α is suggested to be 0).

On the contrary, qualitative analysis, which requires gathering data, documenting the experiences of individuals, and counting the number into identical responses, was studied by grouping into comparable themes and calculating the number into responses that are similar. The results were displayed using, distribution tables.

4. Result

Questionnaire Return Rate

While collecting data from a survey using questionnaires and a predetermined sample size, it is not always possible for all respondents in the sample to respond to the questionnaire. This brings about the concept of return rate, which represents the degree to which a last data set involves every sample respondent. The return rate is measured as the total number of participants that completely filled the questionnaires, divided by the number of participants that were initially in the sample, in addition to those that did not respond. For this study, the original sample size was 120, and the total completed questionnaires were 92. In this regard, the return rate for this research was 76.6%.

4.1 Demographic Results

4.1.1 Age

The project aimed to identify the age distribution of the participants, as presented in Table 4.1.

	Age	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-30	27	29.3	29.3	29.3
	31-40	36	39.1	39.1	68.5
	41-50	24	26.1	26.1	94.6
	Above 50 years	5	5.4	5.4	100.0
	Total	92	100.0	100.0	

Table 3: Age Frequency Distribution

Based on these results, most of the participants were of the age between 31 and 40 years at 39.1% and were a total of 36, with the least number of respondents being above 50 years at 5.4%, a total of 5 respondents. Respondents aged between 20 and 30 years were 27 respondents, equivalent to 29.3% of the total respondents, and those aged between 41 and 50 years were 24, which is equivalent to 26.1% of the total respondents.

4.1.2 Gender Distribution

The following table 4.2 represent the gender distribution of the participants.

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	45	48.9	48.9	48.9
	Male	47	51.1	51.1	100
	Total	92	100	100	

Table 4: Gender Distribution

Most of the participants were male at 51.1%, which was equivalent to 47 respondents, while the females were 45 respondents, equivalent to 48.9% of the total respondents. These results show a good distribution in terms of gender as there is a fair balance between the males and females.

4.1.3 Educational Level

The research also established the education level of each respondent, as presented in Table 4.3.

Education		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	College Diploma	25	27.2	27.2	27.2
	University Degree	67	72.8	72.8	100.0
	Total	92	100.0	100.0	

Table 5: Educational Level Frequencies

Most of the participants were graduates from the university , as most presented that they had a university degree. There were 67 university degree holders among all the respondents, which equates to 72.8 %, and 25 respondents shows that their highest education level was a college diploma, which is equivalent to 27.2% of all respondents. None of the respondents identified secondary school and primary school as their highest level of education.

4.2 Reliability and Validity Test

4.2.1 Reliability test

Reliability Statistics

Cronbach's Alpha	No of Items
.915	12

Table 6: Reliability Test

According to the results on Table 4.4, the Cronbach's alpha is 0.915 that reflects a high reliability degree of the measuring instruments as it is close to 1 and higher than 0.7 which is acceptable. Looking at the Item-total Statistics in Table 4.5, all items have not increased in value from overall Cronbach's Alpha of 0.915 apart from the item ESP[Q1] which would increase the value to 0.917 though it is not necessary to delete it as it a necessary measurement tool for the study and the change would be insignificant. Also given that all items have a correlated item-total correlation above 0.3 shows acceptable reliability of the items.

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
ESP [Q2]	38.30	45.445	.683	.907
ESP [Q1]	8.02	47.714	.471	.916
ESP [Q3]	38.62	45.073	.721	.906
ERP [Q1]	38.58	46.181	.640	.909
ERP [Q2]	38.42	47.478	.582	.912
ERP [Q3]	38.88	46.304	.606	.911
EOP [Q1]	38.24	45.547	.698	.907
EOP [Q2]	38.03	45.592	.706	.907
EOP [Q3]	38.54	45.262	.625	.910
SMP[Q1]	38.46	42.053	.738	.905
SMP [Q2]	38.45	43.239	.693	.907
SMP [Q3]	38.26	43.316	.754	.904

Table 7: Item-total Statistics

4.3 Descriptive Statistics

The following are the overall descriptive statistics for the dependent variable: Supply Management Performance (SMP) and independent variable (ESP, ERP, EOP,) engaged in this study.

4.3.1 E-supplier appraisal (ESP)

This study explored E-supplier appraisal to understand how the studied firms uses it to enhance supply management performance. Table 4.7 show that participants agreed on a moderate level that e-supplier appraisal impact the quality of supply management performance at a mean of 3.59, assurance of supplier appraisal has

been adopted at all organizational functions level at a mean of 3.87, and their firms stressed on reliability in comparison to competitors at a mean of 3.27. On average, the respondent agreed to a moderate level that e-supplier appraisal has some significant influence on supply management performance at a mean of 3.58 (std. dv = 0.796).

Descriptive Statistics

Statements	N	Sum	Mean	Std. Deviation
ESP [Q2] How could you rank the impact of supplier appraisal quality on the supply management performance?	92	330	3.59	.800
ESP [Q1] Assurance is being adopted at all organizational functions levels.	92	356	3.87	.788
ESP [Q3] In comparison to competitors, reliability is stressed.	92	301	3.27	.800
Overall mean			3.58	.796

Table 8: E-Supplier Appraisal Descriptive Statistics

4.3.2 Electronic Resource Planning (ERP)

The study also sought to explore how Electronic Resource Planning is rated in the studied firms and how it influences supply management performance. Table 4.8 shows that respondents, to a moderate extent rated demand forecasting in their firms as being good at a mean of 3.32, defined supplier relationship in relation to supply management performance as good at a mean of 3.47, and argued that to an average level extent with a mean of 3.01, networking as part of ERP is less expensive compared to traditional techniques. Generally, the respondent rated the electronic resource planning in their firms in reference to its impact on supply management performance as good at an overall mean of 3.27 (std. dv=0.749).

Descriptive Statistics	N	Sum	Mean	Std. Deviation
ERP [Q1] How could you rate demand forecasting in your company, while using electronic resource planning?	92	305	3.32	0.769
ERP [Q2] How would you define the supplier relationship in terms of supply management performance, while using electronic resource planning?	92	319	3.47	0.687
ERP [Networking as part of ERP is less expensive than traditional methods, while using electronic resource planning.Q3] Networking as part of ERP is less expensive than traditional methods.	92	277	3.01	0.791
Overall mean	92		3.27	0.749

Table 10: Electronic Resource Planning (ERP) Descriptive Statistics

4.3.3 E-order processing (EOP)

The research also sought to investigate how the studied companies employ e-order processing to improve supply management performance. Table 4.9 shows that to a moderate extent respondent found that on-time delivery impacts management performance at a mean of 3.65, and indicated a neutral rating of the level at which shortened cycle time is used in their firms at a mean of 3.86. The respondent also rated waste reduction in their firms as being moderately important at a mean of 3.35. In general, the respondents indicated moderate importance of e-order processing to supply management performance at a mean of 3.62 (std. dv = 0.808).

Descriptive Statistics	N	Sum	Mean	Std. Deviation
EOP [Q1] Classify the impact of on-time delivery on supply management performance	92	336	3.65	0.777
EOP [Q2] Indicate the degree to which shortened cycle time is used.	92	355	3.86	0.764
EOP [Q3] Assess the importance of waste reduction in your organization.	92	308	3.35	0.882
Valid N (listwise)	92		3.62	0.808

Table 11: E-order processing (EOP) Descriptive Statistics

4.3.4 Supply Management Performance

The last variable that the study explored using the questionnaires was the supply management performance variable, Table 4.10 show that to a moderate degree, participants agreed that implementing e-supplier appraisal

impacts the general supply management performance at a mean of 3.43, and that electronic resource planning is efficient and effective in influencing their firms supply management performance at a mean of 3.63. The respondent also agreed to a moderate level that the implementation of e-order processing leading to improves outcomes of supply management at a mean of 3.45. Overall, the respondent agreed to an average degree that all aspects of e-procurement influence supply management performance at a mean of 3.5 (std, dv = 1.005).x

Descriptive Statistics	N	Sum	Mean	Std. Deviation
SMP[Q1] Implementing e-supplier appraiser has a positive influence to the general supply management performance.	92	316	3.43	1.072
SMP [Q3] Electronic resource planning is effective and efficient in impacting a company's supply management performance.	92	334	3.63	.934
SMP [Q2] The implementation e-order processing contributes to the enhanced performance of supply management.	92	317	3.45	1.009
Overall mean			3.5	1.005

Table 9: Supply Management Performance Descriptive Statistics

Descriptive Statistics	Mean	Std. Deviation	N
SMPMEAN	3.5036	.82022	92
ESPMEAN	3.5761	.63689	92
ERPMEAN	3.2645	.61033	92
EOPMEAN	3.6196	.67861	92

Table 10: Overall Descriptive Statistics

4.4 Multiple Regression Analysis

A multiple regression analysis and correlation analysis were utilized to identify the connection between the dependent variable (supply management performance) and the independent variables (E-order processing, e-supplier appraisal, and ERP).

4.4.1 E-supplier appraisal and Supply Management Performance

Model Analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.846[a]	.715	.706	.582

a. Predictors: (Constant), ESP [Q3], ESP [Q1], ESP [Q2]

Table 11: E-supplier appraisal Model Summary Results

According to these results, the correlation coefficient (R-value) was 0.846, which shows a strong link between the dependent variable (supply management performance) and the independent variable, e-supplier appraisal items in the questionnaire, considering it is significantly closer to +1. The R square value of 0.715 presents that the e-supplier appraisal, account for 71.5% of the differences in the dependent variable. Based on these results, the model for this research provides a good fit.

Analysis of Variance (ANOVA)

The variance (ANOVA) analysis helps to identify if the mean score of the impact of e-procurement elements (E-order processing, E-supplier appraisal, and ERP) on supplier management performance of manufacturing companies in Nairobi county differ significantly from each other and if the interact significantly with each other. Table 4.13 below represents the analysis of variance results for e-supplier appraisal.

ANOVA[a]						
Model		**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
1	Regression	74.824	3	24.941	73.689	.000[b]

Residual	29.785	88	.338		
Total	104.609	91			

a. Dependent Variable: SMP[Q1]
b. Predictors: (Constant), ESP [Q3], ESP [Q1], ESP [Q2]

Table 12: E-supplier appraisal ANOVA Results

The ANOVA results show the F statistics value of 73.689 was significant provided that the p-value =0.000 that is less than 0.05. This presents that there is a relevant relationship between supply management outcomes and the E-supplier appraisal of manufacturing companies in Nairobi County. The F ratio=73.689, which is over 1, show that every item in the questionnaire has an influence on supply management performance.

Regression Coefficient

Coefficients[a]							
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1(Constant)	-1.262	.361		-3.496	.001	-1.979	-.544
ESP [Q2]	.565	.106	.422	5.331	.000	.354	.776
ESP [Q1]	.213	.084	.157	2.548	.013	.047	.380
ESP [Q3]	.564	.108	.420	5.200	.000	.348	.779
a. Dependent Variable: SMP[Q1]							

Table 13: Regression Coefficients Results

Based on these results, all the items P values =0.000<0.05 apart from ESP[Q1]. The null hypotheses H_{01}*: The implementation of e-supplier appraisal has no significant effect on supply management performance among manufacturing firms in Nairobi* is therefore rejected. The results, therefore, conclude that the adoption of e-supplier appraisal has a significant influence on supply management performance among manufacturing firms in Nairobi and that e-supplier appraisal was statistically significant to supply management performance for items ESP [Q2] (β=0.565, P=0.000) and ESP [Q3] (β=0.564, P=0.000) in the questionnaires. These results show a that participant significantly identified that their firms adopt supplier assurance to all their function levels and that their firms stressed on reliability compared to other firms. Item ESP [Q1] was not significant given that P=0.013 > 0.05 (β=0.213, P=0.013), an indication that most of the participants identified minimal significance of e-supplier appraisal on their firm's supply management performance. Given the results, the regression equation identified in the methodology y was fitted as follows:

$Y= -1.262 + 0.213X_1+0.565X_2+ 0.564X_3+ e$
Where X_1= ESP[Q1], X_2= ESP[Q2], X_3= ESP[Q3]

4.5.2 Electronic Resource Planning and Supply Management Performance
Model Analysis

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.872[a]	.760	.752	.502
a. Predictors: (Constant), ERP [Q3], ERP [Q1], ERP [Q2]				

Table 14: Electronic Resource Planning Model Summary Results

These results, the correlation coefficient (R-value) was 0.872, which shows a strong link between the dependent variable (supply management performance) and the independent variable, Electronic Resource Planning items in the questionnaire, considering it is significantly closer to +1. The R square value of 0.760 shows that the Electronic Resource Planning, account for 76% of the differences in the dependent variable. Based on these results, the model for this research provides a good fit.

Analysis of Variance (ANOVA)

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	70.515	3	23.505	93.118	.000[b]
	Residual	22.213	88	.252		
	Total	92.728	91			

a. Dependent Variable: SMP [Q2]
b. Predictors: (Constant), ERP [Q3], ERP [Q1], ERP [Q2]

Table 15: Electronic Resource Planning ANOVA Results

The results above present an F statistics value of 93.118 which is over 1, showing that every Electronic Resource Planning item in the questionnaire has an influence on supply management performance. It also shows significance given that the p-value =0.000, which is less than 0.05. This presents that there is a relevant link between supply management performance and the Electronic Resource Planning of manufacturing organisations in Nairobi County.

Regression Coefficient

Coefficients[a]							
	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
Model	B	Std. Error	Beta	T	Sig.	Lower Bound	Upper Bound
1(Constant)	-1.274	.297		-4.289	.000	-1.865	-.684
ERP [Q1]	.414	.082	.316	5.028	.000	.250	.578
ERP [Q2]	.530	.093	.361	5.681	.000	.345	.716
ERP [Q3]	.501	.083	.393	6.059	.000	.337	.665

a. Dependent Variable: SMP [Q2]

Table 16: Electronic Resource Planning Regression Coefficients Results

The above coefficient results show that all items P values =0.000<0.05. In this regard, the null hypotheses *H_{02} : Electronic resource planning is not efficient and effective in influencing manufacturing companies' supply management performance* is rejected. The results, therefore, conclude that the adoption of electronic resource planning has an important effect on supply management performance among manufacturing firms in Nairobi and that electronic resource planning was statistically significant to supply management performance for all items ERP[Q1] (β=0.414, P=0.000), ERP[Q2] (β=0.530, P=0.000), and ERP[Q3] (β=0.501, P=0.000) in the questionnaires. These results show that participant significantly identified a significant demand for forecasting for required resource, a good supplier relationship between suppliers and firms while using electronic resource planning, and significant cost effectiveness in the supply chain while using electronic resource planning, which overall impacts supply management performance. Given the results, the regression equation identified in the methodology was fitted as follows:

$Y= -1.274 + 0.414X_1+0.530X_2+ 0.501X_3+ e$
Where X_1= ERP[Q1], X_2= ERP[Q2], X_3= ERP[Q3].

4.4.3 E-order processing and Supply Management Performance
Model Analysis

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.864[a]	.746	.738	.478

a. Predictors: (Constant), EOP [Q3], EOP [Q2], EOP [Q1]

Table 17: E-order Processing Model Analysis Results

Based on these results, the correlation coefficient (R-value) was 0.864, which shows a strong relationship between the dependent variable (supply management performance) and the independent variable, E-order processing items in the questionnaire, considering it is significantly closer to +1. The R square value of 0.746 shows that E-order processing, account for 74.6 % of the differences in the dependent variable. Based on these results, the model for this research provides a good fit.

Analysis of Variance (ANOVA)

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	59.289	3	19.763	86.328	.000[b]
	Residual	20.146	88	0.229		
	Total	79.435	91			

a. Dependent Variable: SMP [Q3]
b. Predictors: (Constant), EOP [Q3], EOP [Q2], EOP [Q1]

Table 21: E-order Processing ANOVA Results

The results above present an F statistics value of 86.328 which is over 1, showing that every E-order processing item in the questionnaire has an influence on supply management performance. The results also show significance given that the p-value =0.000, which is less than 0.05. This presents that there is a relevant link between supply management performance and the E-order processing of manufacturing organisations in Nairobi County.

Regression Coefficient

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-0.674	0.277		-2.431	0.017	-1.224	-0.123
	EOP [Q1]	0.49	0.094	0.407	5.232	0	0.304	0.676
	EOP [Q2]	0.348	0.093	0.285	3.74	0	0.163	0.533
	EOP [Q3]	0.35	0.068	0.331	5.173	0	0.216	0.485

a. Dependent Variable: SMP [Q3]

Table 18: E-order Regression Coefficient Results

The above coefficient results show that all items P values =0.000<0.05. In this regard, the null hypotheses *H_{03} : : Implementing e-order processing does not contribute significantly to the improved performance of manufacturing firms' supply management* is rejected. The results, therefore, conclude that the adoption of e-order processing has a significant impact on supply management performance among manufacturing firms in Nairobi and that e-order processing was statistically significant to supply management performance for all items EOP[Q1] (β=0.490, P=0.000), EOP[Q2] (β=0.548, P=0.000), and ERP[Q3] (β=0.350, P=0.000) in the questionnaires. Based on these results show a significant impact of on-time delivery on supply management performance while using e-order processing. The results also show that there is a significant shortening of the supply cycle time while using e-order processing and that e-order processing helps to assess waste reduction, which significantly influences the firms' supply chain management. Given the results, the regression equation identified in the methodology was fitted as follows:

$Y= -0.674 + 0.490X_1+0.548X_2+ 0.350X_3+ e$
Where X_1= EQP[Q1], X_2= EOP[Q2], X_3= EOP[Q3]

4.5 Results Summary

Considering the general regression model was significant to this research, there was a need to narrow down the different variables involved in this research. As a result, the hypothesis tested for this research included:

H_{01}: The implementation of e-supplier appraisal has no significant effect on supply management performance among manufacturing firms in Nairobi
H_{02}: Electronic resource planning is not efficient and effective in influencing manufacturing companies' supply management performance.
H_{03}: Implementing e-order processing does not contribute significantly to the improved performance of manufacturing firms' supply management.

In reference to these outcomes, the null hypotheses (H_{01}, H_{02}, and H_{03}) are rejected. The results, therefore, conclude that the adoption of e-supplier appraisal has a significant impact on performance of supply management

among manufacturing firms in Nairobi and that e-supplier appraisal was statistically significant to supply management performance. The results also show that Electronic resource planning is efficient and effective in influencing manufacturing companies' supply management performance. This was an indication of a considerable

and positive effect of ERP on 'supply management performance. The findings also show that implementing e-order processing contributes significantly to the improved performance of manufacturing firms' supply management and concludes that e-order processing has a positive and relevant influence on performance of supply management.

5. Discussion

When carrying out any type of research, identifying the return rate of the data collection process is significant in reflecting the level of participation and comparing it against the expected outcome of the sample population. In this study, the return rate was 76.6%, showing a fairly high level of engagement from the participants. However, it is necessary to identify that 23.4% of the sample population did not respond which could lead to some bias if those that did not respond differed systematically from those that did not engage. Nevertheless, with a return rate of above 70%, the data gathered is considered reasonably representative of the sample population.

5.1 Demographics Findings

5.1.1 Age

The age distribution of participants help present an understanding of the demographic composition of the sample population. Most of the participants fall within the age of 31 to 40 years , which is represented by 39.1% of the toral sample. This is an indication that the research primarily attracted respondent within their careers prime season or those in their adults life. Interestingly, the results indicate that there was a relatively small representation of respondent above the age of 50 years , comprising of about 5,4% of the sample. The skew towards younger respondent could influence certain results and needs to be considered during the interpretation of the overall outcomes.

5.1.2 Gender Distribution

Gender distribution is another significant demographic aspect to consider. The study gained a balanced gender representation with females constituting 48.9% of the sample populations and males being 51.1%. This balanced gender distribution improves generalizability to the results across females and males, making sure that conclusion drawn from the results are applicable to both genders.

5.1.3 Educational Level

Having an understanding the educational background of participants is important in contextualizing their responses and perspectives. Most of the respondents had a university degree, representing 72.8% of the sample population. This shows that the research fundamentally had individuals with higher educational attainment , which tells a lot about the influence their understanding of the subject being researched and the capacity to offer informed responses. The presence of a significant percentage of university graduates is an indication that the study could be evaluating subjects important to this demographic.

5.2 Reliability and Validity

The reliability tests helps to explore the stability of the measurement tools as well as consistency used in the research. The Cronbach's alpha coefficient of 0.915 shows high internet consistency among the research items, indicating that the questionnaire reliability measured the intended constructs. Furthermore, the item-total statistics supports the strength of the measurement instrument, with all items showing acceptable levels of correlation with the overall scale.

The validity tests measured the degree to which the questionnaire item evaluated the intended constructs. The correlation between items shows strong relations, with the values statistically significant at $p<0.05$. Furthermore, the Pearson correlation coefficient goes beyond the threshold of 0,205, which validates the measurement tool. These findings are an indication that the survey items efficiently capture the fundamental concepts are appropriate for evaluating the research variables.

5.3 Descriptive Statistics Findings

The descriptive statistics are relevant in providing valuable information on the perceived effect and the effectiveness of e-supplier appraisal (ESP), electronic resource planning (ERP), e-order processing (EOP) and their impact on supply management performance (SMP) within the researched firms.

5.3.1 E-supplier Appraisal (ESP)

The results show that respondent generally view e-supplier appraisal to have some moderate effect on supply management performance, especially assurance of suppliers appraisal across firm's functions, which was rated

highly an indication of a widespread adoption of the ESP practice. However, participants showed a lesser emphasis on reliability of e-supplier appraisal in their firms as compared to other competitors. Generally, e-supplier was identified as having some moderate impact to the e-procurement process within the firms researched.

5.3.2 Electronic Resource Planning (ERP)

In reference to ERP as an aspect of e-procurement in manufacture companies, the participants rated demand forecasting and supplier relationship while using electronic resource planning as moderately efficient in affecting the e-procurement process, which consequently affect the supply management performance. However, networking of the supply chain as part of ERP is represented as a less expensive option as compared to traditional methods to a moderate degree. Regardless, electronic resource planning has been generally presented as having positive influence in the e-procurement process and hence the impact of supply management performance, with participant identifying it being effective in the procurement process.

5.3.3 E-ordering Processing (EOP)

In reference to the e-order processing, respondents acknowledged the significance of on-time delivery and waste reduction in improving the performance of e-procurement process, which in turn influences how the supply management performs, rating them as having a moderate influence. The level of shortened cycle time usage was perceived as having a neutral effect to the e-procurement process, which then influences the performance of how the supply network is managed. Essentially, e-ordering processing is considered as having moderate influence on the whole e-procurement process, which improves the performance of supply management.

5.3.4 Supply Management performance (SMP)

The Respondent agreed to a moderate degree that implementing e-supplier appraisal, electronic resource planning and e-order processing positively contribute to the enhancement of e-e-procurement, which enhances the outcomes of the firms supply management. Regardless, of some variations in the perceived effectiveness across various aspects of e-procurement, the overall agreement was that these practices contribute to improving the performance of supply management.

The general descriptive statistics show that while there could be differences in the perceived efficiency of various e-procurement practices like e-supply appraisal, e-ordering processing and electronic resource planning, participants generally agree that these aspects proactively impact the outcomes of supply management in the manufacturing firms. The mean score shows that moderate level of influence across all variables, emphasizing the significance of e-procurement techniques in enhancing supply management with the manufacturing firms that were studied.

5.4 Multiple Regression Analysis Findings

The relationship assessment and multiple regression analysis focused to the establishment of the correlation between supply management outcomes as the dependent variable and the three independent variables that include e-ordering processing , electronic resource planning, and e-supplier appraisal. This analysis presents valuable understanding of these factors of e-procurement, which affects the performance of supply management within the manufacturing firms in Nairobi Country.

5.4.1 E-supplier Appraisal and Supply Management performance

The model summary outcomes show a strong correlation at R=0.846 between e-supplier appraisal and the performance of supply management. E-supplier appraisal items accounted for 71.5% of the supply management performance variation, indicating a significant effect to supply management performance. Based on the ANOVA results, there is a relevant correlation between e-supplier appraisal and the performance of the supply management ($F=73.689$, $P<0.05$). The outcome from the regression coefficient show that the items of e-supplier appraisal apart from the first item significantly influence supply management performance with a regression equation of $Y = -1.262 + 0.213X1 + 0.565X2 + 0.564X3$, where X1 represent assurance adoption at all organizational functions through e-supplier appraisal, X2 represent the supplier appraisal quality and its impact, and X3 represent how reliability s perceived and stressed in comparison to competitors.

The results shows that the manufacturing firms focuses on supplier assessment and reliability trend to have better supply management outcomes. The regression coefficients highlighted the specific components of e-supplier appraisal that significantly impact supply management performance, such as the assurance of supplier appraisal and the stress on reliability compared to competitors. These findings suggest that fostering strong supplier

relationships and ensuring reliability throughout the supply chain can contribute significantly to overall supply management effectiveness.

5.4.2 Electronic Resource Planning and Supply Management Performance

The model summary outcomes for electronic resource planning indicates a strong relationship at R=0.872 with supply management performance with electronic resource planning items showing 76% of the variations. The outcomes from ANOVA shows a significant relationship of ($F=93.118$, $P<0.05$). Regression coefficients shows that all ERP items significantly influence supply management performance, with a regression equation of $Y = -1.274 + 0.414X1 + 0.530X2 + 0.501X3$, where X1 is the rating on demand forecasting in the researched manufacturing firms, X2 represents the supplier relationship in reference to the performance of supply management while using electronic resource planning, and X3 represent the aspect that networking as part of electronic resource planning Is less expensive compared to traditional methods. These results emphasize the significance of leveraging technological solutions to streamline supply chain processes, improve demand forecasting accuracy, and enhance supplier collaboration. The regression coefficients further elucidated the specific components of electronic resource planning that exert a significant influence on demand 41contributing, supplier relationship management, and cost effectiveness in driving supply management performance.

5.4.3 E-order Processing and Supply Management Performance

E-order processing emerged as another key determinant of supply management performance, with the analysis indicating a robust correlation between the two variables. E-order processing, characterized by factors such as on-time delivery, shortened cycle time, and waste reduction, accounted for a considerable portion (74.6%) of the variance in supply management performance. The model summary outcomes showed a strong relationship at R=0.864 with supply management performance. The ANOVA results confirms that significance of the correlations at $F=86.328$, $P<0.05$ and the regression coefficient indicate that e-order processing items significantly influence supply management performance with a with a regression equation of $Y = -0.674 + 0.490X1 + 0.548X2 + 0.350X3$, where X1 represent the item on impact of on-time delivery on the performance of supply management, X2 is the degree to which shortened cycle time is used in e-procurement, and X3 is represent the significance of waste reduction in the manufacturing organizations. These findings show the importance of efficient order processing mechanisms in ensuring timely delivery, reducing cycle times, and minimizing waste throughout the supply chain. The regression coefficients further indicate the specific aspects of e-order processing that significantly influence supply management performance, emphasizing the significance of timely delivery, shortened cycle times, and waste reduction initiatives in driving overall operational efficiency.

Overall, these findings present the critical role of e-procurement strategies, including e-supplier appraisal, electronic resource planning, and e-order processing, in improving supply management performance within manufacturing organizations. By leveraging these technological solutions efficiently, these manufacturing companies are able to optimize their supply chain operations, enhance supplier relationships, improve demand forecasting accuracy, streamline order processing, and reducing waste, therefore facilitating overall operational efficiency and competitiveness. These insights have vital implications for manufacturing firms in Nairobi County, highlighting the necessity of investing in e-procurement technologies and practices to maintain competitiveness in the current business era that is dynamic. Additionally, these findings provide a basis for future research endeavours aimed at exploring additional factors influencing supply management performance and assessing the long-term sustainability of these impacts.

5.5 Summary of Findings

In this project, the purpose was to understand the influence of various factors on supply management outcomes in manufacturing firms in Nairobi. To do this, three hypotheses were tested.

After analysing the data, there was compelling evidence to reject all three null hypotheses. This means that e-supplier appraisal, electronic resource planning, and e-order processing indeed have significant effects on supply management performance. Particularly, the results show that:

- *E-supplier appraisal significantly influences supply management performance. Companies that focus on assessing their suppliers tend to have better overall supply management outcomes.*
- *Electronic resource planning plays a crucial role in influencing supply management performance. Effective utilization of ERP systems leads to improved efficiency and effectiveness in supply chain management.*
- *Implementing e-order processing significantly contributes to enhanced supply management performance. Streamlining order processing procedures leads to better outcomes in managing supplies and resources.*

Basically, these findings emphasize the importance of strategic approaches to supplier assessment, utilization of electronic planning tools, and efficient order processing methods in achieving optimal supply management performance for manufacturing firms in Nairobi.

5.6 Discussion of Individual Objective Results

5.6.1 E-supplier appraisal and Supply Management Performance

The research found that the adoption of e-supplier appraisal has a significant impact on supply management outcomes among manufacturing firms in Nairobi and that it is statistically significant to supply management performance. According to these outcomes, it is clear that for most of the studied manufacturing companies, e-supplier appraisal helps to enhance supply management performance by facilitating the use of digital platforms to evaluate suppliers, which helps in streamlining the procurement process, ensuring compliance to contractual obligation and quality standards, financial stability and improving supplier selection. These results have been supported by Mukarumongi (2018) findings that indicate that supplier evaluation and appraisal process based on the supplier services quality significantly impact the performance of procurement management. Armoh et al., (2023) findings also support these findings by indicating that the performance of supply management is significantly impacted by supplier financial stability evaluation. The findings also indicate that identifying the suppliers attitude towards values and policies is essential in helping improve the performance of the supply management process.

5.6.2 Electronic Resource Planning and Supply Management Performance

Based on the findings, electronic resource planning is efficient and effective in influencing manufacturing companies' supply management performance. The findings indicate a relevant and positive influence of ERP on supply management outcomes. Evidently, these result show that the use of electronic resource planning help in improving forecasting in the procurement process and also helps in enhancing supplier relationship making e-procurement more reliable and efficient. Furthermore, the use of electronic resource planning has been linked to easy and less expensive networking within the procurement chain, as compared to traditional methods of networking. Electronic resource planning enhances financial performance as it increases effectiveness in the process of e-procurement.

These findings are supported by Fauzi (2021) findings , which found that the use of electronic enterprise resource planning leads to increased efficiency and effectiveness that leads to better financial performance which translates to better e-procurement. Stevenson (2012) also found that using resource planning changes the responsibility of supply management to offer information with fast and easy access to produce real-time and relevant information required in making decisions and supply management control systems. Omondi (2019) also discovered a significant link between resource planning and the management of supply chain outcomes within the sugar manufacturing firms within Kenya. Omondi indicates how ERP helps in the effective management of inventories, keeping up-to-date shift allotment details, and enhances production planning.

5.6.3 E-order processing and Supply Management Performance

The findings indicate that implementing e-order processing contributes significantly to the improved performance of manufacturing firms' supply management and concludes that e-order processing has a positive and relevant influence on supply management outcomes. From the findings, e-order is associated to enhanced on-time delivery, shortened cycle time in the procurement process, and enhanced waste reduction in manufacturing companies. Through e-order processing, manufacturing firms are able to efficiently handle requests, order fulfilment, and approvals for order requests , which reduces processing delays, and manual related errors. Furthermore, e-order processing is also associated to real-time tracking and monitoring capacities , which increases visibility into inventory levels and order status, which allows timely replenishment and proactive decision making, which translates to on-time delivery. Moreover, e-order processing enables seamless collaboration between suppliers and manufacturing firms, enhances communications, and enables stronger supplier relationships which helps shorten the procurement cycle.

These results are supported by Oteki (2018) findings that revealed a significant correlation between e-order processing and the performance of supply chain management. This research concluded that using e-order processing improves the performance of supply chain by reducing order processing time, assisting in electronic invoice payment and monitoring order due dates which enhances supplier relationship, minimizing paperwork making procurement more cost effective, and reducing human errors that are common in manual order processing. Hajir (2021) also support these findings by indicating that e-order processing is linked with enhanced supplier relationship management , which translates to better and efficient procurement process, which translates to better supply management performance.

5.7 Discussion Summary

The research focuses on the impact of e-supplier appraisal, electronic resource planning (ERP), and e-order processing on supply management outcome in manufacturing firms based in Nairobi. The research shows a

significant effect of e-supplier appraisal on supply management performance among manufacturing organisations in Nairobi. E-supplier appraisal improves supply management performance by taking advantage of digital platforms for supplier evaluation. This aligns the procurement process, making sure there is compliance with quality standards and contract obligations, assessing supplier financial stability, and enhances supplier selection. These findings are supported by previous research an indication that supplier evaluation based on service quality significantly impacts procurement management performance. Moreover, determining suppliers' attitudes towards creating policies and values is crucial for enhancing supply management performance.

The study presents the effectiveness and efficiently of ERP in impacting supply management performance in manufacturing companies. ERP systems greatly improved forecasting in the procurement process, enhance supplier relationships, and offer easy and cost-effective networking within the procurement chain compared to traditional methods. Moreover, ERP enhances financial performance by raising effectiveness and efficiency in e-procurement processes. Past studies corroborate these results, showing that ERP implementation causes a rise in efficiency, effectiveness, and better financial performance in e-procurement.

The findings also highlight the importance 43contribution of e-order processing to the enhanced performance of supply management in manufacturing firms. E-order processing is linked with improved on-time delivery, shortened cycle time in procurement processes, and enhanced waste reduction. It enables efficient handling of requests, order fulfilment, and approvals, reducing processing delays and manual errors. Additionally, e-order processing facilitates real-time tracking and monitoring, enhancing visibility into inventory levels and order status for timely replenishment and proactive decision-making. Furthermore, it fosters seamless collaboration between suppliers and manufacturing firms, strengthening supplier relationships and shortening procurement cycles. Previous studies align with these findings, highlighting the positive influence of e-order processing on supply chain management performance through reduced time for processing, electronic invoice payment, and improved supplier relationship management.

6. Conclusion

In reference to all these findings, this study concludes by highlighting the extensive influence of appraisal, electronic resource planning (ERP), and e-order processing on the supply management outcomes of manufacturing organisations in Nairobi. E-supplier appraisal has emerged as a vital factor in positively influencing supply management performance, indicating its efficacy in improving operational efficiency and supplier relationships. Similarly, electronic resource planning systems have been demonstrated as effective and efficiency in impacting supply management performance positively, highlighting their role in optimizing the utilisation of resources and the process of decision making in supply management. Furthermore, this study concludes that the implementation of e-order processing significantly contribute to the enhanced performance of supply management in the e-procurement procedures, underscoring its role in streamlining the workflows of e-procurement and improving collaboration with suppliers.

Overall, this projects summary is that the utilisation of e-procurement technologies offers transformative potential in reinforcing supply management practices, which helps increase the competitiveness, efficiency, and agility of manufacturing firms' procurement process, enhancing the performance of their supply management.

6.1 Limitations of the Study

This research experienced certain barriers. The first limitations was associated with accessing participants. Though this study used an online survey, the data collection processes took a little bit more time than expected as most of the respondents were not accessible or took time to respond to an extent that the researcher had to follow-up with those that had given consent to participate in the survey. Another limitation associated to this study is that it only engaged 12 manufacturing firms in Nairobi, which could be argued that it is a small percentage to represent the target population of manufacturing firms in Nairobi, which is home to over 400 manufacturing firms. The reason for only engaging 12 firms results from the limitations of time, resources, and access of willing participants. Lastly, the research was limited in that it only emphasised on only three indicators of e-procurement, yet there are so many indicators that could have been studied to identify how e-procurement impacts supply management performance in manufacturing companies.

6.2 Recommendations

Given the findings regarding e-supplier appraisal, electronic resource planning (ERP), and e-order processing in supply management, several recommendations could be proposed to improve practices on e-procurement and overall enhance supply management. The first recommendation is for manufacturing companies to invest in effective supplier appraisal systems. Manufacturing firms should invest in robust e-supplier appraisal systems that

enable thorough evaluation of supplier performance, quality, and reliability. These systems should incorporate digital platforms for supplier assessment, ensuring transparency, efficiency, and accuracy in supplier evaluations. The second recommendation is for manufacturing firms to take advantage of technology for ERP Implementation:

Implementation of comprehensive ERP systems is necessary for efficient supply management. Firms should take advantage of advanced technology solutions for the implementation of ERP systems that streamline procurement processes, improve forecasting accuracy, and present real-time visibility into inventory levels and the status of order.

Another recommendation is to invest in supplier relationship management (SRM). Strengthening supplier relationships is important for successful e-procurement. Firms need to focus on SRM initiatives, facilitating open communication, fostering mutual trust with suppliers, and collaboration. By creating a strong relationship, manufacturing companies can make sure there is timely supply of services and goods, mitigate supply chain risks, and gain better general performance. Manufacturing firms should consider optimizing e-Order processing Workflows. By streamlining e-order processing workflows, firms can greatly improve supply management efficiency. Manufacturing companies needs to invest in automation tools and digital platforms for e-order processing, minimizing manual intervention, reducing processing errors, and raising order fulfilment cycles.

Enhancing data analytics capabilities is also another recommendation that manufacturing firms should consider. By leveraging on data analytics tools and techniques firms can present reliable knowledge into processes of supply management. Manufacturing firms need to invest in analytics platforms that allow data-driven decision-making, performance monitoring and predictive analysis across the lifecycle of the procurement. Promoting continuous improvement initiatives Continuous improvement is key to optimizing e-procurement practices that manufacturing firms should consider. Manufacturing firms should develop a culture of continuous enhancement, empowering employees to determine inefficiencies, bring up innovative solutions, and implement best practices to improve the effectiveness of supply management effectiveness.

Manufacturing firms should also invest in Employee Training and Development. This will help offer program for comprehensive training and development to employees engaged in e-procurement. The manufacturing companies need to invest in training programs aimed at e-procurement tools, data analytics, ERP systems, and practices of supply chain management to improve employee capabilities and skills. Collaboration with industry partners and experts is also recommendable. Such collaborations with partners, stakeholders, suppliers, and experts can offer essential expertise and valuable insights in e-procurement optimization. These firms should look for opportunities for collaboration, sharing of knowledge, and benchmarking to determine industry best practices and implement strategies for continuous enhancement. Through the implementation of these recommendations, manufacturing firms can optimize their e-procurement practices, improve supply management efficiency, and ultimately gain better performance and competitiveness in the market.

6.3 Recommendations for Future Research

The purpose for this project emphasised on the how e-procurement impacts supply management performance and focuses on three e-procurement indicators that include e-supplier appraisal, electronic resource planning, and e-order processing. However, there are other indicators that can help evaluate the link between e-procurement and supply management performance like e-sourcing, e-payment, e-tendering, and e-invoicing. For further studied, it would be relevant to explore how these e-procurement indicators influence supply management performance. Another recommendation for further is exploring the link between e-procurement and other operations in the supply network processes such as operational performance. It would therefore be recommendable to do further studies on the correlation between e-procurement and operational performance.

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