E-PROCUREMENT STRATEGIES AND SUSTAINABLE PROCUREMENT PERFOMANCE OF TELECOMMUNICATION COMPANIES IN KENYA

BY:

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DECLARATION

I declare that this research project is my original work and has not been submitted for

degree qualification of this or any other university.

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This research project has been submitted for examination with my approval as the

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ACRONYMS

ICTs - Information and Communication Technologies

DOI - Diffusion of Innovation

TAM - Technology Acceptance Model

RBV – Resourced Based View

EDI - Electronic Data Interchange

ERP - Enterprise Resource Planning

ICLEI - International Council for Local Environmental Initiatives

SCM – Supply Chain Management

SPSS - Statistical Package for the Social Sciences

SC – Supply Chain

CAK – Communication Authority of Kenya

ABSTRACT

This study's goal was to assess the impact of e-procurement adoption on the sustainable procurement performance of telecommunication companies operating in Kenya. The study aimed to achieve three specific objectives: (i) to evaluate the e-procurement strategies that have been implemented, (ii) to evaluate the impact of implementing e-procurement on sustainable procurement performance, and (iii) to identify the challenges faced in implementing e-procurement strategies to attain sustainable procurement goals within the telecommunication companies in Kenya. The research employed an explanatory research design, focusing on the telecommunication companies in Kenya. The collection of primary data was conducted through the utilization of semi-structured questionnaires. The respondents in this study consisted of procurement officers, ICT officers, and accounting officers. The response rate achieved was 85%. Descriptive statistics and regression analysis were employed to examine the relationship between the variables in the collected data. The research revealed that implementing e-procurement strategies, including e-ordering, e-tendering, e-invoicing, e-sourcing, e-payment, and e-cataloging, resulted in positive results in terms of sustainable procurement performance. These results encompassed advantages in terms of competitive positioning, decreased operational expenses, environmental sustainability, and employee retention. The study also identified several difficulties faced by telecommunication companies in implementing e-procurement strategies to attain sustainable procurement. These difficulties included high implementation costs, resistance to change, inadequate infrastructure, and lack of adequate training. To address these difficulties, the study recommended policy and practice changes that include creating a supportive legal framework for e-procurement adoption, investing in infrastructure and training, and encouraging supplier collaboration. The study's conclusion is that e-procurement adoption is essential in improving the sustainability of procurement in telecommunication companies in Kenya. Finally, the study recommends extended research focused on exploring the effect of e-procurement on specific aspects of sustainable procurement, such as social responsibility and ethical practices.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Optimizing supply chain management (SCM) is significant in today's competitive business world with technology being vital components of SCM efficiency. E-procurement strategies, for instance electronic ordering, electronic tendering, electronic payment, and electronic invoicing have gained popularity in recent years due to their favorable impact on organizational and individual productivity and efficiency (Tokta et al., 2014). E-procurement eliminates the manual procurement activities (Croom & Brandon-Jones, 2007; Singh & Chan, 2022). Besides, sustainable procurement is the appropriate consideration of environmental, economic, and social concerns during the purchasing and selling process (Singh & Chan, 2022). Therefore, the engagement of electronic procurement in the SC process leads to sustainable procurement performance and is consistent with the creating sustainable development within the organization (Singh & Chan, 2022). Also, engagement of e-procurement strategies assists in harmonizing purchasing power and activities, enhancing distributors' ability to provide superior service, and expediting the flow of critical information between suppliers and buyers; hence, leading to sustainable procurement performance (Singh & Chan, 2022).

Technology Acceptance Model (TAM), Resourced based View (RBV), and Diffusion of Innovation (DOI) Theory anchored this study. The DOI was established in 1962 by E.M. Rogers (Daoud & Ibrahim, 2018). Organizations have adopted and implemented e-procurement practices like electronic ordering and invoicing by leaving out manual methods, as evidenced by the DOI and TAM (Singh & Chan, 2022). This approach has enabled businesses to gain a true understanding of how purchasers integrate and engage with possible technologies throughout time, as well as how a concept might sail through several stages of adoption by multiple parties (Harelimana, 2018).

Furthermore, TAM forecasts motivation for a number of talents by ensuring that businesses operate smoothly and efficiently (Singh & Chan, 2022). Sustainable procurement performance is closely linked with the utilization of technology, as it leads to positive impacts. The ease of use is a critical component of the TAM because it properly assesses the sustainable procurement performance and intent toward e-procurement technologies, demonstrating that the adoption and utilization of technology are contingent upon the systems' benefits (Singh & Chan, 2022). The organization's favorable or negative attitude toward technology impacts their real conduct with relation to its utilization. The RBV is a management framework identifying

resources a firm can utilize to generate competitive advantage that is sustainable (Barneys, 1991). The RBV refers to how competitive advantage and performance can be attained because of possessing unique and valuable resource which other competing companies do not have (Kraaijenbrink, Spender & Groen, 2010). As such, this model was used to illustrate how e-procurement strategies can promote sustainable procurement performance.

Kenya's telecommunications companies, like the rest of the globe, is undergoing major changes. The sector has changed dramatically over the last decade as a result of technical advancements. According to Kirui (2019), adopting e-procurement offers real-time communication between a business and its providers, as well as supplier monitoring, management and cost control. Additionally, e-procurement assists in decision-making by giving fast information on all procurement activities (Mose et al., 2013). As such, e-procurement has garnered equal interest from public and private groups during the last decade, albeit with caution due its sustainability concerns. It is self-evident that e-procurement offers significant advantages over traditional procurement methods, for instance it improves performance and efficiency (Walker & Brammer, 2012). Among the automated procurement technologies are Electronic Data Interchange (EDI), which enables paperless communication between purchasing bodies and suppliers, and Enterprise Resource Planning (ERP), introduced in 1970 and served as a predecessor to the internet.

The connection between e-procurement strategies and sustainable procurement performance was emphasized in this study. Certain components of sustainable procurement performance and e-procurement appear to be less identified in literature, demonstrating the need of improving the alignment of both procurement and SCM operations to maximize efficiency and sustainability (Innocent & Kalaskar, 2016). Therefore, this study contributed scientific information to the organization's development and implementation of procurement policies.

1.1.1 E-procurement Strategies

E-Procurement is a technology that streamlines business transactions online (Presutti, 2003). Besides, De Boer, Harink and Heijboer (2010) describes e-procurement strategies as the capacity to using the Internet in purchasing. At the beginning of supply chain cycle, the purchasing system relies on integrated information technology, and this is the case with the electronic procurement (Chang et al., 2013). In short, e-procurement relies on the utilization of the networked technologies like EDI or ERP as well as the Internet to sell and purchase goods and services (Vaast & Walsham, 2009). Markedly, some of the strategies comprise e-payment,

e-ordering, e-tendering, as well as e-invoicing (Tokta et al., 2014). The advantages of e-procurement strategies have expanded its appeal and as a result, it reduces supply costs, lead times and enhancing transparency (Bof & Previtali, 2010). E-procurement is advantageous from the perspective of preventing fraud and enhancing the company's reputation. It is also worth noting that organizations' information systems have been constantly linked to other systems that have helped them develop (Vaast & Walsham, 2009; Walker & Brammer, 2012). Thus, it is deemed a smart and innovative move for e-procurement systems to include new technology, which has allowed customers to purchase products and services over the internet.

The private sector's increased competition adoption of these kinds of technology. Some of these issues have prompted these institutions to use cutting-edge technology in order to improve the efficiency with which they operate, provide services, and interact with stakeholders (Piera et al., 2014). Customers are becoming more and more aware of their rights as customers and they anticipate and demand improved service standards (Kirui, 2019). Owing to these elements, a firm's ability to address the demands of both its internal and external stakeholders has risen. Pointedly, incorporating e-procurement into the organizational procurement process has led to a surge in profitability, better control, and increased efficiency and effectiveness in procuring (Hsu et al., 2011). Although e-reverse auctions have been dismissed in research for its capacity to lower purchasing costs for organizations and businesses with limited purchase volumes (Adebanjo, 2010). It is not just electronic catalogs, electronic tenders, electronic purchase orders, or even electronic auctions that make up electronic procurement.

1.1.2 Sustainable Procurement Performance

According to Grandia (2015), sustainable procurement occurs when an entity is capable of satisfying its services and products needs in an environmentally friendly, financially effective manner, and benefits the wider society. Cabras (2011) defines sustainable procurement as the means of accomplishing organizational demands regarding essential products and services, along with works and utilities, in a cost-effective manner whilst being socially conscious and causing minimal environmental damage. Berry (2011) defines sustainable procurement performance as an approach that considers economic, social and environmental aspects of sustainable procurement. Walker and Brammer (2012) posit that procurement performance is a critical necessity for any company that wants to grow and increase its competitiveness by improving the quality of its customer service. According to Van Weele (2012), a lack of procurement performance stymies the procuring function's advancement and the institution's

ability to execute. As a result, organizations must achieve considerable levels of sustainable procurement performance.

Additionally, the major setback in integrating sustainability and procurement practices is that organizations have not always been structured in a way that allows for synchronization (Walker & Brammer, 2012). Nonetheless, the success of a company's adoption of e-procurement is dependent on many factors, encompassing professionalism and devotion of both management and employees and e-procurement system performance monitoring (Mose, Njihia & Magutu, 2013). Internal and external issues need to be taken into consideration, and public sector institutions need to provide appropriate funding for the development of electronic procurement abilities for management through training programs (Innocent & Kalaskar, 2016). Organizational preparedness, business size and trust are all important aspects in a successful electronic procurement, as are risk and policy considerations. Managing procurement processes necessitates lots of planning and operational procedures.

1.1.3 Telecommunication Sector in Kenya

In the last decade, technical innovation and regulatory reform have had a profound effect on the telecommunications sector in Kenya. There has been a significant infusion of investment into markets that were previously separate, discrete, and vertical, much of it from the private sector. Since the middle of the year 2000, the telecommunication companies in Kenya has been more open to foreign competition. Telecom companies in Kenya are increasingly providing data and internet services in addition to voice. Nonetheless, there has been an increase in the number of participants in this hitherto monopolized sector, resulting in more intense rivalry (Mulago & Oloko, 2019). There are approximately 25 telecommunication companies registered as network facility provider (Communication Authority of Kenya, 2023 as shown in Appendix II. Generally, over the past decade, Kenya's telecommunications companies have witnessed widespread change. Kenya's telecommunications companies have reached new heights because of increased competition, the mobile money revolution, better internet access, governmental reforms, and digital inclusion efforts.

Pointedly, e-procurement is presently being used by corporations such as manufacturing companies to gain a number of advantages, including enhanced staff productivity, lower costs by acquiring services and lower-priced goods (Croom & Brandon-Jones, 2007). E-commerce aspects such as E-procurement have become more important criteria for businesses and sectors to integrate in their business processes. On the other hand, a sustainable procurement strategy

aims to maximize value for money and bringing socio-economic advantages to the firm and the environment, as per ICLEI's congress in 2015 (Singh & Chan, 2022). These efforts, however, are aimed primarily at bringing sustainability to the buying sector.

When acquiring goods and services, sustainable procurement performance factors play a crucial role since it is important to consider environmental considerations as well as cost-effectiveness and product or service enhancement so as to achieve a more sustainable procurement process (Ramkumar & Jenamani, 2014). Originally, e-procurement was used by corporations to reduce costs and cycle times, but recently, e-procurement strategies have been employed as a means to achieve sustainable procurement. While e-procurement has been widely promoted as a useful tool for SP, little work has been done to pinpoint its unique characteristics and evaluate the performance level after implementation.

1.2 Research Problem

The independent variable of the study includes e-procurement strategies, encompassing e-ordering, e-tendering, e-invoicing, e-sourcing, e-payment and e-cataloguing whereas the dependent variables encompass reduced environmental impact, reduced procurement costs, enhanced organizational transparency and efficiency as well as employee retention, which represent sustainable procurement performance of the telecommunication companies in Kenya. Barasa et al. (2017), coins that the advantages of electronic procurement strategies are indisputable, if implemented properly. According to Shukla et al. (2016), using an e-procurement strategy helps businesses cut expenses, streamline purchasing, and enter new markets. In addition, the success of an organization's use of e-procurement depends on how well it meets its demands for services and commodities in a way that is environmentally safe, good for business, and good for society as a whole (Grandia, 2018). In essence, procedures for procuring goods and services must be implemented throughout all facets of an organization's work. Successful adoption and execution are therefore critical for the long-term procurement performance of businesses.

Calipinar and Soysal (2012) outlines that implementing e-procurement strategies significantly improves efficacy and efficiency of an organization's procurement activities. Calipinar and Soysal (2012) further indicate that if these telecommunication companies implement the appropriate technology, it may make a significant contribution to the organization's vision and bottom line. Munyimi (2019) indicates that adoption of technology enables procurement departments to obtain all items necessary by the business at the optimal location, price, time,

quantity, and quality for all units and users. An institution may get significant benefits from e-procurement, enabling it to better serve its customers (Masudin et al., 2021). Other than that, if the procurement processes are ineffective in acquiring products and services, or even works, the supply chain management can suffer negative consequences, perhaps severe ones (Munyimi. 2019). Adopting e-procurement strategies might make it cost effective, faster, and easier for the company to acquire the services and goods it requires.

Azadegan (2008) posit that the increasing rate of technological evolution has led to the development and utilization of emerging technologies, for instance the usage of e-procurement as a routine practice. However, many businesses do not adopt all accessible technology in the same way. This variation in e-procurement system deployment is one of several factors impacted by country and culture. Besides, Hassanzadeh and Jafarian (2010) opines that e-procurement best strategies are a strategic pillar in SCM to achieve efficiency, profitability, and cost reduction, as well as the identification of alternative, superior sources of supply. Therefore, the implementing e-procurement strategies in telecommunication sector is expected to enhance sustainability since it reduces procurement risks, waste, purchasing cycle and increases transparency and accountability as well has having increased performance.

On the other hand, sustainable procurement has grown in prominence as a result of organizations' increased commitment to non-financial responsibility and sustainability goals (Walker & Phillips, 2006; McMurray et al., 2014). Sustainable performance in procurement is highly pertinent to purchase and supply decision makers looking to exemplify environmental and social responsibility at their supply chain network (Walker et al., 2012; Filho et al., 2019). Additionally, participation in sustainable procurement improves organizational transparency, efficiency, compliance, and cost saving (Markus et al., 2013; McMurray et al., 2014). In logistics, purchasing play critical role in the strategic plans of future business actions, so strong business policies are needed to address a variety of issues, many of which have severe environmental impact (Meehan & Bryde, 2011). In light of this, it is critical for the telecommunication sector to acquire sustainably, since this method creates shared value over time, displays responsible management of natural resources, and promotes social fairness on both the micro and macro levels.

According to Vachon and Klassen (2006), as the paradigm change in using sustainable resources emerged, major themes, including but not confined to environmental concerns in supply management, emerged. Nonetheless, procurement's position in carrying forward the

company's sustainability plan and impacting its external environment in the SC has thus led to an increasing discovery of procurement's function (Yevu et al., 2022). According to Grandia (2015), there have been recorded success stories from the integration of appropriate sustainable procurement practices by numerous companies throughout the world. For instance, the Coca-Cola the United States reported significant gains in procurement performance due to green procurement (Agarwal & Vijayvargy, 2012). This is an indication that there are huge prospects for sustainable procurement performance with the implementation of e-procurement strategies.

The Kenyan telecommunication sector has grown tremendously, with stiff competition (Markus et al., 2013). The competitive dynamics within the telecommunication companies encompass powerful suppliers, price-sensitivity and disloyal consumers, and a strong and apparently impenetrable competition in Safaricom Plc (Kirui, 2019). Nonetheless, a study conducted by Innocent and Kalaskar (2016) on e-procurement strategies adoption on the performance of Rwanda's telecommunication firms found that its adoption led to an increased client services and customer satisfaction. Besides, a study conducted Kirui (2019) on e-procurement and performance of Safaricom Plc indicates that system and transmission management have a significant influence on the company. This also demonstrates an improvement in channel relationships, decision-making, and information sharing. However, the author left a huge gap of literature by not sampling other telecommunication companies like Airtel Kenya for an inclusive study.

This study provides a number of significant contributions since there are limited studies linking sustainable procurement performance and e-procurement adoption in telecommunication companies. Certain components of sustainable procurement performance and e-procurement appear to be less identified in literature, demonstrating the need of improving the alignment of both procurement and SCM operations in order to maximize efficiency and sustainability. For this reason, this research filled the gap on the link and potential congruence between sustainable procurement performance following e-procurement strategies implementation in Kenya's telecommunication companies. Particularly, the following research questions were addressed;

1. What is the specific e-procurement strategies implemented by Kenyan telecommunication companies?

2. How does the utilization of e-procurement strategies impact the effectiveness of sustainable procurement in Kenyan telecommunication firms?

3. What challenges do Kenyan telecommunications firms experience in putting e-procurement strategies into practice to achieve sustainable procurement?

1.3 Research Objectives

The main objective was to determine the effect of e-procurement strategies implementation on sustainable procurement performance in telecommunication companies in Kenya.

The specific objectives were;

i. To find out the e-procurement strategies implemented by Kenyan telecommunication companies.

ii. To find out the effect of implementing e-procurement on the performance of sustainable procurement in Kenyan telecommunication companies.

iii. To establish the difficulties encountered in implementing e-procurement strategies in attaining sustainable procurement by telecommunication companies in Kenya.

1.4 Value of the Study

This study was significant since it expands our comprehension of how e-procurement is utilized in enhancing the sustainability of telecommunication organization to ensure its viability long-term. To be effective in the current economic climate, organizations must modify their actions so that they have the least possible negative impact on people and the environment. The old short-term outlook is no longer valid.

Companies may benefit from e-procurement by using it to enhance their procurement function and provide better services to their stakeholders. The study also highlights the need of implementing sustainable procurement practices, which will provide the business a significant competitive advantage.

Additionally, the study's findings are also beneficial to the company's management and staff since they give them insight into how their companies may successfully use e-procurement strategies. This research shed light on the need of adopting sustainable procurement procedures, giving the company a major competitive edge. Other than that, the findings are valuable to academics, especially those wishing to delve more on unearthing procurement.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter examined the current literature on effect of implementing electronic procurement strategies on sustainable procurement performance. In particular, this chapter examined e-tendering, e-cataloguing, e-invoicing, e-sourcing, and e-payment impact on organizational sustainable procurement performance and a chapter summary is also added at the end.

2.2 Theoretical Background

Theories can be categorized based on their breadth, application, structure, and levels (Evenett & Hoekman, 2005). Scholars have proposed numerous models and theories to comprehend the subject of e-procurement. This study was anchored by three theories namely TAM, DOI and RBV.

2.2.1 Technology Acceptance Model (TAM)

The TAM models how people take to new innovation and incorporate it into their routines (Singh & Chan, 2022). Devis (1986) introduced this theory, which indicates that when consumers are introduced to the latest technology, a wide array of factors play a huge role in their decision to adopt it (Davis 1989). Based on this view, there is no organizational improvement until users or employees embrace technology. Based on this view, there is no improvement in organizational performance until consumers or employees embrace the technology. Adoption of any innovation, particularly those based on IT, necessitates investment in computer-based technologies to enable effective planning, communication and decision making (Singh & Chan, 2022). According to Kamel (2014), these technologies might be dangerous and thus, it is crucial to be defined based on institutional preferences and rationale. With proper corporate culture imbibed, the transformation must be gradually implemented and everyone to be engaged.

According to Singh and Chan (2022), TAM is rooted on two assumptions: (1) system's perceived usefulness for instance increased productivity, enhanced performance efficiency and effectiveness in operations and (2) new system's perceived ease of use like simplicity to learn, simplicity to control, simplicity to use and ease of remembering. For this reason, TAM anchors this study since the acceptance and utilization of e-procurement strategies (Tokta et al., 2014) is a part of the users' attitude towards the system and their perceptions of its advantages. Therefore, e-procurement strategies adoption in companies should be embraced by the users in

order to make sure employees are productive, effective delivery, precision tendering, and efficient management of inventory.

2.2.2 Diffusion of Innovation Theory (DOI)

DOI theory was coined in 1962 by E.M. Rogers (Daoud & Ibrahim, 2018; Singh & Chan, 2022). DOI according to Andreanne and Swaminathan (2007), elaborates how and why technologies spread across civilizations. E.M. Rogers says that diffusion is the theory whereby an invention is conveyed to the social systems' members via specific pathways throughout time. Rogers asserts that four primary factors impact the dissemination of a new concept: the invention, channel of communication, social and time structure (Li & Atuagene-Gima, 2011). This procedure primarily depends on human capital. In order for the innovation to be durable and enhance business processes, it must be broadly embraced (Andreanne & Swaminathan, 2007). According to Singh and Chan (2022), organizations have implemented electronic invoicing and electronic ordering by leaving out manual methods, as evidenced by the DOI.

Furthermore, pertaining to DOI theory, the rate of implementation of innovative methods may be evaluated in terms of the company's competitive edge, the stakeholders' adaptability and complexity (Mahala et al., 2022). The second aspect is organizational communication that leads to flow of information regarding creative activities. Time is the third factor, which analyzes the duration of making decisions. The last aspect of the new system is their social environment (Rogers, 1997). The DOI theory theory necessitates the reinvention of goods and services so that they can function more effectively (Mahala et al., 2022). The notions in this theory are applicable to this research in examining the connection between e-procurement strategies and performance of sustainable procurement in telecommunication sector. Other than that, innovativeness is connected to independent factors as individual traits, and institutional structure features of the organization, according to the DOI theory (Einstein, 2008; Mahala et al., 2022). Individual qualities characterize the attitude of a leader toward innovation (Singh & Chan, 2022). In this instance, the procurement procedure is viewed as an internal feature pertaining to tendering, billing, sourcing, and payment. Consequently, e-procurement technologies (Tokta et al., 2014) were the adopted technologies considered for this study since technological adoption affects organizational sustainable procurement performance.

2.2.3 Resource based Theory

RBV theory was propounded by Jay B. Barney (1991), and it contends that having critical resources gives a firm a prime chance to enjoy competitive edge over its rivals. It furthers

suggests that sustainable advantage is a result of doing things in an exceptional manner, through developing superior capabilities and resources (Barney, 1991). The theory further indicates that firms need to develop distinct and company-specific core competencies that allows them do things differently; thus, outperforming the competitors (Edwards et al., 2014). Therefore. this model was used to illustrate how e-procurement strategies can promote sustainable procurement performance.

Drawing on the resource-based theory, this study incorporated the understanding that e-procurement strategies can be seen as valuable resources for telecommunication companies. By leveraging e-procurement technologies and practices effectively, companies can develop distinct core competencies that set them apart regarding procurement efficiency, cost savings, and sustainable procurement practices. The application of this theory provided a framework to analyze how e-procurement strategies can contribute to promoting sustainable procurement performance in the telecommunication companies (Kraaijenbrink et al., 2010). It underscores the significance of identifying and utilizing unique capabilities and resources associated with e-procurement to achieve competitive advantage and sustainable business outcomes.

2.3 E-procurement Strategies

E-Procurement is the use of Internet-based solutions for any search, sourcing, transacting, soliciting, receiving, and post-buy auditing in procurement phases (Mishra et al., 2015). Some of the e-procurement strategies encompasses e-ordering, e-tendering, e-invoicing, e-sourcing, e-payment and e-cataloguing.

First, e-tendering is an electronic system bidding system which replaces the conventional paper-based bidding technique. In organizations, the majority of contracts for commodities, works, and services are awarded via competitive bidding (Ackah et al., 2014). E-tendering is accompanied by various advantages, including increased process efficiency, decreased overhead expenses, more accountability and transparency in procuring, and decreased credit control costs (CIPS, 2006; Mwangi & Kagiri, 2016). According to Muhia and Afande (2015), e-tendering reduces tendering turnaround time, increases compliance with laws and legal processes, improves labor costs, and improves procuring procedures' integrity, correctness, and transparency. Bilali (2015) has established that e-tendering have an impact on procurement procedures. Organizations claim that the effectiveness and efficiency of e-tendering includes lower procurement costs, quicker turnaround times, a reduction in rogue or unauthorized purchasing.

Furthermore, in e-ordering, the processes of ordering supplies, and obtaining purchased goods and services are centralized around an online software platform. All employees of the company utilize an e-catalog to place orders for things they require. E-catalogues are web-based depictions of supplier information, for instance servicing information, scanned images, and links on services and products (Vaidya & Campbell, 2014). In this way, electronic catalogues serve as a cornerstone of electronic procurement by offering easy access to data about services and products that may be purchased digitally or in-person (Hudrasyah et al., 2019). Since the 1960s, a succession of catalogues has utilized cutting-edge technology in every decade (Vaidya & Campbell, 2014). E-catalogue on the other hand can lower quality expenditures by ensuring that approved suppliers meet the quality standards (Monczka et al., 2015). Furthermore, e -catalogues can help minimize quality costs (Hudrasyah et al., 2019). E-catalogues may help to rapid and ongoing innovation and the enhancement of product and consumer pleasure by actively fostering these kinds of interactions.

An e-invoice is one that one that is provided electronically and follows a predetermined format. Rasugu (2021) opine that e-invoicing provides various advantages, among them being significant financial savings, streamlined operations, faster payment terms, more data security, and fewer negative impacts on the environment. Benston and Smith (1976) present the concept of transaction costs. The authors try explaining why individual firms do not do asset transformations themselves based on the transaction costs associated with such operations. As noted by Rasugu (2021), as the number of transactions increases, the average cost of the underlying infrastructure drops. As such, successful electronic invoicing requires a critical mass of partnerships and providers of technology to satisfy the demand for electronic invoicing at every step of the supply chain. Nonetheless, when e-invoicing is not used, decision-making often takes a considerable amount of time.

Additionally, is a set of digital tools that aid in the streamlining, simplification, and improvement of strategic sourcing operations and procurement procedures carried out by a firm's procurement team. E-sourcing approaches enable multinational organizations to significantly minimize external spending while automating procurement operations (Rotchanakitumnuai, 2013). To reap the full benefit and make e-sourcing sustainable, companies must first eliminate the apparent obstacles and determine where e-sourcing belong in their entire procurement strategy (Larsen, 2021). It is crucial not only to embrace the instruments, but also to comprehend and alter the implementation subtleties in order to get the desired results (Kamotho, 2014). Larsen (2021) further indicate that e-sourcing give the

possibility to improve communication and transactional parts of the procurement process. In essence, an e-auction is the pillar of an effective, reproducible, and strategic sourcing procedure (Osir, 2016), as it helps source teams to streamline buying procedures by establishing standardized forms for purchases.

When it comes to conducting business on a worldwide scale, technological advancements in the form of e-payment systems are crucial (Slozko & Pello, 2015; Gichuhi, 2021). In fact, it became the primary enabling engine in ecommerce, upon which the success of electronic business depends. In addition to efficiency and reduced frauds, the e-payment system contributed to the global payment system's efficiency, effectiveness, and progress (Oladeji, 2014). In addition, the e-payment system often offers a variety of electronic methods of payment via which financial institutions offer their customers a range of e-payment opportunities and services, including credit cards or even mobile banking (Premchand & Choudhry, 2015). Accordingly, businesses and government agencies increasingly rely on electronic payment systems (Balogun, 2012). Because of its potential to streamline and ease business transactions, this method of payment is widely recognized and embraced by the financial systems worldwide.

2.4 E-procurement Strategies and Sustainable Procurement Performance

The steps of the e-procurement process are tendering, sourcing, payment, cataloguing, and invoicing. By removing the manual processes and implementing any modern e-procurement solution is meant to significantly minimize the work and time needed to conduct purchasing transactions. According to Berger and Zeng (2010), e-procurement aids firms in locating products in e-catalogues, generating requisitions, requesting approvals, submitting orders to vendors, and automating billing and payment procedures. In the process, this improves procurement performance which translates to sustainable procurement performance within the telecommunication companies. According to Chang et al. (2013), a value creation mindset is essential in improving procurement performance. This would also promote information exchange, which reduces operating expenses by lowering transaction costs and improves supply chain management and control. Also, continuing information exchange reduces uncertainty, resulting in an improvement in performance.

According to Rajkumar (2011), organizational preparedness is a key factor in promoting internal process improvement, training, and innovations when implementing e-procurement strategies. E-procurement increases the transparency of the procurement process and assists

companies in achieving good governance outcomes (Hui et al., 2011). Barasa et al. (2017), indicates that the advantages of e-procurement strategies are indisputable, if implemented properly. The sustainable procurement performance of e-procurement is determined by competitive advantage, reduced operational costs and increased quality (Ghadge et al., 2018). Munyimi (2019) indicates that adoption of technology enables procurement departments to obtain all items necessary by the business at the optimal time, location, price, quality, and quantity for all departments and users; thus, enabling the organization to attain sustainability in its procurement process. Therefore, the research gaps on the impact of electronic procurement strategies on sustainable procurement performance was filled by this study.

2.5 Empirical Literature

Research on the link between e-procurement and sustainable procurement performance is limited, either domestically or internationally. Using Kenya Utalii College as a case study, Osir (2016) delved into how the implementation of e-procurement affected procurement efficiency in Kenyan government institutions. In an effort to improve their procurement performance, State companies have embraced e-tendering, e-awarding, e-invoicing, and e-ordering. According to Osir (2016), the e-payment systems have been instrumental in attaining sustainable procurement performance across businesses. Despite the many benefits of e-payment, many people still feel uneasy about making purchases online because they lack the necessary ICT skills and are worried about security breaches. The report advised that the government build a comprehensive system integration and technology standards, as well as a legislative framework and policy mandating that all bidders utilize e-procurement. Nonetheless, the report did not connect on the sustainability aspect of implementing e-procurement within the organizations.

On the other hand, Wanja and Odoyo (2020) conducted a study on sustainable procurement activities and procurement performance food and beverage processing companies in Kenya. The study found that sustainable procurement techniques considerably improve procurement performance by lowering costs, cleaning up the environment, and improving supply quality. According to the study, sustainable procurement greatly improves procurement performance, which has a beneficial influence on company performance. Although the study provides key insights on the how sustainable procurement processes have a huge effect on procurement performance, empirical gaps exists because they focused on the four procurement practices (green inventory management, green tendering, green specification and reverse logistics). Besides that, the study did not include e-payment, e-sourcing, and e-invoicing, which are key

elements of green procurement practices. The goal of the research also was not on telecommunication companies; thus, leaving contextual gaps to be filled.

Eadie et al. (2012) evaluated factors affecting the adoption of e-procurement at the business level, with a focus on enterprises from diverse industries. Secondary data were analyzed using multinomial logistic regression in this investigation. The findings of the study revealed a positive correlation between electronic tendering and procurement performance. The introduction of e-tendering cost reductions, hence contributing to the organization's competitive edge. E-tendering also improved and expanded communication amongst the stakeholders participating in the procurement process. Nonetheless, the implications of other facets of e-procurement such as e-payment and e-sourcing were not the primary focus of this research. Being conducted outside of Kenya means there is a lack of local context, calling for follow-up research to fill in the blanks and establish a link to sustainable procurement performance indicators.

Makau and Onyango (2010) examined the variables that have encouraged e-procurement's acceptance in the telecommunications market, focusing specifically on Safaricom Plc. Despite the promise revealed by several studies in the field, the research concluded that e-procurement integration and broad acceptance started slowly. Besides, Kiage (2013) investigated the level to which private universities practice e-procurement and the effect e-procurement has on their performance. From the findings, e-procurement has beneficial impact on each performance factor. However, the study failed to link the vital facets of procurement performance within these private universities. In essence, e-procurement procedures must be assessed to ensure that their restrictions do not impede the effectiveness, customer satisfaction, and cost reduction of the company.

Last, whether in the public or private sector, meeting rising expectations for the timely and transparent provision of essential services and commodities is a formidable issue in the modern world (Ancarani, 2008). In scattered supply chains, e-procurement is advantageous since it facilitates coordination (Mwangi & Kagiri, 2016). Various players in supply chain processes have varying levels of legitimacy, authority, and haste to put into action e-procurement, which can affect the level of confidence amongst supply chain partners (Wahid, 2010). However, inadequate help and structural robustness of big supply chain enterprises might be a deterrent to e-business implementation (Brewer & Arnette, 2016). Different industries have varying propensities for adopting e-procurement, based on their historical usage of information

exchange networks before the introduction of the internet. According to Wahid (2010), when its use is completely integrated across the supply chain, e-business provides the biggest benefits. As indicated in the literature, e-business-supported supply chain may be capable of increased integration and collaboration (Wahid, 2010). Therefore, e-procurement is more likely to be used if suppliers are perceived as competent with it; yet, if suppliers lack the expertise essential to integrate information systems across the substantial borders in supply chains, this might be challenging.

2.6 Conceptual Framework

The independent variables of this study include e-ordering, e-tendering, e-invoicing, e-sourcing, e-payment and e-cataloguing. The dependent variables are sustainable procurement performance of telecommunication companies in Kenya measured in terms of its competitive advantage, reduced operational costs, environmental impact and employee retention.
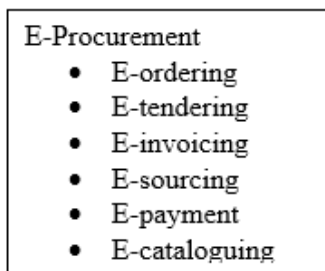
Independent Variable   **Dependent Variable**
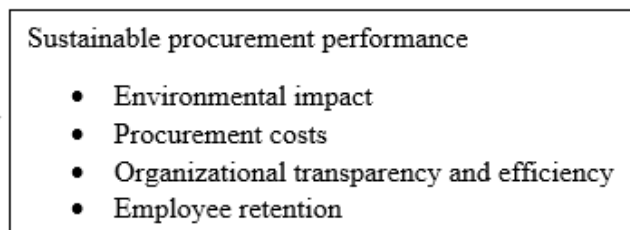
Source (Researcher, 2022).

Figure 1: Conceptual Framework

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The research strategy and technique are described in this section. Particulars like research design, size of the sample size, methods used to gather data, and analysis was discussed in detail.

3.2 Research Design

The research design is the plan and framework developed to collect data. This encompasses an explanation of the processes of research from hypothesis through data collection and analysis as well as a format for sharing the findings (Mugenda & Mugenda, 2003). The aims, questions, background information, and available tools played into the research strategy used for this investigation (Kothari, 2004). Therefore, an explanatory research design was utilized in this study as it is most suited to addressing the study's fundamental research questions of "who," "what," "where," and "how" (Schindler, 2006). This study's overarching goal was to use explanatory research to learn how e-procurement influences the sustainability procurement performance of Kenyan telecommunications firms.

3.3 Population of the Study

Population according to Mugenda and Mugenda (2012) is the total number of distinct cases or things that share certain observable features. The target population was telecommunication companies in Kenya, which are network facility providers, which were 25 in total registered as network facility providers (Communication Authority of Kenya, 2023) as shown in Appendix II. As such, 25 telecommunication companies in Kenya were the study's target population as shown in appendix II. The selection of the target population in this study followed a census because it is a comprehensive source of data about the population (Mugenda & Mugenda, 2012). Also, using a census help minimize sampling bias. As such, each of the telecommunication companies in the population had an equal chance of being selected. In addition, 75 respondents were targeted and 75 questionnaires were given out.

3.4 Data Collection

The study used semi-structured questionnaires (Appendix I) that was administered via online and physical interviews to gather primary data to 25 telecommunication companies in Kenya. The 75 questionnaires were designed in accordance with the goals of the study and one respondent from the procurement, accounting and ICT departments of the telecommunication companies was selected. The respondents were selected because they represented key

stakeholders within the telecommunication companies in Kenya. As employees or professionals working in these companies, they possess valuable insights and experiences related to e-procurement strategies and sustainable procurement performance. Besides, the questionnaire comprised of four parts. The first part covered the respondent's general information, second part covered the e-procurement strategies, the third part encompassed the influence of e-procurement strategies on sustainable procurement performance and the last section focused on challenges faced in adopting and implementing e-procurement strategies. Using a five-point Likert scale, the questionnaire assessed the level to which e-procurement strategies impacts procurement organizational performance at these telecommunication companies.

3.6 Data Analysis

The obtained data underwent data preparation, consisting of editing, coding, categorization, and tabulation, ready to be analyzed (Marshall & Rossman, 2006). Descriptive statistics which include ratios, means and percentages were utilized in analyzing the primary data. The coding process involved assigning numbers to responses so as to categorize them into a restricted number of categories. The responses to open ended questions from the 25 companies were coded and their frequencies calculated using cross tabulations based on the difference between the participants' responses and the central tendency of responses to each component. The analyzed data was interpreted and shown as bar charts, frequency table, pie charts and graphs. For open-ended questions, SPSS Text Analytics was employed. The main themes and word patterns of this texts was identified, extracted, and categorized.

Further, regression analysis was utilized to investigate the association between the variables. This was done using a computer application called SPSS. The used multiple regressions was of the form:

$$y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 \; \varepsilon$$ where:

y = sustainable procurement performance

b_0 = Constant Term

$b_{1,2,3,4}$ = Beta coefficients

x_1 = E-tendering process

x_2 = E-payment process

$x_3=$ E-invoicing process

$x_4=$ E-sourcing process

$x_5=$ E-cataloguing process

$\varepsilon =$ Error

CHAPTER FOUR: DATA ANALYSIS, RESULTS, AND DISCUSSION

4.1 Introduction

Data analysis, interpretation of outcomes, and presentation and discussion of findings are the primary focuses of this chapter. The objective of this study was to analyze how e-procurement strategies impacted the sustainable procurement performance of telecommunication companies in Kenya. Figures and tables are used to illustrate the results.

4.2 Response Rate

75 questionnaires were sent out by the researcher, to procurement officers, ICT officers, and accounting officers, from the 25 telecommunication companies and 60 were filled out and returned. This implies that the response rate was 80%. As noted by Mugenda & Mugenda (2003), a response rate of 50% or more is appropriate for statistical reporting, hence this is sufficient for the study. Therefore, the response rate was sufficient.

4.3 Demographic Information

The demographics were reevaluated afterwards. The respondents' gender, average length of continuous employment, and their level of education are included.

4.3.1 Gender of Respondents

Out of the 60 respondents, 48% of them were female employees whereas 52% where male employees as shown in figure 2. The results could suggest that men make up a larger proportion of the telecommunication companies' procurement departments.
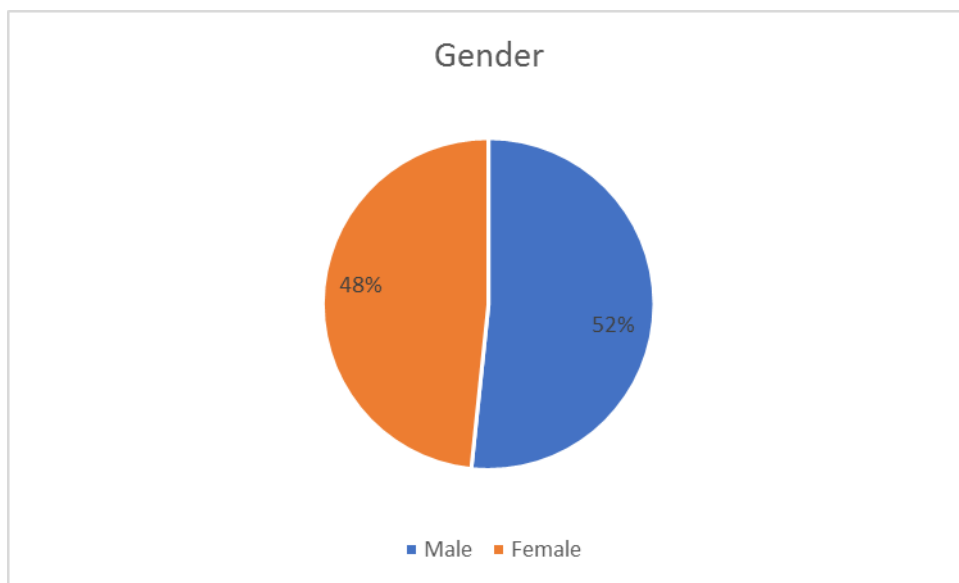
Figure 2: Respondent's gender

4.3.2 Respondent's Education Level

From the collected data, 59% of the respondents have a bachelor's degree, 33% with a master's degree, 6% with a higher diploma and 2% with a diploma as shown in figure 3. The results show that many procurement officers have advanced degrees.
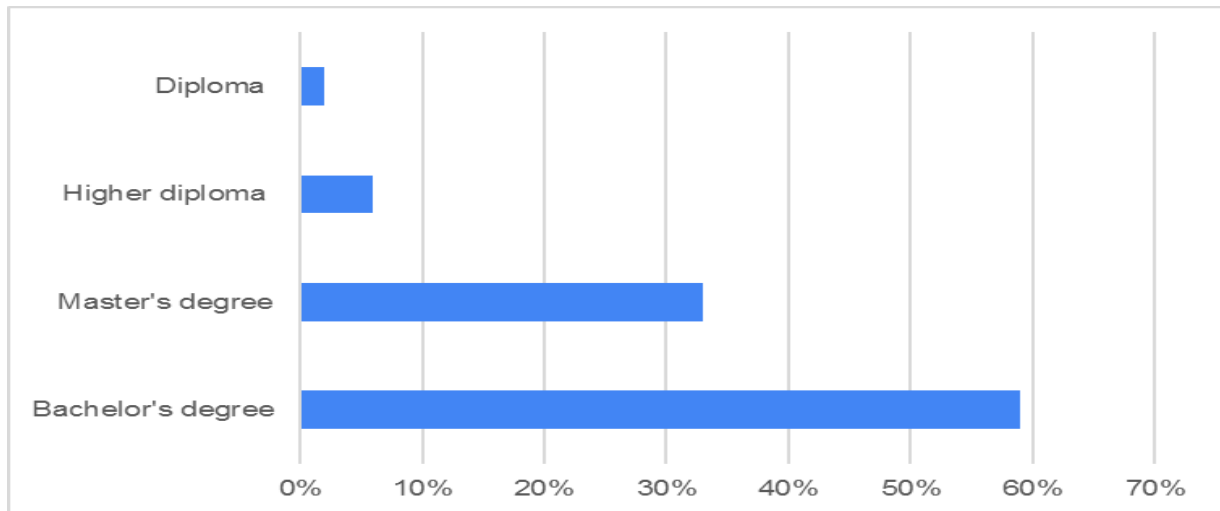
Figure 3: Respondent's level of education

4.3.3 Number of Years in the Company

Figure 4 indicates that most procurement officers (53%) have been in the companies for less than 5 years, while 39% have been in the telecommunication companies between 5 to 10 years and last, 9% of the employees have been in the companies more than 10 years. Therefore, according to the data, most procurement managers have been with the company for some time and are familiar with its inner workings.
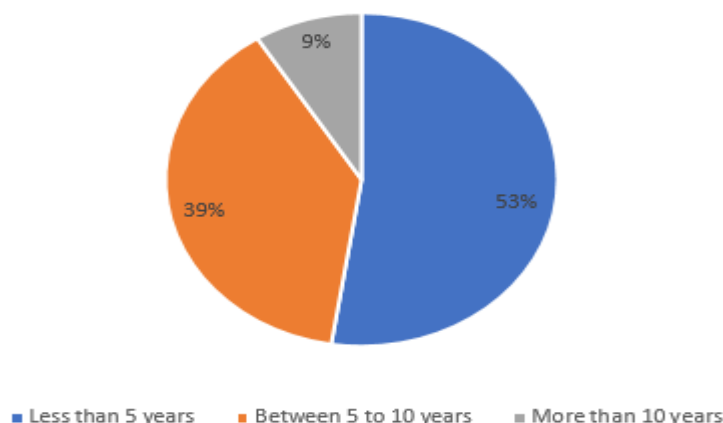
Figure 4: Number of Years in the Company

4.3.4 Number of Employees

Based on Figure 5, it can be observed that the largest proportion of employees in the procurement departments falls within the range of 10 to 20 employees, accounting for 47% of the total. This indicates that a significant portion of the telecommunication companies surveyed has a moderate-sized procurement department, consisting of approximately 10 to 20 employees.
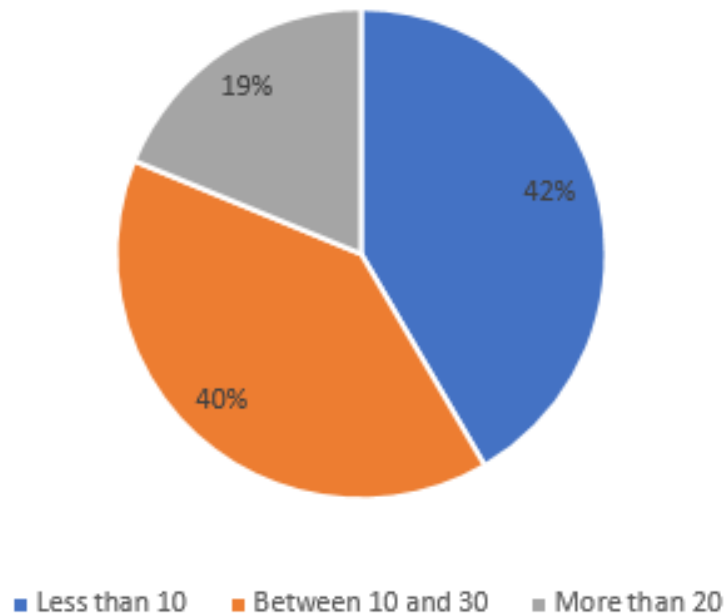
Figure 5: Number of Employees

4.3.5 Number of Years of Operation

Figure 6 indicates the number of years these telecommunication companies have been operational in Kenya. From the data collected, Kenya Power and Lighting Company has been in operation for 45 years, Safaricom PLC has been operating for 26 years, Telkom Kenya has been operating for 24 years of operation, while Airtel Kenya has been in operation for 13 years. These figures indicate the varying levels of companies experience and establishment among the telecommunication companies interviewed.
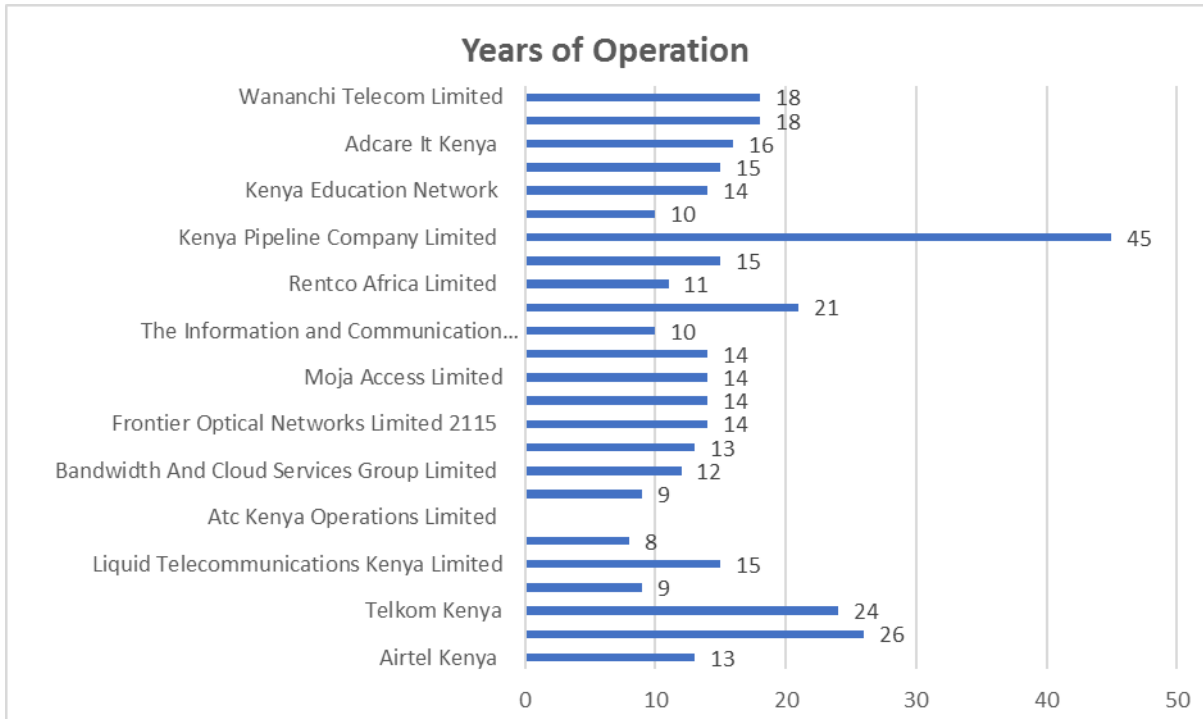
Figure 6: Number of years of operation

4.3.6 Number of Suppliers Engaged

The results in figure 7 indicates that the telecommunication companies engage more than 20 suppliers (20%), between 10 to 20 suppliers (40%), between 5 to 10 suppliers (20%) and they rarely engaged less than 5 suppliers (3%). This indicates that they use many suppliers to deal with their wide range of products.
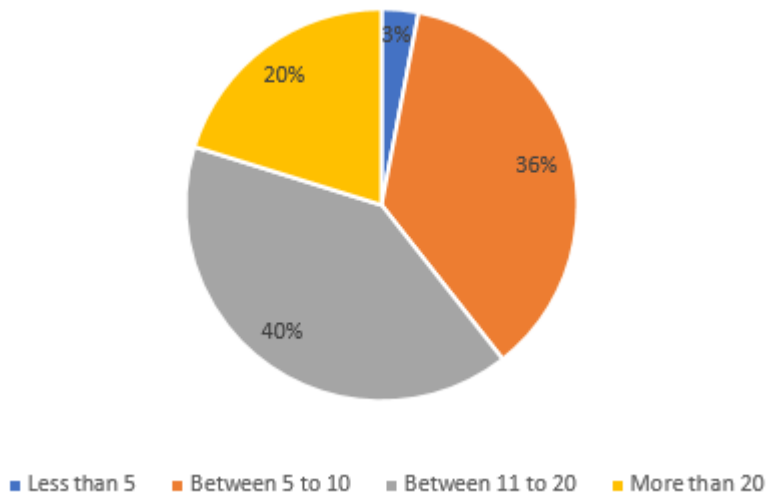
Figure 7: Number of Suppliers Engaged

4.3.7 Implementation of E-Procurement Strategies

Figure 8 below shows the implementation of e-procurement strategies by the telecommunication companies. The results indicate that a significant most of respondents have embraced electronic processes in the areas of E-Tendering, E-Invoicing, E-Cataloguing, and E-Payment. With 98% confirming their use of E-Tendering, it is evident that this digital approach to procurement has become widely adopted. Similarly, 97% of respondents reported utilizing E-Invoicing for their invoicing procedures, indicating a high level of acceptance and integration of this electronic method. Moreover, 95% of respondents reported employing E-Cataloguing to manage their catalog data, highlighting the importance of digitizing and streamlining product information. Additionally, 97% of respondents confirmed their utilization of E-Payment solutions, showcasing the prevalence of electronic payment methods. These findings reflect a strong trend towards digital transformation, as businesses recognize the advantages of these technologies, such as increased efficiency, reduced paperwork, and enhanced accuracy.
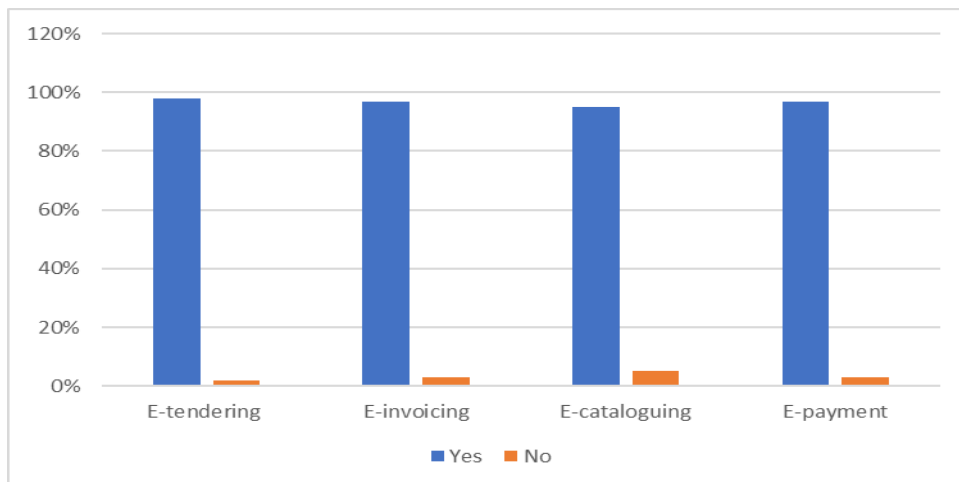
Figure 8: Implementation of E-Procurement Strategies

4.3.8 Number of Years the Company adopted E-procurement Strategies

In figure 9, it is evident that 40% of the respondents stated that their firms have been using e-procurement for 1-5 years, 56% for 6-10 years, and 4% for more than 10 years.
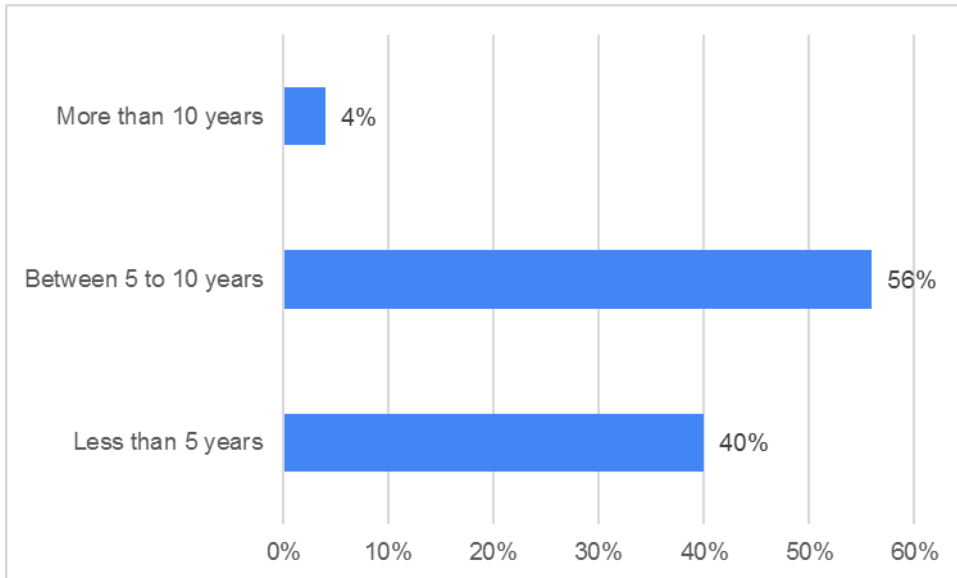
Figure 9: Number of Years the Company adopted E-procurement Strategies

4.4 Use of E-Procurement Practices

The respondents were surveyed about their experiences with e-procurement in the telecommunications companies. A score of 5 indicated a "very large extent," a score of 4 indicated "a great extent," a score of 3 indicated "a moderate extent," a score of 2 indicated "a little extent," and a score of 1 indicated "to no extent." The average and standard deviation were calculated. The means are interpreted using a five-point scale, where a mean of less than 1.5 indicates no effect, a mean between 1.5 and 2.5 indicates some effect, a mean between 2.5 and 3.5 indicates a moderate amount of impact, a mean between 3.5 and 4.5 indicates a large extent of impact, and a mean between 4.5 and 5 indicates a very large extent of impact. Electronic tendering, electronic invoicing, electronic payment, and electronic cataloguing are all aspects of e-procurement methods that were studied in depth.

4.4.1 E- Tendering

E-tendering is the practice of doing a whole tendering process online, from advertising to gathering and presenting sensitive information. As a result, businesses may become significantly more productive as the need for slow paper-based transactions is reduced or eliminated. Information about bids, pricing, etc. for the product may be found in this system. Table 1 displays the findings from the study of electronic tendering.

Table 1: E-tendering Descriptive Statistics

Descriptive Statistics			
	N	Mean	Std. Deviation

Tenders are advertised online	60	4.417	0.5612
Proposal from prospective clients is received online	60	4.367	0.6097
Shortlisting of tenders is done online	60	4.333	0.6806
How has the process affected the coordination between suppliers and the company?	60	4.283	0.7386
High transactional costs and low infrastructure hinders the organization from exploiting the increased opportunities	60	4.233	0.8102
There is no collusion between bidders as opposed to traditional tendering due to fear of being detected	60	4.317	0.7247
Maintains integrity, authenticity and confidentiality of submitted bids	60	4.417	0.6187
It enhances the subcontractor price visibility and speed of returns	60	4.417	0.6187
Valid N (listwise)	60		

Based on the results indicated in Table 1, tenders advertised online receive favorable feedback, with a mean rating of 4.417 (SD = 0.5612). Similarly, the process of receiving proposals from prospective clients online is well-regarded, with a mean rating of 4.367 (SD = 0.6097). Additionally, shortlisting of tenders conducted online also garners positive responses, with a mean rating of 4.333 (SD = 0.6806). Furthermore, the e-tendering process is perceived to have a positive impact on the coordination between suppliers and the company, as indicated by a mean rating of 4.283 (SD = 0.7386).

On the other hand, some challenges have been identified. Respondents reported concerns related to high transactional costs and low infrastructure, hindering the organization from fully exploiting increased opportunities, resulting in a mean rating of 4.233 (SD = 0.8102). Despite the benefits of e-tendering, it is noted that there is no collusion between bidders as opposed to traditional tendering, mainly due to fear of being detected, with a mean rating of 4.317 (SD = 0.7247). However, the process does have several advantages. It is perceived to maintain integrity, authenticity, and confidentiality of submitted bids, with a mean rating of 4.417 (SD = 0.6187). Moreover, the e-tendering process enhances subcontractor price visibility and speed of returns, receiving the highest mean rating of 4.417 (SD = 0.6187). In general, the data suggests that e-tendering positively impacted the coordination between suppliers and the company, although there is still room for improvement.

4.4.2 E-sourcing

E-Sourcing allows firms to contact, screen, and select suppliers regardless of location or time, allowing category managers to achieve greater results than traditional negotiations. The descriptive statistics in table 2 shows how E-sourcing has an impact on sustainable procurement performance.

Table 2: E-sourcing Descriptive Statistics

Descriptive Statistics			
	N	Mean	Std. Deviation
The company identifies new suppliers using an internet-based system	60	4.150	.8601
Buyers and sellers have an open environment where they can compare true value of their products	60	4.167	.6930
The process helps the company to improve efficiency and reduce procurement costs	60	4.300	.5909
The company evaluates suppliers online	60	4.250	.5712
The company has an online platform where the supplier and buyer work together	60	4.300	.6189
The process increases competitiveness of the procurement process	60	4.400	.6431
Valid N (listwise)	60		

Table 2 shows that the company effectively identifies new suppliers using an internet-based system, with a mean rating of 4.150 (SD = 0.8601). Moreover, buyers and sellers have a transparent and open environment to compare the true value of their products, as reflected by a mean rating of 4.167 (SD = 0.6930). The e-sourcing process also proves beneficial in enhancing the company's efficiency and reducing procurement costs, with a mean rating of 4.300 (SD = 0.5909). Additionally, the company's evaluation of suppliers online receives positive feedback, garnering a mean rating of 4.250 (SD = 0.5712). Furthermore, the company offers an online platform that facilitates collaboration between suppliers and buyers, achieving a mean rating of 4.300 (SD = 0.6189). Lastly, the e-sourcing process significantly increases the

competitiveness of the procurement process, with a mean rating of 4.400 (SD = 0.6431). In general, the findings shows that e-sourcing has a positive impact on the organization.

4.4.3 E-invoicing

The respondents as shown in table 3 agreed that e-invoicing has led to efficient and faster communication between the buyer and the suppliers (Mean=4.367, SD=0.5813), and information is easily retrieved (Mean=4.367, SD=0. 6369). Respondents also reported that e-invoicing has reduced the number of waste papers, which is helpful to the environment since it is a paperless process (Mean=4.322, SD=0.7529). Additionally, the respondents agreed that e-invoicing enables low-cost and secure procurement transactions (Mean=4.183, SD=0.5964), indicating that the process may lead to cost savings and increased security for companies.

Table 3: E-invoicing Descriptive Statistics

Descriptive Statistics			
	N	Mean	Std. Deviation
There is low cost and secure procurement transaction	60	4.183	.5964
There is efficient and faster communication between the buyer and the suppliers	60	4.367	.5813
Information is easily retrieved	60	4.367	.6369
There is reduced number of waste papers which is helpful to the environment since it is paperless process	59	4.322	.7529
Valid N (listwise)	59		

4.4.4 E-cataloguing

The respondents, as depicted in the findings in Table 4, reported that changes can be made easily (Mean=4.117, SD=0.7152), updating information is easy (Mean=4.267, SD=0.7334), and suppliers are able to access information on available tenders (Mean=4.100, SD=0.6023). These findings suggest that the system enables convenient updating of information, facilitates easy implementation of changes, and provides suppliers with access to relevant tender information. This may have a positive impact on procurement performance by improving efficiency and reducing errors.

Table 4: E-cataloguing Descriptive Statistics

Descriptive Statistics			
	N	Mean	Std. Deviation

Changes can be made easily	60	4.117	.7152
Updating information is easy	60	4.267	.7334
Suppliers are able to access information on available tenders	60	4.100	.6023
Valid N (listwise)	60		

4.4.5 E-payment

The respondents, as shown in table 5, reported that the transaction process is smooth and faster (Mean=4.267, SD=0.6069) and there is increased transparency in the payment process (Mean=4.3, SD=0.6189). These findings indicate that the implementation of e-procurement has led to a smoother and faster transaction process, as well as improved transparency in payment. These factors contribute to more efficient and reliable procurement operations.

Table 5: E-payment Descriptive Statistics

Descriptive Statistics			
	N	Mean	Std. Deviation
The transaction process is smooth and faster	60	4.267	.6069
There is increased transparency in payment process	60	4.300	.6189
Valid N (listwise)	60		

4.5 Sustainable Procurement Performance

4.5.1 Addressing the Idea of Sustainable Procurement Performance

From figure 10, 97% confirmed that the idea of sustainable procurement performance has been acknowledged and incorporated into their practices. This high percentage demonstrates a strong commitment to considering sustainability factors in procurement processes. A small proportion of 2% responded negatively, suggesting that sustainable procurement may not have been fully addressed or implemented in their institution. Additionally, 1% of respondents indicated uncertainty regarding the institution's approach to sustainable procurement performance.
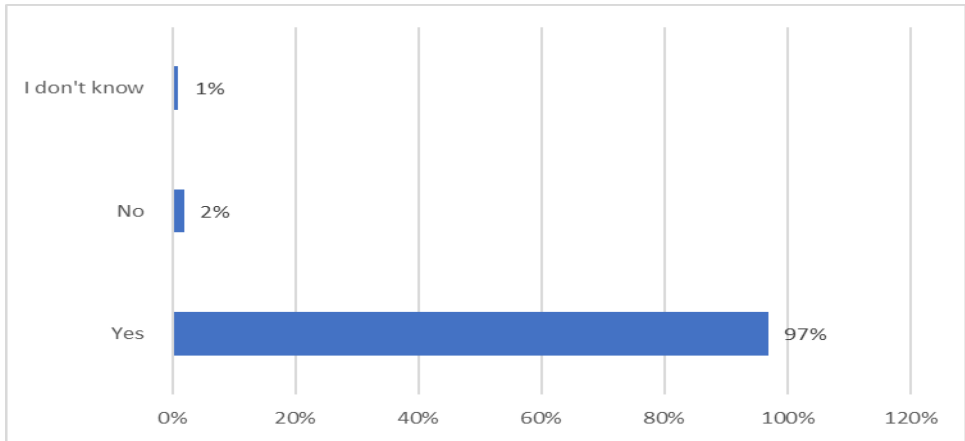
Figure 10: Addressing the Idea of Sustainable Procurement Performance

4.5.2 Consideration for Environmental Protection

Based on findings in figure 11, 54% of the respondents indicated that their companies have considered environmental protection criteria when making purchases, while 44% we not sure. Besides that, 1% indicated that their companies do not consider environmental protection when making purchases. From the results, it is evident that most of the telecommunication companies consider environmental protection when making purchases.
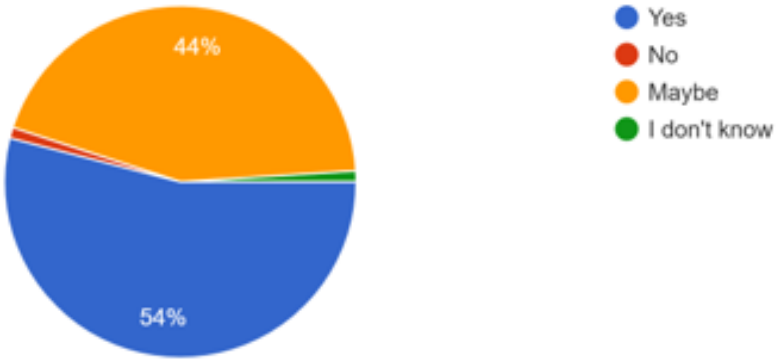
Figure 11: Consideration for Environmental Protection

4.5.3 Ranking of Sustainable Procurement Performance priority within the Company

The findings as illustrated in figure 12 reveal that within the company, a significant portion of respondents hold sustainable procurement performance in high regard. Most of respondents rated the firm's performance as either excellent (38%) or very good (48%), indicating a strong commitment to integrating sustainability into procurement practices. A smaller percentage of respondents considered the performance as good (10%), fair (2%), or poor (2%). These findings highlight a positive outlook overall, with a notable emphasis on sustainable procurement.
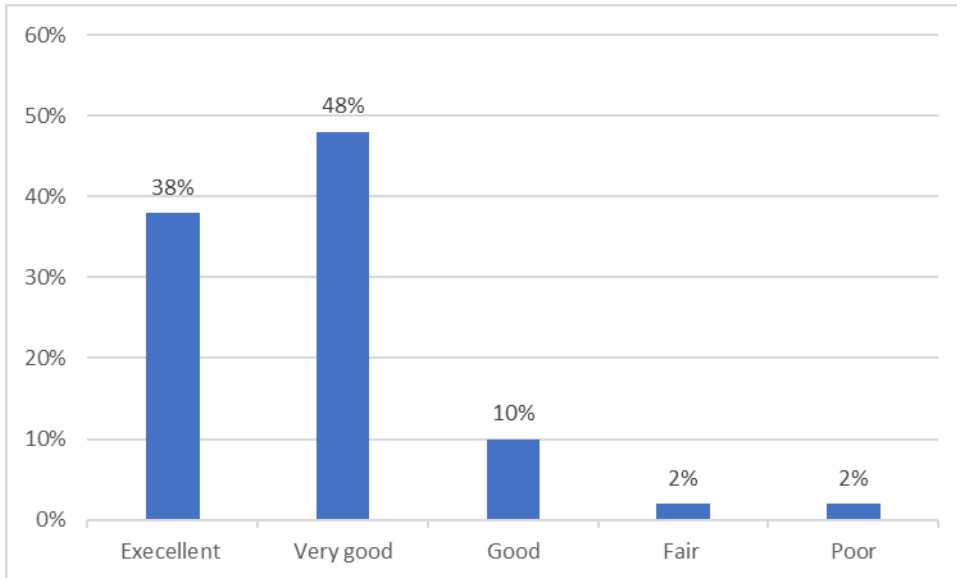
Figure 12: Ranking of Sustainable Procurement Performance priority within the Company

4.5.4 Encouraging Environmental Performance in Procurement through Qualification/Selection Criteria and Technical Specifications

The findings as illustrated in figure 13 indicate that a significant majority of respondents (96.9%) do establish qualification or selection criteria/technical specifications in the procurement process. This reflects a strong commitment to integrating sustainability goals and environmental considerations into procurement practices. Only a small percentage of respondents (1%) reported not establishing such criteria, suggesting room for improvement in incorporating environmental performance incentives. Additionally, 2.9% of respondents expressed uncertainty regarding the establishment of these criteria, highlighting the need for further awareness and education on sustainable procurement practices.
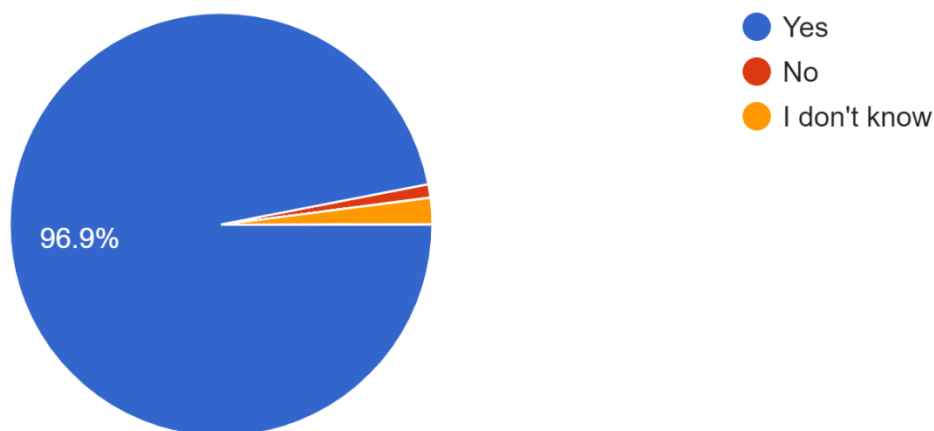
Figure 13: Encouraging Environmental Performance in Procurement through Qualification/Selection Criteria and Technical Specifications

4.5.5 Extent the Organization has attained Sustainable Procurement Performance

Table 6: Sustainable Procurement Performance

Descriptive Statistics			
	N	Mean	Std. Deviation
Using life-cycle analysis to determine environmental impact of the goods and services	60	3.892	.6735
The company's procurement process operates in a safe environment	60	4.137	.5457
Facilitated the engagement of women and people with disabilities in the supplier purchase process	60	4.225	.6735
Ensuring there is the safety of the incoming goods within the facility	60	4.245	.7504
The company has been able to commit to waste reduction goals	60	4.294	.6688
The company has arranged visits to the supplier facilities to ensure they comply with the company's policies	60	4.245	.7097
Valid N (listwise)	60		

Based on the descriptive statistics depicted in Table 6, the respondents generally agreed that their company commits to waste reduction aims (Mean=4.294, SD=0.6688) and ensures the safety of incoming goods within the facility (Mean=4.245, SD=0.7504). They also agreed that the company's procurement process operates in a safe environment (Mean=4.137, SD=0.5457) and has facilitated the engagement of women and people with disabilities in the supplier purchase process (Mean=4.225, SD=0.6735). However, there were some concerns identified in the data. The respondents reported that utilizing life-cycle analysis to determine the environmental impact of goods and services (Mean=3.892, SD=0.6735) and arranging visits to supplier facilities to ensure compliance with the company's policies (Mean=4.245, SD=0.7097) may be challenging. In general, the results suggests that the company has made progress in sustainable procurement practices, but there may be room for improvement in some areas. These findings may be useful for the company to assess their sustainable performance attainability and identify areas where they can further enhance their sustainable procurement practices.

4.6 Benefits of Green Procurement Practices

When it comes to the benefits of e-procurement strategies, the respondents perceived them to include improving institutional image, promoting procurement initiatives, and reducing costs and liability.

Table 7: Benefits of Green Procurement Practices Descriptive Statistics

Descriptive Statistics			
	N	Mean	Std. Deviation
Doing the right thing	60	4.480	.8644
Improving institutional image	60	4.471	.7407
Stakeholder's satisfaction	60	4.284	1.0281
Employee retention	60	4.353	.8972
Organizational efficiency and transparency	60	4.422	.8137
Cost reduction and reduced liability	60	4.451	.8160
Promoting institutional procurement initiatives	60	4.490	.8530
Valid N (listwise)	60		

Based on the descriptive statistics depicted in table 7, the respondents generally agreed that doing the right thing is important to their company (Mean=4.480, SD=0.8644) and that improving institutional image is a priority (Mean=4.471, SD=0.7407). They also reported that stakeholder's satisfaction is valued (Mean=4.284, SD=1.0281) and employee retention is a focus (Mean=4.353, SD=0.8972). Furthermore, organizational efficiency and transparency are considered significant (Mean=4.422, SD=0.8137), as well as cost reduction and reduced liability (Mean=4.451, SD=0.8160). The respondents expressed agreement that promoting institutional procurement initiatives is essential (Mean=4.490, SD=0.8530). Overall, the findings indicate that green procurement practices are seen as having multiple benefits and can be seen as a worthwhile investment for organizations.

4.7 Challenges in Adoption E-procurement Strategies

The challenges in adopting e-procurement strategies are numerous and complex as indicated by the respondents. One major obstacle is the high cost of implementation, which includes investing in new technology, training personnel, and integration with backend systems. Resistance to change and negative attitudes towards the transition can also impede progress. Inaccurate data, cyber insecurity, and fear of technology are also elements that can affect the implementation e-procurement. In addition, the complex and unintuitive user interface, poor

onboarding process, and difficulty in aligning organizational culture with e-procurement can create barriers. Other issues include the inability to onboard and support suppliers, lack of standardized processes, and inadequate legal framework. Addressing these challenges requires a comprehensive approach that considers both technical and human factors, including employee competency, software integration, supplier management, and evaluating costs and benefits.

4.8 E-Procurement Strategies and Sustainable Procurement Performance

Using Multiple regression analysis, the study found out if there was a relationship between E-Procurement Strategies and Sustainable Procurement Performance.

4.8.1 Regression Analysis

The results for the study's multiple regressions were coded, entered, and calculated using SPSS. Coefficient of determination measures how much variation in the dependent variable (sustainable procurement performance of telecommunication companies in Kenya) can be accounted for by shifts in the independent variables.

Table 8: Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.690ᵃ	.475	.427	.33991

a. Predictors: (Constant), E-cataloguing, E-tendering, E-invoicing, E-payment, E-sourcing

The results in table 8 indicate a moderate positive correlation between e-procurement strategies (E-cataloguing, E-invoicing, E-tendering, E-payment and E-sourcing) and the sustainable procurement performance of telecommunication firms in Kenya. Approximately 47.5% of the variance in sustainable procurement performance can be elucidated by these e-procurement strategies. The adjusted R square value suggests that around 57.3% of the variance is accounted for. Therefore, these findings indicate that the adoption of e-procurement strategies can have a positive effect on sustainable procurement performance in the telecommunication sector in Kenya.

ANOVA

The results of an analysis of variance (ANOVA) provide a basis for significance testing since they reveal information about the degrees of variance within certain regression models.

Table 9: Analysis of Variance (ANOVA)

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5.655	5	1.131	9.788	.000[b]
	Residual	6.239	54	.116		
	Total	11.894	59			

a. Dependent Variable: Extent organizations have attained sustainable procurement performance

b. Predictors: (Constant), E-cataloguing, E-tendering, E-invoicing, E-payment, E-sourcing

In table 9, the regression model has a sum of squares of 5.655 and 5 degrees of freedom, resulting in a mean square of 1.131. The F-statistic for the regression model is 9.788. This shows the significance of the regression model and suggests that at least one independent variable contributes to the prediction of the dependent variable.

Regression Coefficient

To further understand the link between electronic procurement and Kenyan telecoms' sustainable procurement performance, the multiple regression analysis was carried out.

Table 10: Correlation matrix

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.194	.555		2.152	.036
	E-tendering	.123	.159	.131	.774	.042
	E-sourcing	.302	.122	.418	2.477	.016
	E-invoicing	.106	.134	.103	.790	.050
	E-payment	.241	.115	.302	2.089	.041
	E-cataloguing	-.066	.167	-.071	-.397	.693

a. Dependent Variable: Extent organizations have attained sustainable procurement performance

As per the generated table 10, the equation ($y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 \, \varepsilon$) becomes:

$$y = 1.194 + 0.123x_1 + 0.302x_2 + 0.106x_3 + 0.241x_4 + \varepsilon$$

The results in table 10 indicate that E-tendering, E-sourcing, E-invoicing and E-payment have statistically significant positive effects on sustainable procurement performance attainability, with coefficients of 0.123, 0.302, 0.106, and 0.241, respectively. The significance levels of the t-values for these coefficients are 0.042, 0.016, 0.05, and 0.041, respectively. This suggests that the implementation of these e-procurement strategies is associated with higher levels of sustainable procurement performance. Besides that, E-cataloguing has no statistically significant impact on sustainable procurement performance attainability, with a coefficient of -0.066 and a significance level of the t-value of 0.693. This indicates that the influence of E-cataloguing on sustainable procurement performance may not be significant in this context.

The intercept value is 1.194, which means that whenever all the independent variables have a value of zero, the predicted value of the dependent variable, sustainable procurement performance, is 1.194.

4.9 Discussion of Findings

The study determined the effect of e-procurement practices implementation on sustainable procurement performance in Kenya telecommunication companies. The study found out that telecommunication companies in Kenya have implemented various e-procurement strategies including e-ordering, e-invoicing, e-tendering, e-sourcing, e-payment, and e-cataloguing. The implementation of e-procurement strategies has enabled telecommunication companies to realize various benefits including cost savings, time savings, increased efficiency, improved data accuracy, improved supplier relationship management, and increased transparency. The adoption of e-procurement has also contributed to reduced environmental impact through the reduction of paper usage, and the promotion of green procurement practices.

From a business perspective, e-procurement represents an opportunity to boost efficiency and productivity. According to the study, e-tendering is used by Kenyan telecommunications firms because it helps cut costs, shortens timelines, increases quality, and allows for greater maneuverability. It is a great motivator for them to collaborate with their suppliers as they go through the bidding process. Van Weele (2005) found that e-tendering led to the drop in value in his research of internal customer satisfaction that is achieved through the E-Procurement

operation. By ensuring that the information acquired is enough for making decisions, electronic procurement improves quality (Sama, Ndunguru & Nsimbila, 2022). According to Muraya (2016), e-procurement minimizes the cost of quality by assuring that suppliers deliver products or services that undergo rigors quality control, which is consistent with the study's findings. Electronic procurement allows for more flexibility in the product idea, which in turn improves both product standardization and customer happiness from the inside out. Standardization helps by making it possible to use fewer suppliers for individual components.

Moreover, the findings suggests that e-sourcing has had a positive impact on the procurement process of telecommunication companies in Kenya. E-sourcing creates an open environment where sellers and buyers can contrast true value of their services and goods. This means it is easier for the telecommunication company to evaluate its supplier. In turn, it increases competitiveness. These results are consistent with a study conducted by Kaseme and Paul (2019). They established that by utilizing e-procurement, businesses can access the products and services of their preferred suppliers online and purchase them directly. In addition, the study found that e-sourcing practice improved the accessibility of potent suppliers, which increased the degree of transparency and decreased the cost of handling purchasing processes, thereby improving company's revenue margins. In essence, through this process, the companies are able to improve efficiency and cut procurement costs.

Additionally, the findings suggest that e-invoicing has had a positive effect on the procurement process of telecommunication companies in Kenya. The positive impact of e-invoicing on the procurement process can be attributed to several factors such as increased efficiency, reduced errors, and faster processing time. The same applies to e-payments. These benefits can lead to cost savings and improved overall procurement performance. Besides that, it helps the environment by cutting down on paper use. Electronic invoicing can provide paperless, transparent transactions for firms, as opposed to traditional paper invoicing. It facilitates the processing and retrieval of data; it increases the security of data within the organization; it speeds up and improves communication between suppliers and buyers; it ensures the security and affordability of procurement transactions; and it facilitates an effective exchange of information among the organization's users. Also, it improves the organization's capacity to consistently provide services; and since the time it takes to offer the service is less when using e-invoices, it takes less time to pay the suppliers. This is consistent with Waganda (2018) findings. According to transaction cost economics, the per-transaction cost of the underlying

infrastructure decreases as volume of transaction rises (Chang et al., 2013). Several developments in technology, especially in the realms of electronic invoicing and digital signatures, have helped to increase the safety of online financial dealings in recent years.

On the other hand, telecommunication companies in Kenya face various difficulties in implementing e-procurement strategies in attaining sustainable procurement. The difficulties include inadequate infrastructure, lack of technical expertise, resistance to change, inadequate legal framework, lack of trust in e-procurement systems, and inadequate supplier readiness.

CHAPTER FIVE: SUMMARY, CONCLUSION, LIMITATIONS AND RECOMMENDATIONS

5.1 Introduction

This section delves into the summary of the study, study limitations, recommendations as well as further suggestions for research.

5.2 Summary

The study found that e-sourcing, e-tendering, e-invoicing and e-payment have statistically significant positive effects on the performance of sustainable procurement in Kenya's telecommunication companies. The coefficients for these variables were 0.123, 0.302, 0.106, and 0.241 respectively, indicating their impact on improving sustainable procurement performance. The intercept value of 1.194 implies that when all of the variables that are independent have a value of zero, the predicted value of sustainable procurement performance attainability is 1.194. These findings highlight the importance of implementing specific e-procurement strategies to enhance sustainable procurement performance in the telecommunication sector in Kenya. In short, the implementation of these e-procurement strategies positively impacted the performance of sustainable procurement, as seen in the companies' improved competitive advantage, reduced operational costs, reduced environmental impact, and improved employee retention. However, e-cataloguing was found to have no statistically significant effect on the performance of sustainable procurement. Therefore, the study suggests that telecommunication companies in Kenya should focus on implementing e-sourcing, e-tendering, and e-invoicing to improve their sustainable procurement performance.

On the other hand, the study identified several challenges that telecommunication companies in Kenya face in implementing e-procurement strategies to attain sustainable procurement. One of the major obstacles is the high cost of implementation, which includes investing in new technology, training personnel, and integration with backend systems. Resistance to change and negative attitudes towards the transition can also impede progress. Inaccurate data, cyber insecurity, and fear of technology are also elements that can hinder the adoption of e-procurement. In addition, the complex and unintuitive user interface, poor onboarding process, and difficulty in aligning organizational culture with e-procurement can create barriers. Furthermore, inadequate technical expertise, infrastructure, inadequate legal framework, lack of trust in e-procurement structures, and inadequate supplier readiness are also difficulties that

telecommunication companies in Kenya face in implementing e-procurement strategies. The study suggests that telecommunication companies in Kenya have to invest in adequate infrastructure, provide technical training to employees, establish a legal framework for e-procurement, build trust in e-procurement systems, and collaborate with suppliers to improve supplier readiness.

5.3 Conclusion

The study conveys some valuable insights into the impact that the use of electronic procurement has had on the sustainable procurement performance of telecommunications businesses in Kenya. Through the use of multiple regression analysis, it investigated the influence that e-procurement strategies have on the overall performance of sustainable procurement. It investigated the connection between the several forms of e-procurement (e-ordering, e-tendering, e-invoicing, e-sourcing, e-payment, and e-cataloguing) and the level of sustainable procurement performance in Kenyan telecommunications companies. The purpose of this study was to investigate how the implementation of e-procurement strategies influences the level of sustainable procurement performance in Kenyan telecommunications enterprises. According to the findings, electronic tendering, electronic sourcing, and electronic payment all have considerable positive impact on the performance of sustainable procurement. These measures help improve the general sustainability of procurement procedures in the telecommunications companies, which is a contributing factor. On the other hand, it was discovered that e-cataloging did not have a substantial impact on the performance of sustainable procurement. The study also shows that telecommunication companies in Kenya face various difficulties in implementing e-procurement strategies in attaining sustainable procurement. The study provides recommendations on how telecommunication companies in Kenya can overcome the difficulties in implementing e-procurement strategies in attaining sustainable procurement. Therefore, the findings of this study have implications for telecommunication companies in Kenya and other organizations that are considering the adoption of e-procurement strategies.

5.4 Limitations of the Study

The study has some flaws, all of which need to be taken into consideration before any inferences can be drawn from it. The use of self-administered questionnaires for data collection is also a limitation. Self-reported data may be influenced by respondents' biases and perceptions, leading to measurement errors. Lastly, the study did not explore the impact of

cultural and legal factors on e-procurement adoption and sustainable procurement performance, which could have provided additional insights.

5.5 Recommendations for Policy and Practice

From the study's findings, there are several recommendations for policy and practice. Firstly, telecommunication enterprises in Kenya must prioritize the implementation of e-procurement strategies to enhance the performance of sustainable procurement. This not only improved the efficiency and effectiveness of the procurement process but also reduce operational costs and environmental impact while promoting employee retention.

Secondly, there is a need for increased awareness and training among employees in telecommunication companies to improve their competence in operating e-procurement systems. This helped to minimize the difficulties faced in implementing e-procurement strategies in attaining sustainable procurement.

Thirdly, collaboration between telecommunication companies and their suppliers is significant in the implementation of e-procurement strategies. Telecommunication companies should collaborate with their suppliers to make sure that they are on boarded and supported, and their feedback is taken into consideration in the implementation process.

Finally, telecommunication companies should continually evaluate the effectiveness of their e-procurement strategies and their impact on sustainable procurement performance. This helped them to identify areas of improvement and adjust their strategies accordingly to achieve better sustainable procurement performance.

5.6 Suggestion for Further Research

In light of the limitations of this study, there are a number of suggestions for more research that might be explored in order to increase the depth of information that is known about this subject. First, the scope of this research was limited to the field of telecommunications in Kenya; nevertheless, it would be beneficial to do a similar investigation in other fields and nations in order to confirm the findings of this research. Second, the research was carried out using a quantitative methodology, but in the future, researchers may choose to use qualitative methods in order to acquire a more in-depth knowledge of the perspectives and experiences of stakeholders in relation to the adoption of e-procurement and the performance of sustainable procurement. In addition, the research primarily focused on sustainable procurement performance; however, future studies might investigate the influence that the adoption of e-procurement has on other performance indicators, such as financial performance and customer

satisfaction. Finally, this research looked solely at the direct effects that adopting e-procurement had on long-term sustainable procurement performance. In the future, researchers may analyze the moderating effects that characteristics like organizational culture, procurement regulations, and supplier management practices have. Overall, more study in this field led to a greater understanding of the influence that the adoption of e-procurement has on the performance of sustainable procurement and provided insights into viable strategies for implementation.

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APPENDIX I

Questionnaire

This questionnaire comprises of four parts. Section A covers the respondent's general information; Section B covers the e-procurement strategies; Section C part covers the influence of e-procurement strategies on sustainable procurement performance and Section D focuses on challenges faced in adopting and implementing e-procurement strategies.

NB: The information collected shall be treated in confidence.

SECTION A: GENERAL INFORMATION

1. Gender

Male   [ ]

Female   [ ]

2. Level of Education Level

i.	Primary	[ ]	v.	Post graduate	[ ]
ii.	Secondary	[ ]	vi.	Masters	[ ]
iii.	Diploma	[ ]	vii.	Doctoral	[ ]
iv.	Undergraduate	[ ]			

3. Number of years worked with the company

i.   < 5 years   [ ]

ii.   5 to 10 years   [ ]

iii. Over 10 years   [ ]

4. How many employees do the procurement department have?

i.   < 10   [ ]

ii.   10 to 30   [ ]

iii. > 30   [ ]

5. Please highlight how many years have your organization been in existence?

i.   < 5 Years   [ ]

ii.   5 to 10 Years   [ ]

iii. > 10 Years   [ ]

6. Please indicate the number of suppliers or contractors you frequently engage?

   i.   < 5   [ ]

  ii.   5 – 10   [ ]

 iii.   11 – 20   [ ]

 iv.   > 20   [ ]

7. Has your company implemented any e-procurement strategies (e-tendering, e-invoicing, e-cataloguing, e-payment)? Please tick if yes or no.

E-procurement strategy	Yes	No
E-tendering		
E-invoicing		
E-cataloguing		
E-payment		

8. If yes, how many years has elapsed since the implementation of the e-procurement strategies?

i) 1-5 years   ()

ii) 6-10 years   ()

iii) Above 10   ()

SECTION B: E-PROCUREMENT STRATEGIES

9. Please specify in the table below to what extent your organization has adopted the following e-procurement strategies. Use the scale given in the table where *1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree.*

E-procurement strategies Prompts	1	2	3	4	5
E-tendering					
a) Tenders are advertised online					
b) Proposal from prospective clients is received online					
c) Shortlisting of tenders is done online					
d) How has the process affected the coordination between suppliers and the company?					

e) High transactional costs and low infrastructure hinders the organization from exploiting the increased opportunities					
f) There is no collusion between bidders as opposed to traditional tendering due to fear of being detected					
g) Maintains integrity, authenticity and confidentiality of submitted bids					
h) It enhances the subcontractor price visibility and speed of returns					
E-sourcing					
a) The company identifies new suppliers using an internet-based system					
b) Buyers and sellers have an open environment where they can compare true value of their products					
c) The process helps the company to improve efficiency and reduce procurement costs					
d) The company evaluates suppliers online					
e) The company has an online platform where the supplier and buyer work together					
f) The process increases competitiveness of the procurement process					
E-invoicing					
a) There is low cost and secure procurement transaction					
b) There is efficient and faster communication between the buyer and the suppliers					
c) Information is easily retrieved					
d) There is reduced number of waste papers which is helpful to the environment since it is paperless process					
E-payment					
a) The transaction process is smooth and faster					
b) There is increased transparency in payment process					
E-cataloguing					

	1	2	3	4
a) Suppliers are able to access information on available tenders				
b) Updating information is easy				
c) Changes can be made easily				

SECTION C: SUSTAINABLE PROCUREMENT PERFORMANCE

10. Has the idea of sustainable procurement performance ever been addressed in your institution?

Yes [ ]   No [ ]   I don't Know [ ]

11. Does your institution consider environmental protection criteria when making purchases?

[ ] Always

[ ] Often

[ ] Sometimes

[ ] I don't know

12. On a scale of 1 to 5, with 1 being the highest priority, where would sustainable procurement performance rank as a priority for your institution?

[ ] 1   [ ] 2   [ ] 3   [ ] 4   [ ] 5

13. In the procurement process, do you establish qualification or selection criteria/technical specifications that encourage bidders to deliver high levels of environmental performance?

Yes [ ]   No [ ]   I don't Know [ ]

14. Please specify in the table below to what extent your organization has attained sustainable procurement for each of the following parameters. Use the scale given in the table where *1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree.*

	Sustainable procurement performance parameters	1	2	3	4	5
a.	Using life-cycle analysis to determine environmental impact of the goods and services					
b.	The company's procurement process operates in a safe environment					

c.	Facilitated the engagement of women and people with disabilities in the supplier purchase process					
d.	Ensuring there is safety of the incoming goods within the facility					
e.	The company has been able to commit to waste reduction goals					
f.	The company has arranged visits to the supplier facilities to ensure they comply with the company's policies					

15. On a scale of 1 to 5, with 1 being the highest and 5 being the lowest, rank the benefits do you see from your green procurement initiatives?

Sustainable procurement performance parameters	1	2	3	4	5
Doing the right thing					
Improving institutional image					
Stakeholders' satisfaction					
Employee retention					
Organizational efficiency and transparency					
Cost reduction and reduced liability					
Promoting institution's procurement initiatives					

16. What recommendations would you make to improve the way procurement is done in your institution?

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SECTION D: CHALLENGES IN ADOPTING E-PROCUREMENT STRATEGIES

17. In your opinion, what are main the challenges you have faced in adopting e-procurement strategies?

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18. What changes do you think your company can do to these e-procurement strategies to enhance its sustainable procurement performance in your opinion?

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APPENDIX II: LIST OF TELECOMMUNICATION COMPANIES IN KENYA

List Of Telecommunication Companies

	Company
1	Airtel Kenya
2	Safaricom Plc
3	Telkom Kenya
4	Jamii Telecommunication
5	Liquid Telecommunications Kenya Limited
6	Alan Dick & Company (East Africa) Limited
7	Atc Kenya Operations Limited
8	Atlas Tower Kenya Limited
9	Bandwidth And Cloud Services Group Limited
10	Dimension Data Solutions East Africa Ltd
11	Frontier Optical Networks Limited 2115
12	Seacom Kenya Limited
13	Moja Access Limited
14	Internet Solutions Kenya Limited
15	The Information and Communication Technology Authority
16	Mobile Telephone Networks Business (K) Limited
17	Rentco Africa Limited
18	Kenya Electricity Transmission Company Limited
19	Kenya Pipeline Company Limited
20	Evail Ltd
21	Kenya Education Network
22	Vodaco Business (Kenya)
23	Adcare It Kenya
24	Swift Global (K) Ltd
25	Wananchi Telecom Limited

Source: The Telecommunications Companies in Kenya (Communication Authority of Kenya, 2023).