

**INTEGRATION OF E-SUPPLIER MANAGEMENT AND  
ORGANIZATIONAL PERFORMANCE OF PARASTATALS IN NAKURU  
COUNTY**

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**A Thesis Submitted in Partial Fulfilment of the Requirements for the Degree of  
Master of Business Administration (Procurement and Supply Chain  
Management Option) of Murang'a University of Technology**

**October, 2022**

## DECLARATION

I hereby declare that this thesis is my original work and to the best of my knowledge has not been presented for a degree award in this or any other university.

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Date

BE401/5071/2019

## APPROVAL

The undersigned certify that they have read and thereby recommend for acceptance of Murang'a University of technology a thesis entitled "**Integration of E-Supplier Management and Organizational Performance of Parastatals in Nakuru County**".

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## **DEDICATION**

This thesis is dedicated to my mother, Naomi and brothers, Kevin and Collins for their love and support.

## **ACKNOWLEDGEMENT**

I would like to thank the Almighty for gifting me the vigour and the grace to conclude this part of my academic journey.

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## ABSTRACT

This study sought to investigate the integration of e-supplier management and its influence on organizational performance. The study aimed to specifically; analyse e-information sharing and its influence on organizational performance, investigate e-tendering and its influence on organizational performance, assess e-payments influence on organizational performance and examine e-point of sale influence on organizational performance. Since suppliers are an important asset for organisational performance, it is imperative that they are well managed to establish mutual benefits. Therefore, the goal was to investigate whether parastatals had integrated e-supplier management in their already existing ICT capabilities to influence organizational performance. The study was anchored on two theories; the innovation diffusion theory to indicate the level of ICT integration and the Technology Acceptance Model (TAM), to show how compatibility and user belief are important for integration and performance. The study used null hypotheses to test the influence of each objective on organizational performance. The study adopted a descriptive research design. The study was undertaken in five (5) selected parastatals or state-owned organizations in Nakuru municipality with a total population of 236 employees in selected departments. By use of purposive sampling, a sample size of 91 respondents was used. The study used qualitative and quantitative research methods. The study applied closed and open-ended questionnaires with a five-point Likert scale, to collect data from the respondents. The data collected was coded using Statistical Package for Social Sciences (SPSS), analysed using descriptive and inferential statistics and presented using tables. The study also adopted multiple regression and ANOVA tests to test the influence, hypotheses and relationship between e-supplier management and organizational performance respectively. E-supplier management integration was moderate ( $M=3.42$ ,  $SD=.97$ ). The findings inferred that e-supplier management was statistically significant in predicting the performance of parastatals at  $p<.05$  and that 21.9% of organizational performance was influenced by e-supplier management variables. It also showed that e-information sharing influences organizational performance at 9.4%, e-tendering at 3.3%, e-payments at 2.6% and e-point of sale at 22.1%. The study also showed e-information sharing, e-tendering, e-payments and e-point of sale had a weak positive correlation with organizational performance at .325, .214, .197 and .481 respectively. The study recommends parastatals full integration of e-supplier management capabilities and to work with suppliers to allow accrual of benefits that will improve overall organizational performance. The study recommends further research be done on other components of e-supplier management such as eSRM, contracts management and e-supplier selection.

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## ACRONYMS AND ABBREVIATIONS

<b>CBK</b>	Central Bank of Kenya
<b>CIPS</b>	Chartered Institute of Purchasing and Supply
<b>DSS</b>	Decision Support System
<b>EBPP</b>	Electronic Billing, Payment and Presentation
<b>EFT</b>	Electronic Fund Transfer
<b>EPOS</b>	Electronic Point of Sale
<b>ERP</b>	Electronic Resource Planning
<b>ICT</b>	Information Communication Technology
<b>IFMIS</b>	Integrated Financial Management Information Systems
<b>IPOS</b>	Irish Payment Services Organization
<b>KEPSS</b>	Kenya Electronic Payment and Settlement System
<b>KMC</b>	Kenya Meat Commission
<b>NACOSTI</b>	National Commission for Science Technology and Innovation
<b>NHIF</b>	National Hospital Insurance Fund
<b>NYS</b>	National Youth Service
<b>PESTEL</b>	Political, Economic, Social-Cultural, Ecological, Technological and Legal factors
<b>PPADA</b>	Public Procurement Asset and Disposal Act
<b>PPDA</b>	Public Procurement Disposal Act
<b>PPRA</b>	Public Procurement Regulatory Authority
<b>PPADR</b>	Public Procurement and Asset Disposal Regulations
<b>RTGS</b>	Real Time Gross Settlement
<b>SME</b>	Small Medium Enterprises
<b>SRM</b>	Supplier Relationship Management
<b>TQM</b>	Total Quality Management

## OPERATIONAL DEFINITION OF TERMS

<b>E-information sharing</b>	It is the electronic dissemination of important data for structures, people and departments in the organization through built systems within the organization and with other organizations (Lotfi, Mukhtar, Sahran & Zadeh, 2013).
<b>E-payments-</b>	It is the payment of goods and services purchased or the receipt of payment, virtually and electronically (Raja & Seetharaman, 2008).
<b>E-Point of Sale</b>	It is a cloud-based electronic means where customers can fulfil the payment of goods or services and where sales taxes are payable. It is essential for sales, inventory and customer management (Kate, 2022).
<b>E-supplier management</b>	It is the application of electronic solutions and software to effectively manage and improve a network of suppliers by thoroughly vetting and selecting appropriate suppliers for the firm (Monczka, Handfield, Giunipero & Patterson, 2009).
<b>E-tendering</b>	E-tendering is the distribution of requests for products and services to suppliers and attaining replies by utilizing the internet (CIPS, 2020).
<b>SAP Ariba</b>	It is a cloud-based innovative solution that allows suppliers and buyers to connect and conduct business on a single platform (Chowdary,2019).
<b>Organizational Performance</b>	It is the measuring of the actual results of the organization against the anticipated objectives of the organization, it is also a comparison between the output and the organization's projected output (Richard, Devinney, Yip, Johnson, 2009).

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

The world is advancing drastically in the field of technology. Industries are upgrading from industry 4.0, which is concerned with the use of machine learning and automation, to industry 5.0 which will eventually use Artificial Intelligence (AI) and Robotics. The supply chain needs to be aligned with the current flow of technology to enable its survival in the future, and E-supplier management is one of the integral areas in supply chain that will play a major role in ensuring that organizations' performance is top-notch from its competitors and overall capacity to maintain market share and keep itself in the market. This is because suppliers form the backbone of ensuring there is a continuous flow of materials and information at the lowest for effective performance (Baily, Farmer, Crocker, Jessop & Jones, 2015).

The definition of electronic supplier management can be derived from supplier management, which is the overseeing of suppliers' performance and capabilities throughout their lifespan (Mitchell & Lamoureux, 2016), as the application of electronic solutions and software to effectively manage and improve a network of suppliers by thoroughly vetting and selecting appropriate suppliers for the firm. This also includes proper contract management and constant monitoring of supplier performance and their level of improvement (Baily et al., 2015). E-supplier management is an e-procurement integrated system that is not popularly done. It is a relatively new concept that embodies ways of handling suppliers toward mutual organizational growth (Oteki, 2021).

E-supplier management comprises strategies such as supplier selection and evaluation, monitoring, supplier involvement and development. Supplier selection is the arbitrary method of selecting a supplier to acquire the needed products and services to support the functionality of the organization which requires various heads of multiple departments within the organization to select the most appropriate supplier (Davidrajuh, 2003). It is also the procedure where organizations find, assess, and engage suppliers (Beil, 2009). Supplier development is the procedure whereby the organization works with suppliers to improve its performance (CIPS, 2020). The main goal of supplier management is to increase supplier performance and capabilities. Supplier monitoring is following up on the suppliers' performance and giving responses that are expected of them and how to improve their capabilities (Yang & Zhang, 2016). The levels of integration of e-supplier selection include full automation of supplier selection, contract management, supplier relationship management, and supplier monitoring.

E-supplier management integration falls into backward integration in supply chain, which entails obtaining a certain degree of control over suppliers to gain advantages over competitors and consequently lowering overall procurement costs (Georgise, Thoben & Seifert, 2014). The electronic integration of supplier management aims to accrue benefits such as long-term relationships with the supplier, collaboration on product development, continuous improvement, training both on the job and out of the job and longer employment periods (Jia, Gao, Lamming & Wilding, 2015). The foundation is built on faith and joint decision-making, allegiance and compliance. It also assists in attaining mutual beneficial gain from both parties. There are reciprocal exchange and mutual obligations (Jia et al., 2015).

For e-supplier management integration to become fruitful, it requires a great degree of information sharing and cooperation for its success (Baily et al., 2015). E-supplier management when integrated into the e-procurement system should provide elaborate information sharing and increase the real-time forecasting demand and consequently improve the delivery of goods to enhance the relationships with the members of the supply chain (Oteki, 2018). The efficiency of e-supplier management depends on the buying company's understanding of the organisation of the supplied setup, the number of suppliers and/or customers the firm works with, and the type of relationship that exists between the supplier and the buying organization and the websites created for/by the supplier must be easy to use in terms of speed, navigation, Information content (content, quality, accuracy) and interactivity through live charts, notice boards or emails (Choi & Kim, 2008).

Integration of e-supplier management entails the incorporation of Information Communication Technology (ICT) in supervising suppliers. In supply chain, integration allows for the improvement of material and information flow within the organization and amongst associates in the line of the supply chain (Georgise et al., 2014). Integration increases collaborative supplier relationships, supplier optimization initiatives can be realized, improving joint technological development and increasing competition among employees while reducing paperwork and acquisition of up-to-date information (Baily et al., 2015). ICT enables E-SM to function through the use of management systems such as Enterprise Resource Planning (ERP), Integrated Financial Management Information System (IFMIS), Electronic Data Interchange (EDI) and E-procurement. Companies such as SAP Ariba and Oracle have provided E-SM extensions (Georgise et al., 2014). Integration

in this context focused on how the organizations are using the already existing ICT technologies to cater for e-supplier management.

Skills Framework for the Information Age (SFIA, 2020) provides a seven-level framework for supplier management where the lowest level (Level 2) begins with collecting and reporting supplier data and information, to the highest level (Level 7) where firms and suppliers have efficiently provided collaborative partnerships in the aim of reducing risks and costs while providing avenues for value creation and innovation. SAP Ariba provides electronic management of suppliers which provides services such as supplier segmentation, risk management and mitigation and managing the supplier's lifecycle.

A case study of Thames Valley Police (TVP) showed that the police force has adopted an electronic software, @UK Supplier Management System, to improve its procurement systems by providing a means for ordering and invoicing electronically from their suppliers regardless of their electronic capabilities, compatibility or size. The system also provides a link between the suppliers and the TVP back-office systems and has linked to financial systems to provide ways of a reduction in the suppliers' and firms' costs while eliminating time and improving efficiency (Baily et al., 2015).

The Keiretsu System is a Japanese supplier management style that focuses on long-term relationships with the supplier, collaboration on product development, continuous improvement, training both on the job and out of the job and longer

employment periods (Jia, Gao, Lamming & Wilding, 2015). It is established on mutual confiding and joint decision-making, allegiance and compliance. The Guanxi System is a Chinese- style of supplier management which focuses on relationships with the supplier with mutual beneficial gain from both parties. There are reciprocal exchange and mutual obligations (Jia et al., 2015).

Kepher, Shalle and Oduma (2015) mention a survey done for the Ministry of Special Programs that highlighted that Kenyan organizations have been struggling with their relationship management and thus have not obtained high levels of supplier performance adequate for attaining competitive advantage in the market since it doesn't have one system. An effective supplier management system maximizes output from suppliers, lowering costs while increasing quality and future development of supplier capabilities. Integrating automated supplier management enhances the fulfilment of expected outcomes for the organization (Njeru, Arasa, Ngugi & Kahiri, 2014). Even though there are benefits that can be accrued from incorporating e-supplier management, there are certain barriers such as lack of trust, inadequate IT developments, insufficient knowledge, high cost of integration and misalignment of goals that hinder such advantages to be realized by organizations (Sabir & Irfan, 2014).

Performance is the capacity of an individual or a company to achieve desired goals or to meet the outcome of the result at less cost and thus become effective and efficient. Performance can be measured both negatively or positively and it is affected by the environment where the firm or person operates and the targets to be

obtained (Ion & Criveanu, 2016). They go further and quote Bernadin (1995) on his description of performance as “the sum of the effects of work because they provide the strongest relationship with the organization’s strategic objectives, the customer’s satisfaction and the economic contributions”.

Organizational performance is measuring the actual results of a firm against the anticipated objectives of the organization, it is also a comparison between the output and the organization’s projected output (Richard et al., 2009; Almatrooshi, et al., 2016). It consists of three areas; (i) financial accomplishment -profits and returns on investment and product, (ii) market operation -market share and sales, (iii) shareholder return (Richard et al., 2009). Determining organizational performance is a crucial aspect in determining the development of the organization (Felizardo, Elisabete & Thomaz, 2017).

A firm’s performance depends on its employees, it’s the leadership and the cognitive competencies of both the employees, their teams and leaders (Almatrooshi et al., 2016). It embodies the ability of the firm to meet its obligations through proper management, good governance and consistent dedication to meeting the results put forward (Kilonzo, 2014). It is measured based on the firm’s ability to increase productivity, reduce inventory and strengthen its market share (Kipkemoi, 2017).

The dimensions of organizational performance are categorized into four areas, that is financial performance, business performance, organizational effectiveness, and market performance (Ho, 2008). The financial operation appraises the financial state

of an organization which comes from the decisions made by the organization and how those decisions have been executed by the employees of that organization (Carton, 2004). Marketing performance measures the degree a firm can accomplish in terms of market and profit share and customer fulfilment (Ho, 2008). Business performance measures the organization's status compared to its competitors in the market in which it operates (Croteau, 2010). Organizational effectiveness measures the firm's efficiency in meeting its goals without draining its resources in terms of goal configuration and allotment of resources (Bhasin, 2020).

Organizational performance was influenced by factors that determine how the organization is structured, the activities to undertake, and the goals that are to be achieved. These factors include; (i)external or PESTEL factors, which the organization cannot control, they include; political, economic, social-cultural, ecological, technological and legal factors. (ii)internal factors which constitute the feature of the organization, that is the vision, purpose, mission, company value and quality statements and instruments of the organization, (iii) individual choice is also a factor where personal or joint decisions by individuals or groups concerning costs and advantages are made (Bhasin, 2020).

The public sector measures performance in terms of efficiency and effectiveness in meeting public needs, financial performance, quality of service, economy, and social and environmental requirement fulfilment (Mihaiu, 2014). By moving towards the use of technological innovation, performance benefits can be actualised (Gardenal, 2013). Initiating E-procurement in the organization forms the component factor in

motivating employees and creating shareholder awareness to encourage the use of technology (Gardenal, 2013). Organizations need to move beyond an internal or institutional analysis of their procurement system and improve on supplier consolidation, ethical purchasing and application of technology in e-procurement (Kilonzo,2014).

Several aspects of e-procurement have contributed to organizational performance including efficiency; the firm can use less time to obtain the same results as when the paperwork was used. Effectiveness is also an advantage where the firm will meet its objectives by using minimum effort while reducing supplier disagreements with the firm. Transparency also becomes a benefit through automating and publishing tenders and their awards, and procedures used (Gardenal, 2013).

Suppliers form part of an organization's stakeholders and therefore perform a crucial task of ensuring the continuity of the organization, (Baily et al., 2015; Nair, Jayaram & Das, 2015). Many organizations experience large debt and bankruptcy since they fail to pay their suppliers on time. A good example is Tuskys which shut down recently in 2020 and Uchumi Supermarket which failed in the 2000s (Wambu, 2020). Public institutions have raised red flags due to conspiring with suppliers and committing embezzlement and fraud a good example is the NHIF, NYS and KMC scandals that have affected the public's view on transparency. To circumvent such failures organizations, need to automate payments and invoicing of their suppliers while getting elaborate information on the supplier capability of meeting firms' needs to promote transparency and overall organizational performance (Wambu, 2020).

A parastatal is a term that explains a firm or organisation that is maintained and controlled by the administration of the country it is in. It is a legal entity whose function is to carry out work on the behalf of the government (Ngunyi, 2014). In Kenya, parastatals are established by an Act of parliament, the State Corporations Act, Cap 446. They have the same characteristics as those of a firm in that it can sue and be sued, has continuous succession and can hold property or dispose of it. It was established to provide services at a low cost, promote healthy competition, and also protect customers from untoward exploitation while promoting equality (Atieno, 2009). There are about 317 listed state-owned and semi-autonomous government agencies in Kenya that vary based on their functions from regulatory, finance, services and others (Office of the Auditor General, 2019).

Procurement in parastatals has evolved from a structure without regulations in the 1960s to becoming a fully implemented system with the incorporation of the Public Procurement and Disposal Act in 2005 was revised to the current Public Procurement Assets and Disposal Act (PPADA) of 2015 (Ngari, 2012). In part four (VII) Section 71 subsection 4(a), the Act states that a public entity can acquire its supplier lists from websites and portals, However, it doesn't mention whether the lists could be stored or retrieved manually (paper storage) or electronically (Public Procurement Regulatory Authority [PPRA], 2019). Therefore, depending on the firm's information technology capability, they can offer cloud storage facilities.

Integrated Financial Management Information System (IFMIS) was the first e-procurement ERP-based platform to be introduced into the public procurement sector

in 1998 and later deployed in 2003 in the ministries and in 2012 in the counties after the promulgation of the new constitution in 2010 (Mambo, 2015). It aimed at automating the procurement process from actual procurement to the payment of suppliers (National Treasury, 2015). Currently, National Hospital Insurance Fund (NHIF) and National Social Security Fund (NSSF), are aiming to invest in better software, SAP Ariba, which has broader capabilities that provide extensive services (NSSF & NHIF portals, 2021).

The application of e-procurement paved way for improving the procurement process in the public sector by promoting transparency and accountability and providing cost-saving opportunities while strengthening internal anti-corruption controls and detecting integrity breaches (Neupane, 2014). It also provided auditing services that may assist during an investigation of fraud, corruption, embezzlement and unfairness (Organization for Economic Co-operation and Development [OECD], 2016) & (Barahona, Elizando & Santos, 2014). Procurement in parastatals and state corporations is decentralized in nature. County-level parastatals can conduct procurement services and practices for their respective counties up to a certain amount without approval from the main offices (OECD, 2016).

Procurement in parastatals has been a subject of critics due to its poor performance, and an influx of corruption and embezzlement scandals hence the integration of IFMIS. Other ethical issues such as conflict of interest and acceptance of gifts and bid-rigging, contributed to poor performance. This meant that employing proper supplier evaluation criteria, maintaining constant communication with the supplier

and keeping records of supplier information are essential for efficient procurement performance of the parastatals (Koech, Ayoyi & Mugambi, 2016).

## **1.2 Statement of the Problem**

Despite the benefits firms gain from the integration of e-supplier management into their procurement process, most parastatals have yet to fully implement e-supplier management (Oteki, 2021). Supplier management is increasingly becoming an important topic of research and implementation since suppliers play an integral part in all business processes. Organizations, source most of their utilities from different suppliers of different spectrums. Suppliers could log into the firm's e-procurement system and acquire updated information on sales requirements, present stock and also marketing actions (Rushton et al., 2014). However, a study on the budget report and outlook 2014/2015 of Kenya which highlighted that about 30% of parastatal budgetary misappropriation was attributed to the procurement of goods, services and works, Kimia (2019). Mureithi, 2020 mentions that late payments of suppliers in Nakuru county had accumulated to about Ksh.2.1billion worth of debts that were yet to be paid which contributed to poor performance. By integrating e-supplier management it enables parastatals to track supplier spending through spend analysis, optimise supplier base, improve decision-making and obtain updated information. Therefore, the firms would be able to link inventory for both firms, performance and supplier reports preparation and auto-generation and access supplier capabilities, catalogues and references. They would also pay suppliers using mobile payments, electronic cheque clearances, e-invoicing and online billing and also supplier online registration, pre-qualification and selection- which will enable proper evaluation, selection and monitoring of the suppliers to achieve good mutual relationship and

benefits (Baily, et al., 2015; Beil, 2009). Research on supplier management has focused on supplier management practices, their components and their effect on procurement, or supply chain performance (Waithira, Mwangi & Ismail, 2018; Oromo & Mwangangi, 2017; Njeru et al., 2014; Kepher, et al., 2015). However, the concept of e-supplier management being a relatively new area has not been intensively researched (Oteki, 2021) and the quoted studies have yet to extensively study the extent of electronic management of suppliers. Therefore, this study sought to focus on how integrating e-supplier management capabilities in the existing organisation's systems, influenced organizational performance.

### **1.3 Objective of the Study**

#### **1.3.1 General Objective**

To investigate the integration of e-supplier management and its influence on organizational performance in parastatals in Kenya.

#### **1.3.2 Specific Objective**

- i. To analyse the influence of e-information sharing integration on the organizational performance of parastatals in Nakuru County
- ii. To investigate the integration of e-tendering and its influence on the organizational performance of parastatals in Nakuru County
- iii. To assess the influence of e-payments integration on the organizational performance of parastatals in Nakuru County

- iv. To examine the influence of e-Point of Sale (EPOS) integration on the organizational performance of parastatals in Nakuru County.

#### **1.4 Research Hypotheses**

**H<sub>01</sub>** E-information sharing has no statistically significant influence on the organizational performance of parastatals in Nakuru County

**H<sub>02</sub>** E- tendering has no statistically significant influence on the organizational performance of parastatals in Nakuru County

**H<sub>03</sub>** E-payments have no statistically significant influence on the organizational performance of parastatals in Nakuru County

**H<sub>04</sub>** E-Point of Sale system has no statistically significant influence on the organizational performance of parastatals in Nakuru County

#### **1.5 Significance of the Study**

- i. The government institutions- Identified areas of integrating e-supplier management for transparency, cost reduction and quality improvement.
- ii. Private Institutions-They weigh the cost and benefits of managing the suppliers electronically and how they can meet organizational standards
- iii. Suppliers- The different areas where they lacked and improved on them. They were also able to appreciate the concept of e-procurement to improve their efficiency in both on-time service delivery and capacity
- iv. Researchers and Students- More research material for future researchers in e-supplier management and development of new areas and concepts of study

- v. Policymakers- Include the guidelines on how to integrate e-evaluation and selection and procedures for information sharing and record keeping in procurement manuals and circulars.

## **1.6 Scope of the Study**

The main of the study was to determine whether e-supplier management was integrated into the parastatals and if it influenced organizational performance. The study also adopted innovation diffusion theory to show areas where e-supplier management needed to be integrated for efficient organizational performance and Technology Acceptance Model (TAM) to show that e-supplier management capability acceptance by users played a role in ensuring its integration is effective. The study inspected the integration of e-information sharing, e-tendering, e-payments and e-point of sale and how they influence organizational performance. The variables even though they have been previously done as e-procurement tools for procurement performance, this study covered these variables as e-supplier management capabilities. The study was to be undertaken in Nakuru county parastatals which are located within the municipality with a target population of 236 respondents.

## **1.7 Limitations of the Study**

- i. Questionnaire- The study heavily relied on closed-ended questionnaires which limited the outcomes due to limited selections and thus generalisation of the population was made.

- ii. Lack of control of the environment- Since the study took place in an environment where the respondents knew each other, it influenced some of the respondent's responses.
- iii. Small sample size- Due to the Covid-19 pandemic, the study was not able to get a large number of respondents as most of the employees were working from home or were let go.
- iv. Sensitivity of information- The respondents were concerned about giving the researcher information that was deemed confidential.

To overcome some of the limitations, the researcher included open-ended questions within the questionnaire to reduce generalisation. The researcher reassured that the information given will be treated with utmost confidentiality and anonymity and also reassured that the information was for purely academic purposes.

### **1.8 Assumptions of the Study**

The study assumed that named variables were the key indicators of e-supplier management. It also assumed that the parastatals in Nakuru County conducted e-supplier management practices with the aim of improving their overall performance. The study farther assumed that the respondents selected were satisfactory in providing the information needed.

### **1.9 Contributions of the Thesis**

The research was able to provide the following contributions:

- i. Automating Supplier selection and evaluation integration allows efficiency in decision making by reducing time taken

- ii. Virtual questionnaire administration improves the rate of collection of updated information and provides easy access to supplier material
- iii. Blockchain allows for transparency and accountability of not only the organisation but also the suppliers by improving supplier spend analysis
- iv. Cloud computing ensures proper and updated supplier records with easy retrieval.

### **1.10 Organisation of the Thesis**

The chapter one focused on the relevant background information on e-supplier management and organizational performance and how they correlated. It also included the problem the research tried to solve, the objectives of the study, its significance, its limitations, assumptions of the study and the contributions of the study.

Chapter Two highlighted the theories that the study was based upon. It also reviewed the literature on e-supplier management and the empirical reviews of the variables being investigated. The chapter also criticized the research done on e-supplier management or lack thereof.

Chapter Three presented the research design the study embodied, the sampling design and procedure adopted, the population being investigated and the instruments used in research and the basis for analysis and presentation and the ethical issues that the research considered.

Chapter Four discussed data was analysis and presentation the results that the researcher has made from the data collected. It provided the presentations of the information collected through means, standard deviations, regression and ANOVA tests.

Chapter five focused on the summary of the findings made for each objective together with the conclusion for each objective and recommendations for future, policy and further research made from the results of the study.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter desired to discuss theories that are incorporated into e-supplier management. The empirical reviews related to the study and the research gap identified in the literature expounded from the study.

#### **2.2 Theoretical Framework**

Theoretical literature provides a guide toward research and provides a structure that helps the researcher in knowing or understanding their study critically and analytically (Adom, Adu- Agyem & Hussein, 2018). This study focused more on the Innovation diffusion theory and Technology acceptance theory.

##### **2.2.1 Innovation Diffusion Theory**

It is also identified as the Diffusion of Innovation Theory. The pioneer of this theory was E. M Rogers, (1983) who defined diffusion as the course of where improvement is broadcasted via certain media throughout some time amid users of a specific process. It is a process where information is altered within its structure and function. This theory is suggested that innovation is made to increase economic performance (Rotich & Okello, 2015).

For innovation effective it affects every individual differs preferably in the following steps: the first step covers the knowledge where the person gets an overview of the

innovation and how it operates, and the second step was persuasion where the individual then forms an overall perspective idea about the innovation, that is whether it is favourable or unfavourable and decision this third step the person undertakes a series of actions that either gear towards acceptance or rejection. Implementation is the fourth step where the innovation is put into practical application and finally confirmation where the results are evaluated and analysed regarding the innovation-decision made (Orr, 2003).

The theory puts into perspective groups of individuals who adopt innovation differently namely: i) innovators who are the first to try out the innovation, ii) Initial Adopters who represent the opinion leaders, iii) Initial Majority see the functionality of the innovation to adopt it, iv) Late Majority they are pessimists who only use the improvement after the majority has applied it and v) Laggards refuse to change. Rogers dictated that for this theory to work efficiently, four specific elements are needed, the innovation idea, a communication medium to provide a means of sharing information, the time involved in making the decision and also a social system (Rotich & Okello, 2015).

The theory suggested that for any type of innovation to be fully integrated into a firm, there need to be components such as compatibility of the innovation with the firm current systems, the ability of the innovation to be tried and for the shareholders to observe (Rotich and Okello, 2015). Similarly, in e-procurement, similar considerations must be taken into consideration. With the rate of technological changes in the economy, firms need to make sure that both themselves and the

suppliers have compatible systems and to understand where the suppliers lie in the adoption of innovation category, that is they are the innovators or the laggards.

Even though the theory provided relevant and invaluable information, it did come with a few limitations, in that the theory fails in offering a participatory approach and centres more on behaviours (Rotich & Okello, 2015), but it functioned well with the implementation of behaviours rather than their prevention, it also doesn't consider individual resources or social groups (LaMorte, 2019).

This theory was applied to the study as it assisted in recognising there is a need for a certain level of incorporation of e-supplier management, in terms of innovation ideas, information sharing and time taken in overall decision making, for performance to be obtained. This coincided with the idea that if e-supplier management innovation is to function, it must be fully integrated into a firm, should be compatible with the firm's already existing capabilities and also with those of the firm's current and prospective suppliers, where improvement in innovation leads to increase economic performance.

E-tendering and e-information sharing required to be compatible with the current organization system to enable their full potential to be realised. E-tendering areas of compatibility include virtual screening, online evaluation, virtual prequalification and automatic selection based on the criteria adopted by the organizations to cater for efficient decision-making. E-information sharing areas of compatibility include virtual administration of questionnaires, automatic filtering and grouping of

information to weed out non-competitive suppliers. When both are compatible, they collectively improved the organization's efficiency by supplying competitive suppliers who provide better quality products and services, reduce lead times and shortened delivery at the lowest cost.

### **2.2.2 Technology acceptance theory**

The model was developed by Davis (1986). This was one of the widely used when there is a need to grasp the knowledge on the adoption of computer innovation and technology (Harelimana, 2018; Surendran, 2012). The theory is affected by two factors; supposed usefulness which is the users' assumption that the system will improve their performance both in their job and their daily life, and the other factor is perceived helpfulness which is the degree to which the user will put in less effort (Surendran, 2012).

This theory or model was used to envisage the acceptance, implementation and application of information technology. The model had other inputs in terms of factors such as compatibility, task technology fit and cognitive absorption (Chen, Li & Li, 2011). The theory was implemented in three stages; i) Adoption, where the system is first tested and adopted through several Information systems; ii) Validation, where it uses the correct dimension of users' receptive behaviour for different technologies; iii) Extension where there is new research for any new relationships or variables in the theory (Al-Momani, Mahmoud & Ahmad 2018).

For any technology to be adopted into an organization there must be computerized tools for decision-making and communication and due to their risky potential, there

needs to be specification of preference. Due to the nature of people resisting change, the users of the technology must be made aware of this change and given the run-down of its benefits to weigh on its reception. Based on this theory, any new technology cannot promote organizational performance or efficiency if the change has not been accepted by the employees or users of that technology (Rotich & Okello, 2015).

This theory was significant to the study as it amplified that for e-supplier management to be fully utilised in the firm to achieve maximum efficiency, the users of these capabilities must accept adjustments in the way suppliers are managed. This meant that for organizations to improve their performance, their suppliers and employees must be ready to embrace the new and enhanced automated methods of payments, information sharing and records management.

For e-payments and e-pos integration to meet the organization's needs they required that both the organizations and suppliers accept the technology as helpful and useful during their day-to-day activities. E-payments incorporation suggested that it would improve transparency and accountability. It also showed that it could make it easier for the organizations to track supplier spending which would help in reducing costs, reduce payment periods and be useful in keeping tabs on expensive suppliers. Epos made it easier for organizations to remove non-performing suppliers, easy retrieval of suppliers reports for referencing, reduced physical stock-taking as inventory tracking was done in real time and alerts were given when the stock reaches beyond the minimum level.

## **2.3 Empirical Review**

An Empirical Approach involves organising and examining information to make valid conclusions. It uses data gathered from naturally occurring situations or experiments as opposed to that conducted in a laboratory (Beins & McCarthy 2012).

### **2.3.1 E- Information Sharing and Organisational Performance**

E-information Sharing constitutes the dissemination of important data for structures, people and departments in the organization. The advancement in Information Technology has enabled the electronic exchange of information which has initiated the increased flow of information which reduces uncertainty (Lotfi et al., 2013). Research concerning collaborative e-Government and sharing of information, states that Information sharing involves developing procedures and modifying company processes to sanction sharing of information alongside other organizations. It further states that when the government shares information, provides opportunities to share databases and decision-making is based on complete information (Gil-Garcia, Chengular-Smith & Duchessi, 2007).

Akoth (2017) researched the effects of e-procurement on service delivery using e-ordering, e-contracting, e-information sharing and e-sourcing variables of e-procurement to study the effect that e-procurement has on service delivery. It was seen that there was a positive correlation between e-information sharing and service delivery and it was statistically significant. This proved that e-information sharing was greatly practised by Western Kenyan counties and it led to improved efficiency and effectiveness of service delivery. The most shared information was pricing and

technical information exchange while the least was online viewing of supplier catalogues.

Kamal, Valbir Singh and Ahmad (2012) examined the factors that influence informational sharing within departments in e-government agencies and found that they centre around; i) Individual factors which include the capacity for employees to trust one another with information shared, their willingness to reciprocate the information shared, and the ability to conform to information stewardship that is, free sharing of 'information power'; ii) Organizational factors that bordered on policies of that department on information sharing, the capacity for top management to support e-information sharing by providing guidance and availing needed resources financial, human, time and technology; iii) Technological factors which cover the IT capability in terms of expertise and Security of information where only relevant users are allowed access.

A system developed by Ren (2014) for managing supplier information between an e-procurement system and buyer-supplier management, was patented by the United States patent on January 21, 2014. The capability enabled easy automatic mapping of customers and catalogues into the organization's capacity. The capability used an e-procurement system as the main user interphase where the supplier could request access. Once they have filled in the information, data is recovered and stored in several databases available to the organization and protected, the data is then mapped and transmitted to several schemes to match the organization's supplier management

system. The interphase, therefore, provides the suppliers with a platform where their information can be received in real-time and stored in an e-procurement database.

Kumar, Garg and Garg (2019) created an e-DSS system that allowed the firm to provide automatic information sharing by administering a questionnaire to the supplier when they access the system. The questionnaire was divided into three sections, the first comprising the purpose of the questionnaire, followed by the details of the suppliers and the last part focused on ranking each criterion and assigning weights or performance ratings to the supplier. The administrator then accesses and updates user information which will be useful for e-supplier selection. This allowed decision-makers to choose a ranking criterion that fits their preference based on the information given by the suppliers gathered through the online questionnaire.

The studies have shown that the e-information studies focused on the type of information shared, accessibility to catalogues, support from top management and security of information and revolved around e-procurement. Kumar, et al., (2019) and Ren (2014) showed the systems they had developed to facilitate e-information sharing. However, the studies have yet to research online access to supplier capabilities (financial, management and operations) to measure their capacity to meet the needs of the organizations and online access to supplier referencing to gain an idea of the quality of services and products they provide, after-sale services, delivery and prices based on other firms that they have worked with. Moreover, the aspect of virtual questionnaire administration has been mentioned on how they will

operate but does not state whether they have been integrated. Therefore, this study endeavored to investigate the above gaps mentioned and whether they have been integrated.

### **2.3.2 E-tendering and Organisational Performance**

E-tendering is the dissemination of requests for the cost of materials and confirmation to suppliers and attaining the replies by utilizing the internet (Raffa & Esposito, 2006). The procedures improve the proficiency of the process by adopting automation (Abdullahi, Ibrahim, Ibrahim & Bala, 2019). This tool was concerned with the publishing of the tender documents towards the awarding of the tender to the selected supplier (Gardenal, 2013). It facilitates productivity and profitability, transparency and reduction of overall transaction time. Therefore, ICT capabilities are essential in ensuring that e-tendering is efficiently implemented and functioning through digital and virtual platforms in the organization (Olukayode & Adeyemi, 2011; Pavithra, Gracy, Raka & Ganesh, 2018).

An evaluation of construction readiness suggested that the use of e-tendering saves on both time and cost while increasing productivity and consequently enhancing competitive advantage. They developed an e-tendering readiness model which encompassed important company themes; people (the staff and the skills they have), process (procedures used by the firm), technology (types of software and network capabilities), work environment (leadership and supervision) and service provider (marketing and communication). They urge that e-tendering simplifies the tendering

process which consequently assists in cost reduction while reducing the overall time cycle (Al-Yahya, Skitmore, Bridge, Nepal & Cattell, 2018).

Gichuhi and Waruguru (2020) researched e-tendering effects on the procurement performance of the Geothermal Development Company in Nakuru. The study revealed that the company did use e-tendering to provide competitive bidding, reduce paperwork and consequently enhance transparency. The study also showed that e-tendering was not statistically significant relationship with procurement performance. However, there existed a positive correlation between e-tendering and procurement performance of the Geothermal Development Company.

A study done on the improvement of e-tendering in the Nigerian public sector showed that tendering to select consultants or suppliers is done by group decision making which comes up with a set of criteria to evaluate the series of firms bidding for the contract. They proposed the design of a three-tier e-tender system that allows multiple stakeholders involved in tender evaluation, prequalification and selection to partake in the process virtually even when they are geographically dispersed. With each individual giving their preference, the aspect of fraud and corruption is compromised and fighting corruption through transparency is not able to be achieved. The e-tender system was able to improve the evaluation procedure and enhance the transparency and accountability of Nigeria's procuring system (Abdullah et al., 2019).

Oteki (2018) studied e-procurement practices in sugar processing firms in Kenya and deduced that e-tendering provided tender access to suppliers in any time frame and easy detection of document alteration while providing fairness and automatically reducing non-compliant bids. E-tendering promotes automated screening of the product or service, price or lead time and contributes towards Ricardian Rents- rents that are acquired through control of scarce resources (Knudsen, 2003). Despite the advantages presented through the adoption of e-tendering, some of the challenges include security concerns, compliance with the country's law and also its failure to support tenders which end in the manual evaluation of the tender (Abdullahi et al., 2019).

The studies focused mainly on e-tendering as an e-procurement tool rather than an e-supplier management tool and investigated its potential to be ready for use, competitive bidding, paperwork reduction, online access of tenders, transparency of evaluation process and screening of products and services. They, however, did not investigate whether initial suppliers' screening could be automated, supplier evaluation and prequalification automation, or electronic supplier selection criteria for final selection and award. This study therefore incorporated the above areas to fill the gaps to showcase e-tendering as an e-supplier management tool.

### **2.3.3 E-Payments and Organisational Performance**

Electronic payment is the reparation of goods and services, purchased online, which is initiated, processed and received virtually and electronically (Raja, et al. 2008). It includes the transmission of electronic money between the financier and beneficiary,

in the presence of a third party to guarantee the authenticity of the money being transferred (Anand & Madhavan, 2000). Electronic payments are becoming a norm for large institutions and firms, especially in Germany have adapted to the new demands of electronic business, which include the use of credit cards and smart card-based wallets. Security plays a critical role in electronic payments. The issues that affect electronic payments authorization, authentication, privacy, the integrity of the firm, theft and data corruption (Heng, 2004).

Weiner (1999) report on the Economic Review of Central Bank in Kansas showed that the United States started early the operation of an e-payment procedure. He mentions that they used electronic check presentation (ECP), where payment on paper cheques was unbundled from the cheque and then transmitted electronically to the bank. It was seen that eighteen per cent (18%) of its clearinghouse was processed electronically by the Federal Reserve either truncated, a cheque clearing system that involves the digitalization of a paper cheque into an electronic cheque to make clearing shorter and quicker (Irish Payment Services Organisation, 2008), or with a cheque to follow. They had also adopted the use of Wire Transfer and Automated Clearing House (ACH), where the wire transfers were operated by the Federal Reserve, (Fedwire) and a Clearinghouse in New York. In ACH, firms exchange payment instructions and participate in direct deposit. There is also the use of Electronic Billing, Payment and Presentation, (EBPP), where the customer or supplier can access their bills and pay them online (Weiner, 1999).

Horne, Nickerson and DeFanti (2015) conducted research on refining supply chain proficiency through e-payments. It showed that East African countries had made a substantial effort in the use of mobile money transfers, especially in Kenya and Tanzania. Kenya has been growing in the use of mobile payment capabilities, M-PESA, Airtel Money and T-Kash. This allowed customers who lacked bank accounts to participate in electronic payment. It was seen that many of the micro-enterprises had adopted the use of mobile payments due to their reliability, flexibility and accuracy and real-time transfer and settlements of transactions.

Based on the Central Bank of Kenya (2017), a real-time transfer is officiated through the Kenya Electronic Payment and Settlement System, (KEPSS). It was implemented in 2005 and was managed by the CBK where money was debited and credited in the commercial banks at the CBK. Commercial banks are also adopting the transfer of money electronically, either through their mobile numbers or through the internet via their respective websites or mobile or windows applications. The CBK implemented Real-Time Gross Settlement (RTGS) and automated clearing houses which mitigated risks related to paper-based bank settlements while improving monetary policy transmission and increasing growth in the volume of transactions. It also designed a regional Payment and Settle System (REPPS) in 2012 to allow real-time settlement between countries in the Common Market for East and Southern Africa. This provides the opportunity for the firms in these banks to carry out payments.

A system was patented in the United States to enable the use of Electronic Funds Transfer for credit messages. The invention authorizes payment by identifying the payee institution, account and amount, it then transmits the authorization payment to the receiver's bank account. The EFT provided online, real-time transactions and reconciliation of accounts receivables and incoming payment records. It ascertains that payment transactions are safe and secure while protecting both user information. The users acquire immediate notification once payment has been made and received (O'Leary, D'agostino, Re, Burney & Hoffman, 2019).

Electronic invoicing involves the use of a software program to automatically link the drafting, sending and receiving of invoices. Most of the software includes firms that use an ERP system or an EDI to process payments automatically (Poel & Vanlaer, 2016). In India, the government uses e-invoicing in Goods and Service tax to reduce fraud cases as data can be accessed in real-time. E-invoicing avails information in real-time, reduces compliance burden, reduces overall paperwork and curtails the monotony of work (National Informatics Center, 2020). In Kenya, the introduction of e-citizen provided an easier way for people to access government services remotely. This meant that suppliers and the general public could apply for licenses and permits and pay taxes through the e-citizen platform and Kenya Revenue authority portals by direct bank deposits or through mobile payments like MPESA (Mutinda, 2017).

Blockchain technology is also a new area where firms can follow up on transactions and carry out real-time and safe payments and transactions virtually. Here

information about all the suppliers you are dealing with is stored electronically in blocks that are joined in by a previously filed block to form a chain of informational data. One of the best examples of payments using blockchain is the use of cryptocurrencies such as Bitcoin, Dogecoin and many others (Conway, 2021). Blockchain provides unalterable transactions that cannot be hacked, data is difficult to cancel or reversed once entered in the record and is permanent. In Kenya, the Central Bank of Kenya had declared that cryptocurrencies were not considered legal tender and therefore could not be used to conduct any type of transactions (CBK, 2015). A company developed a way in which investors in Bitcoin can transfer or convert their tokens to their MPESA (Lewis, 2018). Blockchain helps to achieve authenticity and accountability while reducing the chances of fraud to ensure transaction security (Mung'asio & Moronge, 2019).

Even though e-payments have become a popular way of reducing paperwork and the time taken to pay suppliers, some sellers are reluctant to invest in this kind of information infrastructure due to its expensive nature and security implications (Heng, 2004). Other risks go along with the implantation of e-payments, such as fraud, money laundering- which is hiding the source of illegally attained funds for it to appear legal-, poor privacy and lack of anonymity, technical and cultural problems and the potential of firms and suppliers to resist the change (Raja et al., 2008).

The studies above show that e-payments for the supply chain involved the use of mobile banking, use of RTGS, EFT and blockchain technology. They however didn't venture to investigate their ability to auto self-bill, generation of e-invoicing

and e-receipts for suppliers and electronic transmission of cheques to suppliers. The study investigated the mentioned areas and will also incorporate blockchain as it has yet to be investigated in state-owned institutions.

#### **2.3.4 E-Point of Sale and Organisational Performance**

Njenga and Ismail (2017) conducted a study on the function of e-point of sale towards supply chain management in the retail sector. The study showed that EPOS plays an important role in supplier performance. The study focused on the use of rapid scan systems, cloud-based communication, mobile point of sale and electronic fund transfer at point of sale. It provided better decision-making capacity and the ability to rapidly scan multiple customers within a short time. The use of cloud computing in EPOS provided business analysis and performance reports in the supplier's or firms' inventory. Using EPOS ensured instantaneous payment of clients or suppliers without restricting, the geographical location or time difference. Mukoya and John (2019) research on E-Inventory Management Systems and the performance of supermarkets in Nairobi County, adopts EPOS as one of its variables in measuring the performance of supermarkets. The study revealed EPOS had the highest influence on performance and the relationship there was statistically significant.

Baldwin, Bergschneider, Chamoff, Miller, Piller, Robinett and Thorson (1982) invention patented in the United States, provided a singular point of sale terminal for communicating transactions between the operator and the terminal. The device provides direct access to storage with a programmed processor for low-level routines and is replaced with high-level application programs. The system could collect,

process and record data that is related to the organization's transactions. The information collected can be written, read or stored by use of random-access memory (RAM). It provided flexibility by allowing diverse applications to interchange information without the need to physically connect the appliances.

Shannon (2004) came up with the Point-of-Sale receipt service which provided a transaction receipt paid electronically. The receipt is stored in text format and it is made accessible through several electronic communications networks such as emails and bank web portals, where it can be viewed. Email, stored or printed. It reduced data transfer and storage costs. The other invention was the Point-of-Sale electronic Generation (Mitchell and Mastie, 2010), where the Point-of-Sale system generates electronic receipts rather than paper. This helped in reducing the loss of paper receipts, removing employee subjectivity, promoting accuracy and continuous tracking and reducing reporting procedures expenses.

Parkan (2003) researched how an innovative POS system had influenced the performance of drugstore procedures in Hong Kong. The study adopted an operational competitiveness rating analysis to measure the performance of the drugstore. Information on costs and revenue before and after implementation was collected for assessment. Their performance was ranked to detect whether there was a significant change in their performance after implementation during the eighteen (18) months, it was discovered that the performance of the drug store increased significantly.

The studies showed that the areas investigated included rapid scans, cloud-based communication, mobile point of sale and instantaneous payments of clients. However, they have yet to examine cloud-based report generation and access. The study will also incorporate EFT for supplier payments and inventory tracking but from the perspective of parastatals as the studies focused more on the retail sector and pharmaceuticals.

## **2.4 Critique of Literature**

Supplier management is a combination of different aspects of managing suppliers, from Supplier selection and prequalification, supplier relationship management, supplier involvement and supplier monitoring (Baily et al., 2015). Supplier management builds on relationships between the firms and the suppliers through backward integration. It assists in ensuring product quality improvement and technological advances acquired through developing supplier capabilities to match company expectations (Lu, 2011). Supplier acknowledgement of a collaborative relationship ensured a win-win partnership built on mutual trust and continuous communication. Strategies such as procurement leveraging, material standardisation and variety control are key in boosting buyer-supplier relationships (Quayle, 2006).

Kosgei and Gitau (2016) dwelt on the aspects of supplier management. Supplier relationship management forms part of supplier management. It focused on the elements of trust, commitment and communication and it showed that when companies have mutual trust, commitment and goals account for the improvement of organizational performance in terms of market share increment, improved brand

presence and operational efficiency. However, the aspect of automation of these supplier management components has not been mentioned.

Kitheka (2015) findings on supplier quality management showed that it provided avenues where the firms to integrate supplier capabilities into their operational process. These quality management measurements such as supplier audits, supplier developments and supplier integration promoted organizational performance through reduced lead times, increased profitability, improved customer loyalty and increased reaction to customer orders and enquiries. Most of these practices were done manually which surmounts an increase in cost therefore, the firms tend to avoid these practices. However, the possibility of automation to increase data and information security has not been mentioned.

Oteki (2021) did a study on e-supplier management practices focused on supplier contracts management, history and demand and supply forecast sharing for supply chain performance. The study showed that there was statistical significance between e-supplier management and supply chain performance as it was able to increase supply chain performance by an agreement of 95.9%. It was concluded that through these e-supplier management practices the sugar company was able to acquire quick information, delivery was improved and material flow was able to be streamlined. However, the study does not mention how these suppliers were managed electronically to promote overall organizational performance and focuses on supplier performance.

To capture e-procurement, the Public Procurement and Asset Disposal Regulations (PPADR) of 2020 was updated to provide more information for better procedures for handling e-tenders. This was due to the influx of the public entities on the usage of e-tendering by adopting IFMIS, SAP Ariba and Oracle innovations. The act covers e-tender submissions and password protecting of the e-tender document to the process of virtual opening of the e-tender document. It allows all members of the committee involved in the evaluation process to access the e-procurement system and open the e-tender (PPRA, 2019). However, the act doesn't mention access and evaluation could be done simultaneously with the other member in real-time. It also doesn't mention whether the selection used for evaluation was automatically done by the e-procurement capability.

King'oo and Muli (2019) studied procurement practices and how they influenced organizational functioning within the Ministry of Education. They based organizational performance on the variables of inventory management and contract management. The study showed that contract management had a low positive relationship with organizational performance as it improved the quality of input of departments and increased customer satisfaction. It also showed that though the correlation between inventory management and organizational performance was positively weak, there wasn't a substantial influence on the performance of the ministry as the firm rarely conducted proper demand forecasting.

Felizardo et al. (2017) undertook a study on the organization's performance measurement and evaluation systems in SMEs in the Transforming Industry in

Portugal. They used a list of performance measurement models to evaluate the organizational performance of twelve firms in the industry. They sampled eight (8) models where there was a significant disparity between theory and practice as the managers lacked knowledge of the theory of performance areas and the SMEs had poor strategic planning as their decision-making process was informal as was their performance measurement approach.

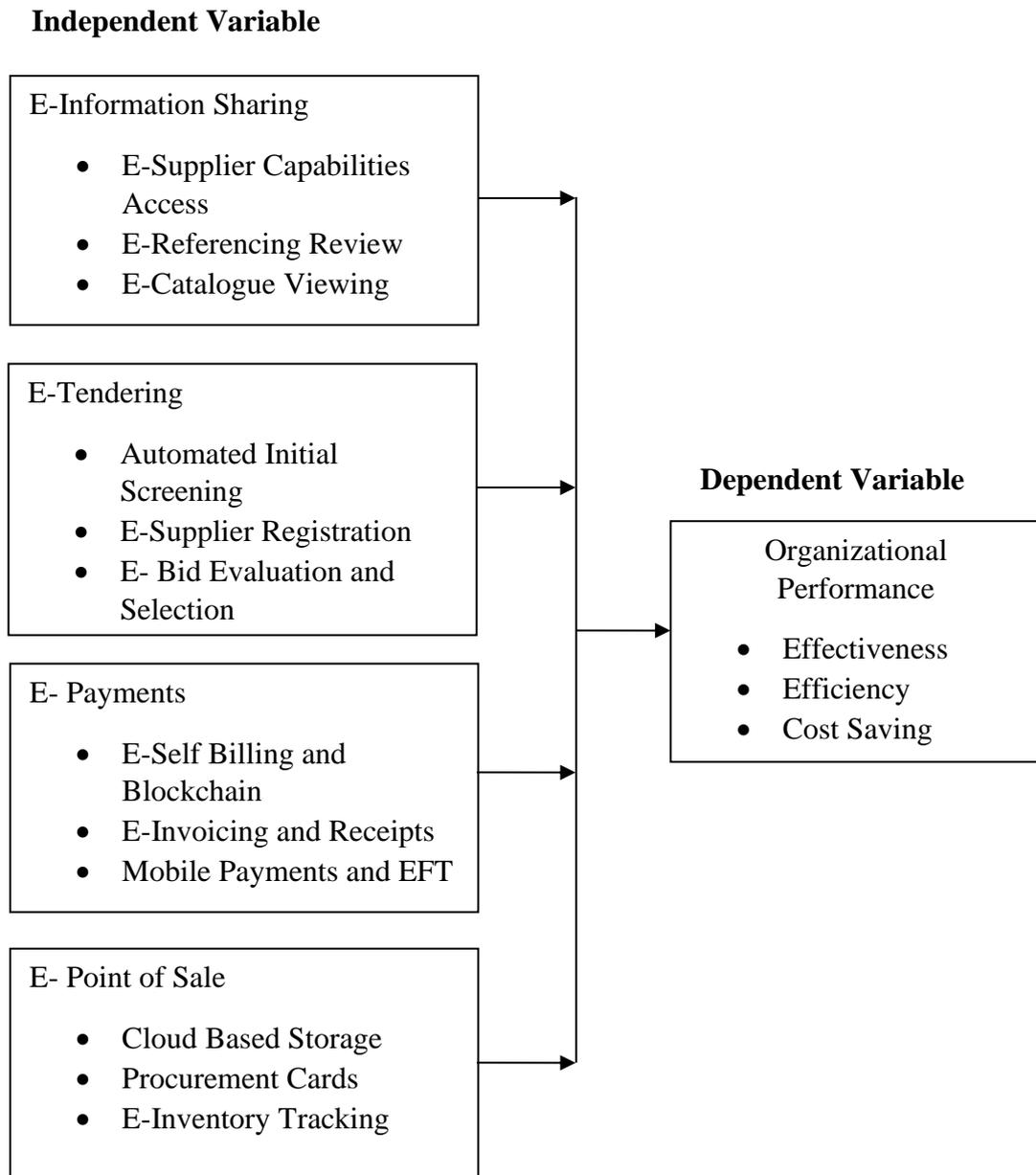
Harelimana (2018) researched the e-procurement impact on the performance of public organizations in Rwanda. The study employed the e-procurement variables of e-billing, e-supplier registration, e-payments and e-bidding. It showed that the above practices enhanced the operations of the Ministry of Finance and Economic Planning as it was able to significantly reduce the company's expenditures from 24.4 million to 18.6 million in 2016, The researcher used a Chi-square test to find the correlation between the e-procurement practice variables and organizational performance and the point of inference was a formidable relationship between the variables and performance since the firm's transaction costs were reduced and efficiency in the ministry also increased.

Kipkemoi (2017) also conducted a similar study on how procurement practice affects organizational performance in East African Portland Cement Company Limited. The study based its findings on the variables of buyer-supplier relationships, e-procurement, supplier selection, TQM and green purchasing. The study concluded that supplier selection played a role in performance as selecting the right supplier assisted the firm in achieving good quality products and services and that more focus

should be put on the financial capabilities of the supplier. The researcher also found out that procurement practices increased organizational performance as the organization provided better customer service while maintaining better ways of efficiently cutting costs.

## 2.5 Conceptual Framework

The structure, as shown in Figure 2.1, constituted the independent variable as electronic supplier management and the dependent variable as organizational performance.



**Figure 2.1: Conceptual Framework**

**E-information sharing-** E-information sharing is the disclosing of information via Information Communication Technologies like electronic mail and the Internet. If both the buyer and seller share information electronically, the performance of the firm will improve because the buyers will be able to get inputs promptly. The sellers were able to see the firm's databases and could prepare to deliver by the fact that they can see the firm stock levels. Similarly, the buyers could access the sellers' catalogues thus placing orders which reduces lead time and costs that could have been incurred in the absence of E-information sharing. It was predicted that with a high level of E-information sharing between the buyers and sellers, a firm would realise effectiveness in terms of delivery of goods and services and be efficient in terms of reduced lead time and cost avoidance by eliminating manual tender processing.

**E-tendering-** This is the dissemination of requests for cost of materials and confirmation to suppliers and attaining the replies by utilizing the internet. By the firm adopting e-tendering in supplier selection and prequalification, suppliers could access tenders in real-time and at any time and detection of document alteration becomes simplified while providing fairness and automatically reducing non-compliant bids. This saved the organization's time and costs associated with the loss of clientele and boosts the organization's public image. By selecting the most suitable supplier firms could get quality products and have room for negotiation of prices. By using E-tendering, it saved on both time and cost of selecting suppliers, while increasing productivity and enhancing competitive advantage. It simplified the tendering process which subsequently assists in cost reduction while reducing the overall time cycle.

**E-payments-** This is the virtual or electronic payment of suppliers where money is transmitted electronically. This could be done through Mobile Banking, electronic clearance of checks, using virtual wallets, credit cards, debit cards or cryptocurrencies. This increased the firm's reliability to pay its suppliers and improved accuracy in billing and invoicing while also providing real-time transactions. This assisted the firms in settling their debts on time which will in turn not only build a good reputation with other suppliers but will also promote long-term relationships and reduction in liabilities from suppliers thus saving money for the organizations.

**E-POS-** This acronym stands for Electronic Point of Sale. The main aim of this system was to provide performance reports and instant payments to suppliers. It helped the firms in reducing costs and time of producing and disseminating paper receipts as electronic receipts are produced. It increased accuracy while consequently lessening report process expenses. By linking EPOS systems in both the firm and the provided an automatic generation and analysis of both of their inventory. This enabled the firm to meet unexpected demands as suppliers are knowledgeable on the replenishment dates and when the firm's inventory is low. This reduced lead time and increases delivery efficiency and consequently improved customer satisfaction.

**Organizational Performance-** An organization's performance is measured by comparing actual performance to the intended output. The idea was to ascertain that the goals of the firm have been realized at the end of the specified period.

Performance could be measured in terms of efficiency and effectiveness. Effectiveness provides better management of resources, improves savings, promotes the value of products and services and better the use of technology while maintaining increased employee output. Efficiency ensures that the goals of that firm have been achieved using the least possible expenditure of resources, that is money, manpower, materials and machines. By enhancing already existing technology, firms could simplify their decision-making process is simplified, which reduces the amount of time taken and costs incurred to ensure that the decisions are well implemented within the specified period.

## **2.6 Summary**

The study adopted Innovation for diffusion and technology acceptance theories as the base for the study. Innovation for diffusion (DOI) encompasses the probability that for any innovation or new technology to thrive or provide efficiency for an organisation, there need to be existence of already established capabilities to enhance full incorporation. The theory exists to provide foundations that for an organisation that is about to incorporate new technology into their functionality, a semblance of compatibility of technology is fundamental for its growth and its benefits to be realized in the organizations' goals. Therefore, this theory is crucial in maintaining the assumptions that the organizations' does have already existing technologies that caters for its functionality and therefore integrating e-supplier management requires compatibility of systems to realize its goal.

Technology acceptance theory (TAM) provided more information that even if the technology has been fully integrated and systems are compatible, there needs to be full acceptance of the technology being incorporated. The theory appreciates that people are necessary for an organisation to function, and their ability to find the technologies useful in attaining efficiency and improving performance. The theory finds it imperative to consider peoples' perception of the technologies they use and its importance and their ability to change their opinions about its significance to their overall performance in meeting their organizations' goals as well as their own.

The study adopted e-information sharing, e-tendering, e-payments and e-point of sale to show the stages through which suppliers are managed. From the first stage of information gathering and collection, followed by their selection and award, how they are paid after satisfactory performance and finally records keeping and performance reviews through electronic point of sale.

The literature reviewed showed that research had yet to venture into exploring the integration of an automated e- supplier capability to improve organizational performance. The literature explored in-depth the components of supplier management and how its benefits the performance of procurement and supply chain. The integration and automation will be researched on the potential of the company capabilities- ERP, EDI, EFT and E-procurement- to contain e-supplier management compatibility and accessibility. This research would therefore provide a bridge towards attaining more information on electronic supplier management integration and how it could improve organizational performance.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

The chapter centred on the procedure applied to the research undertaken. It included the research design, the type of data collected, the source of data, the area of data collection, the population size, and data analysis and control. This chapter was inclusive of the procedure to be undertaken, the ethical issues in research and the analysis of the data that were collected.

#### **3.2 Research Design**

The research applied descriptive research, which entailed the organization of environments for the assembly and examination of data, in a means that purposes to merge the significance of the research objective with the economy in the procedure (Kothari & Garg, 2014). Mishra and Alok (2017) described it as the process in which one opts to combine different components of the study logically and consists of how data was collected, measured and analysed. (Mustafa, 2010) described it as a conceptual structure within the research conducted.

The design described and attained facts from an investigation as they were, the relationship between the two variables and opinions that are held (Mustafa, 2010). The research design deals with quantitative data which is expressed in numbers or percentages (Bouma, Ling & Wilkinson, 2009).

This study adopted this design to emphasize the accurate portrayal of the population and quantitative data was the most appropriate nature of data to be used (Jackson, 2015).

### **3.3 Study Area**

The research was carried out in Nakuru County which is located in Rift Valley and borders Laikipia to the North-East, Nyandarua to the East, Kajiado to the South, Narok to the South-West and Bomet and Kericho to the West. The county was considered to be conferred as a city by the National Government in 2020 by the Urban Areas and Cities Act 2011 and in July 2022, the county was conferred as a city. Most of the procurement practices in parastatals in the county were done in the main office in Nairobi. However, the five (5) parastatals selected, were the only ones who conducted supply chain management functions, to about five hundred thousand shillings (Ksh500,000). Anything more was done in the Main Office. The study used the parastatals to find out the extent to which they had integrated e-supplier management in their organizations and how it contributed to their performance.

### **3.4 Target Population**

A population is the sum of all elements where conclusions are to be made (Cooper & Schindler, 2014). Ogola (2005) defined a population as any group of institutions, people or objects that have a common characteristic.

**Table 3.1: Target Population**

<b>Item</b>	<b>Finance and Accounting</b>	<b>Procurement</b>	<b>ICT</b>	<b>Logistics</b>	<b>Frequency</b>
KPLC	23	16	10	7	56
NSSF	12	7	8	3	30
PCK	21	10	8	13	52
CGN	25	15	18	10	68
NHIF	13	5	7	5	30
<b>Total</b>	<b>94</b>	<b>53</b>	<b>51</b>	<b>38</b>	<b>236</b>

Table 3.1 showed the target population of this study included 236 employees of the five (5) parastatals selected in Nakuru Municipality. the population included the total number of employees in finance, procurement, logistics and ICT departments in the individual five parastatals in Nakuru County. These parastatals included Kenya Power and Lighting Company (KPLC), National Social Security Fund (NSSF), National Hospital Insurance Fund (NHIF), Postal Corporation of Kenya (PCK) and County Government of Nakuru (CGK).

### **3.5 Sampling Procedure and Sample Size**

The study adopted a non-probabilistic sampling procedure to identify the sampling frame and size that was efficient in providing necessary and relevant information.

#### **3.5.1 Sample Procedure**

Purposive sampling was applied to get responses from staff members who were deemed to have the relevant information needed by the researcher depending on the representation of the population to be studied and then applied random sampling to

give the questionnaire to the staff present (Saunders, Lewis, Thornhill & Bristow 2019).

### 3.5.2 Sample size

The sample size is a part of the target population selected for the study, (Smith, 2013). Table 3.2 showed the distribution of respondents in the finance, procurement, logistics and ICT departments that were sampled, as they were considered the ones who frequently interact with the system and suppliers occasionally

**Table 3.2:Sample Size**

<b>Item</b>	<b>Finance and Accounting</b>	<b>Procurement</b>	<b>ICT</b>	<b>Logistics</b>	<b>Total</b>
KPLC	7	8	5	4	24
NSSF	3	3	4	3	13
PCK	3	3	2	4	12
CGN	10	8	5	3	26
NHIF	5	3	4	4	16
<b>Frequency</b>	<b>28</b>	<b>25</b>	<b>20</b>	<b>18</b>	<b>91</b>
<b>%</b>	<b>30.77</b>	<b>27.47%</b>	<b>21.98%</b>	<b>19.78</b>	<b>100</b>

The formula below was used to determine the appropriate sample size to use. It was developed by Daniel (1999).

$$n = \frac{N * X}{X + N - 1}$$

where: n= the desired sample size

$$X = Z_{\alpha/2}^2 * p * (1-p) / MOE^2$$

$Z_{\alpha/2}^2$  Critical value of the normal distribution at 80% confidence level (1.28)

MOE=margin of error (5.3%)

p=the proportion in the target population estimated (50%)

N= population size (236)

$$n = \frac{236 * 146}{146 + 236 - 1}$$

When the above formula is applied, a sample of 91 respondents was acquired. The Covid-19 pandemic affected most of the operations in the parastatals were affected which resulted in to lower turnout of respondents. Moreover, most of the respondents were either new to the technology or were newly employed. Therefore, from the 80% confidence level, the study expected 80% of the populace to pick similar responses, about the study. Saouro, (2015) stated that an 80% confidence is appropriate when only reasonable evidence is required, the study only required evidence that the parastatals had integrated e-supplier management.

### **3.6 Data Collection**

The study used primary data, which was data gathered for the first time and having an original character and secondary data was derived from other publications for inferential purposes (Pandey & Pandey, 2015).

#### **3.6.1 Data collection procedure**

The researcher identified the type of information that needed to be gathered, set a time two-week time frame for the data collection to take place and determined the

instrument best suited for the research. The researcher then classified the respondents into the sample that best suited the study. Preceding the final collection, a pilot test was carried out with a sample of 20 respondents to confirm the validity and reliability of the instrument. Questionnaires were dropped at the five parastatals to the specific respondents and later picked during the day.

### **3.6.2 Instruments for data collection**

The study used a questionnaire as the main mechanism for gathering information. The questionnaire was both open-ended and closed in nature. This helped in providing more accurate feedback and recommendations while simultaneously collecting correct statistical records. The questionnaire adopted a Likert Scale, which set up ordinal categories for levels of agreement and Each response was given a numerical score based on a series of integers in an arithmetic sequence-strongly agree=5, agree=4, disagree=2 and strongly disagree=1 and neutral=3. (Mustafa, 2010).

### **3.6.3 Reliability of the instrument**

A reliable instrument provides consistent results and needs not be valid. This was resolved from the pilot study undertaken by the researcher which utilized Cronbach's alpha to predict the reliability of the instrument that measured the questionnaire on its Likert Scale of 1 (strongly disagree) to 5 (strongly agree). The alpha coefficient is measured with a scale of 0-1 where a value of 0.70 is considered a good scale for reliability (Taber, 2018). Table 3.3 showed that the reliability test was conducted on the statements of agreement which was a total of 29 items.

**Table 3.3: Reliability Test**

<b>Variables</b>	<b>Cronbach's Alpha</b>	<b>No. of Items</b>
E-information Sharing	.82	5
E-Tendering	.82	4
E-Payment	.83	5
E-Point of Sale	.83	4
Effectiveness	.83	4
Efficiency	.84	4
Cost saving	.83	3
Aggregate	.83	29

The coefficient alpha for the study reliability was found to be 0.83. This is consistent with Taber, (2018) where Cronbach's reliability test that if the alpha is above 0.80 it is considered to be a good scale. This conclusion showed that the questionnaire used was reliable and could provide consistent information.

#### **3.6.4 Validity of the Instrument**

It described the degree a tool measured what it is supposed to measure (Kothari & Garg, 2014). There are three types of validity; The first type is Content Validity which is the instrument's ability to provide adequate coverage and the questionnaire was able to cover features of e-supplier management from sourcing, selection, payments and records management. The second type is Criterion Validity which is the instrument's capacity to predict reliable outcomes-. The third type is Construct

Validity where the instrument conforms to predictability, thus, the instrument included all questions that covered the attributes and indicators of each variable as mentioned in the conceptual framework. The researcher was able to consult the experts in the respective field to determine whether the research instrument was favourable in predicting the behaviour or response of the objectives of the study. The instrument was established to be efficient.

### **3.6.5 Pilot Test**

The researcher conducted a pilot study before the main study was undertaken. This pilot study was made within the parastatals in Nakuru county. The researcher was able to administer three questionnaires to 4 members of the group within the 5 parastatals. Based on Connelly (2008), for a pilot test to be effective, it is recommended that it be at least a tenth of the sample size. This allowed the detection of limitations in the construct and arrangement of the questionnaire for an assortment of probability samples (Cooper & Schindler, 2014). The researcher was able to observe the target groups and made needed improvements where the questionnaire lacked.

### **3.7 Data Analysis and Presentation**

The study adopted the use of a Statistical Packages for Social Science (SPSS), to analyse the data collected from the respondents and used both descriptive and inferential analysis.

### **3.7.1 Data Analysis**

The data gathered was analysed, coded and summarized using SPSS package version 25. The study used descriptive statistics to measure the means, standard deviation and frequency distribution of integration of e-supplier management and organization performance. Additionally, inferential statistics, that is, Pearson's correlation and ANOVA tests were conducted to test the hypotheses used. Multiple regression analysis was conducted to examine the influence of e-supplier management variables and organizational performance and correlation analysis were used to assess the relationship between e-supplier variables and organizational performance. The regression equation used to link the e-supplier management and organizational performance was as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

Where Y= Organizational Performance

X<sub>1</sub>= E-Information Sharing

X<sub>2</sub>= E-Tendering

X<sub>3</sub>= E-Payments

X<sub>4</sub>= E- Point of Sale

### **3.7.2 Data presentation**

Data was represented using frequency tables. It was mainly used to show demographic distribution. Tables were however used throughout the study to show the distribution of means, standard deviations, percentages, regression values and hypotheses values.

### **3.8 Ethical Consideration**

Crowther and Lancaster (2005) describe ethics in investigative studies as a set of morals or values for performing and directing research that the scholar should not infringe on them. The researcher considered their ethical position as it affected the nature of data, analysis and collection. The researcher obtained first obtained research approval and data collection letter from Murang'a University of Technology's Board of Postgraduate Studies and uploaded documentation to the National Commission for Science, Technology and Innovation. The researcher then was able to acquire a research permit from NACOSTI that licensed the conduction of the research in the parastatal and presented it to the parastatal's management for processing. The researcher informed the branch managers, Human Resource Managers, and County Secretary of the purpose of the study, who later were able to distribute the questionnaire on the researcher's behalf. The researcher also informed the respondents before dissemination, that the information they provided would be confidential and will provide anonymity to them and their organizations. The researcher was therefore able to provide a true presentation of the population without falsification.

### **3.9 Summary**

The chapter presented the study adoption of a descriptive research design to portray the population and the parastatals as they were in the current surrounding. The study used a non-probabilistic sampling design and a purposive sampling procedure to provide concrete information on those who interact mostly with the suppliers'

management functions and the overall electronic systems that deal with procurement and suppliers.

The study took place in Nakuru County as it is one of the counties that was declared a city. The purpose was to determine whether, as the county is becoming city, it carried out e-supplier management activities. The population targeted the municipality as most of the parastatals were located in that area and they were able to conduct procurement activities only up to five hundred thousand shillings which is adequate for supplier management activities.

The study was able to acquire information from the procurement and logistics specialists who interact mostly with the suppliers. The finance and accounting personnel who deal with the supplier payment and the IT experts who provide maintenance on the organizations, ERP, IFMIS and E-procurement systems as they are knowledgeable on how they perform and whether systems are compatible.

## CHAPTER FOUR

### RESULTS AND DISCUSSIONS

#### 4.1 Introduction

This chapter provided the findings that the researcher has made on the results attained through data analysis and presentation of the questionnaire distributed. The findings were focused on the integration of e-supplier management and how it influenced the organizational performance of parastatals in Nakuru County. Data gathered from this study was both qualitative and quantitative, which was presented through descriptive analysis and narration, respectively. The presentations were done using tables and graphs

#### 4.2 Response Rate

The researcher disseminated 91 questionnaires in a drop-pick system where 80 questionnaires were returned but 11 questionnaires were not returned. This represented a response rate of 87.9% as shown in Table 4.1

**Table 4.1: Response Rate**

Item	Frequency	Percentage (%)
Respondents	80	87.9
Non- respondents	11	12.1
Total	91	100

This response was excellent and representative of the population as it conforms to (Kothari & Garg, 2014) stipulation that a response rate of 70% and above is

excellent. This showed that the response rate was sufficient enough in providing relevant findings that were important in gauging the integration of e-supplier management and its influence on organizational performance in the selected parastatals

### 4.3 Demographic Information

The study aimed to outline how the population was defined in terms of age distribution, work experience, level of education and how it affected the study findings.

#### 4.3.1 Age of Respondents

The study aimed to determine the age demographic of the respondents. Table 4.2 showed how the age of the respondents was distributed among the respondents.

**Table 4.2: Age of Respondents**

<b>Age-range</b>	<b>Frequency</b>	<b>Percent %</b>	<b>Cumulative Percent %</b>
18-25 years	13	16.3	16.3
26-33 years	23	28.7	45.0
34-41 years	26	32.5	77.5
41-48 years	12	15.0	92.5
Above 49 years	6	7.5	100.0

The majority of the respondents 26 (32.5%) were aged between 34-41 years, 23 (28.7%) were aged between 26-33 years, 13 (16.3%) between 18-25 years, 12 (15.0%) were aged between 41-48 years and the least of the respondents were those

above 49 years who accumulated to 6 (7.5%). This showed that the majority of the respondents within the parastatals were middle-aged. This suggested they were slow in the uptake of innovation/technology and might resist its incorporation due to fear of losing their usefulness to their organization and thus opt to encourage the use of manual supplier management practices.

### 4.3.2 Education Level

The researcher sought to determine the education level of the respondents. Table 4.3 showed how the level of education was distributed among the respondents.

**Table 4.3: Level of Education of Respondents**

<b>Education levels</b>	<b>Frequency</b>	<b>Percent %</b>	<b>Cum. Percent %</b>
Master's Degree	11	13.8	13.8
Undergraduate	59	73.8	87.5
Higher Diploma	2	2.5	90.0
Diploma	7	8.8	98.8
Certificate	1	1.3	100.0

The majority of the respondents 59 (73.8%) had obtained an undergraduate level, Master's Degree was second with 11 (13.8%), followed by Diploma with 7 (8.8%), Higher Diploma 2 (2.5%) and Certificate had the least respondents with 1 (1.3%). Since the majority of the respondents had acquired both undergraduate and Master's Degrees, it can be concluded that they were knowledgeable in not only procurement management practices but also the current innovations in the area and their use and benefits to their organizations. Therefore, they were able to provide reliable information about supplier management practices.

### 4.3.3 Level of Experience

The researcher was to ascertain the level of experience each respondent had in their field of expertise and their respective organization. Table 4.4 showed how the level of experience was distributed among the respondents.

**Table 4.4: Work Experience**

<b>Work Experience</b>	<b>Frequency</b>	<b>Per cent %</b>	<b>Cumulative Percent %</b>
Below 1 year	15	18.8	18.8
2-5 years	28	35.0	53.8
6-9 years	20	25.0	78.8
Above 10 years	17	21.3	100.0

Table 4.4 showed that Below 1 year had 15 respondents (18.8%), 2-5 years 28 respondents (35%), 6-9 years 20 respondents (25.0%) and above 10 years, 17 respondents (21.3%). This implied that those below one year were either recently employed, interns or attachés in their respective departments or organizations, hence were getting acquainted with the organizations' systems and therefore their information could have been biased. However, the majority of the respondents had more than 2 years of experience, suggesting that the respondents were well knowledgeable on how their respective organizations operated and the extent of use of technology in supplier management practices. Therefore, the respondents could provide adequate information on the degree of such innovations within the parastatals.

#### 4.4 Descriptive Statistics

The research conducted was to ascertain the level of integration of e-supplier management and how it influences organizational performance. The respondents were asked to rate their levels of agreement using the Likert scale; 1-3.4 represented disagree and 3.5-5 represented agree. The levels of agreement were divided into the independent variables of e-information sharing, e-tendering, e-payments and e-point of sale. The data was determined using mean and standard deviation.

##### 4.4.1 E-Information Sharing

Table 4.5 showed the descriptive analysis for the variable where the respondents were to agree or disagree with the statements of how they could acquire information from its suppliers. The data was determined using mean and standard deviation.

**Table 4.5: E-Information Sharing and Organizational Performance**

<b>Statements</b>	<b>Mean</b>	<b>Std. Deviation</b>
Collect information from suppliers through a virtual administered questionnaire	3.30	1.16
Online access to supplier catalogues	3.81	.90
Online access to supplier's capabilities (Financial, Operational, Quality,)	3.74	.74
Online access to supplier references and performance reviews from previous clientele	3.24	.96
The company and suppliers get access to real-time information	4.00	.89
Aggregate	3.62	.93

Table 4.5 showed that they disagreed with their ability to collect information about their suppliers through a virtually administer questionnaire (M=3.30, SD=1.16). They agreed to be able to access supplier catalogues online, (M=3.81, SD=.90). Similarly, they also agreed that they could access suppliers' capabilities (financial, operational, quality,) and respondents agreed online (M=3.74, SD=.74). They disagreed on virtual retrieval of references and performance reviews from previous clientele (M=3.24, SD=.96). Finally, they agreed that both the company and suppliers could gain access to real-time information (M=4.00, SD=.89). This inferred that the majority of the respondents concurred that e-information sharing was a variable in organization performance and the parastatals were able to virtually acquire credible and verified supplier information. They also state that e-information sharing was able to save time in finding supplier information, simplify order reporting, payments and requisitions, centralize tracking of transactions and information, easy comparison of suppliers, accuracy in the information collected, reduced information collection and easy optimization of the supplier base.

#### **4.4.2 E-Tendering**

Table 4.6 showed the descriptive analysis for the variable where the respondents were to agree or disagree with the statements about the ability to conduct e-tendering.

**Table 4.6: E-Tendering and Organizational Performance**

<b>Statements</b>	<b>Mean</b>	<b>Std. Deviation</b>
Suppliers can register online as company suppliers	4.04	1.06
Supplier eligibility and screening are done online	3.78	.86
The system automatically evaluates suppliers for selection	2.69	1.01
Supplier selection criteria are automated	2.69	.95
Aggregate	3.30	.97

Table 4.6 showed that the respondents agreed that suppliers could register online as company suppliers (M=4.04, SD=1.06) and they also agreed that suppliers could be virtually screened for eligibility (M=3.78, SD=.86). However, they disagreed that suppliers could be automatically evaluated for selection (M=2.69 SD=1.01) and also disagree that supplier selection criteria were fully automated (M=2.69, SD=.95). This implied that the organization's systems could only register and verify suppliers but was not able to automatically select suppliers as its selection criteria were not automated. They however mentioned; improved transparency, promoted efficiency in selecting the best supplier, increased accuracy in criteria used and the number of suppliers participating, timely identification of suppliers, promotes leverage buying and reduced the cost of selection and also reduced supplier selection risks, as some of the benefits incurred by using e-tendering.

#### **4.4.3 E-Payment**

Table 4.7 showed the descriptive analysis for the variable where the respondents were to agree with the statements of how they could reimburse/remunerate their suppliers.

**Table 4.7: E-Payment and Organizational Performance**

<b>Statements</b>	<b>Mean</b>	<b>Std. Deviation</b>
Payments can be done through mobile payments	3.46	1.19
The supplier can automatically self-bill online	3.41	1.37
The company can Electronically transmit a cheque to the supplier's bank account	3.79	1.19
Suppliers and companies can exchange invoices and receipts electronically	3.29	1.06
The company uses blockchain technology to authenticate transactions with suppliers	2.44	.91
Aggregate	3.28	1.14

Table 4.7 showed that the respondents disagreed that payments could be done through mobile payments (M=3.46, SD=1.19). They also disagreed that suppliers could automatically self-bill online, (M=3.41, SD=1.37) and disagreed that suppliers and companies could exchange invoices and receipts electronically (M=3.29, SD=1.06). However, agreed that they could electronically transmit a cheque to the supplier's bank account (M=3.79, SD=1.19). They also disagreed that they could use blockchain technology to authenticate transactions, (M=2.44, SD=0.91). This showed that the parastatals did use e-payments to some extent but had not fully adopted the aforementioned innovations for supplier payments and verifications. The respondents however mentioned other methods of e-payments such as Mobile Payment (MPESA, Paybill), American Express (AX), Real-Time Gross Settlements (RTGS), direct bank deposit, internet banking (iBank) and Integrated Financial Management System (IFMIS). They also identified increased reliability in payments, reduced supplier complaints on late payments, increased security of transactions and

promoted transparency as some of the benefits accrued from adopting the technologies.

#### 4.4.4 E-Point of Sale

Table 4.8 showed the descriptive analysis for the variable where the respondents were to agree or disagree with the statements on how they could track and access supplier reports and inventory.

**Table 4.8: E-Point of Sale and Organizational Performance**

Statements	Mean	Std. Deviation
The company can generate and access supplier performance reports from the cloud server	3.06	1.15
Electronic Fund Transfer Reduces trips to the banks	4.10	.74
The company provides procurement cards for employees	3.28	.81
The company uses EPOS to track its inventory	3.45	.69
Aggregate	3.47	.85

Table 4.8 showed that respondents disagreed with their organization's ability to generate and access supplier performance reports from cloud servers (M=3.06, SD=1.15). However, they agreed that Electronic Fund Transfer reduced trips to the banks (M= 4.10, SD=.74). They also disagreed on the organizations' ability to provide procurement cards for employee purchases (M=3.28, SD=.81) and disagreed that the organizations used EPOS to track its inventory (M=3.45, SD=.69). This showed that the parastatals were able to use EPOS innovation to some extent to cater for e-supplier management which contributed to their performance. The respondents also

reported that EPOS enabled easy retrieval of supplier reports, reduced errors in documentation as they were system generated and reduced the cost of paperwork.

**Table 4.9: Overall Mean of E-Supplier Management Integration**

<b>Variables</b>	<b>Mean</b>	<b>Std. Deviation</b>
E-Information Sharing	3.62	.93
E-Tendering	3.30	.97
E-Payments	3.28	1.14
E-Point of Sale	3.47	.85
Average	3.42	.97

Table 4.9 showed that the respondents disagreed that their organizations were able to fully integrate e-supplier management into their already existing ICT capabilities (M=3.42, SD=.97). They agreed that e-information sharing was well adopted into the organizations' structures (M=3.62, SD=.93). They, however, disagreed on the full extent of incorporation of e-tendering, e-payment and e-point of sale at (M=3.30, SD=.97), (M=3.28, SD=1.14) and (M=3.47, SD=.85) respectively.

#### **4.4.5 Organization Performance**

Table 4.10 showed the descriptive analysis for the variable where the respondents were to agree or disagree with the statements of how e-supplier management integration has affected their efficiency, effectiveness and ability to save on costs.

**Table 4.10:E-Supplier Management and Organizational Performance**

<b>Statements</b>	<b>Mean</b>	<b>Std. Deviation</b>
The amount of paperwork has been reduced considerably	4.21	.98
The time taken to process bids has reduced	3.89	.73
All of the supplier activities (selection, evaluation, pre-qualification) have been automated	2.86	1.17
Performance reports are cloud generated/ online and automatically generated	2.94	1.01
<b>Efficiency</b>	<b>3.72</b>	<b>.97</b>
Supplier disputes and appeals are reduced	3.80	.77
A competitive number of suppliers participate in the tendering process	3.86	.67
The quality of products and services offered is high	3.64	.96
Automation has freed up time for departments to focus on long-term strategy	3.58	.87
<b>Effectiveness</b>	<b>3.72</b>	<b>.82</b>
There is room for price negotiations with suppliers	3.80	.82
The company can get discounts from suppliers	3.20	1.04
Automation has significantly reduced the cost of paperwork	4.10	.96
<b>Cost Saving</b>	<b>3.70</b>	<b>.94</b>
<b>Aggregate</b>	<b>3.61</b>	<b>.98</b>

Table 4.10 showed that respondents agreed that the amount of paperwork had reduced (M=4.21, SD=.98), and they also agreed that the time taken to process bids had reduced (M=3.89, SD=.73). However, they disagreed that all of the supplier activities (selection, Evaluation, pre-qualification) had not been automated (M=2.86,

SD=1.17) and also disagreed that they could automatically generate supplier performance reports from the cloud (M=2.94, SD=1.01). Nevertheless, they agreed that suppliers' disputes and appeals had reduced (M=3.80, SD= .77), they also agreed that a competitive number of suppliers could participate in the tendering process (M=3.86, SD=.67). They also agreed that the quality of products and services offered was high (M=3.64, SD=.96). Moreover, they agreed that automation of supplier management components had freed up time for departments to focus on long-term strategy (Mean=3.58, SD= .87) and also agreed that there was room for price negotiations with suppliers (Mean=3.80, SD=.82). They however disagreed in their capacity get discounts from suppliers (Mean=3.20, SD= 1.04) Finally, they agreed that Automation has significantly reduced the cost of paperwork (Mean= 4.10, SD=.96). They agreed that e-supplier management did contribute to organizational performance at (M=3.61, SD=.98). The respondent also agreed that efficiency, effectiveness and cost savings had been improved at (M=3.72, SD=.97; M=3.72, SD=.82; M=3.70, SD=.94) respectively. This established that the parastatals were able to influence their efficiency and effectiveness, and save on costs by integrating e-supplier management practices. The respondents highlighted that they chose the lowest bidder, removed uncompetitive Suppliers and used centralized procurement and outsourcing their suppliers to reduce overall costs. They also mentioned the following challenges they faced by adopting the new technology; Failure of suppliers to comply and cooperate, high cost of maintenance and management of software. They also mentioned that suppliers could only view the organization page and could not interact with it with poor internet connectivity and the high cost of supplier training.

#### 4.5 Inferential Statistics.

The study used regression and Pearson's correlation analysis to determine the influence of e-supplier management variables on organizational performance and the relationship between e-supplier management variables and organizational performance.

##### 4.5.1 Regression Analysis

A regression model was used to investigate e-supplier management and its influence on organizational performance. It included the model summary for each independent variable and the regression coefficients used to determine to what extent each variable influences organizational performance. The regression model summary was used to show the extent of organizational performance based on the integration of e-supplier management variables and the coefficients were used to show the relationship change in the value of organizational performance concerning the e-supplier management variables.

##### 4.5.1.1 E-Information Sharing and Organizational Performance

Table 4.11 showed the integration of e-information sharing and its influence on organizational performance.

**Table 4.11: Model Summary for E-information Sharing and Organizational Performance**

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate
1	.325 <sup>a</sup>	.106	.094	.40896

The table showed that there was a weak positive relationship between e-information sharing and organisational performance ( $r=.325$ ). 9.4% of Organizational performance could be accounted for by e-information sharing the other 90.4% was attributed to factors not mentioned in this study. A 10.6% change of organizational performance was described by e-information sharing. This showed that E-information sharing had a significantly low influence on organizational performance.

Table 4.12 showed that when all factors are held constant e-payment contributed to a 2.888 unit change in organizational performance which was significant, ( $B=2.888$ ,  $p=.000$ ).

**Table 4.12: E-information Sharing Regression Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.888	.247		11.692	.000
EIS	.204	.067	.325	3.034	.003

The linear equation for the e-information sharing was:

$$Y = \beta_0 + \beta_1 X_1$$

$$Y = 2.88 + .204 X_1$$

For every one unit increase in the e-information sharing variable results in a 0.204 increase in organisation performance. It was established that e-information sharing was statistically significant in influencing the organizational performance of parastatals in Nakuru County ( $p=.003$ ) which coincided with Akoth (2017) study which showed that e-information sharing was statistically significant in the service delivery of county governments.

#### 4.5.1.2 E-Tendering and Organizational Performance

Table 4.13 showed the integration of e-tendering and its influence on organizational performance.

**Table 4.13: Model Summary for E-Tendering and Organizational Performance**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted Square</b>	<b>R Std. Error of the Estimate</b>
1	.214 <sup>a</sup>	.046	.033	.42243

The table showed that there was a weak positive relationship between e-tendering and organisational performance ( $r=.214$ ). Only 3.3% of Organizational performance could be accounted for by e-information sharing the other 96.7% was attributed to factors not mentioned in this study. A 4.6% change in organisational performance was described by e-payments. This showed that E-tendering had a significantly low influence on organizational performance.

Table 4.14 showed that when all factors are held constant, e-tendering contributed to a 3.186 unit change in organizational performance at a significant level ( $B=3.186$ ,  $p=.000$ ).

**Table 4.14: E-Tendering Regression Coefficients**

<b>Model</b>		<b>Unstandardized Coefficients</b>		<b>Standardized Coefficients</b>		<b>Sig.</b>
		<b>B</b>	<b>Std. Error</b>	<b>Beta</b>	<b>t</b>	
1	(Constant)	3.186	.232		13.717	.000
	ET	.133	.069	.214	1.931	.057

The linear equation for the e-tendering was:

$$Y = \beta_0 + \beta_2 X_2$$

$$Y = 3.186 + .133 X_2$$

Every one-unit increase in e-tendering results in a .133 in organizational performance. E-tendering was also not statistically significant with the organizational performance of parastatals in Nakuru County ( $p=.057$ ). Therefore, the study's null hypothesis was partially fulfilled. This was consistent with Gichuhi and Waruguru (2020) study on e-tendering which did not have a statistically significant relationship with organization performance.

#### 4.5.1.3 E-Payments and Organizational Performance

Table 4.15 showed the integration of e-payments and their influence on organizational performance.

**Table 4.15: Model Summary for E-Payments and Organizational Performance**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted Square</b>	<b>R Std. Error of the Estimate</b>
1	.197 <sup>a</sup>	.039	.026	.42396

The table showed that there was a weak positive relationship between e-payments and organisational performance ( $r=.197$ ). A 2.6% of Organizational performance could be accounted for by e-information sharing while the other 97.4% was attributed to factors not mentioned in this study. A 3.9% change in organizational performance could be described by e-payments. This showed that E-payments had a significantly low influence on organizational performance.

Table 4.16 showed that when all factors are held constant e-payment contributed to a 3.241 unit change in organizational performance at a significant level, ( $B=3.241$ ,  $p=.000$ ).

**Table 4.16: E-Payments Regression Coefficients**

<b>Model</b>	<b>Unstandardized Coefficients</b>		<b>Standardized Coefficients</b>		
	<b>B</b>	<b>Std. Error</b>	<b>Beta</b>	<b>t</b>	<b>Sig.</b>
1 (Constant)	3.241	.222		14.603	.000
EP	.117	.066	.197	1.772	.080

The linear equation for the e-payments was:

$$Y = \beta_0 + \beta_3 X_3$$

$$Y = 3.241 + .117 X_3$$

For that every one-unit increase in e-payments results in a .117 increase in organization performance. E-payments also did not have a statistically significant influence (P=.080) on the organizational performance of parastatals in Nakuru County. Therefore, the study's null hypothesis was partially fulfilled. This conflicts with Harelimana (2018) that e-payments did have a statistically significant influence on the performance of state-owned institutions in Rwanda.

#### 4.5.1.4 E-Point of Sale and Organizational Performance

Table 4.17 showed the integration of e-point of sale and its influence on organizational performance.

**Table 4.17: Model Summary for E-Point of Sale and Organizational Performance**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	.481 <sup>a</sup>	.231	.221	.37914

The table showed that there was a low positive relationship between the e-point of sale and organisational performance (r=.481). Only 22.1% of Organizational

performance could be accounted for by e-information sharing the other 77.9% was attributed to factors not mentioned in this study. 23.1% change in organizational performance could be accounted for by e-point of sale. This showed that the -point of sale had a significantly low influence on organizational performance.

Table 4.18 showed that when all factors are held constant e-payment contributed to a 2.327 unit change in organizational performance at a significant level, (B=2.327, p=.000).

**Table 4.18: E-Point of Sale Regression Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.327	.271		8.576	.000
	EPOS	.374	.077	.481	4.844	.000

The linear equation for the e-point of sale was:

$$Y = \beta_0 + \beta_4 X_4$$

$$Y = 2.327 + .374 X_4$$

For every one unit increase in e-point of sale results in a 0.374 increase in organization performance. The table also showed that e-point of sale had a positively strong statistical significance with organizational performance than the other variables at (p=0.000). Mukoya and John (2019) also confirmed that EPOS had the highest level of significance.

#### **4.5.1.5 E-supplier management and Organizational Performance**

Table 4.19 showed the integration of e-supplier management and its influence on organizational performance.

**Table 4.19: Model Summary for E-Supplier Management and Organizational Performance**

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate
1	.508 <sup>a</sup>	.258	.219	.37978

From Table 4.19, the R-value predicted the level of correlation between organizational performance and EIS, ET, EP and EPOS and showed that there was a moderate degree of positive correlation between organizational performance and e-supplier management at .508. The adjusted R<sup>2</sup> of .219 showed that 21.9% of organizational performance (OP) could be explained by e-supplier management variables: e-information sharing (EIS), e-tendering (ET), e-payments (EP) and e-point of sale (EPOS) and the other 68.1% disparity in parastatal organizational performance was described by other variables that were not tested in this study. The R<sup>2</sup> of .258 suggested that a 25.8% change in organizational performance could be accounted for by EIS, ET, EP and EPOS. This was also supported by Oteki (2021) whose study on e-supplier management showed a low R<sup>2</sup> and adjusted R<sup>2</sup> which was at 22.9% and 22.6% respectively.

The regression equation used to link the organizational performance and e-supplier management was as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

$$Y = 11.642 + 0.204EIS + 0.133ET + 117EP + 0.374EPOS$$

Where: Y= Organizational Performance

X<sub>1</sub>= E-Information Sharing (EIS)

X<sub>2</sub>= E-Tendering (ET)

X<sub>3</sub>= E-Payments (EP)

X<sub>4</sub>= E-Point of Sale (EPOS)

#### **4.5.2 Correlation Analysis**

The purpose of this analysis was to find out whether there existed a positive relationship between e-supplier management variables and organisational performance. The study, therefore, conducted a Pearson's Correlation to ascertain whether there was a strong or weak correlation between e-supplier management and organisational performance.

Table 4.20 showed how each variable was related to the other including the organizational performance.

**Table 4.20: E-Supplier Management and Organisational Performance Correlation**

		<b>OP</b>	<b>EIS</b>	<b>ET</b>	<b>EP</b>	<b>EPOS</b>
<b>OP</b>	Pearson Correlation	1	.325**	.214	.197	.481**
	Sig. (2-tailed)		.003	.057	.080	.000
	N	80	80	80	80	80
<b>EIS</b>	Pearson Correlation	.325**	1	.703**	.477**	.357**
	Sig. (2-tailed)	.003		.000	.000	.001
	N	80	80	80	80	80
<b>ET</b>	Pearson Correlation	.214	.703**	1	.389**	.195
	Sig. (2-tailed)	.057	.000		.000	.084
	N	80	80	80	80	80
<b>EP</b>	Pearson Correlation	.197	.477**	.389**	1	.279*
	Sig. (2-tailed)	.080	.000	.000		.012
	N	80	80	80	80	80
<b>EPOS</b>	Pearson Correlation	.481**	.357**	.195	.279*	1
	Sig. (2-tailed)	.000	.001	.084	.012	
	N	80	80	80	80	80

Due to the low-level influence of e-supplier management variables on organizational performance, the study sought to assess whether there existed a statistically significant relationship between e-supplier management and organisational performance. Table 4.20 confirmed that all the four e-supplier management variables had a weak positive correlation with organizational performance; e-information sharing ( $r=.325$ ), e-tendering ( $r=.214$ ), e-payments ( $r=.197$ ) and e-point of sale ( $r=.481$ ) and E-tendering and e-information sharing had a strong positive correlation ( $r=.703$ ). Only e-information sharing and e-point of sale had significant relationships with ( $p=.000$ ). E-tendering and e-payments were not statistically significant at .057 and .080 respectively.

## 4.6 Hypothesis Testing

The study applied the One-Way Analysis of Variance (ANOVA) to test the null hypotheses of the study. The test aimed to determine whether there was a statistical significance between the means of the independent variables and organizational performance, thereby ascertaining whether the hypotheses mentioned were accepted or rejected.

### 4.6.1 E-Information Sharing

Table 4.21 showed the study's null hypothesis test that E-information sharing does not have a statistically significant influence on organizational performance.

**Table 4.21: ANOVA Test For E-Information Sharing and Organizational Performance**

	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Between Groups	6.600	10	.660	5.703	.000
Within Groups	7.985	69	.116		
Total	14.585	79			

There was a statistically significant difference in organization performance between at least 10 groups,  $F(10,79) = 5.703$ ,  $p=0.000$ . Therefore, e-information sharing statistically predicted organization performance at a significant level. This meant that the significance value was low enough to reject the null hypothesis and thus established that e-information sharing did influence organizational performance. This was consistent with Akoth (2017) that when information sharing was employed between organizations and suppliers contributed to organizational performance.

### 4.6.2 E-Tendering

Table 4.22 showed the study's null hypothesis test that E-tendering has no statistically significant influence on organizational performance.

**Table 4.22: ANOVA Test For E-Tendering and Organizational Performance**

	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Between Groups	5.103	9	.567	4.186	.000
Within Groups	9.481	70	.135		
Total	14.585	79			

Table 4.22 showed that there was a statistically significant difference in organization performance between at least 9 groups,  $F(9,79) = 4.186, p=0.000$ . Therefore, e-tendering statistically predicted organization performance at a significant level. This indicated that the significance value was low enough to reject the null hypothesis and confirmed that e-tendering did influence organisational performance. This correlated with Oteki, (2018) that e-tendering had a statistically significant impact on procurement performance as it saved time and used little labour power.

### 4.6.3 E-Payments

Table 4.23 tested the study's null hypothesis that E-payments have no statistically significant influence on organizational performance.

**Table 4.23: ANOVA Test For E-Payments and Organizational Performance**

	<b>Sum Squares</b>	<b>of df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Between Groups	5.133	12	.428	3.032	.002
Within Groups	9.452	67	.141		
Total	14.585	79			

Table 4.23 showed that there was a statistically significant difference in organization performance between at least 12 groups,  $F(12,79) = 3.032$ ,  $p = 0.002$ . Therefore, e-payments statistically predicted organization performance at a significant level. This implied that the significance value was low enough to reject the null hypothesis and therefore established that e-payment did influence organizational performance. This matched the findings by Harelimana (2018) that e-payment was statistically significant in influencing the performance of public institutions in Rwanda.

#### **4.6.4 E-Point of Sale**

Table 4.24 tested the study's null hypothesis that E-point of sale does not have a statistically significant influence on organizational performance.

**Table 4.24: ANOVA Test For E-Point of Sale and Organizational Performance**

	<b>Sum Squares</b>	<b>of df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Between Groups	6.033	9	.670	5.488	.000
Within Groups	8.551	70	.122		
Total	14.585	79			

Table 4.24 showed that there was a statistically significant difference in organization performance between at least 9 groups,  $F(9,79) = 5.488$ ,  $p = 0.000$  where  $p < .05$ . Therefore, e-point of sale statistically predicted organization performance at a significant level. This implied that the significant value was low enough to reject the null hypothesis and therefore showed that e-point of sale did influence organization performance as was evident from Mukoya and John (2019) where EPOS was found to statistically influence the performance of the supermarkets in Kenya.

#### **4.7 Summary**

This chapter used the frequency mean to show the extent of agreements and disagreement on the integration of e-supplier management capabilities and standard deviation to highlight how accurate those statements were by measuring how close they were to the mean. Simple linear regression to test the level of influence each variable had on organizational performance. The simple regression models were then used to determine the overall extent of e-supplier integration.

The ANOVA tests were used to test the hypotheses used in the study. Its use was fundamental in determining whether the independent variables had a statistical significance in their influence. The findings were either confirmed or refuted by other research made by other scholars to show the reliability of the results gathered.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Summary

The general objective of the study was to investigate the integration of e-supplier management and its influence on organisational performance. The study used a hypothesis to test whether e-supplier management had any significant influence on organizational performance. The  $R^2 .258$  showed that a 25.8% change in organizational performance can be accounted for by EIS, ET, EP and EPOS. The adjusted  $R^2.219$  meant that 21.9% of organizational performance can be explained by e-supplier management variables: e-information sharing, e-tendering, e-payments and e-point of sale. The other 68.1% disparity in parastatal organizational performance was described by other variables that were not tested in this study. E-supplier management and organizational performance have a moderate positive relationship ( $R=.508$ ) and it was statistically significant, ( $p=.000$ ). However, e-information sharing and e-tendering had a strong positive relationship ( $r=.703$ ).

##### 5.1.1 E-Information Sharing and Organizational Performance of Parastatals in Nakuru County

The study sought to analyse the influence of e-information sharing integration on the organizational performance of parastatals in Nakuru County. The respondents agreed that the company and suppliers could access real-time information and could access supplier catalogues and capabilities virtually, with a means of 4.00, 3.81 and 3.74 respectively. However, they disagreed on the collection of information through virtual questionnaires and access to suppliers' referees with means of 3.30 and 3.24

respectively. The regression analysis showed that e-information sharing influenced only 9.4% of organizational performance and contributed to 10.6% and a .204 unit change in organizational performance. Pearson's correlation also showed that E-information sharing and the organizational performance had a weak positive correlation ( $r=.325$ ). The one-way ANOVA test rejected the null hypothesis and established that e-information sharing was able to influence organization performance  $p<.05$  ( $p=.000$ ).

### **5.1.2 E- Tendering and Organizational Performance of Parastatals in Nakuru County**

The study sought to investigate the integration of e-tendering and its influence on the organizational performance of parastatals in Nakuru County. The respondents agreed that suppliers could register online and their eligibility screening could be done through their systems with a means of 4.04 and 3.78 respectively. However, they disagreed that suppliers could not be selected and evaluated electronically and automatically with a mean of 2.69. The regression analysis showed that e-tendering influenced organizational performance at 3.3% and accounted for only a 4.6% and .133 unit change in organizational performance. There was a weak positive connection between e-tendering and organizational performance at ( $r=.214$ ). The one-way ANOVA test rejected the null hypothesis and established that e-tendering could influence organization performance  $p<.05$  ( $p=.000$ ).

### **5.1.3 E-Payments and Organizational Performance of Parastatals in Nakuru County**

The study wanted to assess the influence of e-payments integration on the organizational performance of parastatals in Nakuru County. The respondents were neutral in their ability to use mobile payments to pay their suppliers and virtual self-billing with means of 3.46 and 3.41. They were neutral on whether they could electronically exchange invoices at a mean of 3.29. However, they agreed that they could electronically transfer cheques to the bank at a mean of 3.79 and disagreed on the adoption of blockchain technology to authenticate the payment processes done electronically with a mean of 2.44. A regression analysis revealed that 2.6% of organizational performance was attributed to e-payments and that only accounted for a 3.9% and .117 unit change in organizational performance. There was a weak positive association between e-payments and organizational performance at ( $r=.197$ ). A one-way ANOVA test rejected the null hypothesis and established that e-payment influenced organization performance with  $p<.05$  ( $p=.002$ ). Its influence on organizational performance was the lowest compared to the other variables.

### **5.1.4 E-Point of Sale System and Organizational Performance of Parastatals in Nakuru County**

The study wanted to examine the influence of e-Point of Sale (EPOS) integration on the organizational performance of parastatals in Nakuru County. The respondents agreed that bank trips had been reduced considerably with a mean of 4.10. They disagreed with the company's provision of procurement cards to a supplier, EPOS to track their inventory with a mean of 3.28 and 3.45 respectively, and on the ability of the company to access supplier performance reports from the cloud with a mean of

3.06. Regression analysis showed that 22.1% of organizational performance was attributed to e-point of sale and that e-point of sale accounted for a 23.1% change and .374 unit change in organizational performance. There was a weak positive relationship between the e-point of sale and organizational performance at ( $r=.489$ ). The one-way ANOVA test rejected the null hypothesis and established that e-point of sale influenced organization performance at  $p<.05$  ( $p=.000$ ).

## **5.2 Conclusion**

The main aim of the study was to determine the influence of e-supplier management integration on organizational performance. The study deduced that the integration of e-supplier management did improve the organizational performance of parastatals but to a very minimal amount. This was attributed to the organizations' inadequate technology to incorporate e-supplier management efficiently. The study showed that the parastatals were not able to fully integrate e-supplier management from already existing capabilities as highlighted by the variables used. E-point of sale was seen to have the highest level of integration while e-payments had the lowest. This study can therefore deduce that the organizations have yet to consider e-supplier management practices as a fundamental area of focus where organizational performance could be improved, hence the little influence and weak correlation on their efficiency and effectiveness.

On the dimension of electronic information sharing, the study concluded that the parastatals used the internet and other electronic means to gain information about their potential suppliers. It ascertained that by using online information-sharing, they

were able to improve the integrity, increased information tracking, improved decision making and comparison of different suppliers on their capabilities was made easy. This saved time and increased overall efficiency. However, they were not able to collect that information through online questionnaires and access to suppliers' references was still a contingent factor as some of the suppliers did not have reliable internet access. The study also showed that not all aspects of information sharing for supplier management had been realized resulting in low integration. The strong positive correlation between information sharing and e-tendering could be attributed to the necessity of relevant and updated information in the selection of appropriate suppliers.

On the element of electronic tendering, the study determined that the parastatals in the county had adopted the use of e-tendering which improved efficiency, accuracy and increased accountability and transparency of the practitioners in the company. This led to suppliers' increased trust and thus improved competitive buying, which promoted the quality of inventory and services provided. They were able to reduce overall costs by removing uncompetitive suppliers, selecting the lowest bidder and outsourcing their suppliers. However, the aspect of automatic evaluation and selection, which depended on the organizations' e-procurement capability, had yet been realized as they still used IFMIS which did not have that proficiency of automated selection. This showed that e-tendering was still an area where not much integration had been conducted and most of the parastatals still conducted manual tendering.

The aspect of the electronic payment, study established that some of the parastatals had embraced the use of mobile payments. They used M-Pesa, Paybill, Mobile Apps for different commercial banks, IFMIS, Real Time Gross Settlement (RTGS), EFT, Direct bank deposit and American Express (AX), which assisted in remitting supplier vouchers. This helped in reducing supplier complaints on late payments as payments were done on time, improved efficiency of payments and minimized corruption and fraud while increasing accuracy. The use of these e-payments had provided reliability of payments done, security of transactions and improved convenience. Accountability was ensured since there was an electronic footprint left after transactions, which was important during audits. However, the use of blockchain technology was still a new feature that has cost implications when or if adopted, and therefore many of the parastatals had yet to embrace the technological benefit of blockchain implementation. The use of these e-payments structures had cost associations that defeat the notion of cost savings that the organization generated from the use of these methods. Hence why e-payments had the lowest influence on organisational performance.

On the final variable of electronic point of sale, the study concluded that the use of the e-pos systems had reduced the number of trips to the bank and it had also assisted some of the parastatals in keeping track of their inventory. This had enabled them to increase the overall organization performance by saving time on writing the reports, improving easy retrieval of supplier reports and also ensuring convenience in the attainment of information. Cost reduction was achieved through the reduction of paperwork as reports were electronically generated. However, not all of them used cloud storage facilities for such benefits, but it was a step toward a better direction.

### **5.3 Recommendations**

This study provided recommendations based on the findings collected from the research conducted. It included recommendations for practice, recommendations for future research and study and recommendations for policy makers.

#### **5.3.1 Recommendations for Practice.**

This research advocates the parastatals to adopt the concept of educating their suppliers on, the importance of using electronic record keeping to ensure easy access to their suppliers' information for relevant information sharing about their potential suppliers and their capacity to meet their requirements.

This study recommends the parastatals collaborate with the suppliers to enhance systems compatibility. This will enable both parties to automatically generate reports and analysis of their inventory and reports. This will ensure that the suppliers can replenish the company's inventory to ascertain customers, employees and the public, are satisfied.

The study further recommends the inclusion of virtual questionnaires in their capabilities to gather appropriate and up-to-date information and also incorporate e-supplier management practices for it to contribute to their organizations' performance.

### **5.3.2 Recommendation for Policy**

Provide policy guidelines for use of blockchain technology to not only improve the authentication of transactions but also in gathering and accessing relevant and up-to-date information.

They should also provide procedures to leverage their e-procurement capabilities to enable automated selection and evaluation of suppliers to reduce time wastage and manage costs.

They should also provide the standards for managing electronic records of suppliers from collection to storage and retrieval

### **5.3.3 Recommendations for Future Study**

This study centred on Parastatals confined within Nakuru County. A similar study can be done on private institutions, other state corporations and suppliers in different counties to find out whether similar results will be attained. This will provide a broad spectrum of outcomes, especially from private institutions whose procurement practices are not confined within the Public Procurement Asset and Disposal Act (PPADA) and thus more insight into suppliers and their interactions with buyer company's structures can be obtained. This research also recommends that other aspects of e-supplier management, such as eSRM, e-contacts management, e-supplier selection and e-supplier monitoring be researched.

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## **APPENDICES**

## **APPENDIX 1: LETTER TO RESPONDENTS**

WANJIKU NYOKABI RUTH,  
MURANGA UNIVERSITY OF TECHNOLOGY,  
P.O BOX 75-10200,  
MURANG'A, KENYA.

July, 2021

Dear Respondent,

This letter is to request you help me obtain data to facilitate my study titled: Integration of E-Supplier Management and Organizational Performance in Parastatals in Nakuru County by filling out the questionnaire attached.

The information you voluntarily provide will be treated with utmost confidentiality as the final results will be communicated in a general manner. Thanking you in advance for your cooperation and I am looking forward to your positive feedback.

Yours faithfully,

Wanjiku Nyokabi Ruth BE401/5071/2019

Cell numbers: 0703828007/0774277212

Student at Murang'a University of Technology, Kenya

## APPENDIX 2: QUESTIONNAIRE

The purpose of this questionnaire is to collect data on the integration of e-supplier management and organizational performance on parastatals in Nakuru county, Kenya. The questionnaire is anonymous and the information given will be treated as confidential the results of the study will be used for academic research purposes only.

Kindly respond to the questions as truthfully as possible by ticking where it is most suitable.

### SECTION A: BACKGROUND INFORMATION

Please tick where appropriate

The company, you work

Kenya Power and Lighting Company

National Social Security Fund

Postal Corporation of Kenya

County Government of Nakuru

National Hospital Insurance Fund

Job Title of respondent \_\_\_\_\_

Division/Department \_\_\_\_\_

Age of respondents

18-25  26-33  34-41  41-48  Above 49

Highest level of education background

PhD  Master's Degree  Undergraduate Degree  Higher   
Diploma

Diploma  Certificate  A-levels  O-level

Level of experience in the respective field

Below 1 year  2-5 years  6-9 years  above 10 years

### SECTION B: INTEGRATION OF E-SUPPLIER MANAGEMENT

Please tick where appropriate: Strongly Agree (5), Agree (4), Neutral (3), Disagree (2), Strongly disagree (1). To what extent do you agree with the following statements in your company?

E-SUPPLIER MANAGEMENT	EXTENT				
	Strongly Agree	Agree	Neutral	Disa gree	Strongly disagree
<b>E-Information Sharing</b>					

Collect information from suppliers through a virtual administered questionnaire					
Online access to supplier catalogues					
Online access to suppliers' capabilities (Financial, Operational, Quality)					
Online access to suppliers' references and reviews from previous clientele					
The company and suppliers get access to real-time information					
<b>E-Tendering</b>					
Suppliers can register online as company suppliers					
Supplier eligibility and screening are done online					
The system automatically evaluates suppliers for selection					
Supplier selection criteria are automated					
<b>E-payments</b>					
Payments can be done through mobile payments					
The supplier can automatically self-bill online					
The supplier can Electronically transmit a cheque to the company bank account					
Suppliers and companies can exchange invoices electronically					
The company uses blockchain technology to authenticate transactions with suppliers					
<b>E-Point of Sale</b>					
The company can generate and access supplier performance reports from the cloud server					
Electronic Fund Transfer Reduces trips to the banks					
The company provides procurement cards for suppliers					

The company uses EPOS to track its inventory					
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What are some of the other methods of electronic payments that your firm uses?

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What are some of the benefits your organization has accrued from using the following?

E-tendering to select a supplier

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Electronic sharing of information to gather information about the prospective suppliers

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E-Point of Sale for report and receipt generation

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Electronic methods of payment

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**SECTION C: ORGANIZATIONAL PERFORMANCE**

Please tick where appropriate: Strongly Agree (5), Agree (4), Neutral (3), Disagree (2), Strongly Disagree (1). To what extent do you agree with the following statements in your company?

ORGANIZATIONAL PERFORMANCE					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
<b>Efficiency</b>					
The amount of paperwork has been reduced considerably					
The time taken to process bids has reduced					
All of the supplier activities (selection, Evaluation, pre-qualification) have been automated					
Performance reports are cloud generated/ online and automatically generated					
<b>Effectiveness</b>					
Supplier disputes and appeals are reduced					
A competitive number of suppliers participate in the tendering process					
The quality of products and services offered is high					
Automation has freed up time for departments to focus on strategy					
<b>Cost-saving</b>					
There is room for price negotiations with suppliers					
The company can get discounts from suppliers					
Automation has significantly reduced the cost of paperwork					

What are some of the other ways your organization has reduced costs by managing suppliers?

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What are some of the challenges that your firm has experienced in the use of the internet in conducting supplier management initiatives

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**Thank You for Your Participation**

### APPENDIX 3: NACOSTI RESEARCH PERMIT

  
**REPUBLIC OF KENYA**

  
**NATIONAL COMMISSION FOR  
SCIENCE, TECHNOLOGY & INNOVATION**

Ref No: **170558** Date of Issue: **08/September/2021**

**RESEARCH LICENSE**



**This is to Certify that Miss., Ruth Nyokabi Wanjiku of Murang'a University of Technology, has been licensed to conduct research in Nakuru on the topic: INTEGRATION OF E-SUPPLIER MANAGEMENT AND ORGANIZATIONAL PERFORMANCE OF PARASTATALS IN NAKURU COUNTY for the period ending : 08/September/2022.**

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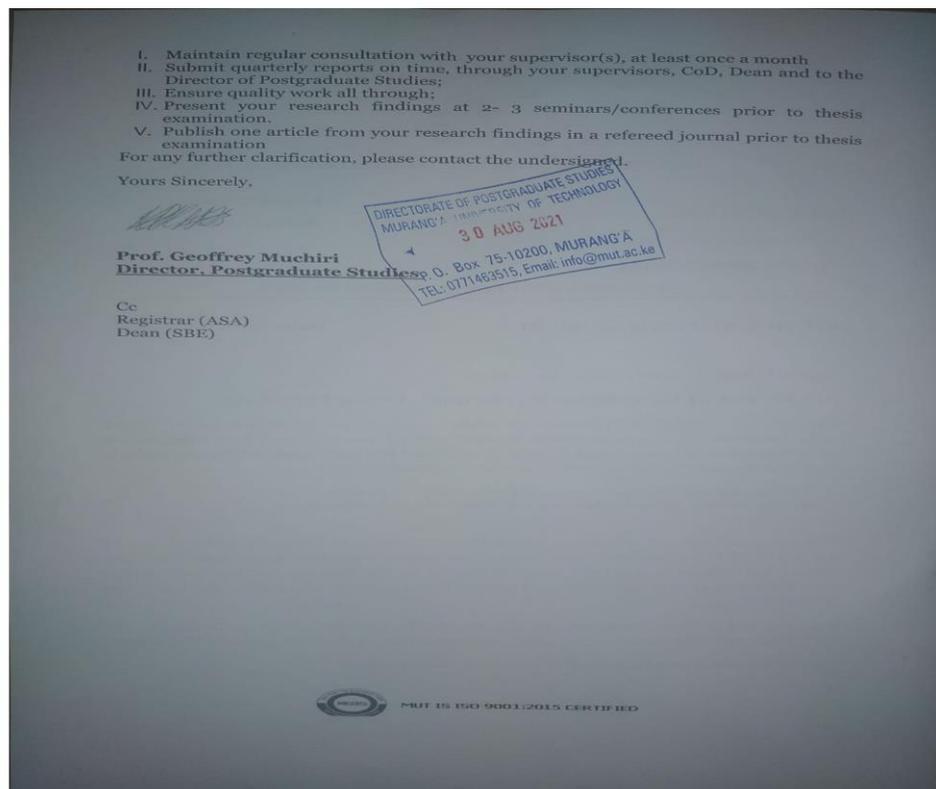
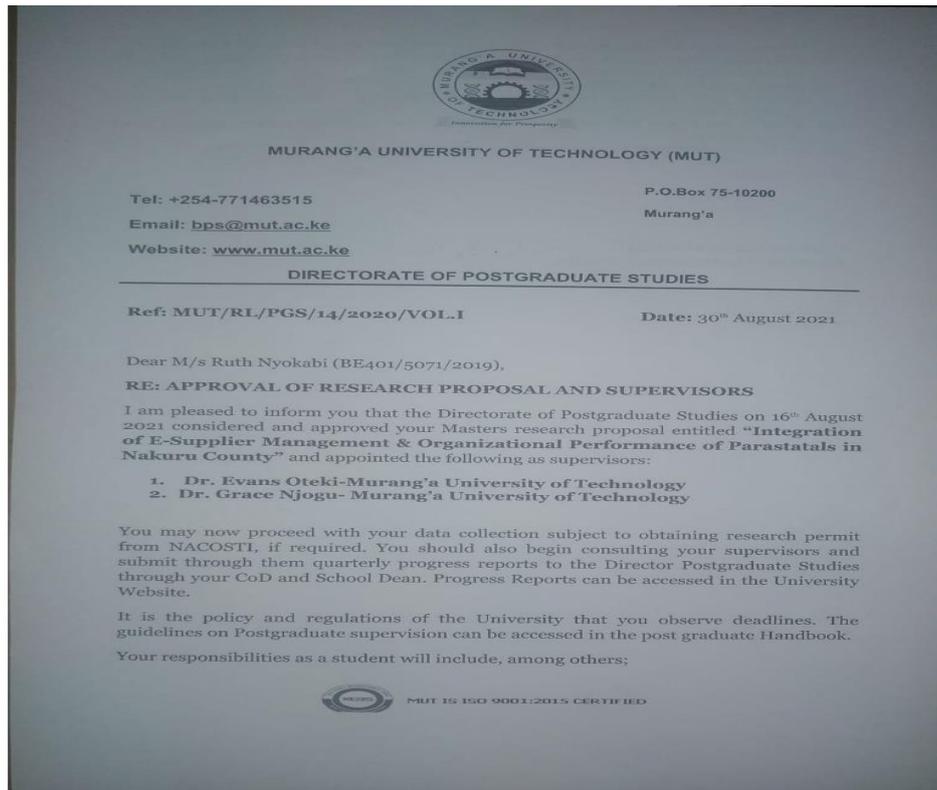
  
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## APPENDIX 4: INSTITUTIONAL RESEARCH



## **APPENDIX 5: RESEARCH PUBLICATIONS**

The following papers have been published from this thesis:

Ruth, N.W., Oteki, E. B. & Njogu G.W. (2021) Integrating Electronic Information sharing in Supply Chain for Organisational Performance of Parastatals in Nakuru County. *International Journal of Business and Management*, IX(9)

Ruth, N.W., Oteki, E. B. & Njogu G.W. (2021) E-supplier Payments and Organizational Performance, *A Conference Paper presented at the Murang'a 1<sup>st</sup> International Virtual Conference on Technology and Innovation for Sustainable Development.*