

**EFFECT OF E-PROCUREMENT ON PERFORMANCE OF THE PUBLIC SECTOR  
IN KENYA: A CASE STUDY OF THE MINISTRY OF DEVOLUTION AND  
PLANNING IN KENYA**

**By**

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## DECLARATION

This research project is my original work and has not been submitted for an award of a degree in any other University.

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## **DEDICATION**

I dedicate this study to my family who love and support me regardless.

## **ACKNOWLEDGEMENT**

I thank the Almighty God for granting me good health and for His grace throughout the entire course. I also wish to specially thank my supervisor Dr. Okonga for her effective supervision, guidance, availability and professional advice as I undertook this research project. My gratitude also goes to all the lecturers who taught me in the MBA Program for enriching my research with knowledge. My appreciation also goes to my family for taking the time out of their busy schedules to read, give suggestions and ask questions (Dad & Kaka) and their moral support (Ma' & Kija).

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## **ABBREVIATIONS AND ACRONYMS**

<b>B2B</b>	Business to Business
<b>CSFs</b>	Critical Success Factors
<b>EACC</b>	Ethics and Anti Corruption Commission
<b>IT</b>	Information Technology
<b>ICT</b>	Information and Communication Technologies
<b>IS</b>	Information Systems
<b>MODP</b>	Ministry of Devolution and Planning
<b>SPSS</b>	Statistical Package for Social Science
<b>US</b>	United States
<b>UK</b>	United Kingdom

## ABSTRACT

In a competitive and globalized operating environment, organizations need to keep abreast with new technological developments and leverage on them to meet their goals and objectives. Since the emergence of e-procurement in mid-1990s, organizations have tried to utilize it with a view of capitalizing on its benefits including cost reductions, process streamlining, improved contract compliance, increased efficiency among others. However many challenges still stand in the way significantly reducing the ability of the organizations to take full advantage of the value of e-procurement. The Kenya government through the National Treasury launched the use of e-procurement in government ministries with the aim of achieving greater transparency and accountability in the use of public funds. However the actual effect of e-procurement implementation on performance of the government entities remains largely untested empirically. This study sought to examine the effect of e-procurement on performance of the Public Sector in Kenya using a case of the Ministry of Devolution and Planning in Kenya. Specifically, the study sought to establish the effect of e-tendering, e-sourcing, e-invoicing and e-payment on performance of the Ministry of Devolution and Planning in Kenya. The study adopted a descriptive research design. The target population of the study was 118 staff working in the Procurement Department of the Ministry of Devolution and Planning in its headquarters in Nairobi. The study was a census survey. The study used primary data which was collected using a self administered questionnaire. In data analysis, the study data was analyzed through descriptive statistics using the Statistical Package for Social Science (SPSS version 23.0) and presented through percentages, frequencies, mean and standard deviation. Further, linear regression analysis was used to analyze the relationship between the study variables. The study results revealed that the study respondents agreed that e-tendering helped reduce the procuring period; e-tendering provided an effective audit trail of the procurement process; e-sourcing eliminated biasness and prejudice in supplier selection; e-sourcing had enhanced the level of competitive bidding; e-invoicing can lead to improved supplier/customer relationships; e-invoicing can lead to improved visibility of procurement dealings; e-payments were harder to manipulate leading to lesser financial improprieties and that e-payments enhanced the level of accountability in procurement payments. The study concluded that e-tendering, e-sourcing, e-invoicing and e-payment as e-procurement practices played a significant role in enhancing the organizational performance of the Ministry of Devolution and Planning in Kenya. The study recommended that the Ministry of Devolution and Planning in Kenya, and other Government Ministries and Departments by extension, should adopt a holistic approach in reforming their procurement processes that will not only be limited to automation of the of the various procurement aspects but also building the capacity of their staff and suppliers on how to work with the various e-procurement platforms.

## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background of the Study**

Supply chain management has become an essential prerequisite to remain competitive in today's globalized operating environment for both profit-making and governmental corporations and entities. As the world's economy becomes increasingly competitive, sustaining competitiveness and enhancing one's organizational performance depends less on price setting but on the ability to create and sustain meaningful interactions with the various stakeholders and particularly, suppliers and consumers (Amani, 2015). These competitive dimensions cannot be delivered without an effectively managed supply chain. Procurement function is an essential part of the supply chain management activities and its significance to the success of modern day entities is seen in its recognition as one of major issues in corporate management over the past few decades (Smart & Harrison, 2013). According to Zaheer, Mushtaq and Hafiz (2016), almost 70% of a firm's total revenues, on average, are spent on procurement-related activities and as such the procurement function forms a major area of concern for any organization in its efforts to enhance its organizational performance.

To proactively manage the overall performance of the procurement function, firms need to know more than inventory positions, deliveries dates and fill rates. They must understand the impact of procurement decisions on the total firm cost or cash flow and using this knowledge to attempt to optimize the effectiveness and efficiency of procurement function for better organizational results (Rodin-Brown, 2012). The advent of the internet has made a significant change in performance of modern procurement functions. The role of procurement and the manner in which it is performed has changed considerably due to advancement in

Information and Communication Technologies (ICT) and Information Systems (IS) (Shalle, Guyo & Amuhaya, 2013). With this, the focus has become to leverage the competitive advantages of the internet and related technologies in firm's procurement activities. Thus, e-procurement is a phenomenon that started in the developed economies following the invention of the Internet but which due to the rapid spread of the internet has been increasingly adopted in all the parts of the globe including in the developing countries (Stephen & Helen, 2015). E-procurement is among the supply-side activities that have been identified as a key area where IS enabled innovations are likely to yield significant benefits for organizations (European Commission, 2012).

Globally, studies conducted in the developed world countries on e-procurement adoption identified country differences in e-procurement adoption. Findings by Presutti (2013) and Trekman and McCormack (2014) showed that firms from countries with a low uncertainty avoidance such as Germany, US and the UK were the early adopters of e-procurement, while countries that were more reluctant to change such as Spain, Netherlands and France had lower adoption rates. The global perspective of e-procurement adopted from the Transparency International Report of 2016 indicates that e-procurement has helped most of the developed and semi-developed countries such as Brazil and India in effectively managing their purchasing decisions (Prasad, 2014). Cummings, Bridgman and Brown (2016) observed that e-procurement in the Netherlands and France had improved the functions of the public sector to a great extent since all the government payments were being done online. Davenport (2013) argues that e-procurement was the route to go in Singapore as it had helped them save great costs in the public sector which had been reinvested in the economy and helped them compete globally.

Miranda and Keefe (2015) studied e-procurement in Turkey. They observed that in many cases within an organization, compliance and maverick spending is a significant issue, not because employees deliberately purchase outside of preferred arrangements, but rather through lack of awareness. E-procurement addresses this through tools such as catalogs and standard order processing and approval processes. Further, Prasad (2014) studied e-procurement in India. He noted that the fact that key information (cost center, commodity codes, etc.) is hard coded against the user dramatically reduces coding errors and provides highly detailed and easily accessible data. According to Rodin-Brown (2012) who studied e-procurement in Oslo, Norway, it is essential to maximize the financial benefits of strategic sourcing. A successful e-procurement implementation provides high quality, detailed management information and will negate the need for data ware-housing or resource-heavy data mining (Rodin-Brown, 2012).

However, studies in most African countries, Kenya included, indicate that the adoption of e-procurement system is still in the early stages and more efforts are required for its full implementation (Agaba, 2013; Adebayo & Evans, 2015). Chipiro (2014) argued that the full benefits of e-procurement have not yet been realized in most of the African countries due to general limited understanding of how e-procurement systems generally works within government environment and other problems such as poor information sharing between purchasers and suppliers, low levels of automation, adversarial supplier-buyer relationships and non-responsive supply chain integration. While various local studies have attempted to review the impact of e-procurement on organizational performance in various sectors of Kenya's economy (such as Avedi (2016) – manufacturing firms, Karanja (2015) - banking, Karani (2016) - energy), it was clear that there was paucity of empirical studies touching on

the effect of e-procurement on the performance of the public sector in Kenya and this was the motivation behind the current study.

Locally, there have been various developments in public procurement and disposal which had for long been challenged by a lack of a clear legal framework and inefficiencies in the entire process of procurement (Njuki, 2015). A process of continuous reforms on procurement in the public sector in Kenya since the late 90's has resulted in a better regulated public procurement process through the Public Procurement and Disposal Act (2005), The Public Procurement and Disposal Regulations (2006) and the Suppliers Practitioners Management Act (2007). The regulations have created several autonomous bodies that also form part of the developments of the public procurement system in Kenya over the years (Shalle *et al.*, 2013). Part of the recent developments in the Government procurement system has been the adoption of the Integrated Financial Management Information System (IFMIS) since the year 2005 as its sole accounting and resource management system. The Government uses IFMIS for several initiatives including Electronic Payment System, e-Government Receipt Accounting System, State Public Procurement Portal among others (Kahari, 2015).

### **1.1.1 E Procurement**

E-procurement can be defined as the use of Internet-based integrated Information and Communication Technologies (ICTs) to conduct each or all stages of the procurement process including search, sourcing, negotiation, ordering, receipt, and post-purchase review (Croom & Brandon-Jones, 2017). On their part, Miranda and Keefe (2015) defined e-procurement as a Business to Business (B2B) IT application that utilizes internet capabilities to carry out various procurement functions such as requisition, approval, catalogue, control,

receiving and payment processes. Vaidya (2016) argued that e-procurement allows the smooth buying and transfer of goods and services by organizations through the use of ICT based platforms. As such e-procurement is an electronic process by means of which goods and services can be exchanged. The e-procurement application can therefore be viewed more broadly as an end-to-end solution that integrates and streamlines many procurement processes throughout the organization (Prasad, 2014).

E-procurement can be grouped into various constructs which include: *e-tendering* which involves sending requests for information and prices of desired goods and services to suppliers and receiving the suppliers' responses using Internet technology; *e-sourcing* which entails pinpointing of fresh suppliers for a particular class of an organization's purchasing needs via the web-based technology; *e-invoicing* which is a form of electronic billing and which allows trading partners, such as customers and their suppliers, to present and monitor transactional documents between one another and ensure that the terms of their trading agreements are being met and *e-payment* which entails paying for goods and services delivered via electronic means (Mohammed, 2015). These four constructs of e-procurement formed the study variables.

The rationale for adoption of e-procurement systems can be seen in the wide range of benefits they can contribute to government agencies in their procurement function. Such benefits include eradication of massive corruption in government procurement, reduction of financial wastage by enhancing the procurement unit's operational performance, establishing of good procurement controls, reduced lead time and procurement costs and enhanced transparency and accountability in procurement dealings (Rodin-Brown, 2012). Other benefits of adoption

of e-procurement include better supplier-buyer relations, increased efficiency and effectiveness in procurement function, ability to easily track orders and supplies, reduced paper work, increased staff productivity, timeliness in delivery of supplies and flexibility in procurement (Vaidya, 2016).

The need to develop standard procurement documentation, the need to enhance compliance with procurement regulations, the desire to save procurement-related costs, the need to enhance visibility of an entity's procurement spend and the need to enhance staff productivity were identified as the drivers behind adoption of e-procurement systems in most of the government institutions (Shalle *et al.*, 2013). Presutti (2013) identified the need to concentrate on more added value activities than mere operational purchasing, the need to reduce the cost of the purchasing process and the need to enforce compliance to purchasing contracts as the drivers for adoption of e-procurement systems. Similarly, Smart and Harrison (2013) considered enhanced procurement decision making, shortened procurement cycle times, improved market intelligence and increased accuracy of purchases as the drivers for adoption of e-procurement systems.

### **1.1.2 Organizational Performance**

Organizational performance refers to the degree to which a firm's objectives are being or have been accomplished. Organizational performance also refers to a measure of how well a firm uses its resources to meet its goals and objectives (Olagunju & Obademi, 2012). It is the process of measuring the actual results of a firm's policies and operations against its set goals and objectives. Organizational performance is used to measure firm's overall financial and non-financial well-being over a given period of time and can also be used to compare similar

firms across the same industry or to compare industries or sectors in aggregation (Parmenter, 2015). According to Austin (2013), the success of an organization is gauged from several indicators both qualitative and quantitative. These include: financial performance, meeting customer needs, building quality products and services, encouraging innovation and creativity and gaining employee commitment. The extent to which an organization succeeds in these areas determines its performance.

The organizational performance construct is probably the most widely used dependent variable in organizational research yet it remains vague and loosely defined. The focus of attention in performance has been mainly on financial measures but some scholars have proposed a broader performance construct of 'business performance' to incorporate non-financial measures such as market share, customer satisfaction and new products among others (Yanan, Hamza & Basit, 2016). Austin (2013) proposed four possible types of measurement for organizational performance namely: outcomes (turnover, absenteeism, job satisfaction); organizational outcomes (productivity, quality, service); financial accounting outcomes (return on assets, profitability) and capital market outcomes (stock price, growth, returns). Bennett, Lance and Woehr (2014) described organizational performance measurement as a process of assessing progress towards achieving pre-determined goals including information on the efficiency with which resources are transformed into goals and services, the quality of those outputs and outcomes, and the effectiveness of the organizational operations in terms of their specific contributions to organizational objectives.

### **1.1.3 Public Sector in Kenya**

The Kenya National Government is authorized to act based on the legal constitution in ensuring the protection and socio-economic wellbeing of all Kenyan citizens. The National Government is structured into Ministries which are headed by cabinet secretaries and supported by their principal secretaries. Each Ministry is in-charge of various government departments and agencies that fall within its portfolio. Currently, the National Government in Kenya consists of 20 ministries covering all the key socio-economic sectors of the country. The Ministries' mandate is to formulate various policies which are aimed at promoting the socio-economic advancement of the country in all the Government Sub-Sectors (GoK, 2014). Among the 20 Government Ministries, the Ministry of Devolution and Planning (MODP) is core especially given the fact that it houses all the 47 County Governments in Kenya and therefore provides a crucial link between the National Government and the County Governments on all matters of national interest (Ndiiri, 2016).

The mandate of the Ministry of Devolution and Planning in Kenya broadly covers issues of economic planning and development, devolution, public service management, youth, gender and special programmes. In addition the mandate of the Ministry includes the functions of various affiliated parastatals, Semi-Autonomous Government Agencies, Commissions and Independent Offices. Some of the notable functions of the Ministry include capacity building and technical assistance to the counties; co-ordination of inter-governmental relations and devolution; coordination of youth, gender and special interests; implementation of special programmes and initiatives; national development planning and youth mainstreaming in national development. To achieve its mandate the MODP has a huge expenditure outlay that is performed within its Procurement Division using the e-procurement financial model (GoK,

2015). As such it was imperative to review the effect of e-procurement on the Ministry's performance and this was the focus of the current study.

## **1.2 Statement of the Problem**

There is increased determination in the world to enhance the quality of public financial management among both developed and developing countries and the use of e-procurement systems has emerged as one of the leading techniques of enhancing the operational effectiveness and efficiency within the procurement function (Hendriks, 2012). As a management tool e-procurement enables government entities to control aggregate spending and deficit, prioritize expenditure across policies, programmes and projects to achieve efficiency, prudence and equity in allocation of resources, to achieve outcomes and produce outputs at the lowest possible cost and to enhance transparency and accountability in utilization of public resources (Croom & Brandon-Jones, 2017).

However, despite their prominence, existing evidence from various empirical studies seems to suggest that e-procurement has mixed results with regard to its effect on organizational performance (Karani, 2016). For instance studies by Vaidya (2016) in Australia, Mohammed (2015) in Egypt, Makafui and Ackah (2015) in Ghana and Avedi (2016) in Kenya reported a positive relationship between e-procurement and firm's financial performance. However, studies by Agaba (2013) in Uganda, Chipiro (2014) in Zimbabwe and Mutuku (2016) in Kenya reported a negative relationship between e-procurement and firm's organizational performance while studies by Shalle *et al.* (2013) in Kenya and Prasad (2014) in India reported no significant changes in firm's organizational performance following implementation of e-procurement.

The MODP is a unique Ministry in the Government of Kenya because it houses all the 47 County Governments which is the largest number of departments/agencies under a Ministry of Government in Kenya. As such it is one of the major Ministries of the Government of Kenya. In the recent past, the MODP have been on the spot over financial management malpractices that have led to the loss of billions of taxpayers' money such as not being able to account for close to Kshs. 2.15 billion for the 2014/2015 financial year (Report of the Auditor-General, 2014/2015), the NYS scam involving over Kshs. 791 million and a financial scandal of over Kshs. 200 million in the Youth Enterprise Development Fund with a significant of these financial malpractices being apportioned to the Ministry's Procurement division (EACC, 2016). This clearly showed that, despite the Government's sustained efforts in the area of public financial reforms in order to boost transparency, efficiency and effectiveness in public expenditure, it was still apparent that the implementation of e-procurement programme in the MODP fell short of expectations. The National Government expectations in implementing e-procurement systems were tightening of financial controls. This would have abated the runaway financial malpractices in Government Ministries and Departments. However, the paradox is that MODP has been cited for massive financial irregularities in spite of implementation of e-procurement.

Local studies done on e-procurement and organizational performance include Amin (2012) and Chepng'etich (2016) - state corporations, Avedi (2016) – manufacturing firms, Karanja (2015) - banking, Barngetuny and Kimutai (2015) and Ndiiri (2016) – county governments in Kenya. No local study had focused on the effect of e-procurement on the performance of the MODP. To fill this existing research gap, the current study sought to determine the effect of e-procurement on performance of the Ministry of Devolution and Planning in Kenya.

### **1.3 Research Objectives**

The study sought to examine the effect of e-procurement on performance of the Public Sector in Kenya using a case of the Ministry of Devolution and Planning in Kenya. The following were the specific objectives;

- i. To establish the effect of e-tendering on performance of the Ministry of Devolution and Planning in Kenya
- ii. To determine the effect of e-sourcing on performance of the Ministry of Devolution and Planning in Kenya
- iii. To examine the effect of e-invoicing on performance of the Ministry of Devolution and Planning in Kenya
- iv. To determine the effect of e-payment on performance of the Ministry of Devolution and Planning in Kenya

### **1.4 Research Questions**

The study was guided by the following research questions:

- i. What is the effect of e-tendering on performance of the Ministry of Devolution and Planning in Kenya?
- ii. What is the effect of e-sourcing on performance of the Ministry of Devolution and Planning in Kenya?

- iii. What is the effect of e-invoicing on performance of the Ministry of Devolution and Planning in Kenya?
- iv. What is the effect of e-payment on performance of the Ministry of Devolution and Planning in Kenya?

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

The study is of benefit to the management in the Ministry of Devolution and Planning in Kenya as it would be able to appreciate the effects of e-procurement on the Ministry's performance. This may in turn inform the kind of strategic decisions the management may need to make to ensure effective application of e-procurement in the Ministry.

The findings of this study may also benefit the policy makers (that is, the government) by providing insights as to the role of e-procurement on the performance of the Kenyan Public Sector. This may in turn inform policy formulation and development of necessary interventions to govern application of e-procurement in Government Ministries and Departments.

E-procurement is not unique to the Public Sector in the country and therefore other corporate organizations in Kenya's Private Sector may benefit from this study as it highlights the significance of e-procurement on their organizational performance. This may in turn inform their strategic decisions regarding the application of e-procurement.

This study adds to the existing field of knowledge about the effect of e-procurement on organizational performance and therefore provides other scholars and academicians with a basis for further research on the subject.

## **1.6 Scope of the Study**

This study was limited to the Ministry of Devolution and Planning in Kenya as the study unit with the Ministry's staff as the study respondents. E-procurement was the study's independent variable while organizational performance was the study's dependent variable. Specifically, the study focused on e-tendering, e-sourcing, e-invoicing and e-payment as the constructs of e-procurement.

## **1.7 Delimitation of the Study**

The study was restricted to the Ministry of Devolution and Planning in Kenya as the study unit and therefore did not cover the other Government Ministries in Kenya. This choice was made based on the argument that application of e-procurement in government agencies in the country is a highly standardized procedure and thus use of a single Ministry was appropriate to reflect the general status of e-procurement in Kenya's public sector. The study variables included e-tendering, e-sourcing, e-invoicing and e-payment as the independent variables while organizational performance was the dependent variable. The study population was the staff working in the Procurement Department of the Ministry of Devolution and Planning in its headquarters in Nairobi.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter presents the theoretical framework of the study, empirical review based on the study objectives, conceptual framework of the study and operationalization of study variables.

### **2.2 Theoretical Review**

This section includes a review of theories that guided the study. The study was guided by four theories namely; Resource Based View Theory, Technology Acceptance Model Theory, Unified Theory of Acceptance and Use of Technology and Kurt Lewin's Three Step Change Theory. The theories are as described in the subsequent subsections.

#### **2.2.1 Resource Based View Theory**

The Resource Based View (RBV) theory can be traced back to the work of Birger Wernerfelt in 1984. However, elements of the RBV theory can be found in earlier research work by authors such as Coase in 1937, Selznick in 1957, Penrose in 1959, Stigler in 1961, Chandler in 1962 and Williamson in 1975 where emphasis was put on the importance of firm resources and its implications to firm performance (Armstrong & Taylor, 2014). The RBV theory argues that organizations should not try to achieve strategic fit with the external environment but aim to maximize their internal resources to create and dominate future opportunities (Saqib & Rashid, 2013). The theory's central proposition is that if a firm is to achieve a state of sustained competitive advantage, it must acquire and control valuable, rare, inimitable and non-substitutable resources and capabilities (Peteraf & Barney, 2012). Within this theory IT

applications are viewed as an investment and not a cost and their use in organizations is encouraged with a view of enhancing organizational performance (Wright, Dunford & Snell, 2014).

This theory therefore assumes that an organization's Information Technology resources are unique and inimitable and that they can generate a competitive advantage for the organization if effectively harnessed (Saqib & Rashid, 2013). Avedi (2016) argued that a resource based view approach to an organization's ICT competencies and capabilities focuses on helping the organization to leverage on such resources in a manner that its competitors cannot and hence enabling such an organization to attain a competitive edge. Wright *et al.* (2014) suggested that an organization's investments in IT based platforms constituted an important non-imitable resource and this is achieved by ensuring that; - the firm acquires better IT resources than its competitors, organizational learning is encouraged and the unique intellectual capital possessed by the business is developed and nurtured.

Critiques of this theory argue that the effectiveness of the resource based view approach is inextricably linked to the external context of the firm and that the resource based view approach provides more value when the external environment is less predictable. Other critiques have argued that the theory's valuable, rare, inimitable, and non-substitutable proposition is neither necessary nor sufficient for a firm's sustained competitive advantage (Armstrong & Taylor, 2014). This theory is relevant to the current study given that e-procurement is a valuable tool that if effectively utilized can enhance the organizational performance of public agencies through reduction of public procurement malpractices,

reduced costs in future procurement processes and increased efficiency and effectiveness in the public procurement process.

### **2.2.2 Technology Acceptance Model Theory**

The Technology Acceptance Model (TAM) was developed by Davis in 1989. This model relates the individuals' behavioral intentions and his/her ICT use. It is suggested that, the actual behavior of a person is determined by his behavioral intention to use, which is in turn influenced by user's attitude toward and perceived usefulness of the technology. However attitude and perceived usefulness are both determined by ease of use (Chuttur, 2012). The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it, and most notably perceived usefulness which is the degree to which a person believes that using a particular system would enhance his or her job performance. Adopting the TAM model requires the understanding of end-users requirements regarding usefulness and user friendliness (Chuttur, 2012).

From this model, usefulness and user friendliness affect users' attitudes towards adoption of any service (Davenport, 2013). Davis thus suggests that it is important to value user requirements based on perceived usefulness and the user friendliness of the technology rather than other objective measure. Critiques of this model are directed to its inclination to the technological/technical aspects of the technology in question ignoring other factors such as social aspect of the users. In practice, constraints such as limited ability, time, environmental or organizational limits and unconscious habits will limit the freedom to act (Olumide, 2016).

The Technology Acceptance Model has been widely criticized, despite its frequent use, leading the original proposers to attempt to redefine it several times. Criticisms of TAM as a "theory" include its questionable heuristic value, limited explanatory and predictive power, triviality, and lack of any practical value, as for revenue system, its practical means .i.e. as per this research taxation is an integral part of countries' development policies, interwoven with numerous other areas, from good governance and formalizing the economy, to spurring growth through, for example, promoting activities such as export activities system for revenue collections (Chuttur, 2012). Davenport (2013) suggests that TAM "has diverted researchers' attention away from other important research issues and has created an illusion of progress in knowledge accumulation. This theory is relevant to the current study given that e-procurement systems are ICT supported and hence automation is at the epicenter of modern day procurement processes. This theory thus provides an appropriate framework of understanding the adoption of e-procurement systems in the local public sector.

### **2.2.3 Unified Theory of Acceptance and Use of Technology**

The Unified Theory of Acceptance and Use of Technology (UTAUT) is a technology acceptance model formulated by Venkatesh and others in "User Acceptance of Information Technology: Toward a Unified View" in 2003. The UTAUT aims to explain user intentions to use an information system and subsequent usage behavior. The theory holds that there are four key constructs: 1) performance expectancy, 2) effort expectancy, 3) social influence, and 4) facilitating conditions. The first three are direct determinants of usage intention and behavior, and the fourth is a direct determinant of user behavior (Hanifi & Ali, 2017). The theory was developed through a review and consolidation of the constructs of eight models that earlier research had employed to explain information systems usage behaviour (which

were, theory of reasoned action, technology acceptance model, motivational model, theory of planned behavior, a combined theory of planned behavior/technology acceptance model, model of personal computer use, diffusion of innovations theory, and social cognitive theory) (Maira, 2013).

The first three constructs are defined as follows: *performance expectancy* is defined as the degree to which the user expects that using the system will help him or her attain gains in job performance. This construct has five root constructs: perceived usefulness (from TAM/TAM2, Combined TAM and TPB), extrinsic motivation (from the Motivational Model), relative advantage (from the Innovation Diffusion Theory), and outcome expectations (from the Social Cognitive Theory); *effort expectancy* which is the degree of ease associated with the use of the system and *social influence* which is the degree to which an individual perceives that important others believe that he or she should use the new system. *Facilitating conditions*, on their part, are defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system (Venkatesh, Thong & Xin, 2016).

Critiques of this theory point that while UTAUT is a well-meaning and thoughtful theoretical presentation, on the flip side it presents a model with too many independent variables for predicting intentions (that is, 41 in number) and at least 8 independent variables for predicting behavior and as such it contributed to the study of technology adoption “reaching a stage of chaos.” The critiques have proposed instead a unified theory that coheres the “many splinters of knowledge” to explain technology adoption decision making (Yogesh *et al.*, 2017). With respect to the current study, this theory suggests that performance expectancy,

effort expectancy, social influence and facilitating conditions provide a viable platform for e-procurement use in government agencies. Studies done by Njuki (2015) and Karani (2016) on implementation of e-procurement practices pointed that when employees are given a clear signal from the senior management about the importance of the IT application to succeed and also receive considerable support in terms of necessary training and required changes necessary for business process, their willingness to accept the IT platforms increases.

#### **2.2.4 Kurt Lewin's Three Step Change Theory**

Kurt Lewin theorized a three-stage model of change that is commonly referred to as the unfreezing-change-refreeze model in 1951. Lewin, a social scientist, viewed behavior as a dynamic balance of forces operating in opposing directions. As pointed out by Lewin, the first step within the process of changing behavior is to “unfreeze” the status quo-the equilibrium of society (Palmer, Dunford & Akin, 2014). Unfreezing is essential because it removes inertia to change and group conformity. There are 3 ways to successful unfreezing: (a) increasing the driving forces that direct behavior away from the status quo; (b) decreasing the restraining forces that negatively hinder movement from the existing equilibrium and; (c) finding a combination of the two methods. This can be done through activities such as motivation of participants by preparing them for change, trust building and appreciation of the need to change, active engagement in recognizing problems and group focused determination of solutions through brainstorming (Burnes & Cooke, 2013).

The second step of changing behavior is movement according to Lewin is moving the target system to a new equilibrium level. The movement step can be achieved in three steps such as: persuading employees to depart from the status quo and to view the problem from another

perspective and work together for new and relevant information and to link with the views of the group to powerful and respected leaders who also support the desired change (Cummings, Bridgman & Brown, 2016). The third and last step in Lewin's theory is called "refreezing". In this step is necessary since it promotes sustainability of the change once it has been realized. This is important since employees may revert to the old status quo. This step can be realized through integration of the new values into the existent values and traditions of the organization. Lewin's third step can also be used to reinforce new patterns and institutionalize them through formal and informal mechanisms including policies and procedures (Burnes & Cooke, 2013). This theory is relevant to the current study given that adoption of e-procurement in government agencies requires effective change management policy as the agencies move from the use of manual systems in procurement to use of automated systems in procurement. As such necessary interventions have to be made to ensure the shift addresses all the concerns of the users of the procurement function within the government agencies.

## **2.3 Empirical Review**

This section includes a review of past studies in relation to the effect of e-procurement on organizational performance. The section is structured based on the study objectives and therefore includes sections on e-tendering, e-sourcing, e-invoicing and e-payment and their effect on organizational performance.

### **2.3.1 E-Tendering and Organizational Performance**

Adebayo and Evans (2015) reviewed the adoption of e-procurement systems in Developing Countries using a Nigerian Public Sector Perspective. The study results revealed that majority

of procurement professionals operating in Nigerian public sector organisations had not received sufficient training in the use of e-procurement systems. In another study, Makafui and Ackah (2015) evaluated the role of e-procurement on the improvement of organisational operations of Coca Cola Company limited in Ghana. The study findings revealed that e-procurement did not have a significant impact on the Coca Cola Company in Ghana. Further still, Amani (2015) sought to establish the effect of e-tendering as an e-procurement practice on the organizational performance of Applied Technology Company in Dar es Salaam. The study established a significant positive relationship between use of e-tendering as an e-procurement practice and organizational performance of Applied Technology Company.

In Kenya, Wanyonyi (2015) focused on the effects of information technology on performance of procurement function in public technical training institutions in Kisumu County. The study findings revealed that information technology, ethics and staff competency had a significant positive effect on the performance of the e-procurement function among the technical training institutions in the county. Also, Amani (2015) assessed the effects of e-procurement in enhancing project performance among private sector organisations in Tanzania. The study discovered that e-tendering had no significant effect on the cost of procuring goods even though all the processes were automated. Further, Chirchir (2015) studied the relationship between e-procurement adoption and supply chain management practices in Tea Firms in Kenya. The results indicated that e-tendering had enhanced transparency in purchasing the farm inputs and had therefore saved on costs.

Also, Miranda and Keefe (2015) studied e-procurement in Turkey. Their findings were that E-procurement addressed compliance and maverick spending through tools such as catalogs

and standard order processing and approval processes thus it significantly positively affected organizational performance. Further, Prasad (2014) studied e-procurement in India. He noted that the fact that key information (cost center, commodity codes, etc.) is hard coded against the user dramatically reduces coding errors and provides highly detailed and easily accessible data. This therefore had a positive significant effect on organizational performance in that the tendering and payment data had been consolidated and was easily accessible. According to Rodin-Brown (2012) who studied e-procurement in Oslo, Norway, a successful e-procurement implementation provides high quality, detailed management information and will negate the need for data warehousing or resource-heavy data mining. He found no significant effect on organizational performance. From the above review, it is clear that majority of the studies indicate that e-tendering positively influences organizational performance and thus the study hypothesis was:

*H<sub>01</sub>. E-tendering has no significant effect on performance of the Ministry of Devolution and Planning in Kenya.*

### **2.3.2 E-Sourcing and Organizational Performance**

Kajewski (2014) studied e-tendering: benefits, challenges and recommendations for practice in Australia in the public sector. He observed a positive significant effect of e-sourcing on organizational performance in that it reduced the cost of doing business and delivered services that were more efficient to the community. Also, Agaba (2013) studied E-procurement and performance of Service Organizations in Uganda. The study results revealed a positive significant effect with organizational performance in that both organizational and sociological effects played a significant role in adoption of e-sourcing in the sampled

organizations. However, Amin (2012) who studied electronic procurement and organizational performance among commercial state corporations, found no effect of e-procurement on organizational performance in that e-sourcing had not necessarily led to improved services in these organizations.

Also, Vaidya (2016) tried to develop a model of the Critical Success Factors (CSFs) likely to impact the success of e-procurement initiatives in the Australian Public Sector. The study identified end-user training, system integration, system security, performance management, top management support, change management and supplier adoption as the CSFs that impacted on the success of e-procurement initiatives in the Australian Public Sector. Also, Shalle, Guyo and Amuhaya (2013) sought to investigate how customer service level on e-procurement strategy, procurement cost, inventory optimization on e-procurement strategy and buyer/supplier collaboration affected procurement performance in state Corporations in Kenya. The study found that customer service level on e-procurement strategy, procurement cost, inventory optimization on e-procurement strategy and buyer/supplier collaborations positively related to the procurement performance of state corporations in Kenya. Further, Chirchir (2015) sought to establish the influence of e-procurement adoption on partnership, information sharing and supply chain integration practices in tea firms in Kenya. The study found that e-procurement adoption positively influenced partnership ( $r=.554$ ), information sharing ( $r=.247$ ) and supply chain integration practices ( $r=.332$ ) of the selected Kenyan Tea Firms. The current study is different in that it seeks to evaluate the effect of e-procurement on the performance of the Kenyan Public Sector.

Another study Chepng'etich (2016) focused on the influence of strategic sourcing on organizational performance of state corporations in Kenya, using a case study of Kenya Power. The study revealed that supplier relationship management, early supplier involvement and contract management followed by supplier development had a great influence in the performance of Kenya power. Croom and Brandon-Jones (2017) studied the effect of e-procurement on performance in the UK companies. Hendriks (2012) evaluated the impact of e-procurement systems on organizational performance among companies in South Africa. He discovered that e-sourcing did not have a significant positive effect in that it did not facilitate supplier discovery, sourcing and supplier management, requisitioning, procurement, order receiving and contract management. This empirical review indicates that e-sourcing has a positive effect organizational performance and thus the following hypothesis was proposed:

*H<sub>02</sub>. E-sourcing has no significant effect on performance of the Ministry of Devolution and Planning in Kenya.*

### **2.3.3 E-Invoicing and Organizational Performance**

In his study, Karani (2016) sought to establish the influence of user training and uptake, top management, stakeholder interest and buyer/supplier integration on performance of e-procurement at KenGen. The study findings revealed that user training and uptake, top management, buyer-supplier integration and stakeholder interest had 69.8% significance on the performance of e-procurement system at KenGen with user training and uptake noted to have the least significance while stakeholder interest had the strongest significance. Also, Amin (2012) aimed to establish the extent to which the state corporations had adopted e-procurement and to find the effects of e-procurement on the performance of commercial state

corporations in Kenya. The findings established that e-procurement has led to cost reduction, improved transparency, and accountability in the operations of the commercial state corporations in Kenya. Further, Cheboi (2016) studied the factors affecting effective implementation of e-procurement systems by the county governments of Kenya. The study scope was five counties namely: Bomet, Kericho, Narok, Nyamira and Kisii. The study established that top management commitment, staff capacity, IT infrastructure and change management had a significant effect on adoption of the e-procurement systems in the selected counties.

In another study, Chipiro (2014) evaluated the impact of e-procurement on organizational performance in Zimbabwe. He found that e-sourcing did not significantly affect performance in that top management did not seem part of the process. The study concluded that it was important to make sure that the top management gave full support for the implementation of the e-procurement systems, staff capacity on use of the system is enhanced and that the change management process was well articulated and participative. Also, in a study to review best practices in fiscal reform and economic governance with regard to introduction of e-procurement systems, Rozner (2014) asserted that the most convenient method of overcoming change resistance with respect to use of new ICT systems is by ensuring that there is clear communication, education and training and also via 'quick wins' that demonstrate the benefits of the change. Similarly, Rodin-Brown (2012) in a study that aimed to discuss the best practices for designing and implementing e-procurement systems and how to implement them in developing and transitional countries concluded that top management commitment, change management, staff capacity and IT infrastructure must be addressed early in the needs assessment phase of e-procurement system implementation. Introducing

modern financial management systems demand a full commitment to change: change in technology, in processes and procedures, in skills, responsibilities and behaviors.

In their study to determine the impact of e-procurement on the improvement of organizations in Ghana, Makafui and Ackah (2015) did a case study of Coca Cola Company in Ghana. Their study revealed that e-sourcing did not have a significant impact on the Coca Cola Company in Ghana. Also, Darin (2011) studied strategic procurement in the public sector. He investigated the effect of e-sourcing on the performance of public institutions in Zambia. He observed that e-procurement is a multi-buyer, multi-supplier electronic procurement domain, which allows government agencies to function as independent buying entities under a single buying organization. This had greatly improved performance in the sector. Further, Croom and Johnston (2013) carried out a study on the impact of e-sourcing in the public sector in New York City. They discovered that e-sourcing had no effect on performance in that the level of compliance with e-procurement was strongly influenced by the general disposition of the organization as a whole to either electronic process redesign or the desire to gain perceived benefits from electronic procurement. From the above empirical review, it is clear that majority of the studies were of the view that e-invoicing has a positive effect on organizational performance and thus the following hypothesis was proposed:

*H<sub>03</sub>. E-invoicing has no significant effect on performance of the Ministry of Devolution and Planning in Kenya.*

### **2.3.4 E-Payment and Organizational Performance**

In an investigation on the influence of procurement practices on organization performance in the Private Sector in Kenya, Karanja (2015) used a case study of Guaranty Trust Bank

Kenya. The study results showed that various e-procurement practices positively influenced the organizational performance of the Private Sector in Kenya. Also, in a study of e-procurement and performance of Service Organizations in Uganda, Agaba (2013) aimed at establishing the relationship between e-procurement and performance of selected service organizations in Uganda. The study established that e-procurement had impacted negatively on the performance of selected Service Organizations in Uganda. Further, in an investigation of the challenges facing Government Ministries in Kenya in the adoption of e-procurement systems, Muriuki (2014) did a study that sought to determine the challenges facing the Ministry of Finance in managing change from adoption of e-procurement systems. The study established that the major challenge to the adoption of the e-procurement systems in the Ministry was resistance to change brought about by fear of the unknown, not enough training, fear of redundancy and the fact that e-procurement systems ensured transparency leading to detection of fraud thus challenging the existing corrupt systems.

In another study to assess the factors affecting the implementation of e-procurement systems in County Governments in Kenya, Kahari (2015) used a case study of Nyandarua County. The study revealed that there existed a strong, positive and statistically significant relationship between capacity and skills of e-procurement system users and its implementation. Also, Mutuku, (2016) studied the effect of e-procurement on the performance of Horticultural Firms in Kenya. The study findings were that e-payment had a positive impact on the performance of the organizations in that it eliminated the possibility of paying ghost suppliers and workers. Further, Ndiiri (2016) studied E-procurement implementation and performance of county governments in Kenya. He discovered that e-

payments had no significant effect on the performance of the county governments since not all the counties had fully implement the e-payment in revenue collection.

Other studies include Njuki (2015) who evaluated the factors that influenced the implementation of e-procurement in county governments, a case of Nairobi County. The study revealed that e-payment had significantly improved revenue collection in the County since most of the collection avenues had been automated. Also, Prasad (2014) studied e-procurement in India. He noted that the fact that key information (cost center, commodity codes, etc.) is hard coded against the user dramatically reduces coding errors and provides highly detailed and easily accessible data which is used for processing payments. This therefore had improved both financial and organizational performance. Further, Mohammed (2015) evaluated the impact of e-procurement systems on organizational performance in Egypt. He studied the effect of e-payments in improving efficiency. The study discovered that e-payments had greatly improved efficiency in processing payments to the suppliers while at the same time it reduced errors. From the above, it is clear that majority of the studies are of the view that e-payment has positive implications on organizational performance and thus the following hypothesis was proposed:

*H<sub>04</sub>. E-payment has no significant effect on performance of the Ministry of Devolution and Planning in Kenya.*

## **2.4 Knowledge Gap**

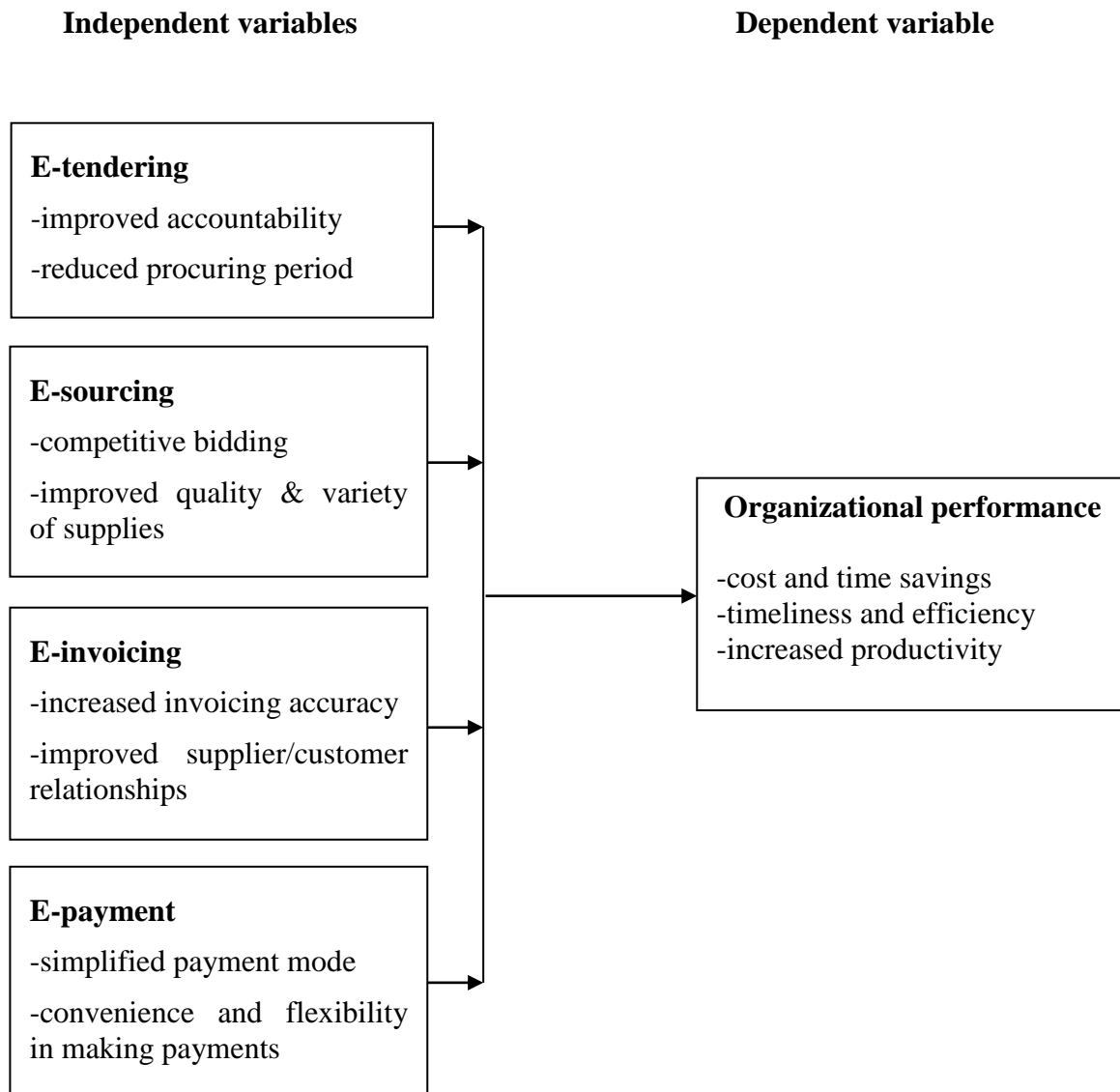
From the above empirical review it is clear that an effective e-procurement system can play a significant role in support government wide as well as agency level procurement policy decisions. E-procurement systems can also integrate procurement budgets and budget

execution data, allowing greater financial control and reducing opportunities for discretion in the use of public funds. The system can also provide information for budget planning, analysis and government wide financial reporting in relation to the procurement function within the government agencies (Miranda & Keefe, 2015). Thus, the adequacy of the solutions offered by the e-procurement systems lies in its ability to improve governance by providing real-time procurement financial information that financial and other managers use to administer procurement programs effectively and to prudently manage their financial resources. Sound e-procurement systems, coupled with the adoption of effective financial monitoring activities can help government agencies gain effective control over their finances while at the same time enhancing transparency and accountability, reducing political discretion and acting as a deterrent to corruption and fraud in their performance (Hendriks, 2012).

While the above studies provided an important insight regarding the effect of e-procurement on organizational performance, it was evident that majority of the local studies on e-procurement had focused on the factors affecting performance of e-procurement systems (Njuki, 2015; Wanyonyi, 2015; Karani, 2016 and Cheboi, 2016) and very few had addressed the issue of the effect of e-procurement on organizational performance particularly in the Public Sector. As such, there was dearth of local empirical literature as to the effect of e-procurement on performance of the Public Sector in Kenya. It is against this backdrop and knowledge of recent serious financial improprieties in the Ministry that this research sought to fill the existing gap by investigating the effect of e-procurement on performance of the Ministry of Devolution and Planning in Kenya.

## **2.5 Conceptual Framework**

The conceptual framework provides a diagrammatic representation of the relationship between the study variables. The conceptual framework presents a visual overview of the study's independent variable(s) and the dependent variable and thus helps to provide a quick glimpse of the study's key variables (Mugenda & Mugenda, 2003). For the purpose of this study, the dependent variable was organizational performance which was evaluated through cost, time, efficiency and productivity implications attributable to adoption of the independent variable while the independent variable was e-procurement which was analyzed using its constituent constructs which included; e-tendering, e-sourcing, e-invoicing and e-payment. This is as illustrated in Figure 2.1.



**Figure 2.1 Conceptual framework**

## **2.6 Operationalization of Variables**

The operationalization of variables is a description of how the study variables were measured. The dependent variable in this study was organizational performance while the independent variable of the study was e-procurement. Both the study's independent and dependent variables were measured using Likert-scale based structure rated 1-5 and which contained

various statements on the indicators of the variables to which the respondents were required to state their level of agreement with those statements where 1= strongly disagree, 2-disagree, 3-neutral, 4-agree and 5= strongly agree. The operationalization of the study variables was as summarized in Table 3.1.

**Table 3.1 Operationalization of Variables**

<b>Study variable type</b>	<b>Variable</b>	<b>Operationalization</b>	<b>Measurement scale</b>	<b>Hypothesized direction</b>
<b>Dependent variable</b>	Organizational performance	<ul style="list-style-type: none"> <li>- Operation cost reductions</li> <li>- Improved efficiency</li> <li>- Improved productivity</li> <li>- Increased timeliness and accuracy</li> </ul>	Ratio	-
<b>Independent variables</b>	E-tendering	<ul style="list-style-type: none"> <li>- improved transparency and accountability</li> <li>- reduced paper work</li> <li>- reduced procuring period</li> </ul>	Ratio	Positive
	E-sourcing	<ul style="list-style-type: none"> <li>- competitive bidding</li> <li>- reduced biasness and prejudice in supplier selection</li> <li>- improved quality and variety of supplies</li> </ul>	Ratio	Positive
	E-invoicing	<ul style="list-style-type: none"> <li>- increased accuracy in invoicing</li> <li>- improved</li> </ul>	Ratio	Positive

		supplier/customer relationships - improved visibility of procurement dealings		
	E-payment	- simplified settlement of supplier dues - convenience and flexibility in procurement payments - cost saving in settling procurement expenses	Ratio	Positive

**Source: Researcher, 2017**

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter presents the methodology that the researcher used to conduct the study. The research methodology is presented in the following order: research design, target population, research instrument and data collection and data analysis and presentation.

### **3.2 Research Design**

This study adopted a descriptive research design. Descriptive research design is a scientific method which involves observing and describing the behavior of a subject in an accurate way (Mugenda & Mugenda, 2003). This is because descriptive research design is appropriate where the study seeks to describe the characteristics of certain groups, estimate the proportion of people who have certain characteristics and make predictions (Cooper & Schindler, 2011). The design was suitable for the current study as it helped the researcher to describe the state of affairs with respect to effect of e-procurement on the performance of the MODP in Kenya as it existed without manipulation of variables.

### **3.3 Target Population**

Target population in statistics is the specific population about which information is desired. According to Ngechu (2004), a population is a well-defined set of people, services, elements, and events, group of things or households that are being investigated. The target population of this study was the staff working in the Procurement Department of the Ministry of Devolution and Planning in its headquarters in Nairobi. There are currently 118 officers working in the Procurement Department at the Ministry's headquarters (Ministry of

Devolution and Planning HR records, 2016). This formed the study's target population. The choice of the staff working in the Ministry's Procurement Department as the study respondents was based on the appreciation that they are ones involved in the implementation of the Ministry's e-procurement system and hence stood a good chance of being able to report on its effects on the Ministry's performance. The study was a census survey.

### **3.4 Research Instrument and Data Collection**

The study used primary data which was collected using a self administered questionnaire (Appendix I). The questionnaire contained close ended questions based on the study objectives. The reason for choosing the questionnaire as the data collection instrument for this study was primarily due to its practicability, applicability to the research problem and the size of the population. It was also cost effective (Denscombe, 2014). To help refine the research instrument, the researcher conducted a pilot test on 12 procurement staff of the Ministry of Finance & National Treasury. A pilot test is conducted to detect weaknesses in the design and content of the research instrument and to provide proxy data for selection of a probability sample (Cooper & Schilder, 2003).

For the purposes of data collection, the researcher obtained approval from KCA and the MODP to conduct the study. The study also sought informed consent from the study respondents as was necessary after explaining the purpose of the study to the respondents. Participation in the study was purely on voluntary terms and there were no penalties for withdrawal of consent at any stage of the data collection. In addition, the study participants were assured that all information provided would be handled and processed confidentially, it would be used for the purposes of the study only and that any emerging issues would only be

cited anonymously. The questionnaires were administered using the drop and pick later method with a lapse period of 2 weeks to allow the respondents ample time to respond to the questionnaires in order to enhance the response rate.

### **3.5 Validity and Reliability of Research Instrument**

Validity of the research instrument indicates the degree to which an instrument measures what it is supposed to measure; the accuracy, soundness and effectiveness with which an instrument measures what it is intended to measure (Kothari, 2004). The research instrument was availed to the supervising lecturer in KCA and peers who helped establish its content and construct validity to ensure that the items were adequately representative of the subject under study. Reliability of the research instrument is a measure of the degree to which a research instrument yields consistent results after repeated trials (Nsubuga, 2006). Using data from the pilot study, the reliability of the research instrument was estimated using Cronbach's Alpha Coefficient which is a measure of internal coefficient. A reliability of at least 0.70 at  $\alpha=0.05$  significance level of confidence as argued by Kothari (2004) was accepted. Adjustments were made accordingly where a low co-efficient was obtained in order to improve on the research tool.

### **3.6 Data Analysis and Presentation**

Data collected was coded and classified into different components to facilitate a better and efficient analysis. The quantitative data gathered through close ended questions was analyzed through descriptive statistics using the Statistical Package for Social Science (SPSS version 23.0) and presented through percentages, frequencies, mean and standard deviation. The study findings were presented in tables and figures, as appropriate.

For the purpose of analyzing the relationship between the study variables, the study used linear regression analysis. Linear regression analysis was useful to the study as it helped the researcher to analyze the existing relationships between the study's independent variable and the dependent variable. The key benefit of using regression analysis lies in its ability to indicate the extent to which changes in the independent variables affect the dependent variable.

The regression model specification was as follows;

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

Where;

$Y$  = Organizational performance (which is the dependent variable)

$X_1$  = E-tendering

$X_2$  = E-sourcing

$X_3$  = E-invoicing

$X_4$  = E-payment

$\beta_0$  = Constant

$\beta_1 - \beta_4$  = Coefficients of independent variables

$\varepsilon$  = Error term

Further, the t-test with a critical value of 1.96 and a p value of 0.05 was used to test the significance of e-tendering, e-sourcing, e-invoicing and e-payment on performance of the MODP in Kenya. According to Kothari (2004) an independent variable has a significant effect if the t statistics is greater than + or – 1.96 or if the p value is less than 0.05.

### **3.6.1 Diagnostic Tests**

As part of data analysis and presentation, the researcher conducted various diagnostic tests with a view of ascertaining the appropriateness of the study data for regression analysis. These tests were critical in ensuring that the study data met the specific assumptions underlying regression analysis. The researcher performed normality, heteroscedasticity and ANOVA tests. These were as described below:

#### **Normality**

As part of exploratory data analysis, tests for normality of distribution of the response variable were conducted. Normality of the data was tested using the Shapiro – Wilk test. The significance level for this study was  $\alpha = 5\%$ . For  $P \geq 0.05$  normality was assumed while for  $P < 0.05$  deviation from normality was assumed. In case the data was found not to be normal, the study would perform a non-parametric version of the test, which does not assume normality (Ghasemi & Zahediasl, 2012).

#### **Heteroscedasticity**

Heteroscedasticity is a situation where the variability of a variable is unequal across the range of values of a second variable that predicts it (Vinod, 2008). In this study heteroscedasticity was tested using the Breuch-pagan / cook-weisberg test. For the Breusch-Pagan / Cook-

Weisberg test, the null hypothesis is that the error variances are all equal while the alternative hypothesis is that the error variances are a multiplicative function of one or more variables. Homoscedasticity is evident when the value of “Prob > Chi-squared” is greater than 0.05 (Bera & Jarque, 2012). To deal with the heteroskedasticity problem if detected, the researcher would try to respecify the model or transform the variables given that sometimes heteroskedasticity results from improper model specification evidenced by choice of wrong variables or using variables whose effects may not be linear (Garson, 2012).

### **Analysis of Variance**

Analysis of Variance (ANOVA) consists of calculations that provide information about levels of variability within a regression model and forms a basis for tests of significance of the regression model. The "F" column of ANOVA provides a statistic for testing the hypothesis that all  $\beta \neq 0$  against the null hypothesis that  $\beta = 0$  (Weisberg, 2005). If the F calculated value is > the F critical value, the regression model is said to be statistically significant in predicting how the independent variables affect the dependent variable while if the F calculated value is < the F critical value then overall regression model is said to be insignificant.

## CHAPTER FOUR: DATA ANALYSIS, PRESENTATION AND INTERPRETATION

### 4.1 Introduction

This chapter presents the analysis and findings of the study as set out in the research methodology. The results were presented on the effect of e-procurement on performance of the Public Sector in Kenya using a case of the Ministry of Devolution and Planning in Kenya.

#### 4.1.1 Response Rate

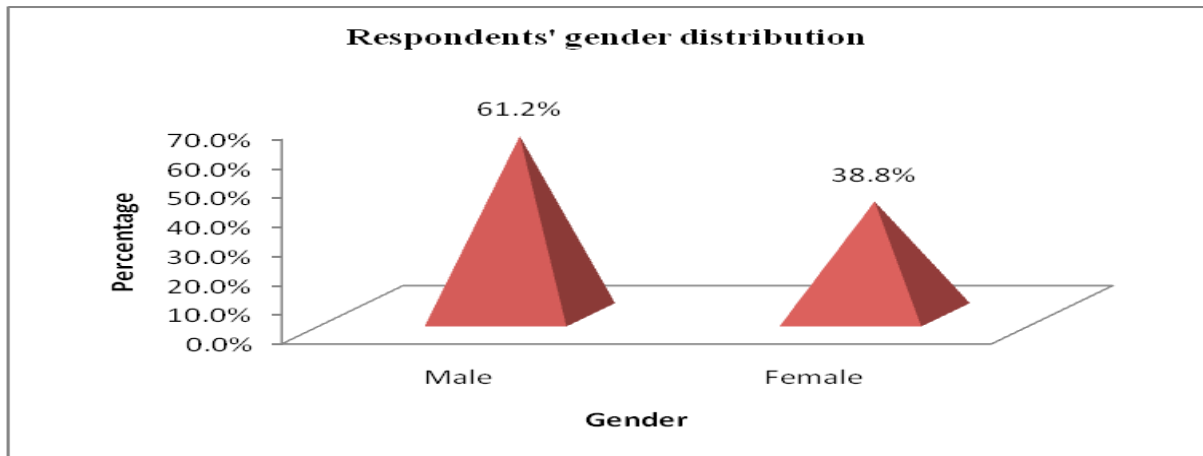
The study targeted 118 staff working in the Procurement Department of the Ministry of Devolution and Planning in its headquarters in Nairobi Kenya as the study respondents. Out of the 118 questionnaires administered, 85 were adequately filled and returned contributing to a response rate of 72.03% (Table 4.2). This response rate was sufficient and representative and conforms to Mugenda and Mugenda (2003) stipulation that a response rate of 50% is adequate for analysis and reporting, a rate of 60% is good while a response rate of 70% and over is excellent.

**Table 4.2 Response rate**

	<b>Frequency</b>	<b>Percent</b>
Responses received	85	72.03
No response	33	27.97
<b>Total</b>	<b>118</b>	<b>100.0</b>

## 4.2 Demographic Information

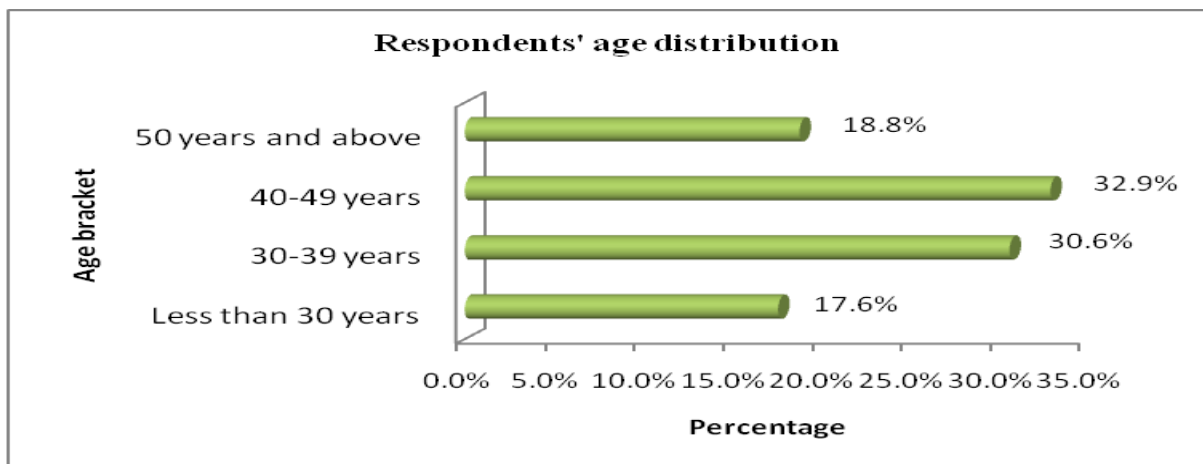
### 4.2.1 Gender Distribution of the Respondents



**Figure 4.2 Respondents' gender distribution**

Based on Figure 4.2 above, majority (61.2%) of the respondents were male while 38.8% were female. This showed that the study did not suffer from gender biasness as it involved both male and female respondents though the majority of the study respondents were male.

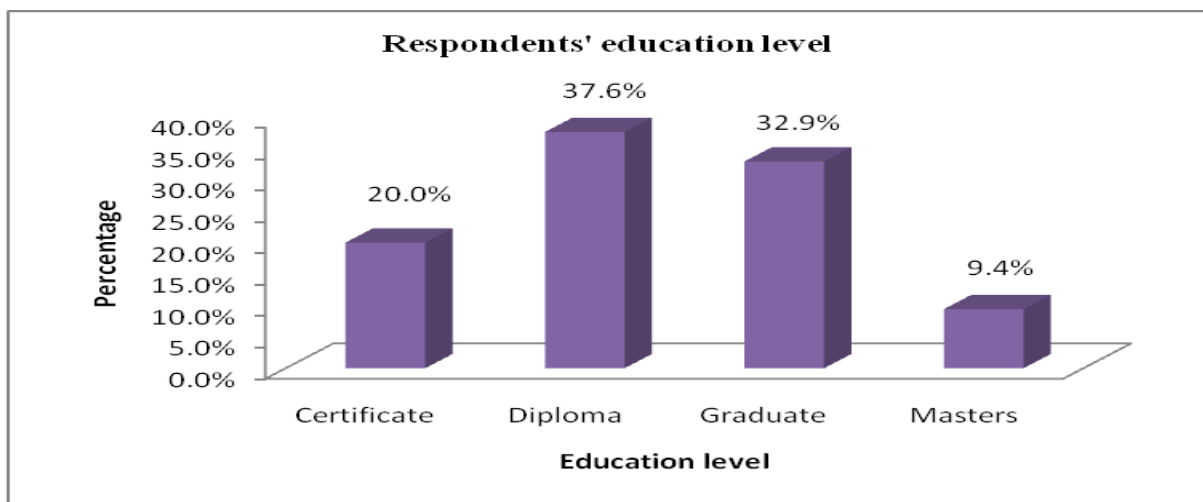
### 4.2.2 Age Distribution of the Respondents



**Figure 4.3 Respondents' age distribution**

Based on Figure 4.3 above, 32.9% of the respondents were aged between 40-49 years, 30.6% were aged between 30-39 years, 18.8% were aged 50 years and above while 17.6% of the respondents were aged below 30 years. These depicted that majority of the staff working in the Procurement Department of the Ministry of Devolution and Planning in its headquarters were aged 30 years and above and as such were old enough to fully appreciate the effect of e-procurement on performance of the Ministry.

#### 4.3.3 Education Level of the Respondents



**Figure 4.4 Education level of the respondents**

According to Figure 4.4 above, 37.6% of the respondents were Diploma holders, 32.9% were Graduates while 20% were Certificate holders. In addition, 9.4% of the respondents were Masters holders. This inferred that majority of the respondents had a sound education background and as such had a good understanding of the effect of e-procurement on the performance of the Ministry of Devolution and Planning in Kenya.

#### 4.2.4 Years Worked in the Ministry



**Figure 4.5 Respondents' distribution based on the number of years worked in the Ministry**

According to Figure 4.5 above, 38.8% of the respondents had worked in the MODP for 6-10 years, 35.3% had worked for 1-5 years, 14.1% had worked for over 10 years while 11.8% of the respondents had worked in the Ministry for less than 1 year. This implied that majority of the respondents had worked in the MODP for long enough to be able to provide crucial information relating to the effect of e-procurement on the performance of the Ministry.

#### 4.3 E-Tendering and Organizational Performance

The first objective of the study sought to establish the effect of e-tendering on performance of the Ministry of Devolution and Planning in Kenya. The study evaluated the respondents' level of agreement with various statements on e-tendering as an e-procurement practice using a scale of 1-5 where 5-strongly agree, 4-agree, 3-neutral, 2-disagree and 1-strongly disagree. The findings are as illustrated in Table 4.3.

**Table 4.3 Respondents' level of agreement with statements on e-tendering**

<b>Statements</b>	<b>Mean</b>	<b>Std. Dev</b>
E-tendering has improved accountability in the tendering process	4.259	0.5153
E-tendering eliminates unnecessary paper work in the procurement process	3.941	0.6788
E-tendering simplifies the evaluation process of bidders	4.271	0.6434
E-tendering helps reduce the procuring period	4.388	0.5995
E-tendering provides an effective audit trail of the procurement process	4.329	0.6247

The study results presented on Table 4.3 above indicate that the staff of the Ministry of Devolution and Planning in Kenya did agree that e-tendering helped reduce the procuring period (mean = 4.388); e-tendering provided an effective audit trail of the procurement process (mean = 4.329); e-tendering simplified the evaluation process of bidders (mean = 4.271); e-tendering had improved accountability in the tendering process (mean = 4.259) and that e-tendering eliminated unnecessary paper work in the procurement process (mean = 3.941). This implied that e-tendering as an e-procurement practice played a significant role in enhancing the performance of the Ministry of Devolution and Planning in Kenya.

#### **4.4 E-Sourcing and Organizational Performance**

The second objective of the study sought to determine the effect of e-sourcing on performance of the Ministry of Devolution and Planning in Kenya. The study evaluated the respondents' level of agreement with various statements on e-sourcing as an e-procurement

practice using a scale of 1-5 where 5-strongly agree, 4-agree, 3-neutral, 2-disagree and 1-strongly disagree. The findings are as depicted in Table 4.4.

**Table 4.4 Respondents’ level of agreement with statements on e-sourcing**

<b>Statements</b>	<b>Mean</b>	<b>Std. Dev</b>
E-sourcing has enhanced the level of competitive bidding	3.988	0.9697
E-sourcing eliminates biasness and prejudice in supplier selection	4.294	0.6514
E-sourcing has enabled the Ministry improve on the quality of supplies	4.282	0.7337
E-sourcing removes physical barriers in search of supplies	3.165	1.1217
E-sourcing allows a quick evaluation of possible suppliers	3.859	0.9778

The study results shown on Table 4.4 above indicate that the staff of the Ministry of Devolution and Planning in Kenya were in agreement that e-sourcing eliminated biasness and prejudice in supplier selection (mean = 4.294); e-sourcing had enabled the Ministry improve on the quality of supplies (mean = 4.282); e-sourcing had enhanced the level of competitive bidding (mean = 3.988) and that e-sourcing allows a quick evaluation of possible suppliers (mean = 3.859). However, the staff of the Ministry of Devolution and Planning in Kenya neither agreed nor disagreed with the statement that e-sourcing removes physical barriers in search of supplies (mean = 3.165). This implied that e-sourcing as an e-procurement practice was integral in efforts to enhance the performance of the Ministry of Devolution and Planning in Kenya.

#### 4.5 E-Invoicing and Organizational Performance

The third objective of the study sought to examine the effect of e-invoicing on performance of the Ministry of Devolution and Planning in Kenya. The study evaluated the respondents' level of agreement with various statements on e-invoicing as an e-procurement practice using a scale of 1-5 where 5-strongly agree, 4-agree, 3-neutral, 2-disagree and 1-strongly disagree. The findings are as illustrated in Table 4.5.

**Table 4.5 Respondents' level of agreement with statements on e-invoicing**

Statements	Mean	Std. Dev
E-invoicing contributes to increased accuracy in invoicing	4.141	0.6753
E-invoicing can aid in dispute handling	4.353	0.6850
E-invoicing can lead to improved supplier/customer relationships	4.388	0.5793
E-invoicing can lead to improved visibility of procurement dealings	4.047	0.7385
E-invoicing can facilitate faster payments while reducing associated invoicing costs	4.212	0.6564

According to the study findings shown on Table 4.5 above, the staff of the Ministry of Devolution and Planning in Kenya agreed that e-invoicing can lead to improved supplier/customer relationships (mean = 4.388); e-invoicing can aid in dispute handling (mean = 4.353); e-invoicing can facilitate faster payments while reducing associated invoicing costs (mean = 4.212); e-invoicing contributes to increased accuracy in invoicing (mean = 4.141) and that e-invoicing can lead to improved visibility of procurement dealings (mean = 4.047). This clearly showed that e-invoicing as an e-procurement practice was

critical in the efforts to enhance the performance of the Ministry of Devolution and Planning in Kenya.

#### 4.6 E-Payment and Organizational Performance

The last objective of the study sought to determine the effect of e-payment on performance of the Ministry of Devolution and Planning in Kenya. The study evaluated the respondents' level of agreement with various statements on e-payment as an e-procurement practice using a scale of 1-5 where 5-strongly agree, 4-agree, 3-neutral, 2-disagree and 1-strongly disagree. The findings are as shown in Table 4.6.

**Table 4.6 Respondents' level of agreement with statements on e-payment**

Statements	Mean	Std. Dev
Use of e-payment has simplified settlement of dues to suppliers	4.247	0.7854
Use of e-payment grants the Ministry convenience in procurement payments	3.835	0.8570
Use of e-payment is cost saving in settling procurement expenses	3.977	0.9509
E-payments are harder to manipulate leading to lesser financial improprieties	4.282	0.5693
E-payments enhance the level of accountability in procurement payments	4.141	0.7891

Based on the results shown on Table 4.6 above, the staff of the Ministry of Devolution and Planning in Kenya concurred that e-payments were harder to manipulate leading to lesser financial improprieties (mean = 4.282); use of e-payment had simplified settlement of dues to suppliers (mean = 4.247); e-payments enhanced the level of accountability in procurement payments (mean = 4.141); use of e-payment was cost saving in settling procurement expenses

(mean = 3.977) and that use of e-payment granted the Ministry convenience in procurement payments (mean = 3.835). This implied that e-payment as an e-procurement practice played an important role in helping enhance the performance of the Ministry of Devolution and Planning in Kenya.

#### 4.7 E-Procurement and Organizational Performance

The study also evaluated the respondents' level of agreement with various statements on effect of e-procurement on the organizational performance of the Ministry of Devolution and Planning in Kenya. The responses were rated using a scale of 1-5 where 5-strongly agree, 4-agree, 3-neutral, 2-disagree and 1-strongly disagree. The findings are as depicted in Table 4.7.

**Table 4.7 Respondents' level of agreement with statements on effect of e-procurement on performance of the Ministry**

Statements	Mean	Std. Dev
Use of e-procurement has led to reduced costs in procurement	4.200	0.7037
Use of e-procurement has contributed to improved efficiency in procurement	4.224	0.5428
Use of e-procurement has contributed to improved staff productivity	4.306	0.6367
Use of e-procurement has led to timely generation of procurement information	3.741	1.0018
Use of e-procurement has contributed to improved monitoring of procurement transactions	4.341	0.6995
Use of e-procurement has led to reduced lead time in procurement	3.953	0.6884

Based on the results shown on Table 4.7 above, the staff of the Ministry of Devolution and Planning in Kenya agreed that use of e-procurement had contributed to improved monitoring of procurement transactions (mean = 4.341); use of e-procurement has contributed to improved staff productivity (mean = 4.306); use of e-procurement has contributed to improved efficiency in procurement (mean = 4.224); use of e-procurement has led to reduced costs in procurement (mean = 4.200); use of e-procurement has led to reduced lead time in procurement (mean = 3.953) and that use of e-procurement has led to timely generation of procurement information (mean = 3.741). This implied that e-procurement played a significant role in the performance of the Ministry of Devolution and Planning in Kenya.

#### **4.8 Inferential Statistics**

These are mathematical methods that employ probability theory for deducing (inferring) the properties of a population from the analysis of the properties of a data sample drawn from it. They allow one to predict or make generalizations about a population based on analysis of data of a sample derived from the population. This study applied linear regression analysis to analyze the relationship between the study variables. Before conducting the regression analysis, the researcher performed tests of normality and heteroscedasticity as described below.

##### **4.8.1 Tests of Normality**

As part of exploratory data analysis, tests for normality of distribution of the study variables were conducted. The normality of the data was tested using the Shapiro – Wilk test. The significance level for the study was  $p = 5\%$ . For  $p \geq 0.05$  normality was assumed while for  $p$

< 0.05 deviation from normality was assumed. The normality tests results were as shown in Table 4.8.

**Table 4.8 Tests of Normality**

Variables	Shapiro-Wilk		
	Statistic	df	Sig.
E-tendering [X <sub>1</sub> ]	.818	84	.113
E-sourcing [X <sub>2</sub> ]	.856	84	.213
E-invoicing [X <sub>3</sub> ]	.943	84	.690
E-payment [X <sub>3</sub> ]	.926	84	.570
Organizational performance [Y]	.872	84	.236

Table 4.8 above indicates that the significance values for the Shapiro-Wilk tests were 0.113 for e-tendering, 0.213 for e-sourcing, 0.690 for e-invoicing, 0.570 for e-payment and 0.236 for organizational performance. This implies that since the p-value of Shapiro-Wilk tests was greater than the chosen alpha level of 0.05 then we accept the hypothesis that the data came from a normally distributed population. The results of the tests are therefore of a normally distributed population.

#### **4.8.2 Heteroscedasticity Test**

Heteroscedasticity is a situation where the variability of a variable is unequal across the range of values of a second variable that predicts it (Vinod, 2008). In this study heteroscedasticity was tested for using the Breusch-pagan / cook-weisberg test. For the Breusch-Pagan / Cook-Weisberg test, the null hypothesis is that the error variances are all equal while the alternative

hypothesis is that the error variances are a multiplicative function of one or more variables. Using the Breusch-Pagan / Cook-Weisberg test, Homoscedasticity is evident when the value of “Prob > Chi-squared” is greater than 0.05 (Bera & Jarque, 2012). The results for the Heteroscedasticity tests were as shown in Table 4.9.

HO                                      Constant variance

Study variables                      E-tendering, e-sourcing, e-invoicing and e-payment

**Table 4.9 Test for Heteroscedasticity**

HO	Variables	Chi <sup>2</sup>	Prob. > Chi <sup>2</sup>
Constant Variance	X <sub>1</sub> X <sub>2</sub> X <sub>3</sub> X <sub>4</sub>	20.83	.181

Table 4.9 shows that the constant variance (Chi<sup>2</sup> = 20.83) is insignificant (P = 0.181). Thus we fail to reject the null hypothesis and conclude that the error variance is equal thus heteroscedasticity is not a problem in the study data. Hence, we accept the null hypothesis that there is no difference in residual variance of independent to dependent variables tested.

### 4.8.3 Regression Analysis

A regression analysis was performed in order to analyze the relationship between the study variables. This was done by regressing the independent variables (e-tendering, e-sourcing, e-invoicing and e-payment) against the dependent variable (organizational performance). The results are as summarized below;

**Table 4.10 Model Summary**

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate
1	.845 <sup>a</sup>	0.714	0.700	.7378

Predictors: (Constant), e-tendering, e-sourcing, e-invoicing and e-payment

According to Table 4.10 above, R square is the coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variables. Based on Table 4.10 above, the value of R square was 0.714 which means that 71.4% variation in the performance of the MODP was due to variations in e-tendering, e-sourcing, e-invoicing and e-payment. Hence, 28.6% of variation in the performance of the MODP was explained by other factors not in the model or not focused on in the current study.

**Table 4.11 ANOVA (Analysis of Variance)**

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	114.088	4	28.522	50.528	.0000 <sup>a</sup>
1	Residual	45.723	81	0.5645		
	Total	159.811	85			

a. Predictors: (Constant), e-tendering, e-sourcing, e-invoicing and e-payment

b. Dependent Variable: Organizational performance

Analysis of Variance (ANOVA) consists of calculations that provide information about levels of variability within a regression model and form a basis for tests of significance. The "F" column provides a statistic for testing the hypothesis that all  $\beta \neq 0$  against the null hypothesis that  $\beta = 0$  (Weisberg, 2005). From the findings the significance value is .0000

which is less than 0.05 thus the model is statistically significant in predicting how e-tendering, e-sourcing, e-invoicing and e-payment affect the performance of the MODP in Kenya. Further, the F critical at 5% level of significance was 6.26. Since F calculated (value = 50.528) is greater than the F critical (6.26), this affirmed that the overall model was significant.

**Table 4.12 Regression analysis results**

	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	4.793	.612		7.832	.0000
E-tendering [X <sub>1</sub> ]	0.742	.161	.577	4.609	.0000
E-sourcing [X <sub>2</sub> ]	0.639	.279	.452	2.290	.0246
E-invoicing [X <sub>3</sub> ]	0.705	.198	.519	3.561	.0006
E-payment [X <sub>4</sub> ]	0.660	.251	.481	2.629	.0102

Based on the regression results shown on Table 4.12 above, the regression model became;

$$Y = 4.793 + 0.742 X_1 + 0.639 X_2 + 0.705 X_3 + 0.660 X_4 + \epsilon$$

From the regression equation above, taking all factors (e-tendering, e-sourcing, e-invoicing and e-payment) constant at zero, organizational performance of the Ministry would be 4.793. The results further indicate that a unit increase in e-tendering would lead to a 0.742 increase in organizational performance; a unit increase in e-sourcing would lead to a 0.639 increase in

organizational performance; a unit increase in e-invoicing would lead to a 0.705 increase in organizational performance while a unit increase in e-payment would lead to a 0.660 increase in organizational performance. At 5% significance level [or 95% level of confidence], e-tendering had a 0.0000 level of significance; e-sourcing had a 0.0246 level of significance; e-invoicing had a 0.0006 level of significance while e-payment had a 0.0102 level of significance. All the variables were significant ( $p < 0.05$ ) with the most significant factor being e-tendering followed by e-invoicing, e-payment and e-sourcing, respectively.

**Table 4.13 Hypotheses Tests Results Summary**

<b>Hypotheses</b>	<b>Sig.</b>	<b>Beta</b>	<b>Remark</b>
<b>H<sub>01</sub></b> . E-tendering has no significant effect on performance of the Ministry of Devolution and Planning in Kenya	.0000	.05	Reject null hypothesis
<b>H<sub>02</sub></b> . E-sourcing has no significant effect on performance of the Ministry of Devolution and Planning in Kenya	.0246	.05	Reject null hypothesis
<b>H<sub>03</sub></b> . E-invoicing has no significant effect on performance of the Ministry of Devolution and Planning in Kenya	.0006	.05	Reject null hypothesis
<b>H<sub>04</sub></b> . E-payment has no significant effect on performance of the Ministry of Devolution and Planning in Kenya	.0102	.05	Reject null hypothesis

Given, that all the p values of the four independent variables were  $< 0.05$ , the study rejected the four null hypotheses and accepted the alternate hypotheses that e-tendering, e-sourcing, e-invoicing and e-payment had a significant effect on the performance of the Ministry of Devolution and Planning in Kenya.

## **CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Introduction**

This chapter presents summary of findings, conclusions and recommendations of the study based on the study objectives. The chapter also highlights suggested areas for further research. The study sought to establish the effect of e-procurement on performance of the Public Sector in Kenya using a case of the Ministry of Devolution and Planning in Kenya.

### **5.2 Summary**

#### **5.2.1 E-Tendering and Organizational Performance**

The study findings showed that the staff of the Ministry of Devolution and Planning in Kenya did agree that e-tendering helped reduce the procuring period; e-tendering provided an effective audit trail of the procurement process; e-tendering simplified the evaluation process of bidders; e-tendering had improved accountability in the tendering process and that e-tendering eliminated unnecessary paper work in the procurement process. The regression analysis results further showed that there was a significant positive relationship between e-tendering and organizational performance of the Ministry of Devolution and Planning in Kenya (shown by a beta value of 0.742,  $p < 0.05$ ). This implied that e-tendering as an e-procurement practice played a significant role in enhancing the performance of the Ministry of Devolution and Planning in Kenya. This agreed with Makafui and Ackah (2015) who in a study of the impact of e-procurement on organizational improvement in Ghana found that e-tendering, as a construct of e-procurement, had a significant positive impact on the firm's performance as it led to shorter lead times, operation cost reductions, better supplier selection and timely placement of orders. This also agreed with Vaidya (2016) who pointed that

adoption of various e-procurement practices can yield benefits such as better supplier-buyer relations, increased efficiency and effectiveness in procurement function, ability to easily track orders and supplies, reduced paper work, increased staff productivity, timeliness in delivery of supplies and flexibility in procurement

### **5.2.2 E-Sourcing and Organizational Performance**

The study findings showed that the staff of the Ministry of Devolution and Planning in Kenya were in agreement that e-sourcing eliminated biasness and prejudice in supplier selection; e-sourcing had enabled the Ministry improve on the quality of supplies; e-sourcing had enhanced the level of competitive bidding and that e-sourcing allowed a quick evaluation of possible suppliers. However, the staff of the Ministry of Devolution and Planning in Kenya neither agreed nor disagreed with the statement that e-sourcing removed physical barriers in search of supplies. The regression analysis results further showed that there was a significant positive relationship between e-sourcing and organizational performance of the Ministry of Devolution and Planning in Kenya (shown by a beta value of 0.639,  $p < 0.05$ ). This implied that e-sourcing as an e-procurement practice was integral in efforts to enhance the performance of the Ministry of Devolution and Planning in Kenya. This was in agreement with Shalle *et al.* (2013) who identified e-sourcing as one of the leading e-procurement strategies that would help enhance procurement performance in state corporations in Kenya as it positively contributes to elimination of biasness and prejudice in supplier selection while also allowing competitive bidding. Similarly, in a study of the influence of strategic sourcing on organizational performance of Kenya Power, Chepng'etich (2016) established that supplier relationship management, early supplier involvement and contract management as e-sourcing constructs had a great influence on the performance of Kenya power.

### **5.2.3 E-Invoicing and Organizational Performance**

The study findings showed that the staff of the Ministry of Devolution and Planning in Kenya agreed that e-invoicing can lead to improved supplier/customer relationships; e-invoicing can aid in dispute handling; e-invoicing can facilitate faster payments while reducing associated invoicing costs; e-invoicing contributes to increased accuracy in invoicing and that e-invoicing can lead to improved visibility of procurement dealings. The regression analysis results further showed that there was a significant positive relationship between e-invoicing and organizational performance of the Ministry of Devolution and Planning in Kenya (shown by a beta value of 0.705,  $p < 0.05$ ). This clearly showed that e-invoicing as an e-procurement practice was critical in the efforts to enhance the performance of the Ministry of Devolution and Planning in Kenya. This concurred with Amin (2012) who established that e-invoicing, as an e-procurement element, had led to cost reduction, improved transparency, and accountability in the operations of the commercial state corporations in Kenya. Similarly, Rozner (2014) argued that application of e-invoicing as an e-procurement tool would lead to benefits such as improved visibility of procurement dealings, improved supplier/customer relationships, better dispute management, better facilitation of supplier dues settlement and increased accuracy in invoicing.

### **5.2.4 E-Payment and Organizational Performance**

The study findings showed that the staff of the Ministry of Devolution and Planning in Kenya concurred that e-payments were harder to manipulate leading to lesser financial improprieties; use of e-payment had simplified settlement of dues to suppliers; e-payments enhanced the level of accountability in procurement payments; use of e-payment was cost

saving in settling procurement expenses and that use of e-payment granted the Ministry convenience in procurement payments. The regression analysis results further showed that there was a significant positive relationship between e-payment and organizational performance of the Ministry of Devolution and Planning in Kenya (shown by a beta value of 0.660,  $p < 0.05$ ). This implied that e-payment as an e-procurement practice played an important role in helping enhance the performance of the Ministry of Devolution and Planning in Kenya. The findings were in line with those of Kahari (2015) and Njuki (2015) who also found that there was a significant positive relationship between use of e-payment methods and revenue collection performance among County Governments in Kenya.

### **5.3 Conclusions**

The study concluded that e-tendering as an e-procurement practice played a significant role in enhancing the performance of the Ministry of Devolution and Planning in Kenya. In addition, the study concluded that there existed a significant positive relationship between e-tendering and the performance of the Ministry of Devolution and Planning in Kenya.

The study also concluded that e-sourcing as an e-procurement practice was integral in efforts to enhance the performance of the Ministry of Devolution and Planning in Kenya. In addition, the study concluded that there existed a significant positive relationship between e-sourcing and the performance of the Ministry of Devolution and Planning in Kenya.

The study also concluded that e-invoicing as an e-procurement practice was critical in the efforts to enhance the performance of the Ministry of Devolution and Planning in Kenya. In addition, the study concluded that there existed a significant positive relationship between e-invoicing and the performance of the Ministry of Devolution and Planning in Kenya.

Further, the study concluded that e-payment as an e-procurement practice played an important role in helping enhance the performance of the Ministry of Devolution and Planning in Kenya. In addition, the study concluded that there existed a significant positive relationship between e-payment and the performance of the Ministry of Devolution and Planning in Kenya.

#### **5.4 Recommendations**

Given that e-tendering as an e-procurement practice positively relates to the organizational performance of the Ministry of Devolution and Planning in Kenya, the study recommends that the Ministry should adopt a holistic approach in reforming its tendering processes that will not only be limited to automation of the tendering processes but also building the capacity of its staff and suppliers on how to work with the e-tendering platform.

Given that e-sourcing as an e-procurement practice positively relates to the organizational performance of the Ministry of Devolution and Planning in Kenya, the study recommends that the Ministry should deploy its e-sourcing platform to attract new suppliers who offer better terms of trade to the Ministry while also performing regular evaluations of its existing suppliers to ensure that they continually meet the set qualifications for doing business with the Ministry.

Given that e-invoicing as an e-procurement practice positively relates to the organizational performance of the Ministry of Devolution and Planning in Kenya, the study recommends that the Ministry should consider rolling out the use of e-invoices in all its purchase activities.

Given that e-payment as an e-procurement practice positively relates to the organizational performance of the Ministry of Devolution and Planning in Kenya, the study recommends that the Ministry should leverage on existing e-payment modes such as M-Pesa to reduce on risks of using cash-based payments while also improving the dues settlement procedure.

### **5.5 Suggested Areas for Further Research**

Since this study explored the effect of e-procurement on performance of the Public Sector in Kenya using a case of the Ministry of Devolution and Planning in Kenya, the study recommends that similar studies should be done in other Government Ministries and Departments in Kenya for comparison purposes and to allow for generalization of findings on the effect of e-procurement on the performance of the Public Sector in Kenya.

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## APPENDICES

### Appendix I: Questionnaire

#### Section A: Demographic information

1. What is your gender?      Male            [ ]                      Female            [ ]

2. What is your age?

Less than 30 years    [ ]                      30-39 years            [ ]

40-49 years            [ ]                      50 years and above    [ ]

3. What is your highest level of education?

Certificate [ ]      Diploma [ ]      Graduate [ ]      Masters    [ ]

Other .....

4. For how long have you worked in the Ministry of Devolution and Planning?

Less than 1 year    [ ]                      1-5 years            [ ]

6-10 years            [ ]                      Over 10 years [ ]

#### Section B: E-tendering

Kindly rate your opinion regarding the following statements on e-tendering as an e-procurement practice. Use a scale of 1-5 where 1= strongly disagree, 2-disagree, 3-neutral, 4-agree and 5= strongly agree.

	<b>Statements</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
5.	E-tendering has improved accountability in the tendering process					
6.	E-tendering eliminates unnecessary paper work in the procurement process					
7.	E-tendering simplifies the evaluation process of bidders					
8.	E-tendering helps reduce the procuring period					
9.	E-tendering provides an effective audit trail of the procurement process					

### **Section C: E-sourcing**

Kindly rate your opinion regarding the following statements on e-sourcing as an e-procurement practice. Use a scale of 1-5 where 1= strongly disagree, 2-disagree, 3-neutral, 4-agree and 5= strongly agree.

	<b>Statements</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
10.	E-sourcing has enhanced the level of competitive bidding					
11.	E-sourcing eliminates biasness and prejudice in supplier selection					
12.	E-sourcing has enabled the Ministry improve on the quality of supplies					
13.	E-sourcing removes physical barriers in search of supplies					
14.	E-sourcing allows a quick evaluation of possible suppliers					

### **Section D: E-invoicing**

Kindly rate your opinion regarding the following statements on e-invoicing as an e-procurement practice. Use a scale of 1-5 where 1= strongly disagree, 2-disagree, 3-neutral, 4-agree and 5= strongly agree.

	Statements	1	2	3	4	5
15.	E-invoicing contributes to increased accuracy in invoicing					
16.	E-invoicing can aid in dispute handling					
17.	E-invoicing can lead to improved supplier/customer relationships					
18.	E-invoicing can lead to improved visibility of procurement dealings					
19.	E-invoicing can facilitate faster payments while reducing associated invoicing costs					

### Section E: E-payment

Kindly rate your opinion regarding the following statements on e-payment as an e-procurement practice. Use a scale of 1-5 where 1= strongly disagree, 2-disagree, 3-neutral, 4-agree and 5= strongly agree.

	Statements	1	2	3	4	5
20.	Use of e-payment has simplified settlement of dues to supplies					
21.	Use of e-payment grants the Ministry convenience in procurement payments					
22.	Use of e-payment is cost saving in settling procurement expenses					
23.	e-payments are harder to manipulate leading to lesser financial improprieties					
24.	E-payments enhance the level of accountability in procurement payments					

### Section F: Organizational performance

Kindly rate your opinion regarding the following statements on effect of e-procurement on the organizational performance of the Ministry. Use a scale of 1-5 where 1= strongly disagree, 2-disagree, 3-neutral, 4-agree and 5= strongly agree.

	<b>Statements</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
25.	Use of e-procurement has led to reduced costs in procurement					
26.	Use of e-procurement has contributed to improved efficiency in procurement					
27.	Use of e-procurement has contributed to improved staff productivity					
28.	Use of e-procurement has led to timely generation of procurement information					
29.	Use of e-procurement has contributed to improved monitoring of procurement transactions					
30.	Use of e-procurement has led to reduced lead time in procurement					

**Thank you for your time.**