THE RELATIONSHIP BETWEEN PROCUREMENT LEGAL FRAMEWORK IMPLEMENTATION, INNOVATION PRACTICES AND SUPPLY CHAIN PERFORMANCE OF PUBLIC ENTITIES IN KENYA

BY

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DECLARATION

I, the undersigned declare that this is my original work and has not been submitted to any other institution.

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ACKNOWLEDGEMENT

DEDICATION

To my wife Linet, mother Sarah, sister Winnie, and late father Kennedy,

ABSTRACT

Sound public procurement is essential for supply chain performance as well as for economic and political developments. Worldwide, there is an increase in growth of public entities from 9% to 23% between 2005-2020 with top 8 countries contributing 20% of global trade, this indicating the increasing importance of entities to the economy. Kenya's public entities contribute Ksh. 438.24 billion spent in public procurement which is about 9% of gross domestic product. However, it is reported that $ 400 billion is lost in public procurement globally. Parastatal reforms report, 2021 show that public entities performance is declining, 18 entities will have Ksh. 382 billion liquidity gap between 2021-2025. Public Procurement Regulatory Authority report 2019 indicate that majority of public entities in Kenya procure at 60% above market prices with suboptimal procurement laws compliance, resulting to public resources wastage, sunken quality and reduced competitiveness. The Authority's report of 2020 attributes these largely to poor implementation of procurement legal framework and innovativeness. Empirical evidence reviewed focused on few elements of the legal framework in the old constitution of Kenya. Majority of innovation studies were reviews and did not focus on purchasing systems, e-procurements, ICT trainings & integrations. Some reviewed studies on procurement legal framework-performance relationship revealed weak relationship, indicating that moderation effects may abound. Practically, procurement laws, innovation practices and performance exists together. Literature however show that this relationship with innovation practices as a possible moderator is lacking. The purpose of this study was to investigate relationship between procurement legal framework implementation, innovation practices and supply chain performance. Specifically, the study sought to establish effect of procurement legal framework implementation; innovation practices on performance and investigate the moderating effect of innovations on procurement legal framework implementation and performance. The study was mainly grounded on Public Value Theory and adopted correlational survey design on a population of 187 entities. For piloting, 10% of the population as suggested by Cooper& Schindler (2011) was selected through random stratification. Primary data were collected using a questionnaire. Expert reviews, Barletts Sphericity tests ($p<0.05$), factor correlations ($p<0.7$) confirmed validity. Reliability was confirmed by values $0.7<\alpha<0.88$ through Cronbach Alpha technique. The data were analyzed by regression models. The findings reveal that implementing procurement laws has significant positive effect ($\beta=0.708$, $R^2=0.502$, $t=12.35$, $p<0.05$), innovation practices has a significant positive effect ($\beta=0.649$, $R^2=0.422$, $t=10.67$, $p<0.05$) implying that unit implementation of procurement laws and innovation practices results into 0.708 units and 0.649 units increase in performance respectively. Moderated regressions reveal interactive effect ($R^2=0.11$, $\beta=0.393$, $t=8.555$, $p<0.05$), evidencing that unit adoption of innovativeness improves effect of implementing procurement laws on performance by 11%. The findings corroborate theoretical evidence that public entities can create value by innovatively leveraging their resources. Study recommends: managers in public entities to derive policies of effectively implementing procurement laws, to continuously adopt innovations and to harness innovative ways of implementing procurement laws. The study is deemed effective in its ability to show that more innovative ways of implementing procurement laws will achieve higher results. In practice, study may be crucial contributing to empirical works in Supply Chain Management and government policy formulation in public procurement.

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LIST OF ABBREVIATIONS AND ACRONYMS

ATMs	:	Automated Teller Machines
BOD	:	Board of Directors
CEOs	:	Chief Executive Officers
EFA		Exploratory Factor Analysis
GDP	:	Gross Domestic Product
ICT	:	Information Communication Technology
IT	:	Information Technology
NGO	:	Non-Governmental Organization(s)
OECD	:	Organization for Economic Cooperation and Development
PCA	:	Principal Component Analysis
PEs	:	Public Entities
POT	:	Pecking Order Theory
PPAD	:	Public Procurement and Asset Disposal, Act of 2015
PPARB	:	Procurement Administrative Review Board
PPOA	:	Public Procurement Oversight Authority
PPDR	:	Public Procurement and Disposal Regulations
PPP	:	Public Private Partnership
PP	:	Public Procurement
PPRA	:	Public Procurement Regulatory Authority
PVT	:	Public Value Theory
SC	:	Supply Chain
SCM	:	Supply Chain Management
SCP	:	Supply Chain Performance

OPERATIONAL DEFINITION OF TERMS

Implementation

The execution, adoption and use of a plan or framework in order to achieve goals and objectives

Performance

It is achievement of the objectives that were given to you by making use of available resources. It is the actualization of given obligations in order for something to happen, say meet expectations

Procurement

The process which ensures that firms acquire materials for use and disposals in order to accomplish its goals and objectives

Procurement legal framework

The rules, laws, procedures and policies that govern the respective subjects conducting procurements and disposals

Public Entities

Procuring entities fully owned and controlled by the government and carrying out procurement or asset disposal under the established legal framework. It is any organization that provides services to the public by using procurement laws and procedures as a representative of the government or on behalf of another entity

Public Procurement

Procurement by public entities by using public resources.

Innovation Practices

The new ideas, technologies, services or new ways of improving provision of goods and services in organizations. It relates to adoptions meant to improve performance.

Procurement Legal Framework Implementation

The adoption and use of the legal framework guiding procurement and disposal of works, goods and services

Supply Chain Performance

The activities carried out in the supply chains intended to achieve the end customer needs. The end consumer needs span from timely delivery, ensuring availability of goods and services and offering goods and services of the required quality

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

This chapter presents the background of the study, statement of problem, objectives of the study, hypotheses, scope of the study, justification and the conceptual framework underpinning diagrammatic representation of conceptualized variables

Procurement is not a new occurrence among scholars in the contemporary literature, given that it is of interest among scholars. It is any effort directed towards acquisition of materials for an organization's use and includes vendor sourcing up to delivery to the final consumer (Asamoah, Berko & Adu Poku, 2019). Hawkins, Gravier, Berkowitz, & Muir (2015) refer to procurement as the act of soliciting, negotiating for terms and obtaining goods, works and services from an external provider often through tendering or structured bidding procedure. It is meant to enable organizations wanting materials to do so at the best possible price where the parties compare aspects such as place, time, quality and quantity. Furthermore, Loosemore, Alkilani & Murphy (2021) assert that procurement is a broad discipline which encompasses processes and activities meant to acquire materials and includes establishing material specifications, sourcing which includes market research as well as negotiation. The Public Procurement and Asset Disposal Act (PPAD, 2015) defines procurement as the acquisition by purchase, rental, lease, hire purchase, license, tenancy, franchise, or by any other contractual means of any type of works, assets, services or goods including livestock or any combination and includes advisory, planning and processing in the supply chain system. From these definitions, it can be said that procurement generally implies the process which ensures that the firm acquires materials for use and disposals in order to accomplish its goals and objectives.

In the words of Panya & Were (2018), the procurement function exists to serve two main goals; procurement goals and non-procurement goals. Procurement goals are achieved directly by the procurement function and encompasses reduction of costs, quality and quantity improvement, reduction of technical risks, protection over integrity and competitiveness. On the other hand, goals not related to procurements involve the social, political and economic objectives within the system. Existence of a legal frameworks in many countries has made the procurement function complex, tedious and increased the challenges the function faces. Thus, achieving efficiency and

effectiveness in public procurement is still riddled in jeopardy (Leenders *et al*., 2008). In the thoughts of Thai (2004), one of the main objectives of the public procurement system is achieving efficiency in operations. This has however proved to be an uphill task given that procurement faces copious challenges due to the market structures in which they operate in, the political environment as well as the legal framework that guides the function.

The study by Pegnato (2003) estimated the extent to which the procurement function saves. The federal United States procurement spend was estimated to be close to $ 200 billion per year. Coggburn (2003), however put the collective spend in procurement for both states and local government at $ 1 trillion per annum. The government's collective purchasing power for developed countries is projected to be 20% of their Gross Domestic Product (GDP) (Thai & Grimm, 2000), while for developing countries, the purchasing power is 15% of the entire GDP (Nicol, 2003). In 2004, Russia's federal procurement spend was deemed to amount to 40% of the nation's total budget. According to the organization for economic cooperation and development report, (OECD) of 2006, the volume of global public procurement spend was $ 3.2 trillion, 8% of the world's total GDP of $ 40 trillion (OECD report, 2016). It can thus be alluded that procurement consumes a considerable budget of any country and thus essential for the development of such economies. Having a clear legal framework that guides procurement structures is a milestone in achieving objectives of such countries.

A legal framework of any system or structure encompasses the rules, laws and policies that govern the respective subjects. Procurement legal framework remains imperative in the working of any organization that procures goods, works and services, hence such entities need to agment a sound legal framework in order to improve performance. Mutangili (2019) writes that the public procurement legal framework clearly defines how public procurement ought to be practiced by stakeholders, experts as well as practitioners, and includes all the phases of the procurement process, general principles of procurement and asset disposal, methods of acquisition of materials as well as the relevant policies. Even though, it is important to note that a worthy public procurement legal framework is centered on the crucial principles that guide the practice (Robert, 2006; Thai, 2009).

It is reported that rules, laws, policies and regulations are an essential pillar for a sound public procurement system in practice and theory. Henceforth, it is crucial that supply chain firms in public entities (PEs) consider adopting resolute rules and regulations in order to practically improve performance of their procurement function, which directly results to improvement in overall organization performance. In contrast a report by the Organization for Economic Cooperation and Development, OECD, (2006) enumerates mixed results on procurement laws and improvement in efficiency. In countries with a democratic structure and clear environment, procurement laws and regulations improve efficiency and effectiveness. However, a country where there is no effective democracy implies that the procurement structure cannot be transparent and effective (OECD report, 2006).

Mwangi (2019) explains that government purchases in most Middle East and African countries range between 9% to 13%, a clear attest that procurement takes a fundamental role in the country. Hence, public procurement is significant in social political and economic developments and making sure that the process is devoid of corruption is essential. To achieve these, the procurement process must be in part or whole, be understood by the key players: the government, procuring entity, business community including suppliers, professional associations (Kenya Institute of Supplies Management, KISM), academic entities, other stakeholders and the public in general. In Kenya, public procurement practices are mainly governed by the PPAD Act, 2015; the Public Procurement & Disposal Regulations (PPAD Regulations, 2020).

In order to understand legal framework of the procurement system in Kenya, it is important to first consider the 2010 new Constitution. Promulgation of the new Constitution 2010 was instrumental in giving radical changes to the Procurement Legal Framework. The idea of procurement was first included in the constitution, and this showed that procurement, just like many lucrative fields, was important in the governance system of the country. So saying, the enactment of an overarching act, the PPAD Act 2015, was made possible by the new Constitution of Kenya, 2010. The title of the act states:

An act of parliament to give effect to article 227 of the constitution, to provide for procedures for efficient procurement and asset disposal by public entities; and connected purposes

Article 227 of the Constitution of Kenya 2010, states:

(1) When a State organ or any other public entity contracts for goods and services, it shall do so in accordance with a system that is fair, equitable, transparent, competitive and cost-effective.

(2) An Act of Parliament shall prescribe a framework within which policies relating to procurement and asset disposal shall be implemented….

From the above, it is demonstrated that public procurement is constitutional and enshrined in the political governance of the country. In saying, the government of Kenya has been developing and rationalizing the practice of procurement in public entities. Public procurement structure has grown from a mere structure with no form of formidable rules and regulations into a current robust structure with a sound legal framework. The main instrument was the supplies manual in the early 1960's, the treasury circulars were given periodically from time to time. A director of government's supply services was responsible for coordinating purchases and adherence to provisions of the issued circulars by government agencies. The circulars also created various tender boards to aid in carrying out procurements. Additionally, the government could make use of crown agents to carry out procurement on behalf of public entities.

The government thereafter developed the exchequer and Audit rules which were the Procurement Regulations of 2001 to replace treasury circulars. Functions of crown agents were alternatively rescinded. While this was viewed as a bold move, it was however unable to address all concerns as related to problems related to procurements and disposals. Need for answer to the shortcomings in public procurement especially in government organizations activated the enactment of an act of parliament. This was realized in October 2005, when the Public procurement and Disposal (PPD) Act 2005, was formally promulgated. The ministry of finance there after published in a gazette notice the PPDR, 2006 regulations to operationalize the Act by a Legal Notice No. 174 on 29th December 2006 and effectively came to use the following year, 2007. PPD Act, 2005 could later be developed to the Public Procurement and Asset Disposal Act, 2015, which included procurement practices in the county governments after a new constitution of Kenya was formally incepted on August 2008. The public Procurement and Disposal Regulations (2020) were incepted on 2nd July of 2020 five years after adoption of the PPAD Act. The regulations are an operational framework of the act and also gives schedules for a variety of application (Republic of Kenya, 2007).

It is crucial to note that the PPAD Act, 2015, was meant to address problems in the way procurement of goods works and service was carried out in the public sector. Studies and experience however depict that effectiveness of the Act has only remained on pen and paper and the results have not been as expected (Mutangili, 2021). While majority of the practitioners are cognizant of the act, they have however not fully practiced and followed it, increasing dissatisfaction in the public arena and depicting procurement as a money laundering and corrupt discipline. Studies by Kanyaru & Moronge (2017) indicate that globally, $ 400 billion which is about Kshs 34.9 trillion is lost due to inefficiencies and corrupt deals in public procurement. Government procurement managers and practitioners have always been held accountable for pitfalls in public procurement; hence procurement has been depicted as a rather fundamental avenue of individuals whooping public resources for own selfish interest. A report by Public Procurement and Regulatory Authority (PPRA, 2017) as quoted by Chebet & Kwasira (2016) painted a grim picture of procurement by public entities, indicating that majority were buying at more than 60% of the established market price and this increased the costs of operation, loss of value for money, sunken quality and reduced competitiveness of the firms. More so, a radically new constitution of Kenya enacted on August 2008 has tried to establish standardization in procurement practices in the public sector even though public procurement in public entities remains embedded in corruption and undercutting practices (Republic of Kenya, 2010).

Gelderman, Ghijsen & Brugman (2006) mentions that in order to ensure that practitioners and other stakeholders are compliant to the legal framework, regulators need to enforce it. Studies in literature however produce mixed results and opinions regarding the influence of enforcing procurement legal framework and compliance (Awino & Getuno, 2014). Sparrow (2000) was opposed to the fact that enforcement of procurement legal framework improves compliance and performance. He noted that where regulators take a keen interest on the legal framework, then this has the result of making violators more complicated on how to mitigate it and this obscure detection by the authorities. Okundi (2013) reported that poor implementation of the procurement law has made performance in County Governments inefficient, given that 30% of the budget resources is lost due to undercutting practices and corruption in procurement. Imperato (2005) however agreed that enforcing a procurement legal framework improves compliance by practitioners. A study tried to compare the link between enforcement activities and compliance by organizations (Zubcic & Sims, 2011) and found that enforcement actions and compliance to the

laws and regulations have a positive relationship. The study by Asamoah, Berko & Adu Poku, (2019) established the challenges of implementation of public procurement act, 2003 in Ghana by adopting a survey design on a target population comprising of procurement officers and contactor organizations working for Newmont Ghana Gold Ltd. A non-convenience sampling technique selected 50 participants who participated in interviews and questionnaires. Collected data was analyzed by descriptive statistics using Microsoft excel and was as frequencies and percentages. The results from the findings indicated that 75% of the respondents responded that strategic planning is an important performance pillar for the implementation of public procurement law, 47.5% implied that the regulation enforcement had a moderate influence on Newmont's procurement act implementation while another 47.5% indicated that the organization culture of Ghana's Newmont favored the implementation of the act. The conclusion drawn was that implementation of the procurement Act, 2003 can be done efficiently if there was judicious enforcement of regulations, strategic planning and a culture that favored procurement activities (Asamoah *et al.*, 2019).

Additionally, Panya & Were (2018) conducted a study on Public Procurement Regulatory Compliance in County Governments in Kenya by using descriptive research design on a population of 525 participants. Study selected105 respondents made up of procurement officers from county assembly, governor's office, county ministries, the sub county and the county referral and sub county hospitals. Questionnaires were chosen as research instruments where multiple regression models were used as analysis techniques. The findings of the study depicted that management of the procurement process, ethics in procurement, contract management and cost of finance management had a statistical significant and positive relationship with the procurement regulatory compliance. The recommendations of the study were that managers and policy makers in counties and other PEs to harness policies meant to improve compliance to the procurement regulatory compliance.

Reviewed scholarly works on procurement legal framework concentrated on original acts and regulations (PPAD Act, 2005, PPDR, 2006, PPP Regulations, 2006) and based in the old constitution of Kenya (Cantera, 2021; Giosa, 2020; Loosemore, *et al.*, 2021; Jibrin *et al.*,2014; Asamoah *et al.*, 2019; Kanyaru & Moronge, 2017; Mutangili, 2021; Getuno, *et al.*,2015; Nyakundi & Muturi, 2017). A model study with all reviewed elements of procurement legal framework

(PPAD Act, 2015, PPD Regulations 2016, Public Private Partnership Act, 2013, Executive orders & directives 2015 & 2018) when based in the New Constitution, 2010 is nonexistent. Further, bulk of the studies have focused only on one or few elements of the legal framework (Siagan, 2017; Getuno, *et al.,*2015; Panya & Were, 2018; Oduma & Getuno, 2017; Moe *et al.*, 2017) ignoring the realism of all the elements. Information on implementation of procurement legal framework and supply chain performance of PEs by considering all tenets of the legal framework under the new constitution of Kenya, 2010 is therefore nonexistent, presenting a gap in knowledge. Against this backdrop, the current study established implementation of procurement legal framework on supply chain performance of PEs in Kenya by considering all elements of the legal framework under the New Constitution of Kenya, 2010.

The concept of innovation practices is not new among contemporary researchers. Innovation is not a lone isolated act, but a combination of new or mixed actions with a view to improve performance. Alves, Galina & Dobelin (2018) defined innovation practices as new services, products, procedures, technologies or the new ways of improving processes where the technological properties of such processes will be significantly different from the original. Zhang, Khan, Lee, & Salik (2019) quoting Damanpour & Evan (1984), refers to innovation practices as adoption and use of an idea for a new product or a new service or the introduction of new elements in an organization's production process or service operation." Singh, Mathiassen & Mishra (2015), in their definition of innovation practices establish that materials technology are often applied to technological issues in organizational set up. The researchers further espouse that innovation practices is no longer an alternative since it has become a unique focus by top managers in many business organizations. For the purpose of this study, innovation practices is adopted as new ideas, processes, practices, frameworks, or new ways of improving the final products and services in a formal organization.

Globally, studies affirm that public sector organizations are wrestling with unprecedented dynamicity of results due to ever changing technology and management structures. So then, the organizations have to quickly reexamine their management models as well as their business practices in order to align themselves and maintain the pace with this changes (Nyaboke & Muturi, 2017). It is of essence to note that procurement plays a vital role in shouldering public organization' realization of their key objectives and conform to the changes and uncertainties

ahead. In practice, this will call for procurement to drive costs out of operational bases as well as adding value to every practice. To achieve this, the organizations must be innovative.

It is reported that information technology used in creation of goods and services enables firms to succeed in the current turbulent market environment characterized by high competition (Mudany, Kemei, Awuor & Ogutu (2021). The resource-based view take of a firm point out that an organization with unique innovative resources and capabilities can obtain competitive scales in tumultuous markets and outperform her competitors and industry contenders. Of worth to note is that innovation practices enable organizations to manufacture new varieties of products and services that are in turn the antecedents for high performance (improved quality, reduction in costs of operations, timely delivery to intended markets, efficient service delivery to citizens). In a nutshell, such firms become bosses in competitive markets and gain high performance which has high technological capability.

In the words of Zhang *et al.* (2019), there are two types of innovation practices. First, product innovations, which imply the new products obtained after putting in action technologic products and second, process innovations which stem from putting in action processes deemed to improve a service or a product. Innovation is acclaimed as an operative alternative for organizations to compete effectively in tempestuous market forces. This can be achieved by implementing diverse innovations forms such as social innovations, organizational innovations, eco innovations, marketing innovation and process-product innovations. The choice of the type of innovation by an organization must however be aligned to the firms set objectives. Gu, Yang, & Huo (2021) show that technology usage can improve performance in manufacturing firms. Mwangi and Kariuki, (2013) contend that public entities' inadequate application of ICT systems and processes negatively affects compliance to the legal framework.

YawObeng & Coleman (2020) studied the effects and outcomes of innovation practices on e-learning system in Ghana by using primary data in tertiary training institutes. In analysis, logistic regression model was adopted to determine impact of innovation practices on web-based e learning system. Correlation matrix ascertained relationship among conceptualized variables. The results show that innovation practices has a significant effect on e learning system given that a single increase in innovation practices results into 55 times increase in features of the system and 3 times increase in the eLearning outcome. Further, the results also denote that features of the eLearning

system has a significant effect on the eLearning outcome. The study however failed to provide recommendations for policy making (Yaw Obeng & Coleman, 2020).

In addition, Chege *et al*. (2019) looked at impact of IT innovation on organization performance in Tharaka Nithi County by randomly selecting 297 small scale farmers and SMEs which were registered and licensed by the government. A quantitative research design was utilized with primary data collected by a questionnaire. Structural equation modelling was also utilized in analyzing the collected data. Results of the study showed that technology innovation has a positive and significant effect on performance. The recommendations informed entrepreneurs to consider coming up with innovative strategies in order to spur performance. The government of Kenya as well need to also strengthen and actualize policies meant to develop ICT infrastructure among entrepreneurs, improving SMEs innovation externalities as well as putting up ICT resource centers in order to improve organization performance (Chege *et al*., 2019).

From the aforementioned discussions, scholarly works on innovation practices is not seldom. A glut of the studies reviewed on the variable were literature & conceptual reviews (Gu *et al*., 2016; Incea *et al.,* 2016; Alves, *et al.,* 2018, Beer & Mulder, 2020), ignoring a primary quantitative approach. Additionally, some studies concentrated on organizations in only one industry, ignoring a multi-faceted approach of PEs in all industries (Kiani *et al.*, 2021; Zhang, *et al.,* 2019; Park *et* al., 2019; Yaw Obeng & Coleman, 2020). Other studies albeit, operationalized innovation practices diversely, ignoring importantly PP practices such as ICT training, E-procurement practices, Capacity building of procurement practitioners, systems development (David & Grobler, 2019; Abdullahi *et al.,* 2019; Haabazoka, 2018 and Okpalaoka *et al*., 2022). In the same vein, other studies adopted diverse sample frames, ignoring heads of procuring units who must be abreast on every PP innovation (Adeyeyetolulope, 2019; Chege *et al*., 2019; Mutie, 2018; Letangule & Letting, 2012). Information on effect of innovation practices on SC performance of PEs in Kenya is therefore lacking and this warrants investigation. Current study set to model this relationship.

In the words of Moore (1995), public value theory (PVT) establishes that firms can create value by adopting and utilizing the available resources (e.g. adopting innovation practices and implement procurement legal framework). The theory provides an understanding of how managers need to be entrepreneurial and innovative in order to create the common good. Further, employees at all levels

of the firms must be actively involved and suggest new ways of implementing set policies as well as adopting innovative ways of creating value (Moore, 1995). The manager's role, although, is not just implementation but harmonizing the operational capacity of utilizing available resources and making sure that there is an effective authorizing environment for creation of citizen value. The PVT provides important grounds in which adoption of innovation practices and implementation of procurement legal framework can be tapped and harmonized as fundamental resources in public procurement to create value and improve performance of the public organizations (Moore, 1995).

Lima, Marcon, Echeveste, Marondin & Frank (2017) studied moderating effect of ICT by basing on a survey of 48 Brazilian Companies which took part in the Brazil Lean Conference of 2014. Questionnaires were used as the main research instrument. Firm performance was evaluated by on time delivery, customer satisfaction, quality and cost. Descriptive statistics and multiple regression analysis were used in the analysis of data. Results indicated that lean practices had a positive and significant effect on performance. ICT practices were also found to moderate this relationship. The study however failed to derive recommendations for practical implementation.

From the afore discussed, studies adopted different variables in moderating procurement legal framework-performance relationship. Marendi (2015) for instance, considered enforcement mechanisms as a moderator of this relationship, while other studies adopted innovation practices on different models (Bulitia, 2014: Moderating effect of technological innovation on human resource management practices and performance; Mudany *et al.*, 2021: moderating role of technology on leadership and performance; Nyambura, 2018: moderating effect of ICT on SC risks and performance; Mkwizu & Sichone, 2019: moderating effect of technological innovation on user attributes and e government IS success). In addition, some studies operationalized innovation practices in a variety of ways (Alzaghal & Mukhtar, 2018: ICT tools; Bonuke & Cheruiyot, 2015: ICT utilization; Kabiru *et al.*, 2012: IT capability, IT investment). The current study hopes to bridge this gap by looking at the moderating effect of innovation practices on procurement legal framework implementation-performance relationship in the lens of e-procurement practices, ICT training, systems development, capacity building of procurement practitioners & interdepartmental integrations.

Quoting the Independent Procurement Review report 2001, Chemoiywo (2014) discloses that Kenya has 187 PEs which fall under various ministries, with the volume of procurement contributed by the enterprises standing at $3.64 billion. This contributes to approximately 9% of Kenya's GDP. There are 187 are fully registered in Kenya, castigated into five groups according to their roles and objectives as: 1. Executive Agencies 2. Purely Commercial State Corporations, 3. Independent Regulatory Agencies 4. State Corporations with Strategic Function 5. Research Institutions, Public Universities, Tertiary Education and Training Institutions (Taskforce Report on Parastatals, 2013). PEs in Kenya have been grappling with poor governance embodied by a political motive and coupled by poor implementation of the rules guiding procurement practices, thus jeopardizing their performance. While it's widely recorded that PEs have the ability to contribute to global trade and public value creation, they face numerous problems, which have hampered their contribution to economic development.

Sturesson, McIntyre & Jones (2015) contend that the top eight countries with the highest number of PEs (China, Malaysia, United Arab Emirates, Saudi Arabia, Indonesia, India, Brazil and Russia) contributes 20% to the world's global trade with China alone contributing 10% of merchandize exports in 2010 and this shows the increasing significance of the entities to economic development. Nevertheless, it is observed that the PEs face numerous problems which hamper their operations (Mutie, 2018). The performance of SC units in PEs is inadequate, many are grappling with corruption, poverty, lack of efficiency and ineffective delivery of services to the common citizens due to poor adoption and use of the legal framework guiding public procurement. Poor implementation of the procurement legal framework was evident in the case of Kenya Medical Supplies Authority KEMSA, (interested party), the PPARB & Republic and Emcure Pharmaceuticals Ltd. (Ex parte) (2019) case that was petitioned in court in 2019. The court held that KEMSA, as a PE violated the PPAD Act (2015) by entering into a contract before elapse of the 14-day period to allow room of rebuttal for any aggrieved service provider. The tender was thus quashed and the entity ordered to re tender. Another fundamental proof of poor implementation of the public procurement legal framework was seen in the Independent Electoral & Boundaries Commission (IEBC), voter registration contract which was lobbied in the Supreme Court in 2013. The petitioners opined that the commission violated the spirit of PPAD Act, 2015 and constitution by making an award decision to a service provider who did not meet thresholds of the tender document, and thus supplied KIEMS kits that failed in the 2013 Kenya general

election. The court in its ruling, held that the procurement of the failed election kits was due to a lack of understanding in boardroom meeting on application of procurement procedures and this led to failure of the commission to test integrity of the kits in good time (Case Petition 5, 2013).

Implementation and compliance levels to the procurement legal framework among PEs has remained low and unsatisfactory. There is no single one entity that has attained a compliance level of 100% (PPRA Reports, 2020), indicating that there is poor implementation of the procurement procedures and regulations. PEs continue to flout procurement procedures and regulations through poor procurement planning, lack of internal policies and manuals, poor records keeping, lack of price market surveys, weak contracts management system and this has led to loss of value for money, occasioning loss of public resources (PPRA Review Report, 2020). For instance, the review report 2019-2020 showed the following compliance levels: Agriculture, Fisheries and Food Authority at 49.6%, Retirement Benefits Authority at 58%, National Social Security Fund at 55%, National Industrial Training Authority at 57%, Homa Bay County Government at 20.2%, Eldama Ravine Technical & Vocational College had a compliance level of 41%, Kenya Meat Commission at 27.5%, Kenya Medical Research Institute at 56.8%, Malindi Water & Sewerege Co. at 42% (PPRA Reports, 2020). This shows that implementation of public procurement legal framework in Kenya PEs is non-compliant, occasioning lack of value for money and thus wastage and loss of public resources (PPRA Review Report, 2020).

Tackling corruption and poverty challenges remains a responsibility of the public sector even though the government can deliver effectively to its citizens (Mutangili, 2019) if lucrative mechanisms are put in place to aid in overseeing operations in the government organizations. Public procurement in many developing states is said to make up to 25% of GDP. For quite a considerable period of time, the rate of industrialization in many countries has remained at 10%. Even so to say the procurement market in developing nations may not be higher, the larger percentage it has on the total GDP is significant enough to warrant formation of an economic agreement that no any international organization in any country would let go easily, alongside the political impact that the function may further pose (Mutangili, 2019).

A report by Presidential task force on parastatal reforms (2021) update discloses that the performance of public entities (PEs) is on a declining trend and this is seriously affecting public finances given that the entities are increasing over reliance on government financial support. The

government's support is however not commensurate to the social and economic benefits achieved by these entities. A sample of 18 PEs by the Taskforce report on parastatal reforms (2021) show that the entities have a financial shortfall of Ksh. 70 billion annually with a projected Ksh. 382 billion shortfalls over the next five years and this has reduced their competitiveness, interfered with acquisition of quality goods and increased the costs of operation. Additionally, 14 of the 18 entities were reported as un profitable, loss making or operating below cost recovery. With a well-developed legal framework, many questions still exist on whether its implementation improve performance.

1.2 Statement of the problem

Public entities remain catalysts of public value creation for any economy. There has been an increase in growth of public entities (PEs) from 9% to 23%, with top eight countries having the highest number of PEs contributing 20% of the world's trade. Kenya's PEs contribute $3.64 billion spent in PP which is about 9% of the country's GDP. Even though, a scenario of poor implementation of procurement laws and procedures has orchestrated inefficiencies in operations, huge loss of public resources, provision of poor products and non-achievement of the value for money in PEs, with the government shouldering burdens. Globally, it is acknowledged that $ 400 billion is lost due to inefficiencies and undercutting practices in public procurement systems. In Kenya, it is reported that performance of PEs has been reducing over the years, with financial support from the national government not being commensurate to their economic and social gains. PEs are facing a trend of financial shortfalls, with 18 PEs having Ksh. 70 billion shortfalls annually and projected ksh. 382 billion in the next 5 years. It is further reported that PEs acquire supplies at 60% above the prevailing market price, leading to loss of value for money and wastage of public resources, sunken quality and ineffective competition. Public Procurement Regulatory Authority (PPRA) review reports, 2020 show that all this have largely been alluded to poor implementation of procurement laws and inefficient innovativeness, majority of PEs compliance remaining unsatisfactory and non-compliant. Previous studies focused on procurement legal framework-performance relationship under original acts & regulations basing on the old constitution, majority considering few elements. Empirical evidence on innovation practices were literature & conceptual reviews, ignoring a primary quantitative approach. Some reviewed studies on procurement legal framework-performance relationship reveals weak relationship indicating that moderation effects may abound. Practically, procurement laws, innovation practices and

performance exists together, however this information with innovation practices as a possible moderator is lacking in theory indicating that there exists an empirical gap for this model. The current study therefore, sought to come up with a new model by analyzing the relationship between procurement legal framework implementation, innovation practices & performance.

1.3 Objectives of the study

The broad objective of the study was to investigate the relationship between procurement legal framework implementation, innovation practices and supply chain performance of Public Entities in Kenya. The study was guided by the following specific objectives;

i. To establish the effect of procurement legal framework implementation on performance of public entities in Kenya

ii. To determine the effect of innovation practices on performance of public entities in Kenya

iii. To investigate the moderating effect of innovation practices on the relationship between procurement legal framework implementation and performance of public entities in Kenya

1.4 Research Hypotheses

H_{01}: Procurement legal framework Implementation has no significant effect on supply chain performance of public entities in Kenya

H_{02}: Innovation practices has no significant effect on supply chain performance of public entities in Kenya

H_{03}: Innovation practices has no moderation effect on the relationship between procurement legal framework implementation and supply chain performance of public entities in Kenya

1.5 Scope of the study

The study was carried out in Kenya among her public entities. Public entities were chosen for this study given that they are agents of public value creation and have a mandatory requirement to apply the law and procedures that guide procurement of goods and services. Furthermore, they are guided by a common legal framework that details procurements and disposal of goods and services. The need to follow procedures and regulations in public procurement is to uphold fairness, equality, transparency, economy and value for money (Sec 227, Constitution of Kenya 2010). The study was limited to the field of supply chain management and specifically

procurement legal framework implementation, innovation practices and supply chain performance by considering 187 public entities in Kenya. The study was limited to implementation of acts, regulations, orders and directives such as Preferences and reservation schemes, 2011, Public private Partnership Act, 2013, PPAD Act, 2015, PPDR, 2016, executive orders and decrees (order no. 2. Of 2018, 0rder no. 6 2015) which have been adopted since promulgation of the new constitution, 2010 and whose implementation and compliance levels varies in different PEs.

1.6 Significance of the study

The study of procurement legal framework implementation and adoption of innovation practices as antecedents of correcting supply chain performance mishaps in PEs offers practical solutions. While serious efforts have been geared towards development of the legal framework until enshrining it in the constitution, the poor implementation and compliance to it has resulted in the PEs loosing public resources through supply chain undercutting practices, with little regard to adopting innovative technologies and practices that may aid implementation and even performance. In literature, studies have concentrated on originating acts and regulations of the procurement legal framework, ignoring this under a business environment regulated by a new constitution and modified legal framework. Furthermore, numerous studies have only dwelt on only one or few aspects of the legal framework, with no study in particular, looking at the interaction of innovation practices on implementation of procurement legal framework.

Against this backdrop, the study was poised to suggest this model in literature by looking at procurement legal framework implementation, innovation practices and performance of PEs which were an important ground for future scholars. The study may inform policy makers (the government and Managers) by suggesting that implementation of procurement legal framework and innovation practices may be important resources for improving performance, and therefore invest resources for their practicality.

1.7 Conceptual Framework

Independent variable **Moderating variable** **Dependent variable**
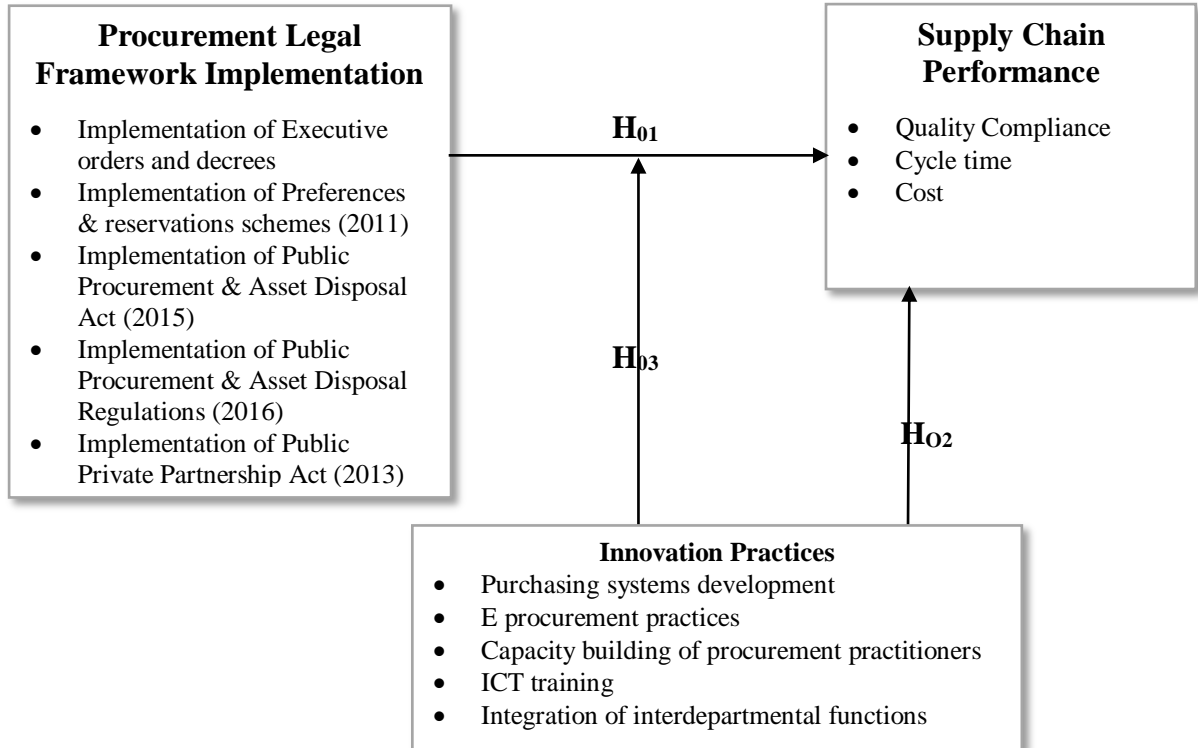
Figure 1.1: Conceptual framework of the relationship between Procurement legal framework implementation, innovation practices and supply chain performance of PEs in Kenya.

Source: (Adapted from Moore, 1995; Bencivenga & Ermanno, 2000; Tornatzky & Fleischer, 1990: Medori & Steeple; 2000)

The conceptual model of the study above depicts an association between procurement legal framework implementation and supply chain performance which exhibits a cause and effect relationship. The independent variable is procurement legal framework implementation. Aspects of the legal framework in place (implementation of executive orders & decrees, implementation of PPDR 2016, PPAD Act, 2015) may affect supply chain performance of PEs. Innovation practices was expected to provide a moderating effect on legal framework implementation and performance relationship. In this case, innovations were conceptualized to mean new practices, services, trainings, technology and security adopted to improve performance. Aspects of innovations (Purchasing systems development, E procurement practices, Capacity building of

procurement practitioners, ICT training, Integration of interdepartmental functions) may also have a direct effect on performance. SCP of public entities is the dependent variable. It was expected that performance metrics in supply chain such as procurement of quality products, cost effectiveness and timely procurements & delivery may improve when there is honest implementation of laws and adoption of innovativeness. With this therefore, it is expected that the values of public procurement as enshrined in the constitution in terms of transparency, value for money, competition and cost-effectiveness may be achieved by public entities (which are agents) as grounded in public value theory since managers will have utilized procurement laws and innovativeness to create public value. Therefore, the study is composed of three main variables; independent variable (procurement legal framework implementation) moderating variable (innovation practices) and the dependent variable (supply chain performance) as shown in the figure 1.1

CHAPTER TWO
LITERATURE REVIEW

This part describes the literature part of the study as commensurate with objective themes outlined in the study. A review of the theories which underpinned the study, conceptual review which discussed various concepts in procurement and supply chain management and lastly an empirical review of the related studies as guided by the objective themes is examined.

2.1 Theoretical Literature Review

This part studies the theories that grounded the study. Post, Sarala, Gatrell & Prescott (2020) contend that a theory is a rational thought which explains a phenomenon. It is an explanation of nature which is consistent with tested and proved methods. Rational thinking is often informed by observational studies or through research. Shuttleworth (2019) further agree that a good study should be grounded in theory.

2.1.1 Public Value Theory

Public Value Theory (PVT) was first coined by Professor Mark H. Moore who established it as an equivalent of shareholders' value in public management in 1995. It advises managers in the public domain, with a bigger picture plan of mitigating constraints and utilizing opportunities presented, as well as the dare to evolve and add value to their outcomes. It explains the value that an organization gives to the society by adopting and utilizing its given resources. PVT provides managers with an understanding of how entrepreneurial activities promote the common good. It is incorporated as an important element in the public sector, more so in PEs, to provide an avenue for employees at all levels (top, middle, operational) to suggest new ways about how to improve organizational working in terms of reducing rates of corruption, improving efficiency and effectiveness. Organizations in the public domain which adopt public value as a principle have to create an organization-wide culture where the quest for public value by individual employees is recognized and rewarded.

PVT establishes that a manager's scope extends beyond implementation of policies and adherence to the norms and culture to include deriving opportunities with a view to improve lives of the common citizenry. This is from the sheer fact that organizations giving services for citizen use are directly responsible to the citizens and their representatives on the use of resources bestowed to them, unlike their private counter parts. Moore (1995) provides that in order to create public value,

an organization must first define its operational capacity, that is ability of the firm to operate and authorizing environment (managers of the firm who make decisions).

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                    ┌─────────────────┐
                    │  Public Value   │
                    │    Outcome      │
                    └─────────────────┘
                      ↗             ↖
                    ↙                 ↘
     ┌─────────────────┐         ┌─────────────────┐
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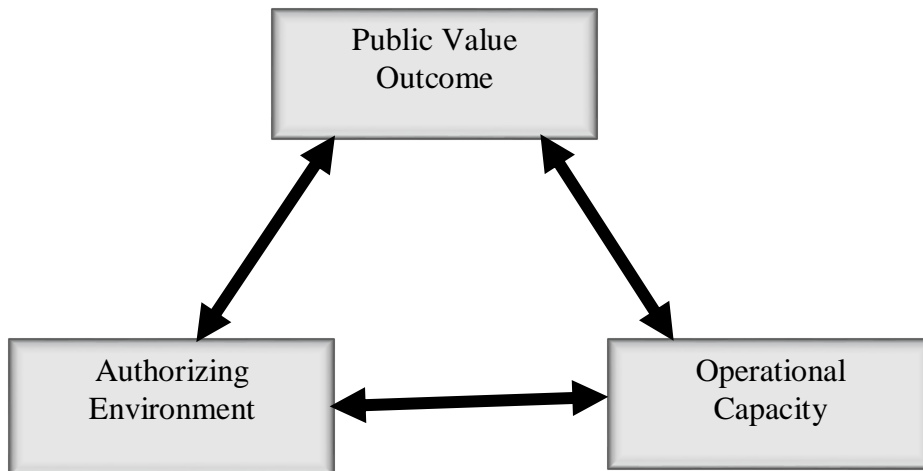
Figure 2.1: Moore Strategic triangle of public value

Source: (Adopted from Moore, 1995)

As tenets of PVT bestow, the managers' scope in public entities is not just implementation of laws and procedures but an understanding of the value that implementation of the said legal framework accrues. The value of procurement legal framework can be understood by a look at the objectives underpinning establishment of the legal framework. These objectives are clearly depicted in section 227, subsections (1) and (2) of the Constitution of Kenya (2010) on procurement of goods and services:

(1) When a State organ or any other public entity contracts for goods and services, it shall do so in accordance with a system that is fair, equitable, transparent, competitive and cost-effective.

(2) An Act of Parliament shall prescribe a framework within which policies relating to procurement and asset disposal shall be implemented

As seen above, the Constitution, while establishing the procurement legal framework, established the objectives of the legal framework as ensuring fairness, equality, transparency, competition, economy and value for money. These are important principles of public procurement are the antecedents of citizenry value. The judiciary of Kenya has recognized these establishments as

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important values in the conduct of public procurement practices. For instance; in the case of Republic of Kenya vs Public Procurement Administrative Review Board (PPARB), Accounting Officer, Kenya Rural Roads Authority and 2 others (Amicus Currrie), Ex Parte Roben Aberdare (K) Ltd. (2019) eKLR, paragraph 103 of the judgement the court held as follows:

"Procurement disputes revolve around the proper interpretation and application of Article 227 of the Constitution; hence, they raise constitutional issues. This is because procurement so palpably implicates socio-economic rights that the public has an interest in its being conducted in a fair, equitable, transparent, competitive, and cost-effective manner".

The Court further declared as follows:

"...It is important to bear in mind that fairness, equitability, transparency, competitiveness and cost-effectiveness are the guiding principles, required by the Constitution in relation to all public procurement in Kenya. Thus, whatever is done should not cause the process to lose the attribute of fairness or, the attributes of transparency, competitiveness and cost-effectiveness. Fairness in the procurement process is a value in itself and a proper compliance with the procurement process is necessary for a lawful process."

The ruling of the court concluded by establishing:

'Fairness is inherent in the tender procedure. Its very essence is to ensure that before a State organ purchases goods or services, or enters into contracts for the procurement thereof, a proper evaluation is done of what is available and at what price, so as to ensure cost-effectiveness and competitiveness. Fairness, transparency, and the other facts mentioned in Article 227 of the Constitution permeate the procedure for awarding or refusing tenders."

PVT was the main anchor theory the study. It grounded the contribution of the study on supply chain performance. Performance of supply chains (quality compliance, cycle time, cost effectiveness) can create value to the citizens (ensuring competition, fairness, equality, economy, value for money) through adoption and use of important resources such as implementation of public procurement laws and adoption of innovations.

2.1.2 Dialectical Theory

Dialectical theory, also called minor logic, derives its roots from the Chinese philosophies of Yin and Yang, which implies that nearly every aspect of the world has the seeds of its opposite, and the world, is in a continuous structure of change in which friendly and foe forces operate upon each other. Initially, it was coined as dialectical materialism theory by Karl Marx and Friedrich Engels who incorporated it with the Hegelian concept. Within Hegelianism, dialect implies contradiction of thoughts and ideas. Contradiction is regarded as the dynamic association of unified oppostities. In this respect, the world is in a continuing state of change, with both constructive and destructive forces acting on each other. It is made up of three phases of development; firstly, a thought or thesis of an idea, second, a reaction or anti idea which contradicts the thesis, third, a statement or way in which the differences between the first two phases are solved.
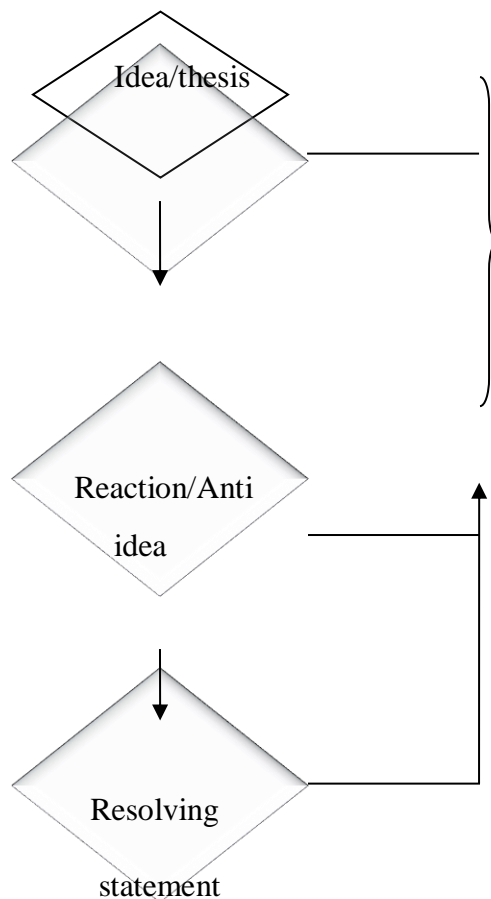
Figure 2.2: Phases of a dialect

Source: (Adopted from Bencivenga & Ermanno, 2000)

Dialectal theory operates in a structural discourse where different parties, individuals or groups presents different angles of view regarding about a particular subject and who would wish to pin point the truth through reasoned arguments. Dialectical tensions are the tugs and pulls experienced in organizations as a result of contradictions. It can be stated that dialect is a resemblance of debate, though it excludes personal elements such as emotions and senses of rhetoric. Dialectal theory can be applied to the study of the relationship modeling of procurement legal framework, where different parties e.g. the government, organization managers, procurement practitioners, service providers have varying ideas but who may argument a reasoned truth through reasoned actions.

The theory is adopted to ground implementation of procurement legal framework given that implementation of regulations and principles actioned through procurement award and disposal decisions is a debate in itself. Actually, the whole idea of implementing the procurement legal framework is to make award decisions in procurements and disposals. Members of committees responsible for making decisions at every stage of the procurement process must make decisions through a reasoned dialect. For instance, a tender committee's award decision follows phases of the dialect: idea, reaction/anti idea and statement of solution where the tender is the idea, anti-idea can be taken to imply appeals by service providers while statement of solution could imply the firms take or the PPARB/ court decision. The contradicting tenets in a competitive public procurement is that one responsive bidder will be a successive while the other responsive bidders will be non-successive, introducing "awards" and "rejections"

2.1.3 Technology-Organization-Environment Theory (TOE)

The Technology, Organization, Environment, TOE, framework model was first put forward by Louis Tornatzky and Mitchell Fleischer in 1990 as an organization level theory of recognizing how technology can be embraced in the firm and the elements that influence adoption of this technology to create value. The proposers of this model in this case, recognized these elements as three-fold: technological, organizational and environmental (Tornatzky & Fleischer, 1990).

According to the proponents, there are a standard set of elements which explains how technology can be incorporated and used in the organization. These elements are the technology growth, organizational aspects, business and organizational reconfiguration), and the business environment. In the technological aspect, the adoption and use is pegged on technologies within the organization environment, benefits derived, as well as visibility complexity. In the context of

the organization, business aspects such as the scope, top management commitment, culture, organization structure, are considered (Chatterjee, *et al*., 2002). The environmental such as competition, collaboration among partners, socio-cultural issues and government support (Scupola, 2009).
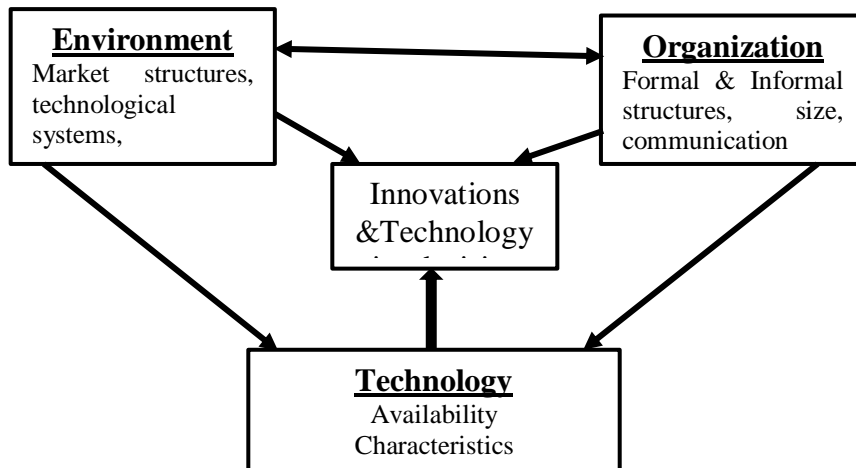
Figure 2. 3: Technology-Organization-Environment Model, TOE
Source: (Tornatzky & Fleischer, 1990)

It is important to recognize why Tornatzky & Fleischer (1990) proposed this theory in organization lenses other than other technological models that had widely been accepted (e.g. Technology Acceptance Model, Theory of reasoned action, Theory of planned behavior). Importantly, the proponents established this model based on higher level characteristics and traits (i.e. technology, organization and environmental) aspects other than the exhaustive qualities of individual people in the organization (Awa, Ojiabo, Orokor 2017) as explained by the preceding theories. TOE model is thus organization-wide based other individual-based and presents a generalized view of viewing the adoption and application of technology in the firm.

Innovation Practices is an important tool of this study. The study conceptualizes that innovation practices in public procurement such as systems & applications adoption and development such Tender Management Systems (TMS), Warehouse Information Management System (WIS), ICT training & development, e procurement practices Training & Capacity building, are important innovations which may be adopted, developed and used to obtain value for the firm. However, their adoption and use may depend on the Organization, its technology capability and the

environment of operation as envisaged by the TOE model. For Innovation Practices to influence supply chain performance, they must widely be accepted and attuned with the existing technological infrastructure. The organization itself must be favorable, that is, the firm's culture and norms, communication channels must support the innovation practices. Policies and regulations, both from the internal and external environment must further allow the adoption and use of innovation practices. The theory therefore, takes credence that PEs may adopt innovation practices to improve performance since the practices will position the firm's competitive scales, reduce costs of operations and improve speed and quality in operations. The TOE model thus grounded the variable Innovation Practices

2.1.4 The Concept of Public Procurement

The idea of public procurement is not a new concept in the contemporary academia. It was first molded and written in Syria on a red clay tablet at around 2400 and 2800 B.C. The first procurement was for purchasing 50 jars of smooth oil in exchange for 600 small weight in grain. In around 800 B.C., there existed evidence of procurement between China and the Greek colony which concentrated on the development of silk trade. Government legislature in the United States at around 1800s began to make legislature and policies to create boards responsible for conducting purchasing. However, central procurement by state agencies was so seldom practiced at the time. In 1778, the continental congress approved purchasing commissioners who were paid 2% of the value of procurements. An increase in fraud and bribe saw the commissioners put on a salary payment at the end of the year. In 1792, the U.S Congress approved a purchasing act that gave the treasury and war departments authority to procure in the name of the United States. The first early procurement was made in 1794 where 6 frigates for the U.S Navy were bought. Wastage of public resources and bad experience enabled the enactment of a more comprehensive procurement law; the Purveyor of Public Supplies Act that could later ground procurement in the US military. Later on, lack of implementation and effective compliance to the Supplies Act gravitated enactment of Public Contracts Act in 1808 (Kanyaru & Moronge, 2017) which barred Congress members from taking part in public procurement. In 1809, the Procurement Act was enacted which required public procurement to be as competitive as possible. The earliest notable recognition of procurement is recorded in the works of Charles Babbage (1832) book on *Economy of Machinery and Manufacturers* where he called for a procurement officer in the mining sector. During the world war, the role of procurement became non-instrumental due to scarcity of materials. In 1980

organizations were increasingly concerned with supplier competition and acquisition of quality supplies. In today's time, procurement is instrumental for an organization success. Chief procurement officers are today important in strategic management of the firm. Since then, there have been many developments in PP worldwide (Kanyaru & Moronge, 2017).

The study by Helby, (2019) wrote that unlike their private counterparts who are driven by a profit motive, public procurement's main objective is rendering services to the common citizenry and being accountable to them. In addition, public procurement is a discipline regulated by a government legal framework while private procurement follows company manuals and regulations. Perhaps, the main difference between public and private procurements is seen from the fact that PEs carrying out procurement are financed government of the day on contribution of citizen taxpayers while their private counterparts' main source of revenue is company owners and shareholder's contributions. The PPAD Act, 2015 defines public procurement as the procurement by public entities which use public resources.

Lember, Kattel & Kalvet (2013) explains that there has been a growing interest by governments in using public procurement as a tool for innovations. In the last decade, governments across the world have established that PP which contributes to around 10-30% of GDP can be used extensively and explicitly to promote innovation practices. Indeed, this is possible as countries in Asia, America and Europe have developed explicit policies placing public procurement as a glamour for innovation. For example, the European Commission Lead Market Initiative (2011c, 2012a), Pre-Commercial Public Procurement related activities (2012b), Indigenous Innovation Policy Initiative in China (Edler *et al.*, 2007), Industrial Policy Initiative using public procurement in Brazil (Prochnick, 2010). The issue of public procurement for innovation has further been emphasized in global organizations doing a procurement. The Organization for Economic Cooperation and Development, OECD (2009) for instance, stated that public procurement for innovation must be incorporated as far as possible.

The practice of public procurement in government organizations should be in a way that there will be open competition and any interested player will be accorded equal opportunity to take part. Therefore, equality, competition and fairness are key principles of a public procurement process (Prochnick, 2010). It is recognized in Lember *et al.,* (2013) that nondiscrimination, competition and transparency are the principal principles for any public procurement. Constitution of Kenya

(2010) agrees with this establishment as it enlist transparency, fairness, equality, competition and cost-effectiveness as the guiding principles of public procurement practices in Kenya. In Kattel and Lember (2010), when competition in public procurement is attained through innovation practices other than price-based competition, then it can be adopted as a national policy objective, including procurement. According to Mutangili (2019) governments provide goods to their citizens through public procurement. Public goods e.g. national security and hospitals are however non-excludable and non-competitive, meaning that a persons' consumption of a public good does not reduce the quality and quantity of another's use. The government can also provide merit goods through public procurement (Odhiambo, 2015).

Government procurements in Kenya are receipts of high-level corruption due to enormous budgetary allocations and the complexities of procurement processes with a close exposure to politicians and civil servants (Mutangili, 2019). One key reason for this is that a personal interest of a civil servant is not the same to interest of the public. This dissimilarity in interests, herewith referred to us principal-agent problem, is the root cause of corruption in public coffers. According to the Authority report (2017), the highest cases of bribe in African countries occur in the field of public procurement by subverting the awarding of contracts. Corruption embedded in public procurement practices leads to lack of value for money, high prices of materials and wastage of public resources. Governments procurements in developing countries, Kenya being a no exception, are breeding grounds for corruption and not just because scale of complexities and enormous resources in the field. Other reasons for the escalation of this menace are the fact that public procurement is unique with differing stakeholders making it susceptible to corrupt practices. Firstly, public procurement utilizes financial resources which to a large extent, belong to an obscure stakeholder. Two, public procurement makes use of citizen monies and divert them from other government projects (Burbidge, 2016).

According to a report by PricewaterCoopers, PwC (2017), organizations in the public domain report crooked payments and bribes in the process of awarding procurement opportunities. Fraud in the tendering process when awarding contracts is the fastest ever-growing economic crime in the 21st C given that a company in every 3 has reported irregularities in public procurement in the past decade. Surveys and reports show that high level systemic corruption is rampant in PEs, e.g. construction, airport, energy, independent commissions, ministry departments and county

governments where tender contracts are allegedly awarded to firms which did not meet criteria. A study on government officials by Ethics and Anti-Corruption, EACC, (2017) established that high level fraud in procurement tendering was rampant in county governments (EACC, 2017). The study further concluded that companies diverted public funds and favoritism in the award-process decision by public officials was a common norm. Kenya losses about Ksh. 608 billion to corruption in public procurement yearly. About $1.5 trillion opportunities in public procurement are influenced by corruption with the volume of bribes in going to different hands in PP being about $200 billion yearly (EACC, 2017; PwC, 2017).

2.1.5 The Concept of Procurement Legal Framework Implementation

Implementation is understood as the execution, adoption and use or the carrying out of a plan or framework in order to achieve goals and objectives. In this essence, implementing the procurement legal framework is the execution of legal framework guiding procurement and disposal of works, goods and services (Lynch, 2013).

Procurement legal framework is the system of rules, regulations and policies which guide public procurement practices. A framework encompasses a structure with different components directed at achieving a defined goal. It is a law or regulation (or part of a law) sanctioned by a law making organ of the country, setting stage for management of public procurement. The framework is often further divided into principles, procedures, rules, regulations of acquisition as well as the administrative bodies responsible for public procurement. Hence, procurement legal framework is the acts, regulations and directives guiding the procurement of works, services and goods by public entities (Lynch, 2013).

The achievement of cost effectiveness, accountability and transparency, competition and fairness in public procurement has undergone significant transformations. In the 1960s, the procurement legal framework had no notable regulations. In 1970s and early 1990s, public procurement was regulated by circulars from the ministry of national treasury. Enactment of The Public Procurement and Disposal Act (2005) and the Public Procurement and Disposal Regulations (2006) brought new criteria for public procurement in Kenya. Forth going, endorsement of the new constitution of Kenya (2010) ushered in PPAD Act (2015) and the PPAD Regulations (2020) cemented public procurement on the ideals of transparency, value for money, competition and cost effectiveness; ushered in the Public Procurement Regulatory Authority (PPRA), introduced professional opinion

of Heads of Procurement Units and established County Treasury as the body in charge of procurement in the County Governments among other notables.

The legal framework of procurement in Kenya stemmed from promulgation of the new constitution of 2010, Chapter 12, and section 227, which gives precedence for establishment of the legal framework through an act of parliament. The legal framework is composed of the following elements:

2.1.5.1 Executive Orders and Decrees

Executive orders and decrees in supply chain management are presidential proclamations that affect operations in public procurement. The executive order 6. Of 2015 communicated the need to uphold integrity and ethical conducts by state officers, more specifically in PP in a view to fight corruption. The president ordered procurement practitioners to adopt and use integrated financial management information system (IFMIS) when carrying out procurements in a bid to harness transparency and seal loopholes of corruption in public procurement. The executive order 2. Of 2018 was based on transparency and accountability in PP. The order directed PEs to update and make public all information and records pertaining to procurements and disposals including but not limited to names of bidders prequalified and awarded, scope and specification of goods, works and services, capacity of the awarded bidders, names of members of evaluation and inspection & acceptance committees among others. This order was meant to accelerate and deepen transparency in PP.

2.1.5.2 Public Procurement and Asset Disposal Act, 2015

The public procurement and asset disposal act, PPAD Act, 2015 was assented to and became an act on December, 2015, commencing operations on the 7th of January, 2016. It is the overarching act that guides for procurement and disposal of goods, works and services in Kenya. The act brought about several changes to the legal framework, for instance the change from PPOA to PPRA, changes to the tender evaluation process, requirement for heads of procurement to give professional opinion on awards, county government procurements through the County Treasury among others.
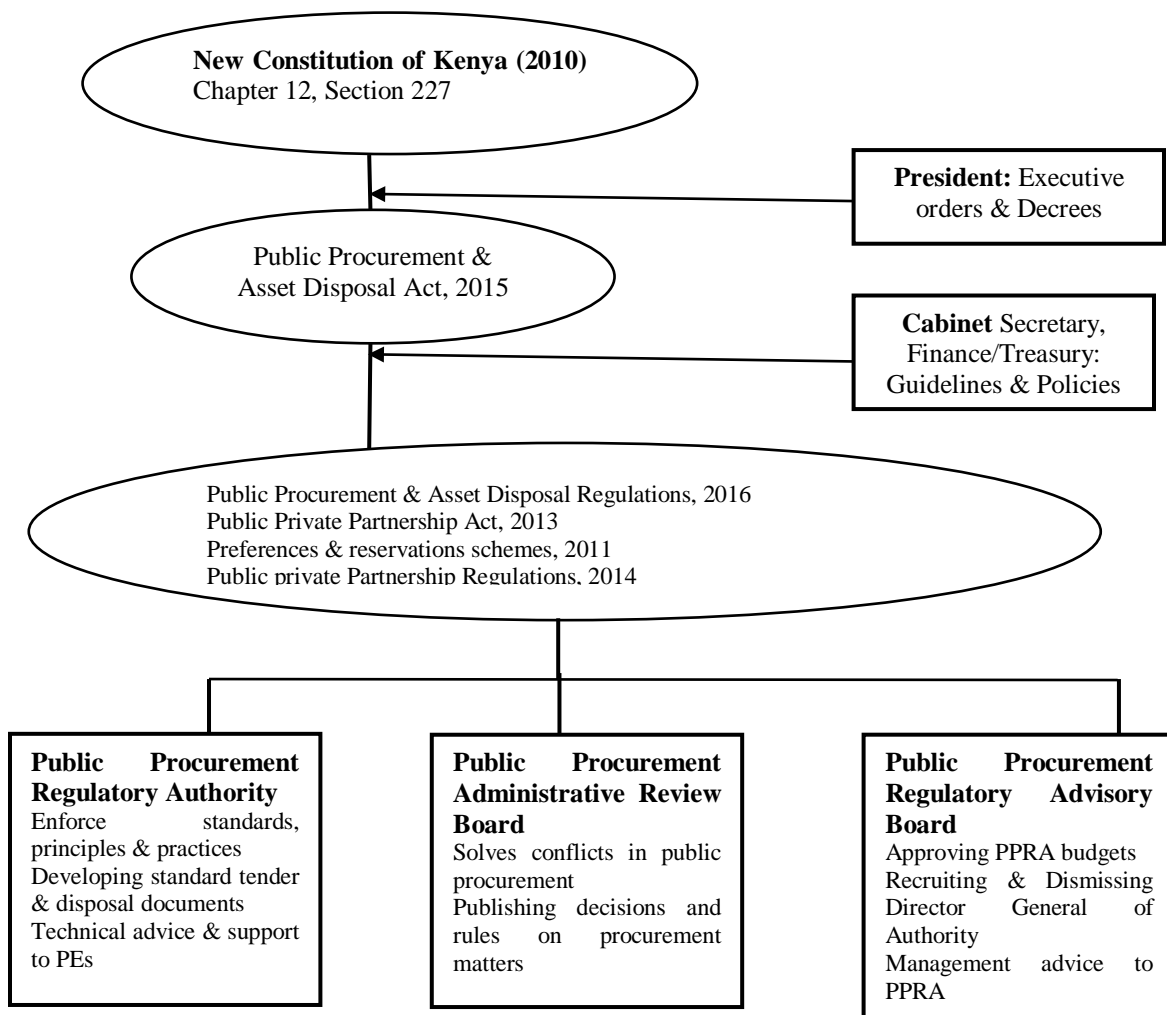
Figure 2. 4: The Procurement Legal Framework in Kenya

Source: (Adopted from Marendi, 2015; Lubale, 2013)

2.1.5.3 Public Procurement & Disposal Regulations, 2016

The PPDR, 2020, came into operation on the July of 2020 after a waiting period of five years (since enactment of the act, 2015). This means that in all the waiting period, the act was operationalized by the 2016 regulations. The regulations operationalize the Act, they provide a detailed step by step procedural contents on how the act is supposed to be implemented. The regulations also provide schedules which provide various forms for application

2.1.5.4 Public Private Partnership Act, 2013

The Kenya Government, like many governments, has turned to Public Private Partnerships (PPP) to bridge the infrastructural deficits where the PE may initiate the project or the private entity. The

Public Private Partnership, PPP Act, 2013 came into being on the 14th of January 2013 after a presidential assent and started operationalization on the 8th of February 2013. The Act allows room for the taking part of the private sector in the financing, construction as well as the development and operation of development projects and infrastructure for the government through concessioning.

2.1.5.5 Public Private Partnership Regulation, 2014

The PPP regulations were adopted in 2014 after publishing by the ministry of finance and treasury treasury. This was in pursuant to section 71 of the PPP Act to provide for better implementation and working of the Act. They cover all agreements for provision of finances, operation or maintenance of the project for the government through participation of the private sector. The regulations however, have exemptions where they do not apply.

2.1.5.6 Preferences and Reservation Schemes, 2011

The Preferences and Reservation Schemes, 2011, came into being after the Public procurement policy of 2011, gazette through the legal notice number 58 of 2011, reserved at least 10% of government contracts to youths, disadvantaged groups and small and medium enterprises (SMEs) (Mwangi, 2019) This was decreed by the President Mwai Kibaki during in 5th celebrations of Youth Enterprise Development Fund. Later, this led to promulgation of the Access to Government Procurement Opportunities (AGPO). In 2013, President Uhuru Kenyatta decreed that regulations of procurement be revised to allow for 30% of contracts be reserved for youth, women and people with disabilities with no competition from firms and service providers already established. With this decree, there was establishment of preferences and reservation regulations, 2011 through an amended legal notice number 114 of 2013. 30% of contracts were regulated to be a reservation of these interest groups. These was further entrenched in the PPADA (2015). Part VI of the act provides that each PE doing a public procurement shall reserve 30% of its value of procurement in each financial year, to youth, women and people with disabilities (Mwangi, 2019).

2.1.6 The Concept of Innovation Practices

Innovation practices refers to the process of improvement of products and processes to bear specific technological characteristics in their features and functioning that were not present before (Mardia & Namusonge, 2016). In this context, it refers to new models of work and product designs with better, altered features and work processes than they were previously. Also, innovation

practices can be defined as a journey by which groups of people or organizational entities leverage the importance of technology to add extra steps in the making a product or service in a marketplace to increase their competitiveness (Broughel & Thierer, 2022). The aim of innovation practices in this context is to increase an organization's competitive advantage. Furthermore, Innovation practices is the process of increasing productivity by bringing benefits to citizens in the form of new and improved goods and services that improve their standards of living (Broughel & Thierer, 2022). In this context, innovation practices is aimed at finding ways that satisfy consumers better using technology. From the preceding definitions, innovation practices has 'a new' premise. The study thus defines innovation practices as new ideas, practices, technologies or new ways of improving the final products and services in a formal organization.

Mabhodha & Choga (2018) echoes that innovations in public procurement encompasses practices which must improve transparency and value in the acquisition process. This include e ordering, e-tendering, e-sourcing, e-reverse auction, trainings & development in ICT, capacity building of stakeholders on adoption of new innovations. E-ordering has made procurement easier through innovations. It refers to the use of electronic media to carry out all ordering for goods and services. Electronic orders are requests for goods and services that are generated and sent using an electronic format. E-ordering applications make procurement services faster and more efficient as a result of the increased speed of transactions. Also, the order data is integrated with the company's ERP, which makes processing easier for the company. Besides the automated system enables customers to receive notifications automatically when orders are ready for delivery. The notification of clients and corporations concerning the delivery of orders makes re-ordering comfortable for all end-users and may prevent delays in responding to already processed orders (Mabhodha & Choga, 2018).

E-sourcing is the process of collecting bids from different suppliers electronically, mostly over the internet. The internet as a resource makes it possible for different suppliers to access information online through company portals to allow them to find calls for bids. Therefore, e-sourcing makes information flow easy for both companies and suppliers since such information can be obtained remotely at the comfort of the suppliers' home or mobile phone (Mardia & Namusonge, 2016). Some of the advantages include improved transparency and openness because all suppliers can access the company portal and also get to view other suppliers. It, therefore, eliminates foul play and corruption, especially by middlemen.

E- tendering is the process of sourcing for suppliers electronically. This process is done via a portal on a company's website. It happens the same way as e-sourcing, however, in e-tendering, it is the entity that does the process of looking for suppliers. advantages include the ability of organizations to reach a wider base of vendors in the global business fraternity (Broughel &Thierer, 2022). It also allows for faster transactions without the need for regular travel. Additionally, the process of e-tendering enables companies to achieve transparency since all the willing vendors are allowed to access information and place their applications openly.

E-reverse auction is an online-based application that allows people to compete for supplies in real-time. this platform has the benefit of increased competition which leads to lower purchase costs (Mariam & Kisimbii, 2020). It also leads to the saving of time through reduced negotiations, which was common before the electronic auction was created. E-informing is the process of using internet resources to provide information to various stakeholders in the procurement and supply chain. the advantage includes the flow of information faster for quicker decision making. E-informing also provides stakeholders with knowledge for timely procurement choices. Additionally, the internet provides an array of information sources that the E-informing platform can leverage to improve the efficacy of procurement and supply chain. Further, it improves transparency and openness in the procurement process.

Training and capacity building in procurement involve the process of improving the know-how of procurement personnel and department with the latest knowledge and skills to make them more efficient in their functions. The Kenya Institute of Supplies Management (KISM) has training programs for supply chain management practitioners and carries out these trainings especially for practitioners in PEs. Training & Development is an important business function. It leads to an improved collective response to issues affecting procurement (Mariam & Kisimbii, 2020). The global changes in the field of procurement also get to be shared by different stakeholders leading to collective action.

Innovation practices have different effects on the supply chain performance. Among them include improved efficiency since it enhances human labor input at an affordable rate. The combined inputs of both humans and machines improves performance of an organization. Furthermore, there

is a reduction in the cost of hiring and training staff to assume responsibilities that would otherwise be done by machines (Muriuki, 2021). In this case, the money can be invested in other areas of the company that needs growth such as improvement of employee welfare and remuneration which build employees' motivation and hence boosts their morale for performance. Also, the cost of re-ordering improves customers' experiences during business transactions such as procurement and tendering, which leads to improved customer loyalty (Zhang, Khan, Lee & Salik, 2019). There is also continuous quality improvement because of the availability of customer feedback via technological platforms such as social media. Moreover, improved customer loyalty enhances brand value, which translates to a higher competitive advantage. Companies with a higher competitive advantage often attract a talented pool of employees, which will translate to improved performance of the entity.

In addition, innovation practices have led to improved security of data for most companies in the 20th and 21st centuries. For instance, advancements in technology have led to the introduction of data storage and management technologies such as big data and cloud computing facilities, which make it possible for companies to handle large volumes of data at a lower cost and reduced storage space (Zhang, Khan, Lee & Salik, 2019). Furthermore, it has enabled the tracking of information about clients and other business partners possible as a result of remote computing leading to the avoidance of losses. As a result, companies have reported improved turnover because of the higher profit margins. In the case of remote computing, customers can place orders ad receive notifications about their transactions in the comfort of their homes hence reducing the associated costs of traveling to and from public and private entities to carry out transactions, which makes the company improve its image branding. Besides, technology has enabled companies to cut down the numbers of their employees which saves costs, hence the entities can realize more profits. Gu *et al.* (2021), however warn that technology can have to negative consequences to a business organization, affecting both staff and company performance. Firstly, innovation practices has led to the replacement of labor with machines. Human capital, which is an essential component of an organization's performance is replaced by innovation practices making such entities suffer reduced performance especially when the technologies replace performance contracts (Gu *et al.,* 2021), Technology may also affect the way information is handled by different companies including public entities. In this case, safety is a crucial component of information management systems for optimal results. Concerning this issue of safety, some innovation practices may create situations

where a company's data safety is compromised. For instance, with the advent of technology through developments such as ERP and the internet, may mean that data is prone to threats.

Therefore, different entities have experienced reduced performance brought about by hackings which have resulted in delays leading to economic losses. Also, the privacy of information held by companies may be compromised because of innovation practices. For instance, company ERP as well as all online transactions can be open to external parties, which makes the privacy of the firms to be compromised. In this case, classified information may be open to the scrutiny of malicious individuals who may use them to sabotage the organization. A sundry of studies in literature carried out on information communication technological and /or innovation practices and improvement in performance have revealed that it positively and significantly influences performance (Gu *et al.,* 2021; Alves, *et al*., 2018; Weeks & Namusonge, 2016; Mabhodha & Choga, 2021; Muriuki, 2021; Zhang, *et al*., 2019).

2.1.7 The Concept of Supply Chain Performance

Any performance must be attributed to an individual, unit or entity. Performance is understood as achievement of the organization in relation to its objectives (Silva, Nuzum & Schaltegger, 2019). It is made up of the outcomes obtained by contribution of both teams and individual people to the firm's stated goals. Performance is not a single phrase, but is a combination of both behavior and economic outcomes. Brumbach, more intently, views performance of a firm as both the behavior and results. According to him, behaviors are outcomes in their own ways and may be judged independently apart from results. However, performance itself is an impact.

Supply Chain Performance (SCP) can be viewed as the activities carried out in the supply chain intended to achieve the end customer needs (Hausman, 2004). The end consumer needs span from timely delivery, ensuring availability of goods and services and offering goods and services of the required quality. Hausman (2004) further suggests that SCP need to achieve companywide performance. Nevertheless, this cannot be achieved if parties in the SC still consider their individual needs and confidential information. Parties in the SC must accept that a key indicator in the performance of the SC is the end customer, who makes up the chain-wide performance. The performance of the SC can thus, not be based on the individual business unit performance. In

essence, the battlefield in achieving organization competitiveness in the future will be supply chains vs supply chains.

Supply Chain Performance entails inter-company wide activities and involves material components, basic inputs, finished products and movement across different channels all the way to the customer. Furthermore, it embodies business functions such as procurement, distribution, research and development, sales and marketing among others. Kamble & Gunasekaran (2020) says that for companies to be successful in the contemporary competitive environments, the supply chains need support for continuous improvement. In order to ensure continuous supply chain improvement, organizations require performance measures which support the chain wide supply chain performance other than specific function performance such as procurement performance, logistics performance, distribution performance among others.

The individual performance of stakeholders, say the supply chain (which contributes to the overall organization performance) can be castigated in three sections; the being, the doing and the relating. Being, are the skills and competencies of the individual which portray him as qualified to perform a specific task. It is what the manager expects the individual to bring to the organization and help it perform. Doing on the other hand, are the activities which diverge at different times in the organization and which verily affect performance activities of the individual and the organization performance as a whole. Put simply, the doing are ideas, which are funny little things that do not work unless done. Furthermore, relating is concerned with ability of the individual to create meaning associations and relationships with other individuals closely related to his performance and who determine his performance success (Tambare, Meshram, Lee, CRamteke & Imoize, 2021) Singh, Darwish & Potocnik (2016) elaborate that supply chain performance is a great premise for the success of a firm and has received immeasurable attention from managers in the contemporary firms. Plethora of research establishments in this concept have premised on expounding the ways in which performance can be improved and sustained so that firms can reap the benefits of improved profits and long term success. The key challenge has however been the way to measure performance (Singh *et* al., 2016). Supply Chain Performance can be viewed in two ways: procurement efficiency and procurement effectiveness (Kumar & Odzmar, 2010).

Performance can be operationalized in a variety of ways among them profitability. Even though, performance is always not just about profits (Tambare *et al*., 2021; Kamble & Gunasekaran, 2020). A firm's performance can be calibrated in terms of the activities it carries out in order to achieve its set goals and objectives. The organization should therefore have specific metrics upon which performance is premised. For example, lack of commitment by the company staff, absenteeism, increased customer complaints are a clear attest of poor performance by the organization. Determinants of performance may be culture and market orientation (Singh *et* al., 2016). With differing elements of performance, a unit measure of performance cannot be adequate in estimating the performance of an organization. Given that PEs carry out a procurement and asset disposal based on a defined legal framework, performance of the said entities can be attuned in terms of the values of public procurement of transparency, competitiveness, equality & fairness, cost-effectiveness and service delivery. The common supply chain performance measures can generally be grouped into the elements of cost effectiveness, time (cycle time) and quality compliance (Kamoni, 2020). The study by Waruguru (2015) solidifies the choice of supply chain performance in the public sector as the quality of acquired materials, time (lead time variability) and cost (the comparative price of acquired materials). Public procurement in Kenya has been categorized by endemic corruption orchestrated by tender price manipulation and inflation (cost), delays and increased lead time (time), inefficient procurement planning, poor records keeping, noncompliance to the law & political infiltrations (quality) (Kamoni 2020, Okiri & Muturi, 2016).

Many models and systems measuring supply chain performance exists (Kurien & Qureshi, 2011). Notably among them is Medori & Steeples framework model (2000). The framework presents a structured model for identifying and enhancing performance measurement system. Like many performance models, the framework suggests that arriving at an elaborate measure of supply chain performance begins with critically describing the company's success factors (stage 1); Matching the firm's key requirements with identified requirements in stage 1 with the six established aspects; 1) Quality 2) Cost 3) Flexibility 4) Time 5) Delivery 6) Future growth (stage 2); selecting the appropriate measure based on 105 indicators (stage 3); Auditing and rationalization for identification and storage of measures (stage 4); adopting and using the measures by defining each measure based on 8 key indicators: title, objective, benchmark, equation, frequency, data source, responsibility and improvement (stage 5), reviewing and maintenance of the measures (stage 6).

The key advantage of Medori & Steeples model is that it can be used by practitioners to identify performance measures. Further, the model can be applied both when designing new performance measurement systems and also when monitoring, evaluating and improving existing systems. In addition, the model presents a unique description of indicators on how performance measurements can be identified and realized. Pervious literature such as the works of (Tangen, 2004; Sorooshian, Aziz, Ahmad, Jubidin & Mustapha, 2016, Folan & Browne, 2005) have criticized the model, for example inability of the model to provide guidance on how the 6 competitive priorities are arrived at in stage 2. Furthermore, the 6 competitive priorities in stage 2 are not the only measures of performance, as performance measures can be categorized into so many other priorities (Folan & Browne, 2005). From the model however; quality, cost and time (including delivery) can be seen as among the key measures of supply chain performance. In this regard, the study adopted quality compliance, cycle time and cost effectiveness as the indicators of performance as established by (Waruguru, 2015; Kamoni 2020; Okiri & Muturi, 2016) and grounded in Medori & Steeples Model (2000).
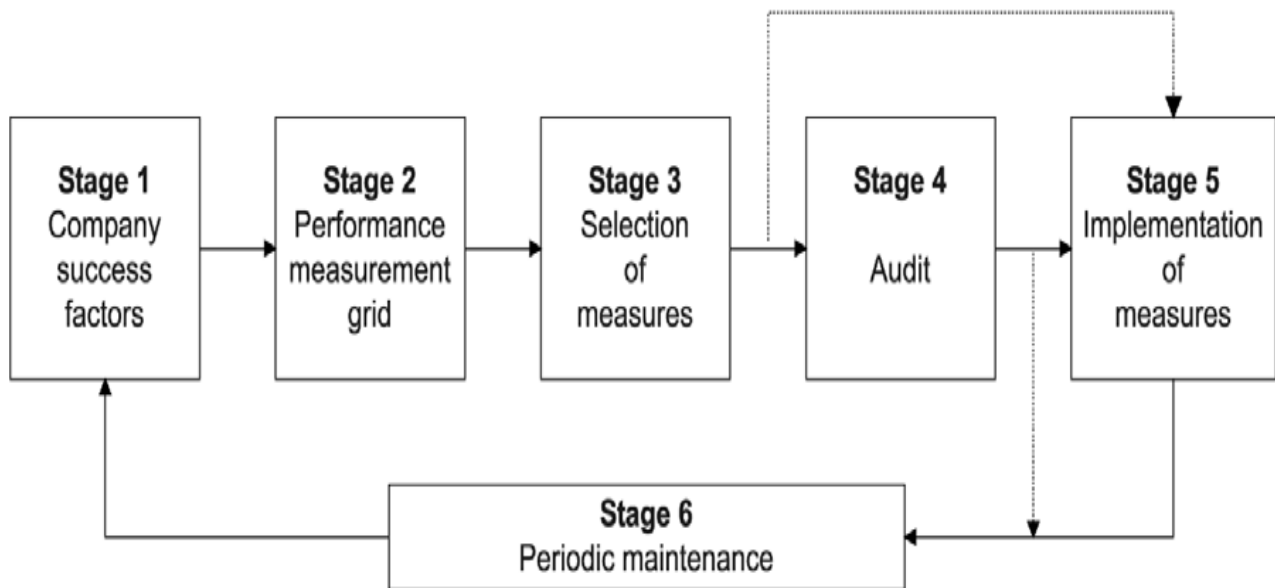
Figure 2.5: Medori & Steeple Performance Model
Source: (Adapted from Medori & Steeple; 2000)

2.1.7.1 Cost effectiveness

The desire for any organization is to manage costs. Firms cannot achieve their objectives without managing their costs. In todays' global competitive and dynamic markets where consumers evolve of age and recognize their rights, firms must rightly press the right button at every time. This calls

for managers to recognize that costs must be given the necessary attention, by deriving strategies that will drive away the costs out of the cost basses. Public procurement is a major waste of public resources, more so if it fails to achieve the desired values. In order to manage costs, managers in public procurement must ensure economy and efficiency as well as value for money (Lynch, 2013)
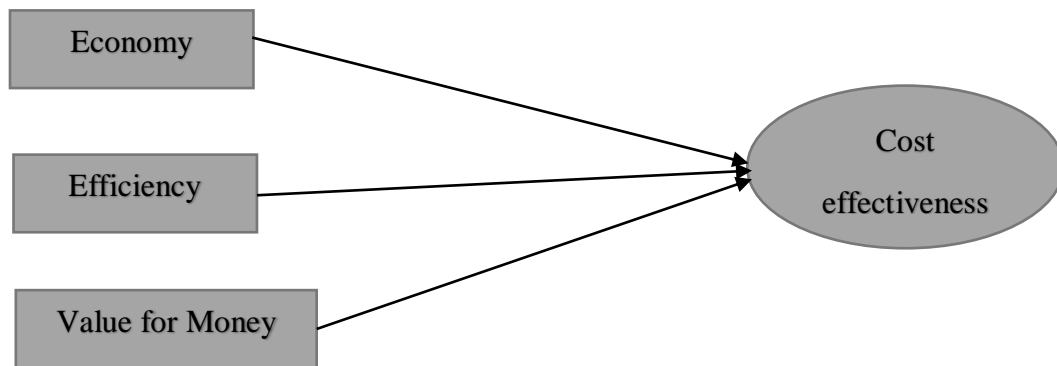
Figure 2.6: Cost effectiveness in Public Procurement
Source: (Adopted from Lynch, 2013: formatted to befit the concept)

Economy refers to doing a procurement or asset disposal with the least possible cost, that is, reducing expenditure by obtaining an item at the lowest possible cost. Efficiency denotes a practice among organizations in which managers achieve their desired output using the cheapest available resources. Value for money on the other hand, is adopted to mean that the cost of an undertaking a procurement or asset disposal is justified to the value of the same of the goods, works or service being procured or disposed. That is, materials under consideration must be acquired at the prevailing market prices such that the cost of procurement or disposal will be commensurate to the value of the item and service (Lynch, 2013).

2.1.8 Procurement Legal Framework Implementation, Innovation Practices, Supply Chain Performance

The procurement legal framework of any organization is important in guiding procurement practices. Such a legal framework may encompass policies, rules, regulations and procedures meant to streamline operations in procuring units. Mbae (2014), decree that the law guiding procurement has improved transparency in public procurement, enabled prudent utilization of public resources in the county, heightened quality of works, goods and services procured by the county and further enabled effective disputes resolution among staff working in procurement in

the county. The study concluded that the public procurement law is an important tool of improving performance in the county government.

Ngari (2010) modelled a study on the effect of public procurement and disposal act on procurement performance of parastatals in Kenya by castigating down the act as effectiveness of the Public Procurement Oversight Authority (PPOA), Competency of Procurement Officers, Cost Policies, Availability & Resistance of suppliers. Public procurement is a complex field because of different roles and objectives it has to achieve as well as making a balance between murky political environment in which it operates in and meeting the goals of the organization. Unlike their private counterparts who concentrate satisfying their stakeholder interests, PP has to go beyond the firm's boarders. The study listed corruption in the tendering process, inefficacy of PPOA in enforcing penalties on the law breakers and lack of good will from practitioners as the main challenges affecting implementation of the PPAD Act, 2015. However, the procurement law and act significantly improved performance.

Discussions in Oduma & Getuno (2017) acknowledges that in current tumultuous business environments, procurement is undergoing a significant shift and experiencing change that has not been witnessed before. With the mutating legal framework guiding acquisition in public entities, practitioners must tighten their belts in adopting best practices which marry principles and tenets of the legal framework. Citing the Auditor General report for 2013/14 financial year, public secondary schools especially in Nairobi County were breeding grounds for poor implementation of the public procurement law. It was reported that 80% of the contracts awarded by the public secondary had botched prices and 60% of the works had been paid on or before completion in contravention to the procurement regulations. However, public procurement regulations significantly and positively improved performance.

In contrast, some studies have proved that the public procurement legal framework is to blame for dismal performance and corruption in PEs, showing that there is a weak or no relationship between implementing the legal framework and performance. Okundi (2017) for instance, revealed that in spite of the development of the legal framework guiding public procurement practices, the procurement system of Kenya is still riddled in corruption and under cutting practices. There is a weak relationship between the procurement law and the implementation of county governments in devolution ($R^2 = .035, P = .000$) with the national government losing more than 30% of the

national budget due to corruption in public procurement. Furthermore, the procurement law had made execution of public procurement in county governments a difficult agenda.

Kinoti, Arasa, Waititu & Guyo, (2013) examined the implementation of procurement regulatory framework and ethical SCM among ministries in Kenya. Their results showed a weak significant association between procurement regulatory framework and SCM ethics ($R^2 = .172, P = .000$). This implied that implementation of the procurement regulatory framework did not correspond to achievement of ethical practices in the government ministries.

In addition, Mutai (2015), established that there exists insignificant relationship between procurement policies & procedures and supply chain performance ($R^2 = .449$) The study specifically noted that while many banks in Kenya have put in place known policies and procedures to guide there procurement practices, these policies and procedures are however not commensurate in improving performance of their supply chains. In addition, the study further sufficed that in adhering to the procurement policies, many of the banks did not put in place penalties for violation of the procurement laws and practices, alluding that offenders of the law walked scot free without being punished.

Practically, procurement laws, innovations exist together. Okpalaoka, Ogunnaike, Kalu, Yaya, Usendiah & Emmanuel (2022) states that innovation practices have a significant positive relationship with organization performance on Small and Medium Enterprises (SMes) in Nigeria. Capabilities as proxies of innovations in technology, such as research and development have the ability to positively influence performance. Organizations need to implement innovative learning, adopt technological practices in their operations as it is clear that such moves will greatly help the firm perform to perform better, increasing visibility in competitive markets and establish a niche in competitions (Okpalaoka *et al*., 2022).

Chege, Wang & Suntu (2020) looked at technology innovation long term effect among entrepreneurial firms. It is true that Information Communication Technology (ICT) is shaping many facets of the firm, key among them the way interaction among entrepreneurs and the way more career opportunities can be obtained. There exists a positive significant relationship between innovative technologies and firm performance (Chege *et al*., 2020). Government policies should therefore be designed to improve innovativeness among entrepreneurs.

In the study by Adeyeyetolulope (2014), it is observed that innovation practices affect organization performance. Specifically, measures of innovation practices such as strategic planning and marketing capability practices have a significant effect on performance. Jointly, the innovations also affect performance significantly. It is also recognized that discerning firms in today's globe where economies are highly deregulated must rise up and adopt innovative strategies if remaining afloat is anything to go by. Outmaneuvering their competitor must be innovative based and informed by the capability to give better value than competitors, understanding customer needs by amplifying customer-centric strategies. In a nutshell, companies and stakeholders in general must be innovative to maintain competitive scales in market shares.

The relevance of innovation practices in organizations is evidenced in theory. Specifically, the TOE model theory explains the aspects which may influence adoption and use of technology and innovation to create value in a firm set up. Tornatzky & Fleischer (1990) proposes in this theory that technologies are important for firm survival but their adoption are conditional on a set of factors. They present this factors in tripartite as technological (compatibility, complexity, experimentation and visibility), organizational (scope, management commitment, culture, organization structure), environmental (competition, collaboration, political issues, government support). If these factors are embraced and satisfied, then technologies and innovations can create value and improve performance in the organization.

Worth noting, there is mixed results on whether implementation of procurement legal framework has a bearing on performance. The implementation of procurement legal framework has a statistical and significant relationship with performance (Mbae, 2014; Ngari, 2010; Oduma & Getuno, 2017). In contrast, implementation of procurement legal framework has a weak or no statistical significant relationship with performance (Okundi, 2017; $R^2 = .035$; Mutai, 2015; $R^2 = .449$). This scenario indicates that moderating effects may be involved on this model. Further, it is shown that innovation practices is an important input in improving performance, shown in the works of (Chandrashekar, *et al*., 2019; Haabazoka, 2018; Okpalaoka*, et al.,* 2022; Adeyeyetolulope, 2014; Chege, *et al*., 2020) This indicates that innovation practices is a possible moderator on the relationship between procurement legal framework & performance. For this effect, the current study will investigate the moderating effect of innovation practices on procurement legal framework implementation and performance relationship.

2.2 Empirical Literature Review

2.2.1 Procurement Legal Framework Implementation and Performance

The concern about implementation of the procurement legal framework to improve performance of organizations (both PEs, SMEs, open air markets) has driven an interest among policy makers and researchers on whether the legal framework is a 'preserve for the rich' company service providers or shows neutrality for all stakeholders.

The study by Cantera (2021) on public procurement rules and management in Spain employed a desktop review methodology to conclude that the difference in management and leadership styles of Spain's community metropolis of Castilla Leon was responsible for poor implementation of public procurement rules. Management models of community metropolis contracted for public transport services within the towns were different and this brought about discrimination in the application of public procurement rules. Cantera warned that while metropolis in Spain are guided by common public procurement rules on contracting for public transport services, implementation of these rules, does not improve performance due to different management models applying the rules differently. This study concentrated on bus transport in metropolis and did not consider all PEs applying procurement rules. Moreover, Cantera (2021) adopted a desktop review methodology on secondary data, ignoring primary data & a quantitative approach.

Sánchez (2019), on Implementation of decentralized technologies for PP established the relationship between adoption of ledger technologies in Europe and the performance of public procurement. Employing a desktop review methodology, the writer noted that adoption of the technologies in public procurement results to high levels of transparency, autonomy, integrity shortens the lead time among for the purchasing European countries. Adopting the technologies as according to Sanchez comes at a cost spanning from immutability of transactions, the simple nature of the smart transactions, the breaches of contracts by the contracting parties as well as loopholes in bid rigging during tendering exercises. The study however concluded that European countries following the established public procurement regulations must prioritize adopting technologies in their practices. This study looked at the technological rules in PP but did not look at all the acts and regulations guiding PP in Europe.

Mahmood (2010) studied public procurement and corruption in Bangladesh by employing a systematic review methodology from the period 1999-2010. The study adopted a cross sectional study on secondary data begotten from 22 documents of databases of national and international agencies as well as 4 leading Bangladesh newspapers. Information from the mined data, using the search words 'public procurement' and 'corruption' exhibited that even though Bangladesh followed an established legal framework in public procurement, corruption was however rampant in government public entities, the country losing 2-3% of its GDP to corruption yearly, more so in public procurement practices. In order for economies like Bangladesh to weed out corruption in governance and public procurement, it must learn from the past successful measures adopted in other countries such as independent and autonomous anti-corruption bureaus in Singapore and Hong Kong, Voter Education in Thailand, Report Cards in Bangalore, the OPEN system in Seoul among others. The study by Mahmood (2010) looked at the relationship between PP and corruption, but did not reveal the effect of implementing PP regulations in an organization. Further, the study did not operationalize acts and regulations guiding PP in Bangladesh, neither did it make use of primary data obtained from practitioners nor based the study on philosophical foundations.

Giosa (2020), on preventing collusive tendering in public markets via framework agreement regulations in Europe, used secondary data from publications and website of European countries to demonstrate that while the procurement regulations on framework agreements are aptitude and robust, there exists loopholes in the agreement regulations which are breeding grounds for bid rigging by suppliers admitted to the framework agreements. These features include (i) The closed nature of the framework agreements (ii) Homogeneity of the procurement contracts & competition based on price at the call off stage and (iii) period of the framework agreements. The report offers recommendation to remedy these loophole as developing guidelines on the implementation of framework agreements, establishing irregularity between the number of suppliers & number of call-offs, variation of call off methods, use of Most Economically Available Tender (MEAT) among others (Giosa, 2020). Giosa's study concentrated on only framework agreements guiding PPPs, overlooking all acts and regulations of PP, further the study did not establish the effect of the framework regulations on Performance.

Siagian, (2017) looked at public private partnerships in Indonesia by conducting an explanatory review study on PPP regulations and their efficacy in Indonesia. According to Siagian, the

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fundamentals of Indonesia's PPP regulations are the infrastructure focus, the regulation arrangements (1998-2004), the regulation arrangements (2005-2014), Arrangements 2015 and the associated arrangements spanning 1998. The significant challenges facing implementation of the PPP regulations in India are meeting requirements of the regulations, lack of training & capacity building. To realize value from implementation of the PPP regulations, then mitigation of these challenges is not an option. The writer's study concentered on only PPP regulations without looking at the whole acts & regulations guiding PP. In addition, this study undertook a conceptual review, disregarding a primary field study and also failed to reveal the effect of the PPP regulations on performance.

Thanh, Bevacqua, Nguyen & Nguyen (2018) studied Impact of public procurement rules and the administrative practices of public procurers on bid rigging in Vietnam. The writers utilize secondary data through a systematic review methodology to indicate that implementation of public procurement rules buoyed with administrative practices in public procurement contributes to bid rigging in public procurement practices. Inefficiencies begotten through unnecessary and excessive supplier selection criteria (which limits participation of service providers), regulation of joint bidding, expose of information to unwarranted parties in public procurement, numerous communication with suppliers were precepts of bid rigging in the Vietnam public procurement system. If these loopholes are not sealed, then implementation of public procurement regulations significantly aided bid rigging and hence, deprived the achievement of value for money as well as wastage of public resources. In saying, the study utilizes secondary data and systematic literature review methodology, diverting from the current study which will make use of primary data and adopt a correlational survey design. Further, the paper failed to reveal the bearing of implementation of procurement legal framework on supply chain performance.

The study by Moe, Newman & Sein (2017) studied public procurement information system, dialects in requirement specifications in Norway. The study employed a qualitative research approach to obtain data from 3 public procurement projects from the municipalities in Norway. A purposive selection of the 3 projects followed a case study design on a population made up the cases listed on the Norway national tender for public tenders. Interviews were further selected as research instruments on project leaders, members of the projects as well as successful service providers. The results revealed that public procuring entities in Norway solve the tradeoff between

acquiring information systems adhering to their requirement specification and adhering to negotiation restrictive public procurement regulations by choosing an appropriate tendering procedure (Moe *et al.*, 2017). The study concentrated on government projects other than all PEs, adopted a purposive sampling and did not disclose the effect of procurement legal framework. The current study will adopt a stratified sampling on all PEs and investigate effect of procurement legal framework on supply chain performance.

Gnip (2021), concentrated on assessing the effect of partisan favoritism in public procurement of Croatia. Adopting an empirical literature, the study's motivation rests on the pretext that improvement in public procurement performance ultimately improves government savings and in turn improves efficiency, which enables countries in the European Union to save €20 billion every year. Data was obtained from the directorate of procurement systems in the ministry of economy and entrepreneurship of Croatia. The findings indicate that suppliers and service providers of goods, works and services aligned to the ruling political class collected a 35% increase in revenues in public procurement compared to firms that had no political muscles. Also, it is shown that a 10% increase in political donation and inclinations resulted to a 5.7% increase in revenues in public procurement to the politically motivated firms. The second conclusion on results depicted that politically disloyal firms do not accrue revenues in public procurement even if they met the set criteria and this hampered achievement of transparency openness. From this, it can be concluded that implementation of public procurement regulations is not an antecedent of improving performance in the public sector of Croatia (Gnip, 2021). This study used a literature review methodology by obtaining data from a ministry records. It further did specify the effect of implementing procurement legal framework on performance.

The study by Loosemore, Alkilani & Murphy (2021) on the Institutional drivers of social procurement implementation in Australia utilized the New Institution Theory and qualitative data collection methods to present the main drivers of implementing procurement policies in the construction industry. The study was guided by interpretivist epistemology philosophy under a social constructivist lens. Also, semi structured interviews with the senior managers and executive officers of the construction firms was adopted as the main data collection instrument. The target population was 25 firms and the managers were sampled purposively given that they were thought to encompass just enough experience in social procurement in the Australian construction firms.

The results showed that coercive isomorphism was the most important drive for the implementation of social procurement policies followed by mimetic isomorphism and normative isomorphism. The study's conclusion was vested on the understanding that implementation of procurement policies in Australia public firms require supply chain parties to adopt a paradigm shift from implementation for compliance purposes to a one that stabilizes and makes normal, the social procurement.

In the African context, research on implementation of procurement legal framework has hitherto, not been ignored. The study by Chekol & Tehulu (2014) focused on the effective public procurement implementation in Ethiopia. With a focus on the Amhara region public enterprises and government enterprises in Bahir Dahir town, the study targeted 42 procurement officers through a survey design. Further, questionnaires collected data which were analyzed through multiple linear regression. The findings indicated that familiarity with procurement rules and regulations, transparency in public procurement, ethics in procurement and efficiency of the procurement processes were found to have a statistically significant and positive relationship with implementation of procurement legal framework. Accountability in procurement practices, although having a positive relationship with implementation of procurement legal framework, was found not to have a significant impact on effective implementation of public procurement (Chekol & Tehulu, 2014).

Jibrin, Ejura & Augustine (2014) on Public procurement reforms in Nigeria: Implementation & compliance challenges, the writers make use of secondary data as well and desktop review methodology on published data which focused on implementation and compliance to Nigeria procurement regulations. It is espoused that procurement encompasses the whole process of acquiring assets, livestock, goods, works and assets and spans from when an organization identifies the need and decided on its material requirement. While following this process buoyed by honest implementation of the legal framework, the writers acknowledge that public procurement in many countries are bedeviled with negligence, lack of a sense of direction, non-competition, lack of transparency, corruption and a system enjoined in political patronages. The study identifies media publicity, organization culture, political patronage as the main aspects influencing implementation and compliance to procurement legal framework implementation in Nigeria (Jibrin *et al*., 2014).

In a study by Adewole (2014) on: governance reforms & challenges of implementing public procurement law in Nigerian state & local governments, the paper targeted 36 states and 774 local governments in the whole of Nigeria. The study measured the level of implementation of the Nigeria procurement law (2007) in the federal national government, local governments and the states. It is recognized that the enactment of the public procurement law (2007) stemmed from the premises of weak institutional frameworks, rampant corruption, non-competition and political annihilations that bedeviled public procurement practices. While the PP law (2007) brought a lot of sanity in practice i.e. openness and accountability, fair penalties for offenders and an atmosphere of transparency, this good fruits were only achieved at the federal government level, with states and local governments lacking behind. The domestication of the procurement law, 2007 in lower level government tiers and states took long with no notable achievement in terms of the objectives of transparency, openness, fairness and competitiveness. The different PEs were implementing the procurement law differently and this brought about different results. The lack of political goodwill, lack of compelling autonomous institutions, infiltrating corruption, citizens' refusal to demand accountability and take part in political processes as the main challenges to implementation of the procurement law of 2007 (Adewole, 2014).

A study established the challenges of public procurement law and act, 2003, in Ghana (Asamoah, Berko & Adu Poku, 2019; Assessing the Implementation Challenges of the Procurement Act of Ghana: The Newmont Ghana Experience). In order to collect quantitative data, the paper applied a survey research design and targeted a population comprising of procurement officers and contactor organizations who worked with Newmont Ghana Gold Ltd. Convenience sampling technique was also utilized to sample 50 participants through interviews and questionnaires. The results from the findings indicated that 75% of the respondents responded that strategic planning is an important performance pillar for the implementation of public procurement law, 47.5% implied that the regulation enforcement had a moderate influence on Newmont's procurement act implementation while another 47.5% indicated that the organization culture of Ghana's Newmont favored the implementation of the procurement act. Study concluded: implementation of the public procurement act, 2003 can be done efficiently if there was judicious enforcement of regulations, strategic planning and a culture that favored procurement activities (Asamoah *et al.*, 2019).

In Tanzania, a study established the influence of procurement legal framework towards adoption of e-procurement (Shatta, Layaa & Shayo, 2020; Legal Framework Influence Towards E-Procurement Adoption Model in Developing Countries: Buyers'-Suppliers' Perception in Tanzania). Guided by TOE and the Unified Theory, the study adopted a positivism philosophy in a cross sectional survey research design. In terms of sampling, non-probability purposive and probability stratified sampling techniques were used in a sample of 157 respondents. Data was collected by a questionnaire while secondary data via documentary reviews. The analysis technique involved the use of Structural Equation Modelling (SEM) using Smart PLS 3 software. The results pinpoint that a legal framework indirectly influences adoption of an e procurement model platform in the presence of performance expectations, attitude and relative advantage (Shatta *et al.*, 2020).

Research in Kenya has shown significant interest on implementation of procurement legal framework, even though none is existent on Implementation of procurement legal framework under the new constitution of Kenya and a new act of procurement in all PEs. To begin with, the study by Kanyaru & Moronge, 2017; Public Procurement Legal Framework and Performance of Public Institutions in the Judicial Service Commission employed a survey research design to study a sample size of 80 respondents who were employees of the Judicial Service Commission of Kenya. The specific objectives were to establish the extent of PPAD Act 2015 on performance of the Judiciary and to establish the effect of policy formulation on performance of the Judiciary. Interviews and questionnaire (selected due to their economic nature an ability to warrant anonymity) were used as the main research instruments. The data collected data was analyzed by descriptive statistics which was aided by an SPSS software. Guided by principal agent, legitimacy theories and a stratified random sampling technique on the sample size, the writers concluded that the PPAD Act 2015 and policy formulation were statistically significant and therefore determined the procurement legal framework on the Kenyan Judiciary performance (Kanyaru & Moronge, 2017).

Mutangili (2021) studied the Public Procurement Law and Performance of Energy Sector in Kenya, he targeted respondents from all the corporations in the energy sector which was made up of Kenya Power & Lighting Co., Kenya Electricity Transmission Co, Rural Electrification Authority, KenGen, Kenya Petroleum Refineries Ltd., Kenya Pipeline Co., National Oil

Corporations of Kenya and the Geothermal Development Corporation. The paper was grounded in the Institutional theory. It is recognized that procurement as a functional process is made up of lucrative decisions which have to be made at every stage. Each decision is important, a slight error in the decisions can render an organization into serious consequences, including loss of values in the market stake. The results reveal that a sound procurement legal framework, buoyed by honest implementation of regulations highly influences performance in the energy sector of Kenya. Compliance to the act and implementation of the regulations is far from better in the energy sector. Mutangili concludes that corporations in the energy sector need to establish supplier audit policies, adopt ethical policies and adopt policies on use of information communication technology to improve performance (Mutangili, 2021).

Panya & Were (2018) conducted a study on determinants of Public Procurement Regulatory Compliance by County Governments in Kenya. A descriptive research design, employed on a targeted population of 525 participants was adopted. The paper set to determine the effects of procurement process management, procurement ethics, contract management and financial cost management o procurement regulatory compliance in Homabay County. Stratified random sampling technique was adopted to select 105 respondents made up of procurement officers of the county assembly, governor's office, county ministries, the sub county referral and sub county hospitals. Chief ministers of departments were also included as units of observations. Questionnaires were chosen as research instruments where multiple regression models were used as analysis techniques aided by SPSS software. The findings of the study depicted that management of the procurement process, ethics in procurement, contract management and cost of finance management had a statistical significance and positive relationship with the procurement regulatory compliance. The recommendations of the study were that managers and policy makers in counties and other PEs to harness policies that will the determinants as this will improve compliance to the procurement regulatory compliance.

The study by Getuno, Awino, Ngugi & Mwaura (2015) studied the Implementation of PPP regulations, 2009 and the organization performance of state corporations in Kenya. The paper surveyed 187 state corporations as according to the taskforce on parastatal reforms of 2013. The sample population was made up of 250 procurement officers and 60 CEOs from 125 state corporations, selected through a simple random technique. A questionnaire and interview guide

were selected as the main research instruments. The data collected was further analyzed through descriptive statistics and multiple regressions. While Getuno *et al.* (2015) recognize that there is none implementation of PPP regulations, 2009 in PEs which has deemed achievement of value for money, economic growth, investment improvement, the results nevertheless, indicate that implementation of the PPP regulations, 2009 significantly leads to performance of the state corporations as shown by the R^2 value of .574. The recommendation was that in order to effectively implement PPP regulations, 2009 the government should increase budgetary allocations to partnership programs also devise ways to sustain interests of the private sector (Getuno *et al.*, 2015).

Oduma & Getuno (2017) employed a census survey of secondary schools in Nairobi City County in a bid to assess the effect of procurement regulations on performance of public secondary schools. The study adopted a descriptive research design in order to determine the influence of ethical standards, transparency, procurement professionalism and inspection and acceptance on the performance of public secondary schools in Nairobi. A target population of the 76 public secondary schools with units of observation as procurement staff involved in procurement and store keeping was utilized. Pearson correlation coefficient examined the association among study variables with the help of SPSS software. The findings showed that ethical standards, transparency, professionalism and inspection and acceptance affected the performance of Secondary schools in Nairobi. The conclusion was that most public secondary schools have not fully implemented PPAD Act, 2005 and PPDR, 2006 in the procurement of goods and services. Recommendations were to instill stiffer penalties for violators of regulations and adequate training of procurement professionals (Oduma & Getuno, 2017.

Marendi (2015) on procurement legal framework implementation and performance undertook a study that concentrated on the legal framework of Kenyan public procurement with originating regulations and the old act. The paper used 187 state corporations as quoted by the task force on parastatal reforms (2013), from which a sample of 112 firms was arrived at and studied through a cross sectional survey design. Enforcement mechanism (measured by audit and procurement reviews) was used as a moderator variable. Grounded on Principal agent, stakeholders, four pillars model, institutional, legitimacy, decision & public value theories, inferential and descriptive statistics were used in the analysis. The results showed a significant effect of the conceptualized

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variables on performance, with enforcement mechanisms moderating the legal framework implementation and performance relationship. Recommendations were that state corporations to implement the legal framework in order to improve performance (Marendi, 2015).

Mutangili (2019) used a desktop study review methodology to study Corruption in public procurement. It is recognized that the menace of corruption in public procurement has bedeviled the performance of public organizations and has been passed on from one government to the other, with no serious effort being employed to curb the vice. Guided by broken windows and the ethical theories, the main problem of this study is that public procurement in Kenya is a bed rose of corruption, the country loosing Ksh. 608 billion every year which translates to 7.8% of the GDP. Also, the problems in procurement due to corruption are attested by the fact that 1 in every 3 companies report corruption in public procurement. The study's conclusion is that a diverse nature of political, economic, social cultural and management aspects makes up the main causes of corruption in the public procurement system of Kenya. Recommendations were that companies should endeavor to adopt open tendering practices, transparency & fairness, implementation of stiffer penalties for violators of regulations, capacity building or practitioners as well as strengthening audit processes (Mutangili, 2019).

A study examined whether compliance to the procurement legal framework influence performance of procuring units in universities in Kenya (Nyakundi & Muturi, 2017: Effects of Compliance In Public Procurement Regulations On The Performance Of Procurement Functions Within The Universities In Kenya, Kisii University). Using a sample of 90 participants drawn from a target population of 893 participants, the study had the following specific objectives: to determine the influence of transparency, the establish the effect of competitive bidding, to establish the effect of professionalism, quality sourcing on performance of public universities. The units of observation comprised of prequalified suppliers in Kisii university as well as the staff in the procurement department Simple random sampling technique on 10% of the population justified by Mugenda & Mugenda (2005) guided selection of the samples. Data was collected by questionnaire. Descriptive and inferential statistics were used for analysis. The findings were that the study conceptualized variables influenced performance and the recommendations implied that Kisii university and other public firms to institutionalize the variables (Nyakundi & Muturi, 2017).

As discussed in the preceding paragraphs and other studies, scholarly works focused on establishing the relationship between procurement legal framework and performance under the original acts and regulations (PPAD Act, 2005, PPDR, 2006, PPP Regulations, 2006) and old constitution of Kenya (Cantera, 2021: Undelayable reforms of public procurement in Spain; Giosa, 2020: Preventing collusive tendering in public markets via framework agreement regulations in Europe; Loosemore, *et al.,* 2021: Institutional drivers in social procurements implementation in Australia; Jibrin *et al.,*2014: Public procurement reforms in Nigeria, Implementation & compliance challenges; Asamoah *et al.,* 2019; Kanyaru & Moronge, 2017: determinants of PP Legal Framework on the Performance of Public Institutions in Kenya; Mutangili, 2021: Impact of PP Law on the Performance of Energy Sector in Kenya Getuno, *et al.,*2015: Implementation of PPP regulations, 2009 and organization performance of state corporations in Kenya; Nyakundi & Muturi, 2017: Effects of Compliance In Public Procurement Regulations On The Performance Of Procurement Functions Within The Universities In Kenya). Consequently, procurement legal framework with all elements (PPAD Act, 2015, PPD Regulations 2006, Public Private Partnership Act 2013, Executive orders & Directives 2015 & 2018) after promulgation of the new constitution, 2010 is non existent. Further, bulk of the studies have focused only on one or few aspects of the legal framework (Siagan, 2017; Getuno, *et al.,*2015; Panya & Were, 2018; Oduma & Getuno, 2017; Moe *et al.*, 2017) ignoring the realism of all the acts, directives and regulations. Information on implementation of procurement legal framework & supply chain performance of PEs when all elements of the legal framework are considered in the realism of under the new constitution of Kenya, 2010 is therefore non-existent and warrants investigation. Hence there exist a gap of knowledge in literature. Against this backdrop, the current study sought to assesses procurement legal framework implementation and supply chain performance of public entities in Kenya by considering all acts and regulations of the legal framework under the new constitution of Kenya 2010.

2.2.2 Innovation Practices and Performance

In the global arena today, governments are adopting innovative practices and technologies in public procurement with a view to improve quality and the economic growth (Alves, *et al.,* 2018) Innovativeness as an antecedent of performance varies in different organizations. The study by Gu *et al*. (2016) studied the effect of ICT on supply chain resilience and performance. Based on a sample size of 206 manufacturers in the Chinese manufacturing firm, the writers adopted a

systematic empirical review methodology to examine the relationship between supplier information technology (IT) exploitative use, supplier IT explorative use, customer IT exploitative use, customer IT explorative and supplier resilience. Guided by the lens of information processing theory, it is argued that for firms to recover from operational disruptions caused by disruptions in the supply chain such as the Covid 19, they must exhaustively improve the capacity of utilizing IT to amend their structures and survival processes. The grounds of information processing theory cement that using ICT is an ideal way of improving information sharing and processing which are bases of evading disruptions. The results show that supplier and customer resilience improves supply chain performance and supplier IT explorative use have an effect on performance. Further the ambidextrous use of IT takes effect on the customer side.

Incea, Imamoglua & Turkcana (2016) developed a conceptual framework in order to establish the effect of Technological Innovation Capabilities and Absorptive Capacity on Firm Innovativeness in Turkey. Paper employs a literature review methodology based on an extensive search. The study had the following specific objectives: to evaluate the effect of absorptive capacity on innovation capabilities and to determine the effect of innovation practices capacities and the absorptive capacity on the firm innovativeness. In the rapidly changing business environment, firms must be innovative to survive in the turbulent markets. This is also true given that innovation is tantamount to competitive scales and adopting innovations means improving the competitive advantage of the firm. Absorptive capacity and technology innovations are thus critical to competitiveness. The study models thus absorptive capacity has a positive relationship with innovation practices, innovation practices has a positive relationship with firm innovativeness and absorptive capacity has a positive relationship with firm innovativeness.

A study established the theoretical underpinnings of organization innovation (Alves, *et al.,* 2018: Literature on organizational innovation; past and future). The writers adopted a bibliometric analysis review on a sample of 460 articles published in the years 2007-2016 and indexed in the web of science. The study acknowledges the importance of innovation to firm competitiveness. The concept of innovation as according to the writers, was first distinguished by Joseph Schumpeter (1934). Schumpeter established innovations types as product innovations, production method innovations, markets innovations, Innovation, therefore, is more than a mere changing technology. The findings of the literature review study show that the important elements which

ground organization innovation are learning and evolution, innovation implementation and leadership, creativity and learning innovation. Results on contemporary views denote that researchers are approaching innovation as learning for resource development, human resource innovations as well as knowledge and capability innovations.

The study by Černe, Jaklič & Škerlavaj (2015) established the relationships between technology innovation, management innovation and financial performance in 3 countries, Slovenia, South Korea and Spain. The primary data was collected from 604 firms in the 3 countries. Data collected was analyzed through Structural Equation Modelling (SEM). The writers acknowledge that in the past scholarly research on innovations was focused on changes in technology as well as improvement in technology with a little touch on the changes in management and other technology based dynamics. In tandem with precepts of the resource based view theory, management innovation is an important edict for competitive scales and has taken center stage in describing non technology based innovations. The results show that management innovation must be present for innovation practices to give meaning and impactful financial performance. The conclusion of the study establishes the glue that holds management innovation as a must for financial performance, shifting away from the previous establishments that gave exclusive eminence to innovation practices as impactful on performance.

Kiani, Yang, Ghani & Hughes (2021) targeted the upper echelon management, the CEOs to demonstrate the mediatIng effect of entrepreneurial orientation on the relationship between innovation practices and the entrepreneurial passion in China's SMEs. Primary data were collected by a questionnaire employed on 400 companies sourced from the directorate of technology firms in Guangdong province of China. The findings of the paper denote that the firm's entrepreneurial orientation has a significant mediating effect on the relationship between managers' entrepreneurial passion and innovation practices. Findings further reveal that the CEOs entrepreneurial passion has a significant prediction of firm orientations, and the CEOs entrepreneurial passion can further improve the innovation practices of the firm (Kiani *et al.*, 2021).

Zhang, Khan & Salik (2019) carried out study on the influence of management innovation and technological innovation on organization performance, the mediating role of sustainability in

Pakistan. Data was collected by a questionnaire. The sample size of 700 participants was made up of manufacturing and trading firms, where CEOs informed the study. The data so collected was analyzed by descriptive statistics as well as confirmatory factor analysis. The findings depict that technological and management innovation have a significant positive relationship with sustainability and organization performance. Sustainability was found to have a partial mediating role on the relationship between technological and management innovations and organization performance. The recommendations of the paper were that managers in the contemporary firms need to prioritize policies and strategies meant to adopt technological and management innovations in order to survives turbulent markets in the long run.

The study by El-Chaarani & El-Abiad (2018) studied impact of innovation practices on performance in banks in Lebanon between 2010 and 2017. Bank performance was operationalized by Return on Assets (ROA) as well as Return on Equity (ROE). Innovativeness was operationalized by mobile banking, ATMs, internet banking and computer software. Non probability sampling technique was applied to select 17 Lebanese banks from a population of 49 banks. Secondary data as well a panel data from the period between 2009 and 2015 was utilized. Regression analyses and descriptive statistics guided analysis of the data collected. The findings of the study show that innovation practices (ATMs and internet banking) have a positive impact on Bank performance in Lebanon. Correspondingly, innovation practices (mobile banking and computer software investment) have no significant impact on the bank performance in Lebanon. The study draw conclusion based on the study variables but failed to raise recommendations for adoption in practice.

Beer & Mulder (2020) conducted a systematic literature review on 'the effect of technological development on work and implications for continuous vocational education training. The paper set to answer two questions: what is the effect of new technologies on work characteristics? What are the implications of technological development for continuous vocation education and training? Extant literature was mined from the databases in the fields of psychology, education, economics and education to give a sample of 21 studies. Stakeholders in vocation education and training often enter these markets with knowledge, skills, motivations and expectations. It is important that these fundamentals are considered in coming up with new leaning environments especially for vocational education and training organizations. The results denote that technological

developments result to increased complexities and mental work, reduction in manual works, reduction in manual works, increased work interruptions, in order to improve work performance, the study found out that there should be knowledge of technology, being to change, time management (Beer & Mulder, 2020).

Park, Bae & Hong (2019) concentrated on human resource managers of 236 private research and development centers published by the Korea Industrial Technology Association to advance a study titled: High Commitment HRM systems, HR capability and ambidextrous technological innovation. The study specifically analyzed the relationship between innovation practices, human resource capability and human resource and the mediating role of human resource capability on innovation practices and human resource. Snowballing sampling technique was adopted to sample, with questionnaires adopted as the research instruments. Further, descriptive statistics and regression analysis analyzed the collected data. Findings show that human resource has a positive significant effect on innovation practices and capability. Also, human resource capability had significant mediating effect on the human resource management systems and innovation practices. The study discussed that research and development centers as well as other firms in Korea to prioritize adopting and implementing the study variables.

Manzaneque, Ramírez & Diéguez-Soto (2017) studied intellectual capacity efficiency, innovation practices and family management in Spain by surveying 5, 304 firms as quoted by the Spain ministry of Industry for the period 2000-2013. The study adopted a matched pair research design where firms with innovation practices were matched with controlling firms with no innovation practices in order to control firm specific characteristics. Further, component logistics regression models was adopted in analysis of data. Descriptive statistics were also adopted to analyze the collected primary data. The results show that intellectual capital efficiency has a significant positive effect on innovation practices outputs, since human resources and firm's ability to harness skills and abilities greatly determines output in innovation practices. Further, the findings illustrate that family management moderates the relationship between intellectual capital efficiency and innovation practices. Study however failed to provide recommendations for adoption in practice.

In the African arena, research on technologies and innovations has in the same view, not been overlooked. To begin with, Donbesuur, Ampong, Owusu-Yirenkyi, Chu (2020) conducted a study

on the relationship between innovation practices, organizational innovation, domestic institutional environment and the international performance of SMEs in Ghana. Primary sources of data informed the study, where questionnaires were administered to 730 participants who took part in the study. Units of observation was composed of CEOs or business owners, finance officers, Global Business Managers and Innovations or Research & Development Officers. Structural Equation Modelling was adopted in the analysis of the primary data. Based on the institutional and dynamic capability theories, the paper posits that innovations (both technological and organization) have an effect on performance and this is contingent on the domestic institutional factors. Results indicate that both technological and organizational innovation affect performance. Additionally, it is revealed that environment institution enforceability and specificity improve the effect of innovations on SMEs performance (Donbesuur *et al.,* 2020).

YawObeng & Coleman (2020) conducted a study on Evaluating the effects and outcomes of innovation practices on a e learning system in Ghana. A 3-point scale was developed to obtain primary data from a sample size of 600 participants studying in tertiary training institutes, who were chosen through a purposive sampling technique. In analysis, logistic regression model was adopted to determine impact of innovation practices on web-based e learning system. Correlation matrix was applied in determining relationship among the conceptualized variables. The results provide evidence that innovation practices has a significant positive effect on eLearning system given that a single increase in innovation practices results into 55 times increase in features of the system and 3 times increase in the eLearning outcome. Further, the results also denote that features of the eLearning system has a significant effect on the eLearning outcome. The study however failed to provide recommendations for policy making.

David & Grobler (2019) generated data on 21, 601 agricultural households in South Africa to examine the relationship between ICT and farming land in household food production. The data on the household was obtained second hand from the general household survey report, 2015 of South Africa. Anchored on endogenous growth and innovation & technological theories, the study recognizes that given South Africa's economy is the second biggest in Africa, it is one of the largest suppliers of food products as the national level but about 80% of the households are not involved in agriculture production activities. Logit regression models were adopted to analyze the generated data It is conceptualized that household participation in agricultural production is a

condition for farm production, land size for farming is a condition for the land accessibility, internet and telephone use were taken as measures of ICT. Study results showed that internet and telephone use has a positive and significant effect on the agricultural production by the households, land accessibility has an indirect significant relationship with food production by the households. The conclusion of the study was that land accessibility is a big obstacle to farming activities in South Africa, ICT innovations may thus be impossible due to lack of farming land, (David & Grobler, 2019).

Abdullahi, Shehu & Usman (2019) studied the Impact of ICT on productivity in the banking industry in Nigeria. Questionnaires were used as research instruments in a population of 220 from which a sample of 140 respondents of 3 bank branches were selected purposively. A convenience non-probability sampling technique was also chosen in the sampling frame. The study used a descriptive survey research design and multiple regression analysis in the analysis of collected primary data. The study was guided by the following specific objectives; to determine the impacts of software component, hardware component and internet on the organization productivity of banks. The results inferred that all the study variables had a positive and significant on the organization productivity of banks in Nigeria. The recommendations were that the banking industry to make adopt the use of modernized hardware, software and current internet infrastructure to in order to improve their productivity, (Abdullahi *et al.,* 2019).

In Zambia, Haabazoka (2018), studied the Effect of technological innovation on performance of commercial banks by using secondary data made up of 19 banks. The specific objectives were to evaluate the effects of internet banking, mobile banking transactions, ATM transactions on the financial performance of the banking industry. Monthly data, adopted for a 4-year time period was utilized. Paper used a descriptive design, innovations and transaction cost innovations theories grounding the paper. In analyzing the generated data, regression analysis via SPSS was used. The results showed that innovation practices among banks had a positive significant relationship with the financial performance of the banking industry. Specifically, the findings revealed that ATM transactions, mobile bank transactions positively affected performance while internet banking transactions were found to have a weak relationship. The recommendations were that banks to derive strategies of spurring innovations in order to improve performance.

Okpalaoka *et al*. (2022) evaluated application of innovation practices in SMEs performance in the Lagos state of Nigeria on the study tittled 'effect of innovation practices on the performance of selected manufacturing SMEs in Lagos state. Descriptive, causal research survey designs was applied on a population of 562 SME owners from which a sample of 262 was selected purposively. Further, questionnaires were used to collect data from the respondents, giving a response rate of 85%. Regression and ANOVA was applied in the analysis of data by the help of stata software, where the Cronbach alpha technique estimated the instruments reliability. The objectives of the paper were formulated as evaluating the influence of technological learning capability on profitability of SMEs, to assess the influence of resource allocation capability affects sales growth in SMEs. The results revealed the study explanatory variables had a positive effect on their corresponding dependent variables. The recommendations of the paper rested on the pillar that SMEs in the Lagos state of Nigeria and worldwide have to implement strategies that encourage use of learning technologies as well as adoption of technology in their production methods since this would effectively improve performance.

In the Zimbabwe, Mabhodha & Choga (2018) modelled on a study on Impact of ICT on the procurement processes in the urban council. The units of observation were 5 urban councils, Chegutu, Kwekwe, Gweru, Chinhoyi and Kadoma councils from which a sample of 86 respondents. Quota sampling technique was adopted with the respondents drawn from 3 departments of the councils (procurement, works and finance. Primary and secondary data informed the study, where primary data was obtained with the help of questionnaire as the main research instrument. Qualitative and quantitative analysis was adopted via SPSS software. Grounded in the TAM theory, results from the findings showed that while the adoption and use of ICT is recognized in the Zimbabwean urban councils, utilization of it is at the rudimentary level. Findings further indicated that application of ICT in procurement improves the procurement process and further compliments other operations, more so administrative and financial practices. ICT training, resources availability and firm management are critical success factors for the utilization of ICT in procurement. The recommendations were that employees need to be equipped with knowledge and skills in ICT as this will improve performance of the procurement process (Mabhodha & Choga, 2018).

Karakara & Osabuohien (2020) conducted a comparative study on West African countries to investigate ICT adoption, competition and innovation among the informal firms basing on Ghana and Nigeria. Secondary data retrieved from World Bank Data, 2014 was generated to inform the study. In the analysis of generated data, binary logistic regression was applied on the quantitative data. The study hypothesized four models, whether the firm is a product innovator, whether the firm is a process innovator, whether the firm is an organization innovator and whether the firm is a marketing innovator. The results showed that ICT adoption has a significant and positive effect on the modelled innovations. Specifically, the adoption and use of telephones, emails and webs has a significant effect on innovations. The effects of the ICT adoption were however found to be different between Ghana and Nigeria. The recommendations were that firms must derive strategies modelled towards adoption and use of ICT infrastructure since this will spur innovation in practice (Karakara & Osabuohien, 2020).

In the Ghanaian case, YuSheng & Ibrahim (2018) drew a conceptual framework and tested it using data obtained from a sample of 600 customers in commercial banks. The aim of the study was to model the relationship on the role of service innovation on the relationship between service delivery, customer satisfaction and customer loyalty in the Ghanaian banking industry. Convenient sampling method was adopted to select customers who were issued with questionnaires. In addition, structural equation modelling and descriptive statistics were used to analyze data with the help of SPSS software. Confirmatory factor analysis measured the discriminant, content and construct validities. The results of the paper showed that service innovation has a direct and significant influence on service delivery and customer satisfaction. Furthermore, the results show that service delivery had a positive effect on customer satisfaction and the bank's customer loyalty. Paper however failed to draw recommendations for adoption in practice.

Adeyeyetolulope (2019) surveyed 137 employees of the Nestle Foods Plc. Nigeria in order to investigate the impact of innovation practices on performance in Nigeria. The specific objectives of the paper were examining effect of strategic planning and marketing activities on performance of manufacturing firms in Nigeria. To analyze the collected data, regression, correlation and ANOVA techniques were used. Writers acknowledge that for firms in the contemporary competitive markets to survive the murky competitive environments, they must constantly provide better value in terms of quality than their competitors. Providing quality, albeit, cannot be achieved

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if the firms turn a back on innovations. Many firms in Nigeria have been outwitted by foreign firms, due to their inability to adopt their innovative practices. The findings depict that strategic planning and marketing have an effect on performance both jointly and independently. The study variables also had a significant and positive effect on performance. The paper recommended that organization need to ne innovative in order to be competitive and that employees need to be trained to improve efficiency and efficiency (Adeyeyetolulope, 2019).

In the Kenyan context, Weeks & Namusonge (2016) studied Influence of ICT practices in procurement on performance in public universities in Kenya. A descriptive research design was adopted on the data collected from 8 campuses of the Jomo Kenyatta University of Agriculture and Technology. The study targeted 41 procurement officers and directors of the campuses. Primary data was collected by questionnaires and interview schedules. Further, descriptive statistics and inferential statistics analyzed collected data by the help of SPSS software. The results indicate that ICT had a positive and significant effect of performance. As a result, the paper was in conclusion that ICT is an important element in improving performance given that it develops quality practices, efficiency & effectiveness, as well as service delivery. The recommendations were that JKUAT and other firms need to consider prioritizing the adoption of ICT (Weeks & Namusonge, 2016).

In the study by Chege *et al*., (2019) on impact of IT innovation on organization performance, the writers cased on Tharaka Nithi County by randomly selecting 297 small scale farmers and SMEs which were registered and licensed by the government. A quantitative research design was utilized and primary data s collected by a questionnaire. Structural equation modelling was also utilized in analyzing the collected data. Results of the study showed that technology innovation has a positive and significant effect on performance. The recommendations informed entrepreneurs to consider coming up with innovative strategies in order to spur performance. The government of Kenya as well need to also strengthen and actualize policies meant to develop ICT infrastructure among entrepreneurs, improving SMEs innovation externalities as well as putting up ICT resource centers in order to improve organization performance.

A study looked at effect of ICT on supply chain management performance (Amukanga & Otuya, 2021: ICT and Supply Chain performance, a literature review). The writers employ a literature

review by carrying out a document review on supply chain management and performance. The writers establish that ICT is important in supply chain practices given that it is an antecedent for meeting the needs and wants of consumers. This is by building supplier trust, reducing lead time and better quality. Firms that correctly match their supply and demand are better geared towards improving performance. This is better exemplified where there is a strong system of ICT, with utmost trust among partners. The paper concludes that SCM is an important pillar of any organization akin with improving performance. Where the supply chain is prudently managed, then the firm will reap benefits of improved competitive scales. This can be achieved through adoption of ICT in their procurement practice. The recommendation of the study was that more scholars need to have a look at the topic in different contexts and disciplines.

Muriuki (2021) while considering state corporation of the energy sector modelled a study on effect of ICT on procurement performance of the energy sector state corporations. The study was guided by the following specific objectives: to examine the effect of communication technology, application software, information technology, e procurement policy, and e-procurement technical support staff on the procurement performance of state corporations in the energy sector. Both qualitative and quantitative data was used in the study, where descriptive survey design and correlation designs were applied on a sample size of 211 respondents chosen via simple random techniques. The units of observation were staff in the procurement departments as well as technical support staffs. A census sample was also utilized in selecting the e-technical support staff. Questionnaires were used as research instruments. The factor and multiple regressions were used to aid in the analysis. The study findings showed that all the study variables had a positive significant effect on performance and thus recommended regular ICT training, alignment of e procurement policies with the current practices as well as the adoption and use of contract management and spend analysis softwares (Muriuki, 2021).

By concentrating on 94 government agencies as according to the yellow pages posit (2017), Mutie (2018) carried out a study on the effect of innovation practices on organization performance of government agencies. The study was guided by the following specific objectives: to determine the influence of digital tools and enhancement, system development and enhancement, IT based innovations, interdepartmental process integration on performance. A descriptive cross sectional survey design was adopted on a population of 94 participants, from which a sample of 94

respondents was selected through a census technique. Questionnaires as research instruments collected primary data which was analyzed by multiple regression analysis. The results indicated that all the study variables had a positive and significant effect on performance. The recommendations were that more funds be allocated to technological development in order to improve service delivery (Mutie, 2018).

Letangule & Letting (2012) conducted a literature review on the adoption of innovation practices and performance by reviewing the models of innovations in technology, the adoption of innovations in technology, the approaches to innovations, factors influencing the adoption of innovations as well as the relationship between technological adoption and firm performance. The writers recognize that technology innovations and the suitable adoption of new technologies are an antecedent for firms with a keen eye to maintaining visibility in the today's turbulent markets. Buoyed with deregulated economies which have even disturbed the competition playing fields, firms in competitions must move fast and adopt strategies that will spur innovations. Additionally, the performance of firms is today pegged on their ability to be innovative and maintain this in the entire life cycle. The paper concedes that literature evidence show that there exists a strong annex between innovation practices and performance of firms (Letangule & Letting, 2012).

From the aforementioned discussions, scholarly works on innovation practices is not seldom in literature. A glut of the studies reviewed on the variable were literature & conceptual reviews (Gu *et al*., 2016; Incea *et al.,* 2016; Alves, *et al.,* 2018, Beer & Mulder, 2020), ignoring a primary quantitative approach. Additionally, some studies concentrated on organizations in only one industry, ignoring a multi-faceted approach of PEs in all industries (Kiani *et al.*, 2021: technological innovation & entrepreneurial passion in China's SMES; Zhang, *et al.,* 2019: Management & Technological Innovations in Manufacturing Trading firms; Park *et* al., 2019: Ambidextrous innovation in Korean Private Research Centers; Yaw Obeng & Coleman, 2020: Technological Innovations in Ghana e-learning systems). Other studies albeit, operationalized innovation practices diversely, ignoring importantly PP innovation practices such as ICT training, E-procurement practices, Capacity building of procurement practitioners, systems development (David & Grobler, 2019: internet & telephone use; Abdullahi *et al.,* 2019: software & hardware component, internet; Haabazoka, 2018: internet & mobile banking, ATM transactions; Okpalaoka *et al*., 2022: technological learning capability). Yet other studies adopted diverse sample frames,

ignoring heads of procuring units who must be abreast on every PP innovation (Adeyeyetolulope, 2019: all employees of Nigeria's Nestle Plc.; Chege *et al*., 2019: small scale farmers in Tharaka Nithi County, Kenya). Information on effect of innovation practices on the supply chain performance of PEs in Kenya is therefore lacking, and this warrants investigation. The current study therefore sought to model this relationship.

2.2.3 Procurement Legal Framework Implementation, Innovation Practices and Supply Chain Performance

While scholarly works have been documented on the effect of innovation practices on performance, modest of this works have been carried out on the moderating aspects of this variable, and none has revealed its moderation effects on procurement legal framework implementation and supply chain performance of PEs in Kenya.

Bulitia (2014) looked at the moderating aspects of technological innovation on human resource management practices and performance by concentrating on manufacturing firms in Kenya. This study used a census survey to consider all the 68 medium and large firms in manufacturing as quoted by the Kenya association of Manufacturers (2012) and employed questionnaires as research instruments to obtain data from production managers, human resource managers, brand managers and marketing managers. Secondary data was obtained from the firms published reports. The study results showed that innovation practices has moderating aspects on human resource management practices and firm performance as shown by the (R^2 = .052). It was concluded that managers can set to improve performance of their firms by developing new innovative strategies and adopting them in practice.

The study by Mudany, Kemei, Awuor & Ogutu (2021) modelled the moderating role of technology on leadership and performance. Grounded on the Diffusion of Innovations and contingency theories, researchers used a cross sectional design on a target population of 68 firms in the energy sector. Primary data were collected by a questionnaire grounded in the lens of positivism. Descriptive statistics helped analyze the collected data. The results showed that there is a significant positive relationship between leadership and performance. The results further proved that technology moderated this relationship (R^2 = .033). The recommendations were that managers to consider adopting innovative technologies in order to improve performance.

Nyambura (2018) modelled the moderating effect of ICT on supply chain risks and performance relationship of manufacturing firms in Kenya by using a stratified random sample in selecting 76 manufacturing firms. A cross section survey which made use of both qualitative and quantitative approach was further employed in Nyambura's study. Descriptive statistics analyzed the data. The findings showed that ICT significantly moderated the relationship between only one study variable (organization characteristic) and performance but jointly moderated the relationship between supply chain risks and the performance of manufacturing firms. The study recommended firms to adopt the use of ICT in order to improve performance.

Marendi (2015) looked at moderating effect of procurement legal framework implementation by using enforcement mechanisms as a moderator, measured by compliance audits, compliance levels and review periods as a moderator. This study also concentrated on the acts and regulations forming the legal framework before promulgation of the new constitution (PPD Act 2005; PPD Regulations 2006; PPP Regulations 2009 and the Preferences & reservation regulations 2011). The study variables which formed the legal framework were PPD Act, 2005; PPD Regulations, 2006; PPP Regulations, 2009 and the Preferences & reservation regulations, 2011.The results suggested that implementation of the public procurement legal framework influences performance and that enforcement mechanisms provided a moderating effect on the said relationship. Recommendations were that state corporations to earnestly implement the legal framework and harness the enforcement mechanisms.

In evaluating the moderating effect of ICT on service quality and customer satisfaction relationship, Bonuke & Cheruiyot (2015) targeted 6067 customers in star hotels in Nairobi, Kenya from which a sample of 375 respondents was arrived at through proportionate sampling technique. A descriptive design was utilized with a questionnaire used as research instrument. Multiple regression model was used in analyzing the collected data. The findings indicate that service quality affects customer satisfaction ((β= .194, p= 0.003) and ICT moderates this relationship (R^2 = .049). The recommendations were that managers in hotels need to pay attention on service quality practices. Further, the managers need to consider implementing policies meant to gear the use of ICT in order to improve performance

Awiti, Imbambi, Mande & Machuki (2020) looked at the moderating effect of technology on change management and performance of the companies listed on the Nairobi Stock Exchange by surveying 64 listed companies. A sample of 38 firms arrived at purposively was selected in which senior managers of the companies (CEOs, Human Resource Managers, Finance managers and marketing managers) were adopted as observation units. A cross section survey design was then used to study 152 managers. Questionnaires collected primary data while secondary data was obtained from published reports. The findings revealed technology moderated the relationship between change and performance of the listed firms (Composite mean=3.83; F=148.439, p= 0.000). The recommendation was that firms to consider upscaling their use of technology).

In the Malaysian case, Hamdi, Silong, Rasdi & Omar (2015) surveyed the biotechnology industry to establish the moderating effect of technology uncertainty in the innovation speed and product success relationship. A cross sectional survey research design was employed on a population of 240 biotech firms. Questionnaires were utilized to collect primary data by concentrating on sales managers, CEOs, executive managers, research & development officers and project managers in the healthcare, agriculture and industry. Descriptive statistics and multiple regression were further used in analysis. The results showed that innovation speed had a significant relationship with product success. Also, technology uncertainty moderated this relationship. The recommendations informed policy makers and managers to harness implementation of the study variables.

The study by Mkwizu & Sichone (2019) looked at the moderating effect of technology on the user attributes and e-government information systems success in Tanzania by using quantitative methods. By concentrating on Dar es Salaam, writers used a descriptive research design and convenience sampling technique to obtain data from the Tanzania Revenue Authority officers., 246 questionnaires were completely filled and returned. Collected data was analyzed by using structural equation modelling by the help of SMART PLS software. Findings disclosed that user attributes had a significant effect on information system success (p = 0.000) while technology had a moderating effect on this relationship (p = 0.001). Recommendations inferred that government agencies in Tanzania to prioritize user attributes in developing information systems without overlooking technological developments.

A Pakistanis study by Anser, Zhang & Kanwal, (2018) demonstrated the moderation of corporate social responsibility and firm performance by innovations. Grounded in resource based view and institutional theories, secondary data which comprised of yearly reports obtained from 300 manufacturing firms that were listed on the Pakistan Stock Exchange were used. The data was obtained for the period between 2013 to 2016. Also the empirical testing of the derived hypothesis made use of panel data. The Pearson and Spearman correlation tested the linearity of relationships while multiple regression analysis with the help of SPSS analyzed the collected data. The reliability and validity was ascertained by the Cronbach's alpha technique. The results revealed that there exists a significant direct relationship between the corporate social responsibility and performance. Nevertheless, the study showed that innovation does not produce moderating effects on the mentioned relationship. The study recommended similar studies in developing countries and other contexts other than manufacturing firms.

The study by Liao, Fu & Liu (2018) on testing the moderating effect of technological capability and market information management capability in China, conducted a study titled: Open innovation strategies and firm performance: moderating role of technological capability and management information market capability. Data was collected from 238 Chinese firms through a census survey. In the analysis of data, structural equation modelling and linear regression model analysis were utilized. The study was limited to firms operating in China's high tech sector, i.e. information technology, pharmaceuticals and telecommunication. The results showed that technological capability moderates the relationship between open inbound innovation and firm performance, even though the same with outbound open innovation is absent. Mixed results of the moderation by management market information capability is noticed. The implications to management is that firms must pay more attention to both technological and market management information capability as these spurs innovation.

The study in Brazil on the moderating effect of ICT on lean product development and firm performance was carried out by Lima, Marcon, Echeveste, Marondin & Frank (2017). A survey of 48 Brazilian Companies which took part in the Brazil Lean Conference of 2014 guided the paper. A questionnaires was utilized as the main research instrument. Firm performance was evaluated by on time delivery, customer satisfaction, quality and cost. Descriptive statistics and multiple regression analysis were used in the analysis of data. Results indicated that lean practices

had a positive and significant effect on performance. ICT practices were found to moderate this relationship. The study however failed to derive recommendations for practical implementation.

Fayomi, Adelakun & Babaremu (2019) studied the impact of innovation practices on production by employing a literature review methodology. Information technology has unending impacts on production activities since it improves efficiency, effectiveness, service delivery and optimization of costs. Even though, the rapid innovations in technologies such as information and communications has forced humanity to spring, putting strain on the available few amenities and resources. The paper concludes that innovation practices has significant impact on construction, health, agriculture, biotechnology and nanotechnologies. The paper however failed to reveal moderation aspects of innovation practices and also the recommendations to be adopted in practice

Reviewed studies adopted different variables in moderating procurement legal framework-performance relationship. Marendi (2015) for instance, considered enforcement mechanisms as a moderator on this relationship, ignoring innovation practices. Other studies adopted innovation practices as a moderator on different models (Bulitia, 2014: Moderating effect of technological innovation on human resource management practices and performance; Mudany *et al.*, 2021: moderating role of technology on leadership and performance; Nyambura, 2018: moderating effect of ICT on SC risks and performance; Mkwizu & Sichone, 2019: moderating effect of technological innovation on user attributes and e government IS success), innovation practice as a moderator on PLFI-performance relationship. Yet a number of studies operationalized innovation practices in a variety of ways (Alzaghal & Mukhtar, 2018: ICT tools; Bonuke & Cheruiyot, 2015: ICT utilization; Kabiru *et al.*, 2012: IT capability, IT investment) ignoring PP innovations such as ICT training, systems development, capacity building of procurement officers and e procurement practices. Information on moderating effect of innovation practices on procurement legal framework and performance is nonexistent. The current study sought to bridge this gap by looking at moderating effect of innovation practices on procurement legal framework implementation and performance of public entities in Kenya

CHAPTER THREE
RESEARCH METHODOLOGY

Research methodology refers to the overall strategy for data collection and analysis that provide the best means for answering questions (Saunders *et al.*, 2009). This chapter discusses the methodology and design that were used in the study.

3.1 Research Philosophy and design

Philosophy is about the source and development of knowledge. It is concerned with fundamentals of knowledge about which inclinations and essential assumptions of a study are based. Simply put, Saunders, Lewis & Thornhill (2009) say that philosophy is what a researcher does when embarking on research, like solving a real problem in an organization by collecting data and developing theories and hypothesis to give answers to the problem. Tsang (2016) intimate that a research philosophy exists to serve three main functions. Firstly, demystifying, which is the criticizing and explaining assumptions, contradictions and variations that abounds in knowledge. Secondly, informing, which depicts where the researcher stands in the wider field of knowledge and the explorable opportunities presented. Thirdly, method-facilitating which is concerned with understanding the methods and procedures that the researcher employs as well as redefining such methodologies and critically evaluating their conditions for use.

The choice of a research philosophy is often based on the researcher's beliefs and assumption on the orientation of knowledge. These assumptions may be related to realities encountered about the research (ontology), assumptions about the human know- how (epistemology) or assumptions about the way the researcher's values influence the research (axiology). Further, the writers acknowledge that the choice of philosophy will inform the choice of research design and general procedures and methodologies for a research. Therefore, adopting a 'one best philosophy' will results in clashes between studies designs and methodologies in different researches, as well as knowledge beliefs and assumptions among different writers. Even though, philosophical disagreements are never absent in research studies (Saunders, *et al.,* 2009).

The study was based on the positivism philosophy. The philosophy first began in the works of Bacon F., Comte Auguste and Vienna Circle philosophers, the positivists pivotal attention is following the scientific method in order to obtain pure data and information without the people

biasness (Tsang, 2016). Saunders *et al.* (2009) agrees with this establishment and adds that for positivists, existing theories are adopted to test derived hypothesis and give logic conclusions. Research is guided by neutrality and detachment of the researcher from the data with the view of avoiding influencing final outcomes. In essence, positivists must maintain an objective stance of their surroundings and be independent of what is being researched. An important view of this philosophy is that the research mostly involves measurement of quantitative data and incorporates a deductive approach to theory development. Methods of analysis are often quantitative and derived from measuring observable facts (Saunders *et al.*, 2009; Tsang, 2016). The positivism philosophy was suitable for this study since it involved collection of quantitative data, objective from the environment in which the data was collected, involved testing of hypothesis and followed the established theories to draw conclusions on procurement legal framework implementation, innovation practices and organizational performance of public entities. Furthermore, the study follows an established and agreed upon scientific method.

Research design is the model of actions that informs how a researcher sets to answer research questions and encompasses objectives derived, the sources from which data will be collected and how the so collected data will be analyzed (Saunders *et al.*, 2009). The study adopted correlational survey design. The purpose of correlation studies is to gain an understanding of the relationship among variables of a study majorly without the researcher having an influence over the variables. Further, correlation designs adopt the use of quantitative methods, and are ideal in obtaining data in their natural being (Arasa, *et al.*, 2013). A cross sectional strategy was chosen for this study since data was obtained from the target units at one particular point in the period of research. Survey strategies allows the researcher to consider all the units of observations and are useful in answering the where, who, how and what questions. Further, survey is an attempt to collect data to obtain reasons for existence of relationships among variables and allows the researcher to model these relationships (Saunders *et al.*, 2009). Given that the current study aimed at considering all PEs in Kenya and model the relationship between implementation of procurement legal framework, innovation practices and performance, correlational survey design were deemed appropriate.

Additionally, previous studies such as Kanyaru & Moronge, 2017; Mutai, 2015, Getuno *et al*., 2015, Kinoti, Arasa, Waititu & Guyo (2013) have utilized the design and drawn meaningful recommendations, and thus deems the choice of this philosophy fit.

3.2 Study Area

The study was conducted in all the 187 PEs in Kenya (see Appendix VI). In the spirit of the PPAD Act (2015), a public entity refers to a procuring entity undertaking a procurement or asset disposal to which the act applies and includes the national and county governments and their departments, judiciary, commissions, independent government offices, state corporations, central bank, public schools and universities, firms owned by public entities, colleges, constituents and others. A public entity for that reason, is a government entity or an entity in which the government has full, large control mechanism and which use public resources (funds contributed by the tax payer) to undertake procurement as according to the legal framework established by the government (PPAD Act, 2015). All PEs are confined to the same legal framework, and are required to undertake procurement in a manner that upholds the principles of transparency, competition, equality, value for money and economy. PEs are distributed all over the country as they are established for different purposes and perform different functions.

3.3 Target Population

In the words of Mugenda and Mugenda (2003), a population is defined as a group of individuals, events or objects with a collective observable characteristic. Sekaran (2010) agrees to this establishment and intimates that population is simply the group of individuals or units that a researcher wishes to study, from which findings will be obtained from. Chemoiywo (2014), while quoting Mars group Kenya (2013) reported that Kenya has 210 commercial PEs, with only 187 fully registered and owned by the government. This is corroborated by the Presidential task force report (2013) as quoted by Marendi (2015), which denotes that Kenya has 187 PEs. For the purposes of this study, the units of observation were the 187 registered PEs. The PEs are guided by the same procurement legal framework and are supposed to adopt, implement and comply with the legal provisions of public procurement practices in order to achieve values of public procurement and objectives of public service delivery.

The PEs also have different structures when implementing the legal framework, meaning that they adopt a tenet of the legal framework for a specific procurement. Furthermore, the PEs were

established at different times and for different purposes. The Taskforce Report on Parastatal Reforms (2013) as quoted in the press release report (2021) reveal that the Kenya PEs are classified in groups/strata according to their main purpose as 1. Executive Agencies 2. Purely Commercial State Corporations, 3. Independent Regulatory Agencies 4. State Corporations with Strategic Function 5. Research Institutions, Public Universities, Tertiary Education and Training Institutions.

As at January 2023, the State Corporations Advisory Committee website indicated that there are 187 public entities. This was corroborated by the Presidential Taskforce Report on Parastatal reforms, PTRPR (2013) published in the State Corporations Advisory Committee's website also indicating 187 public entities, meaning that there was no official report showing any change in inventory of the public entities. In addition, the report postulates that there are 34 Commercial State Corporations, 21 Commercial State Corporations with a Strategic Function, 62 Executive Agencies, 25 Independent Regulatory Agencies and 45 Research Institutions, Public Universities, Tertiary Education & Training Institutions making a total of 187 entities (PTRPR, 2013; Press release Report, 2021). Therefore, the choice of all registered PEs fully owned by the government was informed by the fact that its mandatory for them to adopt the legal framework when conducting procurement. Given that the PEs are established for different purposes and are required to adopt and use the procurement law in different environments and structures, the study chose all PEs in order to obtain a general view of implementation of all the elements of the legal framework.

The study targeted the heads of procuring units as respondents to the study in every PE. Heads of procurement functions are primarily responsible for implementation and compliance to the acts and regulations of procurement practices. The head of procurement is also primarily responsible for ensuring that an entity follows the set rules and principles of procurement practice and renders professional opinion and advice to the CEO on all procurement matters (PPAD Act, 2015). For these reasons, the study selected the heads of procurement functions as respondents in the study. From the population of 187 heads of procuring units, 19 were selected for piloting and all the remaining 168 (who did not take part in piloting) were used as respondents to the study. Therefore, the study used survey in arriving at 168 respondents.

3.4 Data Collection Methods

Khothari (2004) referred to data collection as the process of gathering pieces of information necessary for a research process. It is a step-by-step approach of measuring and gathering data on pre-determined variables in an elaborate and organized manner with the aim of answering the relevant questions and drawing logic conclusions.

3.4.1 Data Types and Sources

The study used primary data. The choice of primary data was informed by Aila (2014) assertion on its suitability to solve existing problems in the phenomena under investigation, while at the same time being easily obtained through a correlational survey design. Kothari (2009) explains that primary data refers to the data collected first hand and afresh from the target units. This was obtained from the Heads of Procuring Units (PUs) of the PEs, who are the professional supply chain officers and whose opinions will be deemed professional. Tullow & Hawkins (2004) as quoted by Aila (2014) affirm that primary data can best be obtained through surveys. In addition, Saunders *et a*l. (2009) reiterates that primary data present the factual information that is begotten for the purpose of a research study.

The study used categorical data where questionnaire statements were represented by symbols and numbers. The data was Ratio scaled based on a 5- point Likert scale in which: Strongly Agree (5), Agree (4), Neutral (3), Disagree (2) and Strongly Disagree was represented by (1). Ratio scale measurements are important for continuous variables since values can easily be added, subtracted and divided. A Likert scale is a means of obtaining answers and opinions about a subject matter of interest, and measures the opinions of participants towards a particular subject matter. In the words of Nemoto & Beglar (2014), a Likert scale has multiple entries from which participants of a survey or study select their opinions about the subject matter. The writer further agrees that Likert scales are mostly used when investigating differences and relationships among variables (such as implementation of procurement laws, innovation practices and supply chain performance). Using 5-point Likert Scale questionnaires is best suited in social science because: 1. Data can be collected from a large number of participants 2. Provides highly reliable estimates 3. Validity of data can be ascertained through various means 4. Data obtained can be compared with other collection techniques (Nemoto & Beglar, 2014).

3.4.2 Data Collection Procedure

Allred & Davis (2010) defines data collection procedure as the process by which the researcher gathers the required data or information. Various methods in which a researcher can rely on to collect and administer collection instruments exist (Bhattacherjee, 2012) and include personal delivery, telephone administration, posting through a post office and the drop and pick method. Personal delivery and telephone administration are inefficient since they suffer high non response rates and do not cover wide coverage (Shaughnessy, Zechmeister & Jeanne, 2011). On the other hand, the drop and pick-later method results in high response degrees and is an effective way of covering large populations (Allred & Davis, 2010).

The researcher obtained a data collection approval letter from the learning institution, Maseno University prior to data collection (Ref No. PHD/BE/00068/018, 7TH Dec. 200, See Appendix II) This was a research introduction letter from the School of Graduate Studies. The researcher then used the university approval letter to obtain a research permission from the ethics committee of the institution (Ref. No. MSU/DRPI/MUSERC/01185/22, See Appendix III). Thereafter, the researcher obtained a research permit from the relevant government authority, the National Council for Science, Technology and Innovation (Ref. No. 700718, See Appendix IV), NACOSTI. A copy of the personal data collection letter (See Appendix I), introduction letter from the learning institution and the research permit from NACOSTI was sent to all PEs via a google form link after making personal telephone calls and obtaining emails of the procurement office/procurement officer. The contacts for the calls was obtained from the institutions website and google search. For the PEs that were unresponsive, the researcher made personal visits and supplied the entities with hard copies of the personal data collection letter, introduction letter from the learning institution and the research permit, this giving the respondent ample time to read and understand the questions before answering. The questionnaire was thereafter collected after a week for subsequent aanalysis.

3.4.3 Data Collection Instruments

A research instrument is a device used to collect data in an objective and a systematic manner for the purpose of a research (Khothari, 2004). In this study, a questionnaire is used as the main data collection instrument (See Appendix III). The questionnaire guided the collection from the heads of procurement units three constructs: procurement legal framework implementation, innovation

practices and supply chain performance. An item pool of 94 items comprising of 53 items for procurement legal framework implementation, 25 items for innovation practices and 16 items for supply chain performance was generated through a scopus literature search and review of the acts, orders and regulations guiding public procurement. The questionnaire was divided into three main section. Section A is made up of questions on procurement legal framework implementation. It is measured by items conferring implementation of elements of procurement legal framework. Section B comprises questions on innovation practices. It is conceptualized and measured by systems development, ICT trainings, training to capacity build & e procurements as suggested previously by ADB report on innovations in public procurement   Section C was made up of questions on supply chain performance. The questionnaire was subjected to expert reviews to ascertain content validity. The instrument was then piloted to allow for pretesting, where a computation of Cronbach alpha values ascertained reliability The questionnaire was selected as instrument for data collection since it gives a high extent of adoption and standardization of data amongst the population (Saunders *et al.*, 2009).

3.4.4 Pilot test

It is important to carry out pilot testing in order to discover, ascertain and review weaknesses in measuring instruments (Copper & Schindler, 2011) The experience gained in identifying weaknesses can be used in effecting improvement of the measuring instruments. A pilot study on 19 PEs, forming 10% and who did not take part in the final study was randomly selected to take part in pre-testing of the research instrument. According to Connelly (2008), a pilot study should be 10-20% of the sample projected for the larger parent study in order to allow for meaningful generalization. Cooper& Schindler (2011) also observed that 10% of a sample is adequate for pilot testing. The study thus followed Connelly (2008) and Cooper & Schindler (2011) establishments to select 19 heads of procurement units (10%) for the pilot testing.

Table 3.1: Pilot Sample size

No	Category	Target	Pilot Sample
1	Executive Agencies	62	4
2	Purely Commercial State Corporations,	34	4
3	Independent Regulatory Agencies	25	4
4	State Corporations with Strategic Function	21	4
5	Research Institutions, Public Universities, Tertiary Education and Training Institutions	45	3
	Total	187	19

Source: (Field Survey, 2023)

In arriving at the 19 entities, the researcher first stratified the organizaions into 5 stratas. A simple random sampling technique was adopted to select 19 entities, 4 entities were selected from each strata, with the last strata (Research Institutions, Public Universities, Tertiary Education and Training Institutions) writer obtaining 3 entities as shown in table 3.1.

3.4.5 Instrument Validity Test

According to Sekaran & Bougie (2016), validity of a resreach measuring tool is the appropriateness of the tool to really estimate what it oughts to estimate, in other words the extent to which the instrument measures what it is supposed to measure and perform as expected. In measuring validity, the study sought to ascertain two types of validities: construct validity and content validity. The choice of the two validities is informed by Wirland *et al.* (2017) who espoused that in order to establish truthfull validity, it is important to consider the judgemental (content validity) as well as the statistical (construct validity) measures.

Content validity of a measuring tool tests the degree to which a measuring tool measures contents of the subject matter under consideration (Sekaran & Bougie, 2016). Also called face validity, the objective of content validity is to affirm that the construct items extend past empirical establishments to include both theoretical and practical aspects. Drost (2012) say that the main ways of establishing content validity are asking questions about the measurement instrument or ask the opinion of expert views on the subject matter. To establish content validity, the instruments were issued to 5 experts from the faculty of Business and Economics of Maseno University and 5 practitioners drawn from the procurement office of Maseno University and Jaramogi Oginga Odinga University of Science and Technology. Seven or more experts are adequate to ascertain content validity (Dev Von *et al.*, 2007). Their recommendations were incorporated in the

instrument that was used in the final data collection. After deliberations, it was found that fairness and equality was not a correct measure of supply chain performance and was therefore expunged from the item pool. In the same vein, the Likert scale grading format for variables was changed from (1=Very High, 2=High, 3=Moderate, 4=Low, 5=Very Low) to (Strongly Disagree, SD=1, Disagree, D=2, Neutral, N=3, Agree, A=4, = Strongly Agree, SA= 5) with the symbols SD, D, N, A and SA indicated on the ticking box and not the numbers. Public procurement and disposal regulations, 2020, was also found not to be a true measure of procurement legal framework given that it had been adopted in the late 2020 and therefore had been in operation for a shorter period. The experts advised adoption of the same regulations (2016). The PPP act, 2013 which replaced the PPP regulations, 2011 was adopted and the PPP regulations 2011 expunged. In total, the collection instrument realized an item pool of 94 items for the three variables in the final study.

Construct validity is the measure of how construct items operationalized as measures of that construct estimate the construct as known in theory (Saunders *et al*., 2009; Tsang, 2016). In testing construct validity, measures of a construct should be associated with the things it is associated with (convergent validity), but tests can be carried out to ascertain that the measures are not associated with the things it should not be associated with (discriminant validity). Given that the study operationalized its constructs as measurement scales, evaluating dimensions of the measurement scales should indicate evidence of construct validity. Exploratory Factor analysis in a Principal Component Analysis Model (PCA) was employed to establish construct validity of items. Although MacCallum *et al*. (1999) provides an understanding that there is no absolute minimum sample in EFA, de Winter *et al*. (2009) shows that samples of N<50 can well, be used. Scholarly works by Zeller (2006) established sample sizes between 10 and 50 were sufficient. The choice of EFA was thus informed in (MacCallum *et al*., 1999; de Winter *et al*., 2009; Zeller, 2006) given that the study had a parsimoniously small sample.

The first step was to ensure that the dataset was suitable for exploratory factor analysis. This was achieved by Kaiser-Meyer-Olkin and Batllets's Test of Sphericity. Costello and Osborne (2005) explains that PCA is not a true factor analysis technique. Conway & Hoffcut (2003) however intimates that PCA is by far, the most commonly applied component models in EFA which gives similar results as common factor models (Maximum Likelihood Analysis, MLA & Principal Axis

Factoring, PAF) if the researcher's goal is not only to reduce data but also understand latent structure of variables.

In establishing construct validity for procurement legal framework implementation, a total of 53 item pool was subjected to EFA in principal axis factoring extraction method. Correlation matrix and factor loadings determined whether there were patterned relationships among variables and the divergence of factors. Correlations below 0.02 are considered unfit for exploratory factor analysis and as such, they were excluded at the second analysis after detection. Low correlation coefficients were excluded since they indicated lack of patterned relationships. In addition, correlations above 0.9 indicate presence of Multicollinearity (Guadagnoli & Velicer, 1988). Kaiser- Meyer-Olkin (KMO) and Bartlett's test established suitability of data for EFA and results put in Table 3.2.

Table 3.2: Kaiser-Meyer-Olkin & Bartlett's tests for Procurement Legal Framework Implementation

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.710
Bartlett's Test of Sphericity	Approx. Chi-Square	5047.331
	Df	1225
	Sig.	.000

Source: (Field Survey, 2023)

A scan of results in Table 3.2 above show Bartlett's Test of Sphericity significant level ($p<0.05$) confirmed that the data had patterned relationships as shown in Table 3.2. The KMO value of 0.710 which is above the cut off value of 0.5, indicated that the data met the requirement for factor analysis. If this requirement is not met, it implies that distinct and reliable factors cannot be produced. However, the requirement was met (Hair *et al.*, 1998).

After testing of these assumptions, the findings on both factor correlation matrices to check for the presence of correlation among factors was carried out as well as the Varimax rotation. The variance extracted between factors and also as per facto were then calculated. Component correlation coefficient squared were also calculated. Finally, a comparison of the variance extracted between components as well as the component correlation coefficient squared were compared. From the item pool of 53 items for Procurement Legal Framework Implementation, 5 factors were extracted and their correlation matrices presented as below in Table 3.3

Table 3.3: Factor Correlation Matrices Between Factors for Procurement Legal Framework Implementation

Factor Correlation Matrix					
Factor	1	2	3	4	5
1	1	0.051	0.078	0.099	0.063
2	0.051	1	0.136	0.141	0.048
3	0.078	0.136	1	0.163	0.084
4	0.099	0.141	0.163	1	0.218
5	0.063	0.048	0.084	0.218	1

Extraction Method: Principal Axis Factoring.

Rotation Method: Promax with Kaiser Normalization. **Source: (Field Survey, 2023)**

In the Table 3.3 above, the highest correlation between the factors was recorded between factor 4 and 5 (.218) while the lowest correlation was recorded between factor 5 and factor 2 (.048). In overall, there was low factor correlations, all correlation matrices were below 0.7 between the factors, indicating that divergent (discriminant validity) was achieved as suggested by Conway & Huffcut (2003). In addition, all the variance extracted between components, that is, the average factor loadings are higher than the calculated correlation squared of any of the factor correlation matrix, this further confirming divergent validity.

A total of five factors were identified after suppressing correlations. The results of correlations within the factors is presented in the table below

Table 3.4: Factor Correlations within the factors for Procurement Legal Framework Implementation

Factors	1	2	3	4	5
IEOD1					0.60
IEOD2					0.73
IEOD3					0.65
IEOD4					0.74
IEOD5					0.81
IEOD6					0.75
IPRS2011-1			0.70		
IPRS2011-2			0.81		
IPRS2011-3			0.76		
IPRS2011-4			0.62		
IPRS2011-5			0.60		
IPRS2011-6			0.76		
IPRS2011-7			0.65		
IPRS2011-8			0.77		
IPPADA2015-1		0.70			
IPPADA2015-2		0.61			
IPPADA2015-3		0.79			
IPPADA2015-4		0.71			
IPPADA2015-5		0.57			
IPPADA2015-6		0.65			
IPPADA2015-7		0.59			
IPPADA2015-8		0.74			
IPPADA2015-9		0.75			
IPPADA2015-10		0.74			
IPPADA2015-11		0.78			
IPPADA2015-12		0.72			
IPPADA2015-13		0.70			
IPPADA2015-14		0.74			
IPPADA2015-15		0.72			
IPPADA2015-16		0.69			
IPPADA2015-17		0.73			
IPPADA2015-18		0.77			
IPPADA2015-19		0.78			
IPPDR, 2016-1				0.69	
IPPDR, 2016-2				0.73	
IPPDR, 2016-3				0.80	
IPPDR, 2016-4				0.72	
IPPDR, 2016-5				0.68	
IPPDR, 2016-6				0.73	
IPPDR, 2016-7				0.62	
IPPDR, 2016-8				0.55	
IPPDR, 2016-9				0.63	
IPPDR, 2016-10				0.72	
IPPDR, 2016-11				0.73	
IPPPA-1	0.61				
IPPPA-2	0.76				
IPPPA-3	0.70				
IPPPA-4	0.74				
IPPPA-5	0.78				
IPPPA-6	0.65				
IPPPA-7	0.85				
IPPPA-8	0.54				
IPPPA-9	0.64				

Extraction Method: Principal Axis Factoring.

Rotation Method: Promax with Kaiser Normalization. **Source: (Field Survey, 2023)**

From results in Table 3.4, factor correlation matrices within the extracted factors show an average variance of .697 for the first component, 0.709 for the second component and third components, 0.691 for the fourth component and 0.713 for the fifth component which are higher than factor correlation matrices of any of the factors. The high average loading per factor confirms the presence of convergent validity.

In testing for Construct validity for Innovation Practices, the data was also tested for suitability of exploratory factor analysis by checking the Kaiser-Meyer-Olkin Measure (KMO) and Bartlett's Test of Sphericity.

Table 3.5: Kaiser-Meyer-Olkin & Bartlett's tests for Innovation Practices

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.758
Bartlett's Test of Sphericity	Approx. Chi-Square	2638.711
	Df	351
	Sig.	.000

(Source: Field Survey Data, 2023)

The KMO test value of 0.758, which is above the cut off value of 0.5 as suggested by Hair *et al*., (1998) indicated that the data met the requirement for factor analysis. In addition, Bartlett's Test of Sphericity significant level (<0.05) further spoke louder that the data could produce patterned relationships hence was adequate for factor analysis   If this requirement is not met, it implies that distinct and reliable factors cannot be produced.

Table 3.6: Factor Correlation Matrix for Innovation Practices

Factor Correlation Matrix					
Factor	1	2	3	4	5
1	1	0.151	0.032	0.0161	0.071
2	0.151	1	0.236	0.101	0.148
3	0.032	0.236	1	0.163	0.044
4	0.161	0.101	0.163	1	0.118
5	0.071	0.148	0.044	0.118	1

Extraction Method: Principal Axis Factoring.

Rotation Method: Promax with Kaiser Normalization. **Source: (Field Survey, 2023)**

The correlation matrix shows low correlations between components, the highest correlation was between component 2 and component 3 (.236) thus implying that the components did not have

high associations. Correlations between components did not exceed 0.7, indicating that divergent (discriminant validity) was achieved as suggested by Conway & Huffcut (2003).

Table 3.7: Factor Correlations within the factors for Innovation Practices

Factors	1	2	3	4	5
PSD1		0.626			
PSD2		0.619			
PSD3		0.742			
PSD4		0.536			
PSD5		0.813			
EPP1	0.598				
EPP2	0.775				
EPP3	0.648				
EPP4	0.801				
EPP5	0.823				
CBPP1			0.599		
CBPP2			0.76		
CBPP3			0.63		
CBPP4			0.8		
CBPP5			0.698		
ICT-T1					0.771
ICT-T2					0.831
ICT-T3					0.488
ICT-T4					0.591
ICT-T5					0.666
IIDF1				0.711	
IIDF2				0.842	
IIDF3				0.65	
IIDF4				0.593	
IIDF5				0.881	

Extraction Method: Principal Axis Factoring.

Rotation Method: Promax with Kaiser Normalization. **Source: (Field Survey, 2023)**

Factor correlation matrices within the extracted factors show an average variance of .729 for the first component, 0.667 for the second component, 0.697 for the third component, 0.735 for the fourth component and 0.669 for the fifth component which are higher than factor correlation matrices of any of the factors. The high average loading per factor confirms the presence of convergent validity. However, all the variance extracted between components, that is, the average factor loadings is higher than the calculated correlation squared of any of the factor correlation

matrix. This confirms divergent validity and hence it can be concluded that the variance within each construct is explained by the items rather than the other construct.

In order to establish construct validity for supply chain performance, the data was also tested for suitability of exploratory factor analysis by checking the Kaiser-Meyer-Olkin Measure (KMO) of Sampling Adequacy value.

Table 3.8: Kaiser-Meyer-Olkin & Bartlett's tests for Performance

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.658
	Approx. Chi-Square	1138.711
Bartlett's Test of Sphericity	Df	351
	Sig.	*.000*

(Source: Field Survey, 2023)

The Kaiser-Meyer-Olkin Measure (KMO) value is above the cut off value of 0.5, in this case the value, is 0.658, indicating that the data met the requirement for factor analysis. If this requirement is not met, it implies that distinct and reliable factors cannot be produced.

In addition to checking one of the assumptions for factor analysis, further analysis to check the correlations among the components were carried out. The findings on the component correlations are given in Table 3.9.

Table 3.9: Factor Correlation Matrix Between Factors for Supply Chain Performance

Factor Correlation Matrix					
Factor	1	2	3	4	5
1	1	0.01	0.122	0.091	0.111
2	0.01	1	0.037	0.201	0.042
3	0.122	0.037	1	0.163	0.044
4	0.091	0.201	0.163	1	0.90
5	0.111	0.042	0.044	0.190	1

Extraction Method: Principal Axis Factoring.

Rotation Method: Promax with Kaiser Normalization. **Source: (Field Survey, 2023)**

The correlation matrix shows low correlations between components thus implying that the components did not have high associations. All the correlations between factors were below 0.7 (Conway & Huffcut, 2003). This indicated divergence of the components thus implying that they did not depend on each other.

Table 3.10: Factor Matrix for Performance

Items	Factors 1	2	3
	Factor Matrix		
CT1	0.67		
CT2	0.65		
CT3	0.82		
CT4	0.80		
CT5	0.85		
CT6	0.89		
CT7	0.82		
COST1			0.81
COST2			0.41
COST3			0.48
COST4			0.69
COST5			0.70
QC1		0.70	
QC2		0.56	
QC3		0.76	
QC4		0.63	
QC5		0.73	

Extraction Method: Principal Axis Factoring.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 3 iterations.   **Source: (Field Survey, 2023)**

From the results in Table 3.10, the variance extracted is 0.786 for the first component, 0.676 for the second component and 0.618 for the third components, which are higher than factor loadings between the factors. The high average loading per factor confirms the presence of convergent validity. However, all the variance extracted between components, that is, the average factor loadings is higher than the calculated correlation of the factor correlation matrix. This confirms divergent validity and hence it can be concluded that the variance within each construct is explained by the items rather than the other construct. It also confirms that performance was measured by its own constructs, which are not similar to the innovations practices.

3.4.6 Instrument Reliability Test

According to Sekaran & Bougie, (2016) reliability is the degree to which an experiment, test, or any measuring procedure yields the same results on repeated trials (Sekaran & Bougie, 2016). Reliability is aimed at determining consistency and stability. The ideal motive is to test stability by administering the instrument to the survey respondents twice. To check the reliability of the

instrument in this study, Cronbach's Alpha was adopted. Mugenda & Mugenda, (2008) established that the Cronbach Alpha is a preferred test for reliability since it results into more conservative estimate for reliability and also takes less time as compared to other methods A coefficient of 0.7 is deemed acceptable for reliability test (Hair *et al.,* 1998). In the same vein, George & Mallery (2009) concluded that an alpha value of 0.6 is a sufficient measure of reliability for social sciences. Findings of reliability test are shown in Table 3.1

Table 3.11: Data tool scale reliability test results

Constructs	Number of items	Cronbach's Alpha	Cronbach's Alpha based on standardized scores
Implementation of executive Orders & Decrees	6	.873	.886
Implementation of Preferences and Reservation Schemes 2011	8	.869	.884
Implementation of Public Procurement & Asset Disposal Act 2015	19	.874	.889
Implementation of Public Procurement & Disposal Regulations, 2016	11	.864	.877
Implementation of Public Private Partnership Act, 2013 (IPPPA)	9	.864	.878
Overall Procurement Legal Framework Implementation (PLFI)	53	.860	.866
Supply Chain Performance (Cycle Time)	7	.859	.875
Supply Chain Performance (Cost)	5	.861	.874
Supply Chain Performance (Quality Compliance)	5	.874	.888
Overall Supply Chain Performance	17	.854	.864
Purchasing systems development (PSD)	5	.858	.875
E procurement practices (EPP)	5	.863	.878
Capacity building of procurement practitioners (CBPP)	5	.861	.876
ICT training (ICT-T)	5	.865	.880
Integration of interdepartmental functions (IIF)	5	.860	.876
Overall Innovation Practices	25	.860	.874

Source: (Field Survey, 2023)

The reliability was assessed by subjecting the scales measuring 53 procurement legal framework implementation items, 16 supply chain performance items and 25 innovation practices items.

Respectively, the overall Procurement Legal Framework Implementation computed alpha value was, α= 0.860, overall supply chain performance alpha value was α= 0.854 while overall innovation practices alpha value was, α= 0.860.

From table 3.1 above, the findings show that all the subscales and main scales had high reliable values ranging between 0.700 and 0.881, which is above threshold of alpha value of α > 0.7 suggested by (Hair *et al*., 1998) and > 0.6 (George & Mallery, 2009), thus confirming reliability of the scales. The least reliable Cronbachs' alpha value was purchasing system development which had a coefficient of 0.700 while the highest was implementation of public procurement & Disposal Act 2015 which had a reliability coefficient value of 0.804. This means that the entire instrument had a high reliability hence fit for data analysis.

3.5 Diagnostic Tests

3.5.1 Multicollinearity Test

The regression model assumes that independent variables (procurement legal framework implementation and innovation practices) are not correlated. Where variables are highly collinear, results of the regression model will be highly distorted and harmful to the model. Multicollinearity occurs where items measure the same thing and are therefore identical (Ahire *et al.,*1996). To measure multi collinearity tolerance & Variance Inflation Factor (VIF) was considered. The test diagnoses multicollinearity where VIF greater than 10 and tolerance lower than 0.1 is observed as serious multicollinearity (Miles, 2014). Following this assumption, analysis was done to confirm whether the model was free of multicolinearity. The findings are given in Table 3.2 below using VIF and Tolerance values.

Table 3. 12: Collinearity Diagnostics

| | Collinearity Statistics | |
	Tolerance	VIF
(Constant)		
IEOD	.713	1.402
IPRS	.559	1.789
IPPADA	.838	1.193
IPPDR	.621	1.609
IPPPA	.708	1.412
Supply Chain Performance Cycle Time	.768	1.303
Supply Chain Performance cost	.442	2.263
Supply Chain Performance Quality Compliance	.721	1.387

Source: (Field Survey, 2023)

Examining the tolerance values in table 3.2 above, the findings shows that none of the variables had tolerance statistic that is less than 0.1, the least was cost, under supply chain performance (0.442) while the highest was Implementation of Public Procurement & Asset Disposal Act (IPPADA) under procurement legal framework implementation (0.838). Similarly, the findings show that all the variables had Variance Inflation Factors that were less than 10, with the lowest factor value being Implementation of Public Procurement & Asset Disposal Act, IPPADA (1.193) and highest was Cost, under supply chain performance (2.263), satisfying the threshold by Miles (2014) of VIF lower than 10 and tolerance above 0.1 as indicators of lack of multicollinearity

3.5.2 Normality Test

The regression model assumes that the independent variable (procurement legal framework implementation) and dependent variables (supply chain performance) have a normal distribution. In order to test for normality, the study adopted quantile-quantile plot, Histogram with Normal curve, Normal probability plot and the Shapiro-Wilk test.

3.5.2.1 Histogram with Normal curve test of normality for Performance
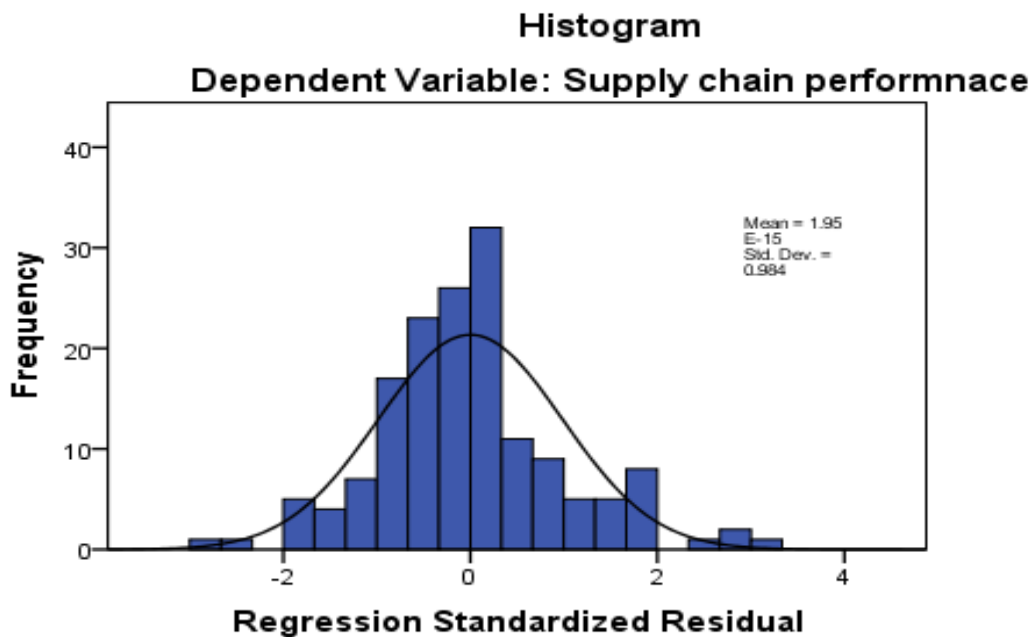
Figure 3.1: Normality Test Using Histogram with Normal curve
Source: (Field Survey, 2023)

The chart in figure indicates that the histogram with the normal probability plot is aligned with the longest bars in the middle. The normal probability plot also indicates that the data is bell shaped with the kurtosis high picked about the mean. The skewness is also normally distributed about the mean, indicating normal distribution of the data and thus meeting the assumption of normality and therefore fit for multiple standard regression model.

3.5.2.2 Normal probability plot for Performance

According to Chambers, Cleveland, Kleiner & Tukey (1983), the points of a given set of data plotted against an assumed normal distribution should form approximately a straight line. Where there are gross departures from the straight line, then this confirms departure from normal distribution of the data. Figure 3.2 below shows the p-p plots obtained;
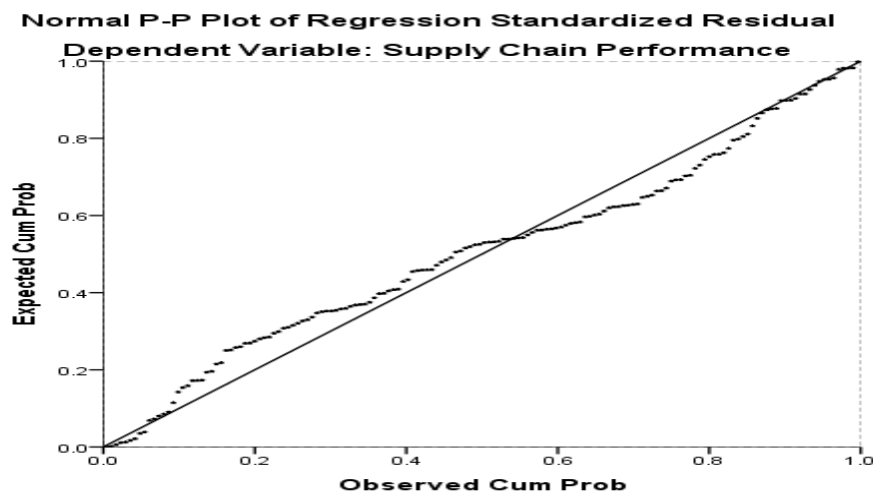
Figure 3. 2: Normality Test using Normal P-P Plot
Source: (Field Survey, 2023)

The P-P plots in Figures 3.2 indicate that the distributions were quite normal and to some considerable extent, the plotted points matched the diagonal line drawn in each case, indicating that the points of the data followed a straight line as according to establishments by Chambers *et al*. (1983). This confirmed that to a considerable extent, the data was normally distributed.

3.5.2.3 Quantile-Quantile Plot for Performance

In Chambers *et al*. (1983), when establishing normality using Quantile-Quantile plots, the points of the data set will fall on the 45-degree reference, then the residuals are roughly normally

distributed. A deviation from the 45-degree reference line is an indication that the dataset is not normally distributed.
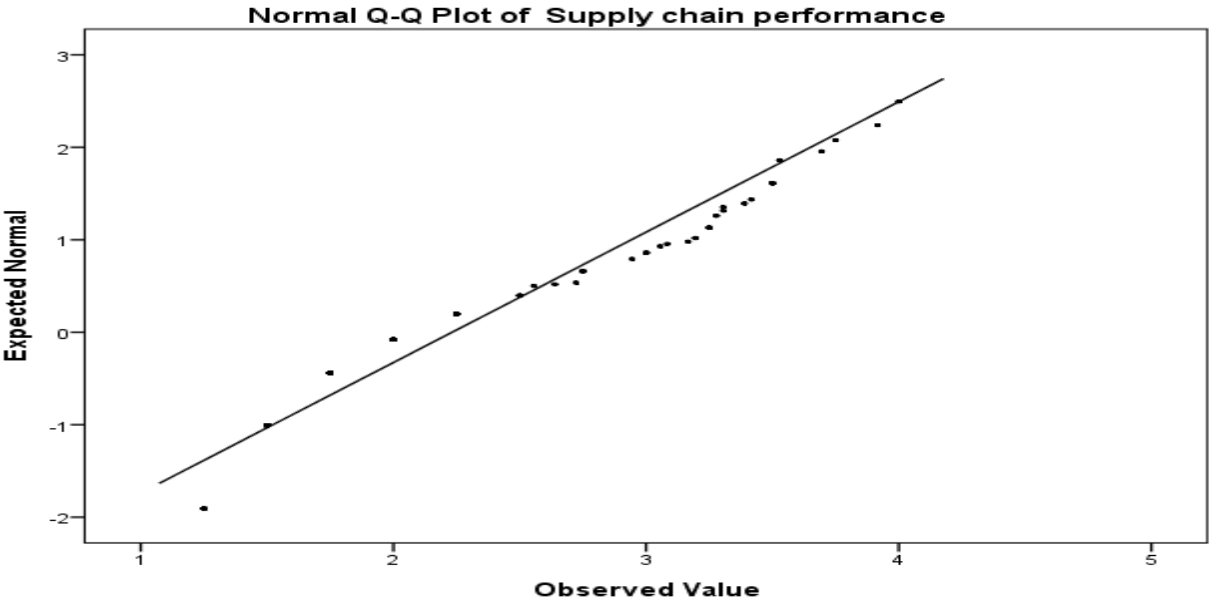
Figure 3.3: Normality Test Using Q-Q Plots for Supply Chain performance

Source: (Field Survey, 2023)

From figure 3.3 above, the Q-Q plot for supply chain performance above show that the residuals tend to align at the 45-degree line with very minimal deviations, especially on the tail ends, grounding the indication that they are normally distributed
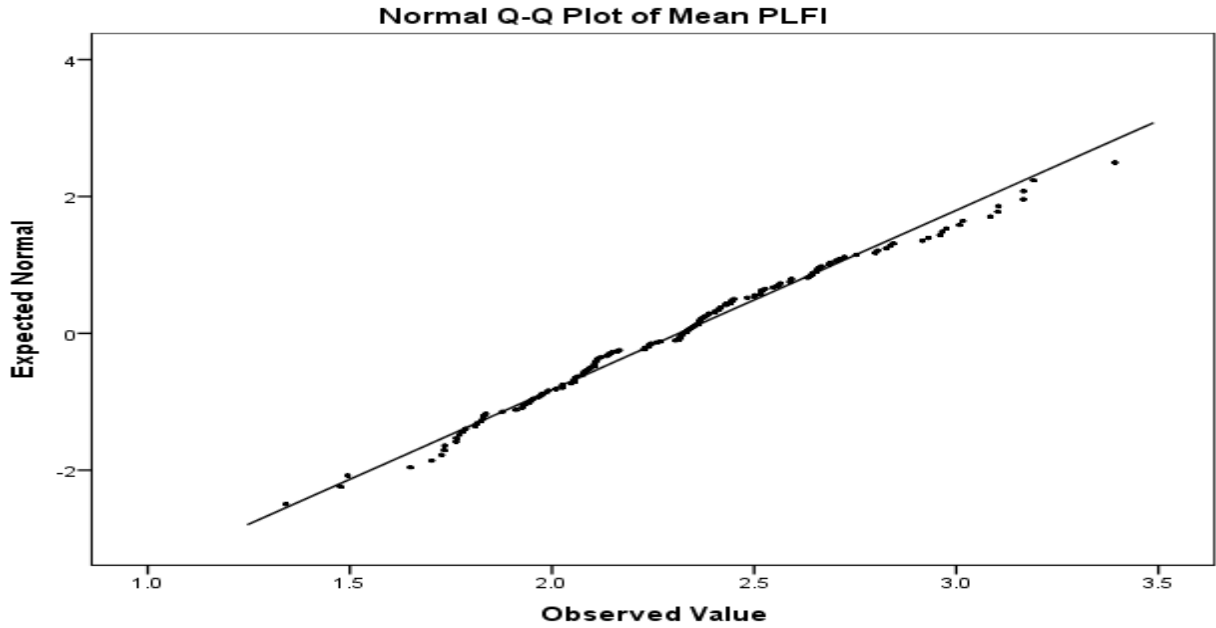
Figure 3.4: Normality Test by Q-Q Plots for Procurement Legal Framework Implementation

Source: (Field Survey, 2023)

Figure 3.4 shows the Q-Q plot for procurement legal framework implementation above that the residuals tend to align at the 45-degree line with very minimal deviations, especially on the tail ends, which could be an indication that they are normally distributed.
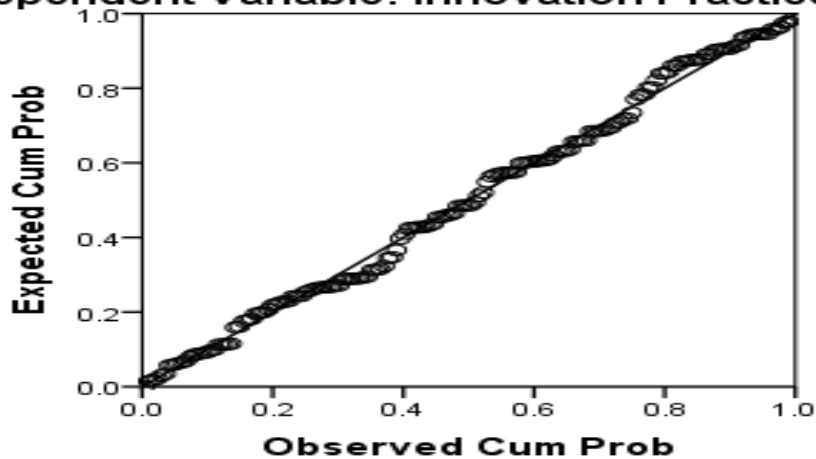
Figure 3.6: Normality Test by Q-Q Plots for Innovation Practices

Source: (Field Survey Data, 2023)

Figure 3.5 shows the Q-Q plot for innovations above that the residuals tend to align at the 45-degree line with very minimal deviations, especially on the tail ends, which is an indication that they are normally distributed.

3.5.2.4 Shapiro-Wilk test for normality

The test assumes a normal distribution if the P-value is larger than 0.05 (Shapiro & Wilk, 1965).

Table 3.3: **Shapiro-Wilk Test for Normality**

	Tests of Normality					
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Supply Chain Performance	.063	158	.200[*]	.984	158	.057
Mean PLFI	.061	158	.200[*]	.989	158	.266

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Source: (Field Survey, 2023)

From the findings in Table 3.3, there are two tests. The first is the Shapiro Wilk test which shows that both supply chain performance mean as well as procurement legal framework implementation means have their Shapiro Wilk test plots above 0.05 values which implies that the data for both independent and dependent variables are normally distributed. If the value would be below 0.05, then the data significantly deviate from a normal distribution. This conforms to (Shapiro & Wilk, 1965) who established that plot values above 0.05 indicate normality. The data in the present test was therefore normal. In addition, the Kolmogorov-Smirnov[a] test shows that the significant values are above 0.05 which means that both variables are not statistically significant. This tests the null hypothesis that the data follows a normal distribution, we concluded that the data was normally distributed since there was no sufficient evidence to reject the null hypothesis.

3.5.3 Homoscedasticity Test

The regression model assumes that homoscedasticity is achieved when the variance of errors is the same across all levels of the predictor variables (procurement legal framework implementation and innovation practices). If the variance of error is different at different values of the predictor variable, then this will indicate heteroscedasticity. When heteroscedasticity is manifest, this can lead to distortion of findings and weaken the analysis, making type 1 error domineering. In order to test for homoscedasticity, the study adopted the Breusch-Pagan test. The test assumes presence

of heteroscedasticity if the test statistic has a p-value below .05 ($p < 0.05$) (Breusch & Pagan, 1979). The findings are given in Table 3.5 below.

Table 3.4: Breusch Pagan Test of homoscedasticity

Breusch-Pagan / Cook-Weisberg test for Heteroskedasticity	
Ho:	Constant variance
Variables:	fitted values of SCP
chi2(1)	= .56
Prob > chi2	=0.5045

Source: (Field Survey, 2023)

Using Breusch-Pagan / Cook-Weisberg test for Heteroscedasticity, the findings revealed a Chi Square value of 0.560, which is above 0.05, with probability greater than chi square value emerging big (0.5045), indicating that Heteroscedasticity was not present. Further analysis of scatter plot was also carried out to examine the alignment of the data points after correlations. This tells whether there is constant error variance or not.
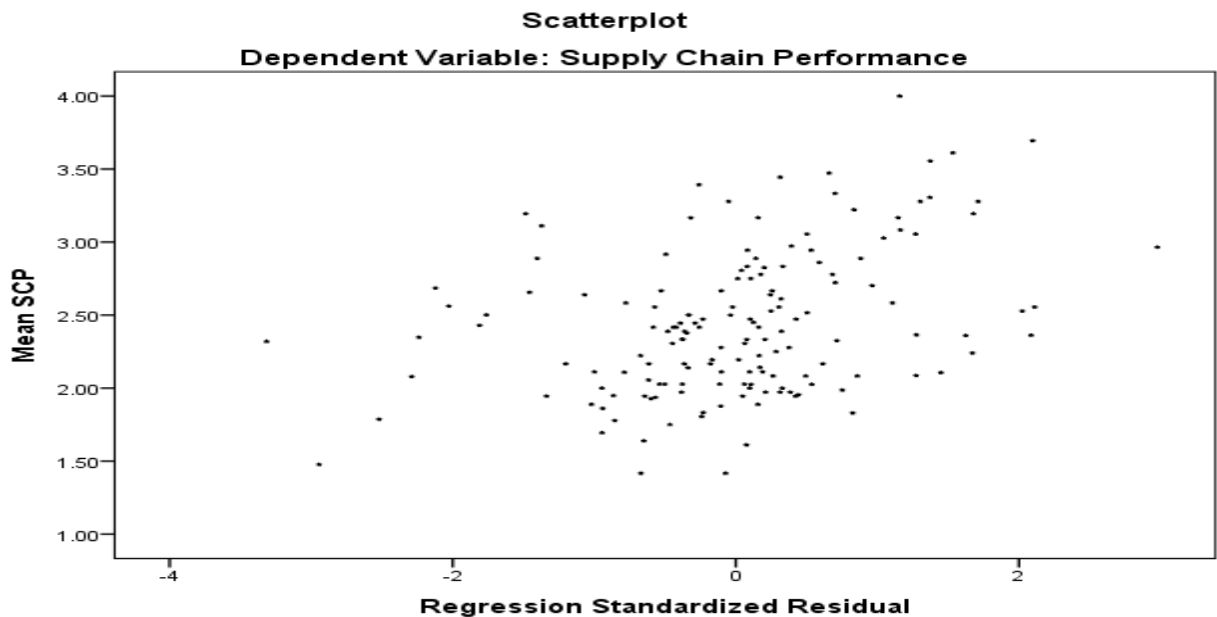
Figure 3. 5: Test of Homoscedasticity using Scatter Plot
(Source: Field Survey, 2023)

The presence of heteroscedasticity is normally confirmed when the residuals are not evenly scattered around the "0" line (Osbone & Waters, 2002). Figure 3.6 above shows that plots of the standardized residuals as a function of standardized predicted values for supply chain performance.

The pattern of data points shows even distribution of data points without clear pattern, which is an indication that there is no heteroscedasticity. This means that the assumption of Homeoscedasticity was met and therefore the model was fit for regression analysis.

3.5.4 Linearity Test

The regression model assumes linearity among variables, existence of a linear relationship between the dependent variable and independent variables (Supply chain Performance, Procurement Legal Framework implementation and Innovation Practices). A linear relationship confers that a change in an outcome variable, due to one unit change in predictor variable is constant regardless of the value of the predictor variable. Where this relationship is not linear, results of the regression model will underestimate the correct relationship. Biedermann & Dette (2000) explains that linearity implies predictor variables in the regression have a straight line relationship with the outcome variables. The figure 3.7 shows a scatter plot test for linearity.
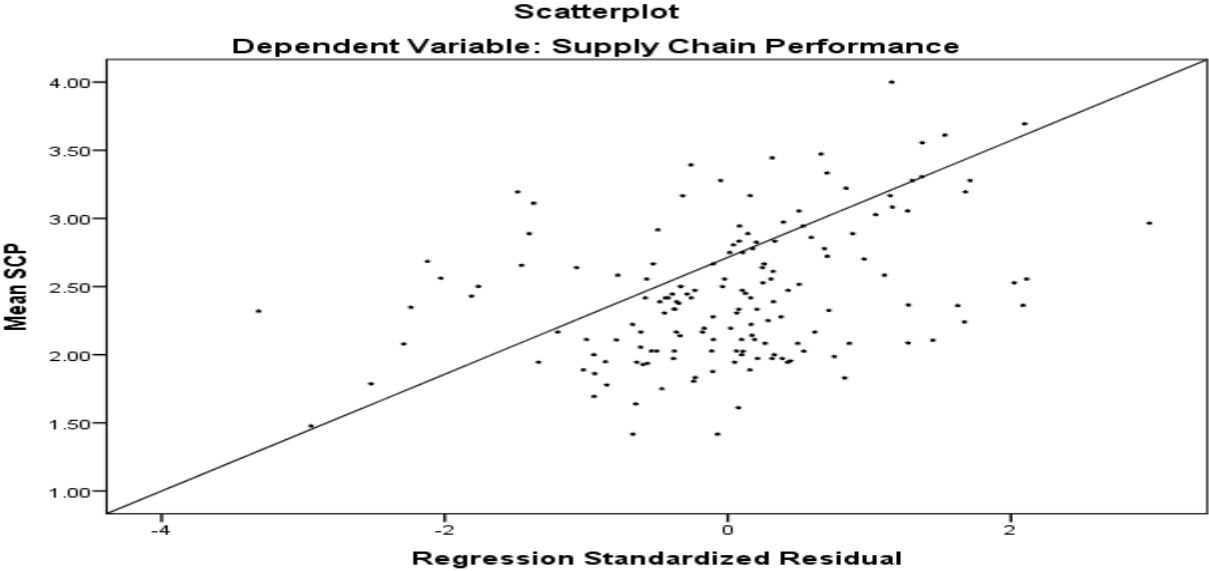
Figure 3.6: Test of Linearity using Straight line graph
Source: (Field Survey Data, 2023)

From the findings shown in Figure 3.7, it is clear as shown, a straight line relationship between the predictors and the dependent variable, supply chain performance exists. Further, there is no curvilinear pattern, and the assumption of linearity is reinforced, as according to Biedermann & Dette (2000), who advocated for existence of a straight line relationship between predictor and

outcome variables as an affirmation of linearity. This means that a linear relationship therefore exists between the dependent and indpendent varaibles hence it suits regression analysis.

3.5.5 Autocorrelation Test

Autocorrelation is the assumption that data points should be independent of each other. It is widely used in time series or panel regression analysis. However, Osbone and Waters (2002) argued that this test should also be carried out for cross sectional data since in the collection of primary data, some subjects could easily influence others to end up with the same results. For example, if data was collected on subject one on a particular question and communication occurs before getting to subject two, then there is a possibility of getting the same results thus undermining the independence of responses. Autocorrelation should thus not exist in the dataset in order to guarantee independence of data. The test was carried out using Durbin Watson test. The results are given in Table 3.5.

Table 3.5: Durbin Watson Tests

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.848[a]	.719	.700	.27066	.719	37.555	10	147	.000	1.756

a. Predictors: (Constant), IIF, IPPADA2015, IPRS2011, IPPPA, IEOD, ICTT, PSD, IPPDR2016, CBPP, EPP
b. Dependent Variable: Mean SCP **Source: (Field Survey, 2023)**

The findings show a Durbin Watson Test value 1.756, which was close to 2.0 thus implying that there were no autocorrelations in the data. According to Miles (2014), a Durbin Watson value that ranges 1.5-2 indicates lack of autocorrelation among the data points. However, values less than 1.4 could be indicative of similar responses. Therefore, following the result of a value close to 2, it can be concluded that the assumption of autocorrelation was met.

3.6 Data Analysis

In the words of Kothari (2008) descriptive statistics are an important tool which enables a researcher to succinctly define data by examining the central tendency and dispersion properties. Further, descriptive statistics provide the essential features of the data collected on the variables and provide the impetus for conducting further analyses on the data (Mugenda & Mugenda, 2008). The researcher used descriptive statistics including the mean, standard deviations, percentages and

frequencies for Likert scale variables in the questionnaire on procurement legal framework implementation, innovation practices, supply chain performance. From the analysis, the study established trends and variations and assigned meaning to the collected data. SPSS version 22 was an important software in this analysis, data was presented in form of tables and figures.

The study is grounded in developed hypothesis based on conceptualized study variables (procurement legal framework implementation, innovation practices and supply chain performance). Hypothesis testing was carried out using p-value in a t-test because it aids in the decision regarding the null hypothesis but also gives additional insight into the strength of the decision. The significance level of 0.05 was used because it is the level mostly used in business and social research (Mugenda & Mugenda, 2003). This represents that the results are at 95% confidence level and this is what the researcher applied in the study. The p-value that was obtained was based on the alpha level or the significance level.

In order to achieve objectives (1) and (2) multiple regression analysis was adopted where the predictor variables (procurement legal framework implementation and innovation practices) were regressed against performance by their subscales (X_1- Implementation of orders & decrees, Implementation of Preferences & Reservation schemes, 2011, Implementation of Public Procurement & Asset Disposal Act, 2015, Implementation of Public Procurement & Disposal Regulations, 2016, Implementation of Public Private Partnership Act, 2013; X_2- development of purchasing systems, e-procurements, capacity building practitioners, ICT training)   A standard linear regression was also carried out in order to establish the effect of Procurement Legal framework bearing the mean of its subscales; as well as innovation practices bearing mean of its subscales and performance.   Multiple regression was used as it allows the estimation of the association between the independent variable in the first and second objective and the outcome holding all other variables constant. For achieving objective (3), hierarchical moderated regression analysis was adopted. A correlation analysis was carried out to examine existence of a correlation among the independent variables.

3.6.1 Correlation Analysis Model

In order to examine the correlation among independent variables, Pearson' Product moment correlation (r) model was adopted. The correlation coefficient measures correlation between variables by the r - value, where an r - value = 0 signifies lack of correlation with a value further

away from 0 (towards -1 or +1) signifies stronger correlation. LeeRodgers & Nicewander (1988) show that a coefficient correlation above 0.9 indicated presence of high correlation among variables. The model is represented as below;

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n \sum x^2 - (\sum x)^2][n \sum y^2 - (\sum y)^2]}}$$

Source: (Adopted from Chen *et al*., 2003; Chen & Popovich, 2002)

Where;

r = the Pearson Coefficient of correlation
n= number of pairs of the stock
$\sum xy$ = sum of products of the paired stocks
$\sum x$ = sum of the x scores
$\sum y$= sum of the y scores
$\sum x^2$ = sum of the squared x scores
$\sum y^2$ = sum of the squared y scores

The results for Pearson correlations are given in Table 3.6.

Table 3. 6: Test of Correlation in independent variables

Correlations

		IEOD	IPRS2011	IPPADA2015	IPPDR2016	IPPPA	PSD	EPP	CBPP	ICTT	IIF
IEOD	Pearson Correlation	1	.301**	.198*	.105	.079	.030	.009	.086	.153	.226**
	Sig. (2-tailed)		.000	.013	.189	.326	.707	.907	.283	.055	.004
	N	158	158	158	158	158	158	158	158	158	158
IPRS2011	Pearson Correlation	.301**	1	.111	.270**	.052	.128	.125	.324**	.180*	.217**
	Sig. (2-tailed)	.000		.166	.001	.515	.110	.116	.000	.024	.006
	N	158	158	158	158	158	158	158	158	158	158
IPPADA2015	Pearson Correlation	.198*	.111	1	.256**	.052	.176*	.103	.000	.025	.053
	Sig. (2-tailed)	.013	.166		.001	.520	.027	.197	.999	.754	.508
	N	158	158	158	158	158	158	158	158	158	158
IPPDR2016	Pearson Correlation	.105	.270**	.256**	1	.456**	.437**	.402**	.355**	.195*	.292**
	Sig. (2-tailed)	.189	.001	.001		.000	.000	.000	.000	.014	.000
	N	158	158	158	158	158	158	158	158	158	158
IPPPA	Pearson Correlation	.079	.052	.052	.456**	1	.400**	.676**	.402**	.213**	.297**
	Sig. (2-tailed)	.326	.515	.520	.000		.000	.000	.000	.007	.000
	N	158	158	158	158	158	158	158	158	158	158
PSD	Pearson Correlation	.030	.128	.176*	.437**	.400**	1	.373**	.347**	.254**	.460**
	Sig. (2-tailed)	.707	.110	.027	.000	.000		.000	.000	.001	.000
	N	158	158	158	158	158	158	158	158	158	158
EPP	Pearson Correlation	.009	.125	.103	.402**	.676**	.373**	1	.350**	.367**	.311**
	Sig. (2-tailed)	.907	.116	.197	.000	.000	.000		.000	.000	.000
	N	158	158	158	158	158	158	158	158	158	158
CBPP	Pearson Correlation	.086	.324**	.000	.355**	.402**	.347**	.350**	1	.509**	.479**
	Sig. (2-tailed)	.283	.000	.999	.000	.000	.000	.000		.000	.000
	N	158	158	158	158	158	158	158	158	158	158
ICTT	Pearson Correlation	.153	.180*	.025	.195*	.213**	.254**	.367**	.509**	1	.494**
	Sig. (2-tailed)	.055	.024	.754	.014	.007	.001	.000	.000		.000
	N	158	158	158	158	158	158	158	158	158	158
IIF	Pearson Correlation	.226**	.217**	.053	.292**	.297**	.460**	.311**	.479**	.494**	1
	Sig. (2-tailed)	.004	.006	.508	.000	.000	.000	.000	.000	.000	
	N	158	158	158	158	158	158	158	158	158	158

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Source: (Field Survey Data, 2023)

From the results on collinearity using Correlations on independent variables, it is clear that there are no correlations above 0.9 to violet the assumption of high correlations among independent variables as suggested by LeeRodgers & Nicewander (1988). From these findings, it can be noted that there were no high correlations among independent variables hence the assumption of collinearity was met.

3.6.2 Model Specifications

Objective One

In order to establish the effect of Procurement legal framework implementation (Independent Variable) on supply chain performance (Dependent Variable) of Public Entities in Kenya (First objective; Hypothesis 1), equation (3.1) was modeled in the following form:

$$Y_i = \beta_0 + \beta_1 X_{11_i} + \beta_1 X_{12i} + \beta_1 X_{13i} + \beta_1 X_{14i} + \beta_1 X_{15i} + \varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(3.1)$$

Where;

Y_i	Is the dependent variable (Supply Chain Performance), the scaled variable that is the weighted average of three SCP descriptors, quality, cost and cycle time
β_0	Identifies an adjustment constant due to scale differences in measuring Procurement legal framework Implementation and Supply Chain Performance (the intercept or the place on the P - axis through which the straight-line passes. It's the value of Y when the X1 is 0.
β_1	Are constants describing the functional relationship in the population.
$X_1,$	Is the independent variable, Procurement; Legal Framework Implementation
(12345)	Are measures of the independent variable, procurement legal framework implementation (Implementation of Executive Orders & Decrees, Implementation of Preferences & Reservation Schemes, 2011 Implementation of PPAD Act, 2015; Implementation of PPAD Regulations, 2016 and Implementation of PPP Act, 2013)
Epsilon, ε_i	Represents the error component for each Entity. The portion of Y score that cannot be accounted for by its systematic relationship with values of X1, the predictor variable.

Source: (Adapted from Freund, Wilson & Sa, 2006; Field, 2005)

Objective Two

In order to establish the effect of Innovation Practices on Supply Chain Performance of Public Entities in Kenya (Second objective; Hypothesis 2), equation 3.2 was modelled in the following form:

$$Y_i = \beta_0 + \beta_2 X_{21i} + \beta_2 X_{22i} + \beta_2 X_{23i} + \beta_2 X_{24i} + \beta_2 X_{25i} + \varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(3.2)$$

Where;

Y_i	Is the dependent variable (Supply Chain Performance), the scaled variable that is the weighted average of three rotated factors of SCP descriptors, quality, cost and cycle time
β_0	Identifies an adjustment constant due to scale differences in measuring Innovation Practices and Supply Chain Performance (the intercept or the place on the P - axis through which the straight-line passes. It's the value of Y when M1 is 0.
β_2	Is a constant describing the functional relationship in the population.

X_2	Is the independent variable, Innovation Practices
(1,2,2,4,5)	Are measures of the independent variable, (Purchasing systems development, E procurement practices, Capacity building of Procurement Practitioners, ICT training, Integration of interdepartmental functions)
Epsilon, ε	Represents the error component for each Entity. The portion of Y score that cannot be accounted for by its systematic relationship with values of PLF the predictor variable.

Source: (Adapted from Freund *et al.*, 2006; Field 2005)

Objective Three

In order to determine the moderating effect of Innovation Practices (moderating variable) on the relationship between Procurement Legal Framework Implementation and Supply Chain Performance of Public Entities in Kenya (Third objective; Hypothesis 3), a hierarchical regression model was adopted in equation 3.3 and was modelled as follows;

$$Y_i = \beta_0 + \beta_1 X_{1i} + \varepsilon_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.3)$$
$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_m M_i + \varepsilon_i$$
$$Y_{ij} = \beta_0 + \beta_1 X_{1i} + \beta_m M_i + \beta_m M_i X_{1i} + \varepsilon_i$$

Where;

Y_i	is the dependent variable (Supply Chain Performance) and is a linear function of the moderating variable (Innovation Practices, M) and the independent variable (Procurement Legal Framework Implementation, X1) plus εi
β0	Is the regression constant or intercept
β1	Is the regression coefficient or change induced in Y (Supply Chain Performance) by X_{1i},
X_{1i}	Is the independent variable, Implementation of Procurement Legal Framework;
(1,2,3,4,5)	Are measures of the independent variable (Implementation of Policy Formulations, Implementation of PPAD Act, 2015, Implementation of PPAD Regulations, 2016, Implementation of PPPs, 2013, Implementation of Preferences & Reservations, 201)
βm	The regression coefficient of change induced in Y (Supply Chain Performance) by M,
M	Innovation Practices, is a moderator of the relationship between Procurement Legal Framework Implementation (X_{1i}) and Supply Chain Performance (Y)
βm	The regression coefficient of change induced in Y (Supply Chain Performance) by the interaction term, Mi.X1i
Mi.X1i	Interaction term which represents the Moderating effect. It accounts for moderation in the model.

εi   Is a random variable, error term that accounts for the variability in Y1 that cannot be explained by the linear effect of the i predictor variables

Source: (Adapted from Freund *et al*., 2006; Field, 2005)

The moderation effect was achieved by observing change in R^2 value after conducting the relationship between the predictor variable and the outcome variable, the moderator and the outcome variable and the interaction term (combined effect of the predictor and the moderator). The interaction effect depicts whether moderation is present in the model (Field, 2005). However, the predictor and the moderator must be included for the interaction term to be valid. Therefore, the R^2 value representing the interaction term depicted the moderation in the model (Baron & Kenny, 1986; Field, 2005)

A simple linear regression was adopted in order to establish effect of procurement legal framework implementation bearing a mean of its subscales and supply chain performance. This was modelled as below:

$$Y_i = \beta_0 + \beta_1 X_{1_i} + \varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots..(3.4)$$

X_1 in this case is the independent variable, which is the mean of its subscales {Implementation of Executive Orders & Decrees, Implementation of Preferences & Reservation Schemes, 2011 Implementation of PPAD Act, 2015; Implementation of PPAD Regulations, 2016 and Implementation of PPP Act, 2013}

Source: (Adapted from Freund *et al*., 2006)

Furthermore, a simple linear regression was adopted in order to establish effect of innovation practices bearing a mean of its subscales and supply chain performance. This was modelled as below:

$$Y_i = \beta_0 + \beta_2 X_{2_i} + \varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(3.5)$$

X_2 in this case is the independent variable, innovation practices, which is the mean of its subscales {Purchasing systems development, E procurement practices, Capacity building of Procurement Practitioners, ICT training, Integration of interdepartmental functions}

Source: ((Adapted from Freund *et al*., 2006)

3.7 Ethical consideration

Ethics formed an important part of this study. The researcher sought for approval from the university's ethical committee; the Maseno University Ethical Review Committee. Before collecting data from the respondents, the researcher sought for their utmost consent and approval through a personal introduction letter. Further, the study upheld the value of informed consent, where the researcher availed sufficient information to the participants before their engagement. A personal introduction letter outlining the title of thesis, the objective for data collection, the role of the respondents was availed to the respondents beforehand on the data collection day. The objective for processing the data was further made explicit to the participants.

The average time of taking part in the study was explained to the participants to enable them make informed decision regarding taking part in the study. For the participants who agreed to take part in the study, the researcher upheld their utmost privacy and secrecy. In achieving this, the study will adopt a number of ways: First, affirmation that the data was specifically used for research purposes only. Second, pseudonyms were used to protect the participants' identities. Third, the research instrument, the questionnaire, was destroyed at the end of the data research process, that is after analysis and achieving objectives of the data. Furthermore, the data to be collected was exposed to any other third party in a manner that would reveal the researchers' identities.

The researcher upheld and maintained proper care, integrity and confidentiality of the data from collection to analysis and achievement of objectives. This was achieved through proper storage and utmost care. The questionnaire was stored under lock and key all the time during the whole research process. Access to the questionnaires for any use was limited to the investigator. Data for research in social sciences need to be kept for at least 2 years after elapse of the research process (Oloo, 2019). This is in resonance to the fact that the research needs to make references to the data when responding to clients (examiners, readers, reviewers). Basing on this ground, the researcher therefore maintains the collected data for 2 years.

Table 3.13: Operationalization of research variables

According to Achuora (2018), operationalization of researchable variables conceptualized for a study is important when the study is grounded in theoretical models. Table 3.1 below shows the operationalization and measurement of the study's main variables

	Construct	Sub Construct	Operational & Practical Indicators	Data Measurement scale	Supporting Literature
X_1	Procurement Legal Framework Implementation	• Implementation of Executive Orders & Decrees	• Publication of information on contracts • Accounting Officer responsibility for Ksh. 10 000 000 procurements • Record keeping for at least 6 years • Procurements through IFMIS to enhance transparency • Publicizing procurements in PPIP • Reporting procurement in the format of the government	Categorical data, ratio scale	(Cantera, 2021; Giosa, 2020; Loosemore, *et al.*, 2021; Jibrin *et al.*,2014; Asamoah *et al.*, 2019; Kanyaru & Moronge, 2017; Mutangili, 2021; Getuno, *et al.*,2015; Nyakundi & Muturi, 2017; Siagan, 2017; Getuno, *et al.*,2015; Panya & Were, 2018; Oduma & Getuno, 2017; Moe *et al.*, 2017)
		• Implementation of Preferences & Reservations Schemes, 2011	• Reservation of contracts to SMEs • Reservation of contracts to local contractors • Reservation of contractors to citizen contractors • Reservation of 30% contracts to disadvantaged groups • Open competition among target & disadvantaged groups • Sensitization of target & disadvantaged groups • Performance as per requirements of time, quality, cost & quantity specifications • Procurement Planning before a procurement & disposal		

• Implementation of Public Procurement & Asset Disposal Act, 2015	• Budgetary allocation & affirmation of availability of adequate funds • Execution of procurements & disposals within a procurement plan • Lotting (splitting of procurements & disposals) • Procurement of standard goods at the prevailing market price • Contracting to prequalified service providers • Service providers meet set criteria for bidding • Periodic prequalification of service providers • Use of the standard tender & disposal documents • Limitation of contracts to state & public officers • Preparation of requirement specifications • Declaration of non-engagement in corruption • Communications by written means • Inappropriate influence on evaluation i.e. maintaining communications during & after evaluations • Maintaining confidentiality of information • Maintenance of proper records • Dating & Filing approvals with approval numbers	
• Implementation of Public Procurement & Disposal	• Formal convening of committee members by the accounting officer • Reporting & accountability of the accounting officer	

	Regulations, 2016	• Convening evaluations committee for each tender
		• Convening disposal committee for each disposal
		• Inspection of delivered goods/finished services & works immediately without delay
		• Use of open tendering as principal method in procurements
		• Approval of alternative methods by the tender committee for any procurement & disposal
		• Approval of specially permitted methods by the tender committee for any procurement & disposal
		• Updating procurement plans
		• Records management staff with relevant qualification
		• Familiarity of staff with procurement & disposal rules & regulations
• Implementation of Public Private Partnership Act, 2013		• Authority of the Accounting Officer to enter into PPs
		• Approval of projects & activities by the PPP committee
		• Prequalification of private contracting parties before a PPP
		• Basing prices & costs of PPPs on prevailing market rates
		• Publishing list of contracting projects & activities
		• Basing selection of private contracting parties on open competitive means
		• Carrying out due diligence on PPP contractors before commencement

				Categorical	(Gu *et al.*, 2016; Incea *et al.*,
			• Basing performance of PPPs and service providers on time, quality & cost requirements		
X₂	Innovation Practices	• Purchasing systems & applications	• Monitoring & evaluation of purchasing systems and applications • Upgrading purchasing systems • Security of systems & applications • Carrying out procurement through systems devoid of compromised • Budgeting for systems development	Categorical data, ratio scale	(Gu *et al.*, 2016; Incea *et al.*, 2016; Alves, *et al.*, 2018, Beer & Mulder, 2020; Kiani *et al.*, 2021; Zhang, *et al.*, 2019; Park *et al.*, 2019; Yaw Obeng & Coleman, 2020; David & Grobler, 2019; Abdullahi *et al.*, 2019; Haabazoka, 2018; Okpalaoka *et al.*, 2022; Adeyeyetolulope, 2019; Chege *et al.*, 2019)
		• E procurement practices	• Adoption & use of web technologies • Adoption & use of e sourcing, e tendering, e ordering, e auction • Bearing of e practices on the supply chain performance • Confidentiality of data in e procurement • E procurements for decision making & better business practices		
		• Capacity building of staff	• Firm training programs for procurement staff on innovation practices • Sensitization of procurement staff on emerging innovations • Training on procurement & disposal matters • Training programs on legal framework e.g. new orders, acts & regulations • On the job training through seminars & team building		
		• ICT training & development	• Training on use of ICT tools • Refresher training on ICT tools & technologies		

		• Bearing of ICT training • Training for efficiency & effectiveness • Budgeting for ICT training		
	• Integration of interdepartmental functions	• Timely, effective communication among departments • Cross functional & multi-disciplinary teams • Collaboration among chain members • Harmonizing requirements for procurements • Development of technical specifications by departmental staffs		
Supply Chain Performance	• Cycle time	• Improvement in procurement lead time • Reduction in undelivered items • Time saving during conflict resolutions • Reduction in delays during operations • Improvement in delivery time • The overall efficiency in processing user requirements	Categorical data, ratio scale	(Silva, *et al.*, 2019; Hausman, 2004; Kamble & Gunasekaran, 2020; Tambare, *et al.,* 2021; Singh *et al.,* 2016; Kumar & Odzmar, 2010; Kamoni, 2020; Waruguru, 2015; Okiri & Muturi, 2016; Kurien & Qureshi, 2011; Medori & Steeples, 2000)
	• Cost	• Reduction in costs of rebuy and repurchase • Reduction in overall organization costs • Reduction in logistics & transportation costs for materials • reduction in external field costs such as market surveys and site visits • Reduction in non-value overheads		
	• Quality compliance	• Reduction in number of defective items procured • Reduction in the number of customer complaints		

- Reduction in returned items due to poor quantities
- Reduction in the number of complaints from internal users
- Reduction in the number of return to store cases

Source: (Self Conceptualization, 2023)

CHAPTER FOUR

RESULTS AND DISCUSSIONS

This chapter presents the findings and discussions according topic and objectives. The purpose of the study was to investigate procurement legal framework implementation, innovation practices and supply chain performance of Public Entities in Kenya. The findings are presented using tables and charts. First, the response return rate is presented followed by results in order of objectives from objective one to three.

4.1 Response Return rate

A total of 168 questionnaires were administered to procurement officers of the public entities. The response return rate is given in Table 4.1

Table 4.1: Response Return rate

Organizations	Sample	Total Response	Percentage Response
Number of Organizations	168	158	94.05%

(Source: Field Survey Data, 2023)

From the findings in Table 4.1, it is clear that out of a total of 168 questionnaires that were administered, there was a response return of 158 fully filled questions which represents 94.05%. This is indicative of good response return according to Kothari (2003) observation that a response return rate above 90% represents a good data collection process and hence qualifies the collected data for generalization over the calculated sample size.

4.2 Overview of Supply Chain Performance

Supply Chain Performance was the main study outcome which was sought using three aspects including cycle time, cost and quality compliance. All the three subscales were measured on a 5-point Likert Scale. The respondents were asked to indicate the extent to which they agreed with the aspects that related to Supply Chain Performance under each of their subscales. They were required to use the five-point Likert Scale where: Strongly Agree (**SA**)=5, Agree (**A**)=4, Neutral (**N**)=3, Disagree (**D**)= 2, = Strongly Disagree (**SD**)= 1. The findings are presented as shown in Table 4.2 using percentages, means, frequency counts and standard deviations.

Table 4.2: Supply Chain Performance

Cycle Time	SD	D	N	A	SA	M	STD
1. Our lead time for acquisition of goods and service has shortened and improved our performance	77(48.7)	41(25.9)	30(19)	8(5.1)	2(1.3)	1.8	.99
2. There is reduction in the number of returned and undelivered items for the awarded procurements and disposals	86(54.4)	16(10.1)	13(8.2)	4(2.5)	39(24.7)	2.3	1.69
3. We have saved time in providing solutions during conflicts or challenges with our service providers of products	60(38)	32(20.3)	35(22.2)	18(11.4)	13(8.2)	2.3	1.31
4. There is reduction in delays during operations for procurements & disposal activities	85(53.8)	24(15.2)	31(19.6)	5(3.2)	13(8.2)	2.0	1.27
5. The delivery time for ordered goods from service providers has improved	48(30.4)	59(37.3)	8(5.1)	38(24.1)	5(3.2)	2.3	1.23
6. There is improvement in efficiency of operations in procurements and disposals for all user requirements	16(10.1)	64(40.5)	56(35.4)	15(9.5)	7(4.4)	2.6	0.95
Cost (SCP, Cost)							
7. There is reduction in the costs associated with procurements and disposals such as ordering & inventory holding costs	62(39.2)	22(13.9)	58(36.7)	3(1.9)	13(8.2)	2.3	1.23
8. There is reduction in non-value overheads such as Litigation, repurchase, reverse and redesign costs	65(41.1)	11(7)	28(17.7)	27(17.1)	27(17.1)	2.6	1.56
9. There is reduction in logistics & transportation costs for materials	20(12.7)	63(39.9)	40(25.3)	15(9.5)	20(12.7)	2.7	1.19
10. There is reduction in external field costs such as market surveys and site visits	36(22.8)	55(34.8)	40(25.3)	17(10.8)	10(6.3)	2.4	1.14
11. Reduction in overall organization costs	32(20.3)	97(61.4)	17(10.8)	8(5.1)	4(2.5)	2.1	.86
Quality Compliance (SCP_QC)							
12. There is reduction in the number of defective procured items	11(7)	2(1.3)	46(29.1)	46(29.1)	53(33.5)	3.8	1.13
13. There is reduction in customer complaints over rendered services	54(34.2)	74(46.8)	14(8.9)	10(6.3)	6(3.8)	2.0	1.02
14. There is reduction in returned items due to poor quantities delivered	66(41.8)	24(15.2)	35(22.2)	20(12.7)	13(8.2)	2.3	1.34
15. There is reduction in the number of return to store cases due to obtaining substandard items	50(31.6)	49(31)	37(23.4)	8(5.1)	14(8.9)	2.3	1.22
16. There is reduction in the number of complaints from the internal users from all departments	63(39.9)	46(29.1)	26(16.5)	6(3.8)	17(10.8)	2.2	1.29

KEY: SA-Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD- Strongly Disagree, M-Mean, STD-Standard Deviation. **Source: (Field Survey, 2023)**

From the findings in Table 4.2, majority of the respondents, 77(48.7%) and 41(25.9%) strongly disagreed and disagreed respectively that there was improvement in the organization's procurement lead time. A low mean (M=1.8, STD=.99) was also obtained, which was in

concurrence with the majority rating thus implying that there is little improvement in the organization's procurement lead time. Majority, 86(54.4%) and 16(10.1%) further strongly disagreed and disagreed respectively that there was reduction in undelivered items for the awarded procurements and disposals, which was also confirmed by a low mean (M=2.3, STD=1.69). It is further clear from the majority, 60(38.0%) of the respondents that organizations supply chain saved timed in providing solutions during conflicts or challenges, which was also disagreed upon by 32(20.3%) of the respondents with a mean (M=2.3, STD=1.31). However, 35(22.2%) remained neutral, 18(11.4%) agreed and 13(8.2%) strongly agreed. Finally, majority, 85(53.8%) of the respondents strongly disagreed that there is reduction in delay during operations for procurement & disposal, which was also confirmed by a low mean (M=2.0, STD=1.27).

Concerning supply chain performance under cost, majority of the respondents, 62(39.2%) strongly disagreed that there was reduction in costs of procurement and were supported by 22(13.9%) who disagreed. However, 58(36.7%) of the respondents remained neutral, 3(1.9%) agreed and 13(8.2%) strongly agreed. A low mean (M=2.3, STD=1.23) was obtained thus implying that there was little reduction in procurement costs. Majority of the respondents, 65(41.1%) strongly disagreed that there was reduction in non-value overheads such as litigation, repurchase, reverse and redesign costs and this was also affirmed by 11(7.0%) who disagreed. Twenty-eight, that is 17.7% remained neutral, 27(17.1%) either agreed or strongly agreed. A low mean, (M=2.6, STD=1.56) was obtained thus implying that there was very little reduction in non-value overheads i.e. Litigation, repurchase, reverse and redesign costs. Finally, majority, 97(61.4%) of the respondents disagreed that there was reduction in overall organization costs and this was further affirmed by 32(20.3%) of the participants who strongly disagreed. A low mean and standard deviation (M=2.1, STD=.86) were obtained thus implying that there was very little reduction in overall organization costs.

The third measure of supply chain performance was quality compliance. The findings indicated a high rating (M=3.8, STD=1.13) on the reduction in the number of defective procured goods and services. This was also confirmed by majority, 53(33.5%) who strongly agreed and supported by 46(29.1%) who agreed. However, majority of the respondents, 74(46.8%) disagreed and 54(34.2%) strongly disagreed that there was reduction in customer complaints over rendered services. A low mean (M=2.0, STD=1.02) and high standard deviation were obtained thus confirming less reduction in customer complains. Majority of the respondents, that is 50(31.6%)

and 49(31.0%) strongly disagreed and disagreed respectively that there was reduction in the number of return to store cases. A low mean (M=2.3, STD=1.22) and high standard deviation were obtained. Moreover, majority of the respondents, 63(39.9%) and 46(29.1%) strongly disagreed and disagreed respectively that there was reduction in the number of complaints from the internal users. A low mean (M=2.2, STD=1.29) and high standard deviation were also obtained thus confirming the less reduction in the number of complaints from the internal users.

4.3 Summary Statistics on Supply Chain Performance

Subsequent analysis was performed to establish the difference mean rating on the various subscales of supply chain performance. The findings on specific subscales are presented as in Table 4.3 below.

Table 4.3: Summary Statistics on Supply Chain Performance

Mean Supply Chain Performance	Mean	Std. Deviation
Mean Supply Chain Performance (Cycle Time)	2.23	0.68
Mean Supply Chain Performance (cost)	2.74	0.99
Mean Supply Chain Performance (Quality Compliance)	2.62	0.63
Mean Supply Chain Performance	2.44	0.49

Source: (Field Survey, 2023)

From the findings, it emerged that cost function of supply chain performance had the highest mean (M=2.74, STD=.99) as compared to quality compliance (M=2.62, STD=.63) and cycle time (M=2.23, STD=.68). A mean of 3.000 is low (Shevlyakov & Oja, 2016). The overall mean (M=2.44, STD=.49) was low implying that the performance of supply chains in public entities in Kenya is low. This could be attributed to low and unsatisfactory compliance to the procurement laws orchestrated by poor implementation of laws guiding public procurement as initially reported by (PPRA Review Report, 2019).

4.4 Procurement Legal Framework Implementation (PLFI)

Procurement legal framework implementation was measured using five subscales.

4.4.1 Implementation of Executive Orders & Decrees (IEOD)

The first subscale was the implementation of executive orders & decrees. Respondents were asked to indicate the extent of implementation of outlined statements for this particular subscale using a Five Point Likert scale where: Strongly Agree (**SA**)=5, Agree (**A**)=4, Neutral (**N**)=3, Disagree (**D**)= 2, = Strongly Disagree (**SD**)= 1. The findings are presented as shown in Table 4.4 using, percentages, means, frequency counts and standard deviations.

Table 4.4: Implementation of Executive Orders & Decrees (IEOD)

Implementation of Executive Orders & Decrees (IEOD)	SD	D	N	A	SA	M	STD
1. The organization updates and makes public information regarding procurement & disposals	54(34.2)	62(39.2)	24(15.2)	8(5.1)	10(6.3)	2.1	1.12
2. The Accounting officer is responsible for procurements and disposals of at least Ksh. 10, 000,000	35(22.2)	70(44.3)	39(24.7)	6(3.8)	8(5.1)	2.3	1.01
3. The organization keeps records for a concluded procurement & asset disposal for at least 6 years	43(27.2)	74(46. 8)	31(19.6)	4(2.5)	6(3.8)	2.1	0.95
4. The organization carries out procurements & disposals through the Integrated Financial Management Information Systems (IFMIS)	50(31.6)	74(46.8)	23(14.6)	4(2.5)	7(4.4)	2.0	0.98
5. Our organization normally reports and publicizes information on procurement and disposals arising from procurement activities in the public procurement information portal PPIP	61(38.6)	38(24.1)	39(24.7)	12(7.6)	8(5.1)	2.2	1.17
6. Out organization reports information on procurements and disposals in the format and structure in the act	16(10.1)	50(31.6)	57(36.1)	29(18.4)	6(3.8)	2.7	1.00
Overall Mean & Std. deviation						2.23	0.71

KEY: SA-Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD- Strongly Disagree, M-Mean, STD-Standard Deviation, **Source: (Field Survey Data, 2023)**

From the findings in Table 4.4, majority, 62(39.2%) of the respondents disagreed that the organization updates and makes public information regarding procurement & disposal, to which 54(34.2%) strongly disagreed and 24(15.2%) remained neutral. There were only 10(6.3%) of the

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respondents who strongly agreed and 8(5.1%) who agreed. A low mean and high standard deviation were obtained (M=2.1, STD=1.12) thus concurring with majority of the respondents who disagreed. This means that there were very little efforts by organizations to update and make public information regarding procurement & disposal. Majority of the respondents, 70(44.3%) disagreed that the accounting officer is responsible for procurement and disposals of at least Ksh. 10,000, 000 which were supported by 35(22.2%) who strongly disagreed. It is clear that 6(3.8%) of the participants agreed, 8(5.1%) strongly agreed while 39(24.7%) remained neutral. Following the cumulatively 66.5% of the respondents who disagreed and strongly disagreed, it can be noted that accounting officers were rarely responsible for procurement and disposals of at least Ksh. 10, 000,000, 000 This is confirmed by a low mean and standard deviation ((M=2.3, STD=1.01). Concerning the organization record keeping for concluded procurement & asset disposal for at least 6 years, majority of the respondents, 74(46.8) disagreed and were supported by 43(27.2) who strongly disagreed. A low mean and standard deviation (M=2.1, STD=.95) further affirmed the responses of poor record keeping for aleast 6 years. Finally, the findings from majority of the respondents who disagreed, 74(46.8%) indicates that the organizations carry out procurements & disposals through the Integrated Financial Management Information Systems (IFMIS), which was also strongly disagreed by 50(31.6%) of the respondents, with a low mean and standard deviation (M=2.0, STD=.98). This means that there is little done by organizations through the IFMIS in terms of procurements and disposals.

4.4.2 Implementation of Preferences & Reservations Schemes, 2011

Analysis was carried out to establish the extent to which respondents agreed with the implementation of preference & reservations schemes of 2011. This was achieved through a set of questions on a 5- point Likert Scale with (1-strongly disagree to 5-strongly agree). The findings are given in Table 4.5.

Table 4.5: Implementation of Preferences & Reservations Schemes, 2011 (IPRS2011)

Implementation of Preferences & Reservations Schemes, 2011	SD	D	N	A	SA	M	STD
7. The organization reserves contracts to Small & Medium Enterprises, SMEs	37(23.4)	36(22.8)	45(28.5)	19(12)	21(13.3)	2.7	1.32
8. The organization reserves contracts to the local contractors	26(16.5)	78(49.4)	9(5.7)	22(13.9)	23(14.6)	2.6	1.32
9. The organization reserves contracts to local citizen contractors	38(24.1)	30(19)	26(16.5)	36(22.8)	28(17.7)	2.9	1.45
10. There is competition and equal opportunity among the target groups (SMEs, citizen contractors, local contractors)	33(20.9)	75(47.5)	13(8.2)	21(13.3)	16(10.1)	2.4	1.24
11. The organization reserves contracts to the disadvantaged groups (Youth, Women, People with Disabilities)	42(26.6)	39(24.7)	49(31)	15(9.5)	13(8.2)	2.5	1.21
12. The organization has implemented the 30% directive for the target groups	55(34.8)	32(20.3)	20(12.7)	28(17.7)	23(14.6)	2.6	1.48
13. Target groups have performed to the required specifications of time, quality, quantity, costs and place	34(21.5)	62(39.2)	25(15.8)	17(10.8)	20(12.7)	2.5	1.29
14. Sensitization of the target groups on procurement and compliance	47(29.7)	20(12.7)	34(21.5)	28(17.7)	29(18.4)	2.8	1.49
Overall Mean & Std. deviation						2.6	0.57

KEY: SA-Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD- Strongly Disagree, M-Mean, STD-Standard Deviation, **Source: (Field Survey Data, 2023)**

From the findings, majority of the respondents, 45(28.5%) remained neutral on the statement that the organization reserves contracts to small & medium enterprises, SMES, whereas 37(23.4%) strongly disagreed and 36(22.8%) disagreed. The overall mean was low (M=2.7, STD=1.32) with a high standard deviation implying that whereas the mean response was low, there were variations from the means such that a significant number of respondents also agreed, in this case, 25.3% cumulatively. Majority, 78(49.4%) of the respondents disagreed that the organization reserves contracts to the local contractors and were supported by 26(16.5%) who strongly disagreed as well. A low mean (M=2.6, STD=1.32) with a large standard deviation confirmed the findings by majority. Furthermore, majority of the respondents, 38(24.1%) strongly disagreed that the organization reserves contracts to local contractors and were supported by 30(19.0%) of the

respondents who disagreed. A low mean (M=2.9, STD=1.45) also confirmed that organizations did not reserve contracts to local citizens. According to the majority, 75(47.5%) respondents who disagreed and 33(20.9%) who strongly disagreed, it emerged that there was no competition and equal opportunity among the target groups such as SMEs, citizen contractors and local contractors, which is also indicated by a low mean (M=2.5, STD=1.21). It was also clear from the majority,42(26.6%) and 39(24.7%) of the respondents who strongly disagreed and disagreed respectively that the organization did not reserve contracts to the disadvantaged groups, that is youth, women and people with disabilities, which is also confirmed by a low mean (M=2.5, STD=1.21) although with a large standard deviation.

From the findings, majority, 55(34.8%) of the respondents strongly disagreed that the organization has implemented the 30 % directive for the target groups, which is also reflected by a low mean (M=2.6, STD=1.48) and a high standard deviation. In addition, the findings show that majority, 62(39.2%) of the respondents and 34(21.5%) disagreed and strongly disagreed that the target groups have performed to the required specifications of time, quality, quantity, costs and place. However, 25(15.8%) of the respondents remained neutral, 17(10.8%) agreed and 20(12.7%) strongly disagreed. A low mean (M=2.5) further confirmed that the majority findings while a high standard deviation (STD=1.29) indicated that there were high variations in the responses. Finally, majority of the participants at 47(29.7%) strongly disagreed that there was sensitization of the target group on quantity, cost and compliance and were further supported by 20(12.7%) who disagreed. However, 28(17.7%) of the participants agreed, 29(18.4%) strongly agreed on the same whereas 34(21.5%) remained neutral. A low mean (M=2.8) further confirmed the majority findings while a high standard deviation (M=1.49) indicated that there were high variations from the mean response.

4.4.3 Implementation of Public Procurement & Asset Disposal Act, 2015

The third aspect of procurement legal framework implementation was the implementation of public procurement & asset disposal Act, 2015. This was also measured on a Five Point Likert Scale of 1 representing strongly disagree and 5 indicating Strongly Agree. Responses were analyzed descriptively and given in Table 4.6.

Table 4.6: Implementation of Public Procurement & Asset Disposal Act, 2015 (IPPADA 2015)

Implementation of Public Procurement & Asset Disposal Act, 2015(IPPADA2015)	SD	D	N	A	SA	M	STD
15. Our organization prepares procurement plan based on approved budget	82(51.9)	30(19)	21(13.3)	14(8.9)	11(7)	2	1.28
16. Our organization ensures that there is budgetary allocations and sufficient funds are available before commencing a procurement	20(12.7)	63(39.9)	40(25.3)	15(9.5)	20(12.7)	2.7	1.19
17. There are procurements and disposals that have been executed outside the procurement plan	36(22.8)	55(34.8)	40(25.3)	17(10.8)	10(6.3)	2.4	1.14
18. The organization practices lotting in procurements and disposals	54(34.2)	57(36.1)	22(13.9)	15(9.5)	10(6.3)	2.2	1.19
19. Procurement & disposals of standard goods are carried at the prevailing market price based on a market survey	43(27.2)	68(43)	21(13.3)	17(10.8)	9(5.7)	2.2	1.14
20. Suppliers meeting set criteria	59(37.3)	49(31)	23(14.6)	10(6.3)	17(10.8)	2.2	1.3
21. Procurements and disposals are contracted to the prequalified service providers	54(34.2)	63(39.9)	17(10.8)	11(7)	13(8.2)	2.2	1.21
22. The firm frequently and regularly prequalifies service providers	44(27.8)	48(30.4)	35(22.2)	13(8.2)	18(11.4)	2.4	1.29
23. There are instances where contracting is done to other service providers other than the prequalified	54(34.2)	49(31)	23(14.6)	21(13.3)	11(7)	2.3	1.26
24. The organization uses standard tender and disposal documents provided by PPRA for procurements & disposals	58(36.7)	50(31.6)	42(26.6)	4(2.5)	4(2.5)	2	0.98
25. Employees of the organization do not take part in contracting for procurements and disposals	17(10.8)	55(34.8)	62(39.2)	20(12.7)	4(2.5)	2.6	0.93
26. The organization prepares due specification of requirements beforehand	32(20.3)	53(33.5)	32(20.3)	29(18.4)	12(7.6)	2.6	1.22

	SA	A	N	D	SD	M	STD
27. The organization ensures that submitted bids have declarations of non-engagement in corruption	57(36.1)	75(47.5)	8(5.1)	8(5.1)	10(6.3)	2	1.09
28. Communications relating to procurements & disposals among parties are made in writing	33(20.9)	82(51.9)	25(15.8)	9(5.7)	9(5.7)	2.2	1.03
29. The organization does not maintain communication with service providers during and after evaluations to influence the evaluation and award process	61(38.6)	38(24.1)	39(24.7)	12(7.6)	8(5.1)	2.2	1.17
30. The evaluations process is influenced by external parties	16(10.1)	50(31.6)	57(36.1)	29(18.4)	6(3.8)	2.7	1
31. Members taking part in procurement proceedings maintain the confidentiality of information	48(30.4)	59(37.3)	8(5.1)	38(24.1)	5(3.2)	2.3	1.23
32. The organization maintains proper records of procurement and disposal proceedings in the office	16(10.1)	64(40.5)	56(35.4)	15(9.5)	7(4.4)	2.6	0.95
33. The organization ensures that approvals are dated and filed with approval numbers	22(13.9)	75(47.5)	39(24.7)	15(9.5)	7(4.4)	2.4	0.99
Overall Mean & Std. deviation						2.32	0.71

KEY: SA-Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD- Strongly Disagree, M-Mean, STD-Standard Deviation. **Source: (Field Survey, 2023)**

From the findings, majority, 82(51.9%) of the respondents strongly disagreed that the organization prepares procurement plan based on approved budget and were followed by 30(19.0%) respondents who disagreed. A low mean (M=2.0, STD=1.28) confirmed the majority response although a high standard deviation was indicative of high variations in the responses. From the findings, it emerged that cumulatively, 80(52.6%) of the participants disagreed and also strongly disagreed with the aspect that the organization ensures that there is budgetary allocations and sufficient funds are available before commencing a procurement, which is low (M=2.7, STD=1.19) based on the mean response. Majority, 55(34.8%) of the participants disagreed, 36(22.8%) strongly disagreed on the execution of the procurements and disposals outside the procurement plan hence affecting performance, which was further confirmed by a low mean (M=2.4, STD=1.14) although with a high standard deviation.

The results infer that majority of the participants at 68(43.0%) disagreed and 43(27.2%) who strongly disagreed that procurement & disposals of standard goods are carried at the prevailing

market price based on a market survey. Moreover, there was a low mean (M=2.2, STD=1.14) indicative of low rating although with a high standard deviation indicative of high variations form the mean. Majority, 57(36.1%) of the participants disagreed, 54(34.2%) strongly disagreed that the organization practices lotting to avoid open competition, which was also confirmed by a low mean (M=2.2, STD=1.19) and high standard deviation. Majority of the respondents, 59(37.3%) strongly disagreed while 49(31.0%) disagreed that suppliers meet set criteria, which was also show by a low mean (M=2.2, STD=1.30) and high standard deviation. It is also clear from the findings that procurement and disposals are rarely contracted to the prequalified service providers, which is indicated by majority, 54(34.2%) who strongly disagreed and 63(39.9%) respondents who disagreed, with a low mean (M=2.2, STD=1.21) although with a high standard deviation. Further findings based on the majority, 48(30.4%) of the respondents who disagreed and 44(27.8%) who strongly disagreed indicate that the firms did not frequently and regularly prequalify service providers, which is also shown by a low mean (M=2.4, STD=1.29) and a high standard deviation.

Majority of the respondents, 54(34.2%) strongly disagreed that there are instances where contracting is done to other service providers other than the prequalified and were supported by 49(31.0%) who disagreed with an overall low mean (M=23, STD=1.26) and high standard deviation. From the findings, 58(36.7%) strongly disagreed and 50(31.6%) disagreed that the organization uses standard tender and disposal documents provided by PPRA for procurements & disposals, which was also confirmed by a low mean and standard deviation (M=2.0, STD=.98). It is further clear from the majority of the findings who disagreed and 32(20.3%) who strongly disagreed that employees of the organizations indeed do not take part in contracting for procurements and disposals. This was further confirmed by a low mean and standard deviation (M=2.6, STD=.93) which shows less participation of employees in contracting. Majority of the respondents, 53(33.5%) disagreed that the organization prepares due specification of requirements beforehand and were also supported by 32(20.3%) who strongly disagreed with a low mean (M=2.6, STD=1.22) although with high standard deviation. Further findings revealed that the organization does not ensure that submitted bids have declarations of non-engagement in corruption as indicated by majority of the participants at 75(47.5%) who disagreed as well as 57(36.1%) who strongly disagreed with a low mean (M=2.0, STD=1.09) although with high standard deviation.

Concerning making in writing of the communications relating to procurement & disposal among parties, majority of the respondents, 82(51.9%) strongly disagreed and 33(20.9%) disagreed, with a low mean (M=2.2, STD=1.03) although with high standard deviation. It is also further clear from the findings that majority, 61(38.6%) strongly disagreed and 38(24.1%) disagreed that the organization does not maintain communication with service providers during and after evaluations to influence the evaluation and award process. It was also confirmed by a low mean (M=2.2, STD=1.17) although with a high standard deviation thus implying that indeed, the organization maintained communication to influence award process. From the findings, majority 57(36.1%) remained neutral on the influence of evaluation process by external parties, although the mean was low (M=2.7, STD=1.00) with a small standard deviation. However, majority, 59(37.3%) of the respondents disagreed that members taking part in procurement proceedings maintain the confidentiality of information and were supported by 48(30.4%) who strongly disagreed, with a low mean and high standard deviation (M=2.3, STD=1.23). In addition, majority, 64(40.5%) of the respondents disagreed that the organization maintains proper records of procurement and disposal proceedings in the office and were further confirmed by a low mean (M=2.6, STD=.95). Finally, the findings show that the organization ensures that approvals are not dated and filed with approvals numbers as indicated by majority, 75(47.5%) of the respondents who disagreed with a low mean and standard deviation (M=2.4, STD=.99).

4.4.4 Implementation of Public Procurement & Disposal Regulations, 2016

The fourth element of procurement legal framework implementation was implementation of public procurement & disposal regulations, 2016. This consisted of 10 questions which were asked on a Five Point Likert Scale ranging from 1 indicating strongly disagree to 5 indicating Strongly agree. The findings are given in Table 4.7.

Table 4.7: Implementation of Public Procurement & Disposal Regulations, 2016 (IPPDR, 2016)

Implementation of Public Procurement & Disposal Regulations, 2016	SD	D	N	A	SA	M	STD
34. The Accounting Officer formally appoints members of Tender opening, evaluation, Inspection & Acceptance & Disposal Committees	42(26.6)	48(30.4)	55(34.8)	11(7)	2(1.3)	2.3	0.97
35. The Head of Procurement reports to the Accounting Officer of the organization	23(14.6)	56(35.4)	48(30.4)	23(14.6)	8(5.1)	2.6	1.06
36. The Accounting Officer convenes the Evaluations Committee for each tender	37(23.4)	67(42.4)	31(19.6)	10(6.3)	13(8.2)	2.3	1.15
37. The disposal committee is convened based on disposal requirements	55(34.8)	77(48.7)	8(5.1)	8(5.1)	10(6.3)	2	1.09
38. Goods and services completed/delivered by service providers are inspected without delay	66(41.8)	31(19.6)	37(23.4)	16(10.1)	8(5.1)	2.2	1.22
39. Open tendering is the main method used for procurements for any procurement	55(34.8)	22(13.9)	60(38)	10(6.3)	11(7)	2.4	1.22
40. Alternative methods of procurement (restricted, RFPs, RFQs, direct) are approved by the tender committee for any procurement & disposal	56(35.4)	17(10.8)	59(37.3)	19(12)	7(4.4)	2.4	1.21
41. Specially permitted methods are used on special occasions when approved by the tender committee for any procurement or asset disposal	46(29.1)	22(13.9)	48(30.4)	26(16.5)	16(10.1)	2.6	1.33
42. The procurement plan is updated to suit requirements for a procurement	60(38)	30(19)	44(27.8)	17(10.8)	7(4.4)	2.2	1.2
43. The organization has a records management staff with relevant qualification	70(44.3)	33(20.9)	27(17.1)	21(13.3)	7(4.4)	2.1	1.24
44. Staff in procurement & supplies are relevant and familiar with principles, rules and regulations relating to public procurement & disposals	76(48.1)	16(10.1)	32(20.3)	23(14.6)	11(7)	2.2	1.36
Overall Mean & Std. deviation						2.29	0.17

KEY: SA-Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD- Strongly Disagree, M-Mean, STD-Standard Deviation, (Source: Field Survey Data, 2023)

From the findings, majority of the respondents, 55(34.8%) remained neutral on whether the Accounting Officer formally appoints members of Tender opening, evaluation, Inspection & Acceptance & Disposal Committees. However, cumulatively, 90(57.0%) disagreed and strongly disagreed on the same with a low mean and standard deviation (M=2.3, STD=.97). Furthermore, majority of the respondents, 56(35.4%) disagreed and were supported by 23(14.6%) who strongly disagreed that the Head of Procurement reports to the Accounting Officer of the organization. The negative response was also confirmed by a low mean (M=2.6, STD=1.06) and high standard deviation. Further findings by majority of the respondents, 67(42.4%) who disagreed and 37(23.4%) who strongly disagreed indicated that the Accounting Officer convenes the Evaluations Committee for each tender. This was also indicated by a low mean (M=2.3, STD=1.15) thus confirming majority response.

Concerning the disposal committee and requirements, majority of the participants disagreed 77(48.7%) and 55(34.8%) strongly disagreed that disposal committee is convened based on the disposal requirements. This was further confirmed by a low mean (M=2.0, STD=1.09) and high standard deviation showing high variations despite the low rating. It is further clear from the findings that there is less inspection (M=2.2, STD=1.22) of goods and services, which is also indicated by majority, 66(41.8%) of the respondents who strongly disagreed and 31(19.6%) who disagreed. Majority of the respondents, 55(34.8%) strongly disagreed and 22(13.9%) disagreed that open tendering is the main method used for any procurement. This was also confirmed by a low mean (M=2.4, STD=1.21) although there were high standard deviations indicative of high variations from the mean. According to the majority of the respondents, 56(35.4%) who strongly disagreed, it emerged that alternative methods of procurement (restricted, RFPs, RFQs, direct) were not approved by the tender committee for any procurement & disposal, which was also confirmed by a low mean (M=2.6, STD=1.33) and high standard deviation. Some respondents remained neutral 48(30.4%) on the use of specifically permitted methods on special occasions when approved by the tender committee for any procurement or asset disposal. This was also confirmed by a low mean (M=2.6, STD=1.33) although with a high standard deviation.

Majority of the respondents, 60(38.0%) strongly disagreed that procurement plan is updated to suit requirements for a procurement, and were supported by 30(19.0%) who also disagreed. However, 44(27.8%) of the respondents remained neutral while 17(10.8%) agreed. A low mean (M=2.2,

STD=1.20) also confirms the majority response thus implying that there was less update of the procurement plan to suit the requirements for procurement. Furthermore, the findings show that the organizations did not have records management staffs with relevant qualifications as indicated by 70(44.3%) of the respondents who strongly disagreed and 33(20.9%) who disagreed. A low mean (M=2.1, STD=1.24) with high standard deviation were realized implying that there was low rating although with high deviations from the mean. Finally, majority of the respondents, 76(48.1%) strongly disagreed that staff in procurement & supplies are relevant and familiar with principles, rules and regulations relating to public procurement & disposals, which was also confirmed by a low mean (M=2.2, STD=1.36) although with high standard deviations.

4.4.5 Implementation of Public Private Partnership Act, 2013

The fifth element of procurement legal framework implementation was implementation of public private partnership Act, 2013. This was also measured using 9 statements. The statements were put on a five-point Likert Scale ranging from 1 indicating strongly disagree to 5 indicating strongly agree. The findings are shown in Table 4.8.

Table 4.8: Implementation of Public Private Partnership Act, 2013 (IPPPA)

Implementation of Public Private Partnership Act, 2013	SD	D	N	A	SA	M	STD
45. The organization enters into Public Private Partnerships by the authority of the Accounting officer	50(31.6)	20(12.7)	51(32.3)	26(16.5)	11(7)	2.5	1.28
46. The contracting parties projects and activities are approved by the PPP committee	85(53.8)	33(20.9)	23(14.6)	9(5.7)	8(5.1)	1.9	1.17
47. The organization prequalifies private parties for PPPs	92(58.2)	34(21.5)	23(14.6)	5(3.2)	4(2.5)	1.7	1
48. Pricing and costing for PPs are based on prevailing market prices through competitive means	73(46.2)	27(17.1)	31(19.6)	12(7.6)	15(9.5)	2.2	1.34
49. The PPP unit makes public in the print and electronic media list of approved projects and activities of the contracting parties	66(41.8)	24(15.2)	35(22.2)	20(12.7)	13(8.2)	2.3	1.34
50. The contractors for the Public Private Partnership project are selected through competitive open tendering	89(56.3)	14(8.9)	37(23.4)	8(5.1)	10(6.3)	2	1.26
51. The organization carries out due diligence on PPP contractors	104(65.8)	21(13.3)	24(15.2)	2(1.3)	7(4.4)	1.7	1.07
52. The organization evaluates service providers' based on time, quality & cost requirements	86(54.4)	28(17.7)	28(17.7)	5(3.2)	11(7)	1.9	1.21
53. The organization regularly monitors and evaluates PPP projects for conformance to the set specifications	88(55.7)	24(15.2)	36(22.8)	2(1.3)	8(5.1)	1.8	1.13
Overall Mean & Std. deviation						2.18	0.92

KEY: SA-Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD- Strongly Disagree, M-Mean, STD-Standard Deviation. (Source: Field Survey, 2023)

It emerged that majority of the respondents, 51(32.3%) remained neutral on the statement that the organization enters into Public Private Partnerships by the authority of the Accounting officer. Cumulatively, some respondents disagreed 70(44.3%) but also strongly disagreed on the same, and a low mean (M=2.5, STD=1.28) was obtained implying that there was less practice of this Act.

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Majority of the respondents, 85(53.8%) strongly disagreed that the contracting parties projects and activities are approved by the PPP committee, and were further supported by 33(20.9%) who disagreed with a low mean (M=1.9, STD=1.17) although with high standard deviation. Further findings indicate that majority, 92(58.2%) of the respondents strongly disagreed that the organization prequalifies private parties for PPPs, which was also supported by 34(21.5%) of the respondents who disagreed and a low mean (M=1.7, STD=1.00) with high standard deviation.

Concerning pricing and costing, majority, 73(46.2%) of the respondents strongly disagreed that Pricing and costing for PPs are based on prevailing market prices through competitive means, and were further supported by 27(17.1%) who disagreed, with a low mean (M=2.2, STD=1.34), although with high standard deviation. Majority of the respondents, 66(41.8%) strongly disagreed that the PPP unit makes public in the print and electronic media list of approved projects and activities of the contracting parties, which was also confirmed by a low rating, (M=2.3, STD=1.34). This means that there was less publishing in print and electronic media list approved projects and activities. Majority, 89(56.3%) strongly disagreed that the contractors for the Public Private Partnership project are selected through competitive open tendering, which were supported by 14(8.9%) and a low mean (M=2.0, STD=1.26) although with a high standard deviation. This means that there was less adherence to competitive and open tendering in the public and private partnership project.

From the findings, majority of the respondents 104(65.8%) disagreed and 21(13.3%) strongly disagreed that the organization carries out due diligence on PPP contractors. This was also revealed by a low mean (M=1.7, STD=1.07), although with high standard deviation, implying that there was little due diligence on PPP contractors by the organizations. Majority, 86(54.4%) of the respondents strongly disagreed that the organization evaluates service providers' performance based on time, quality & cost requirements. These were also supported by 28(17.7%) of the respondents who disagreed. Moreover, a low mean (M=1.9, STD=1.21) confirms the majority rating although with high variation from the mean. Finally, from the findings, majority, 88(55.7%) of the respondents strongly disagreed that the organization regularly monitors and evaluates PPP projects for conformance to time, quality and cost requirements, which was also disagreed by 24(15.2%) of the respondents and a low rating (M=1.8, STD=1.13).

4.4.6 Summary Results on Procurement Legal Framework Implementation (PLFI)

Further analysis was performed to compare the means and standard deviations of the five subscales of procurement legal framework implementation. The findings are presented as shown in Table 4.9 below.

Table 4.9: Comparison of PLFI Means

Procurement Legal Framework Implementation	Mean	STD
Implementation of Executive Orders & Decrees (IEOD)	2.23	0.71
Implementation of Preferences & Reservations Schemes, 2011 (IPRS)	2.60	0.57
Implementation of Public Procurement & Asset Disposal Act, 2015 (IPPAD)	2.32	0.52
Implementation of Public Procurement & Disposal Regulations, 2016 (IPPDR)	2.29	0.52
Implementation of Public Private Partnership Act, 2013 (IPPPA)	2.18	0.92
Overall mean and Standard Deviation	2.32	0.17

Source: (Field Survey, 2023)

From the findings, it is clear that there is higher rating on the Implementation of Preferences & Reservations Schemes, 2011 (M=2.60, STD=.57) among the organizations. This is followed by Implementation of Public Procurement & Asset Disposal Act, 2015 (M=2.32, STD=.52) and thereafter by Implementation of Public Procurement & Disposal Regulations, 2016 (M=2.29, STD=.52). Implementation of Executive Orders & Decrees was the third with a low mean and standard deviation (M=2.23, STD=.71) and finally Implementation of Public Private Partnership Act, 2013 (M=2.18, STD=.92). The overall mean on Procurement Legal Framework Implementation was low, implying that there is low adoption and use of procurement laws in practice.

In alignment with findings of the current study depicting low implementation and compliance levels to procurement laws & regulations, Mutangili (2021) surveyed all state corporations in the energy industry in Kenya to justify that while adoption and use of established laws in public procurement improved performance, there is low implementation of the law in the state corporations i.e. Kenya Power & Lighting Co., Kenya Electricity Transmission Co, Rural Electrification Authority, KenGen, Kenya Petroleum Refineries Ltd., Kenya Pipeline Co., National Oil Corporations of Kenya and the Geothermal Development Corporation riddled in

corruption due to supplier breaches. This confirms position of the current study that there is low implementation levels of procurement legal framework in the public entities as evidenced by overall mean and standard deviation (M=2.32, STD=0.17).

In a related study which surveyed 187 state corporations as like the current study, Getuno *et al*., (2015) examined PPP regulations, 2009 implementation and organization performance of state corporations in Kenya by using a sample of 60 CEOs and 250 procurement officers. Even though this study revealed that there is poor implementation of the PPP regulations 2009, a reflection of the current study findings which revealed low implementation levels of the PPP act, 2013 (M=2.18, STD=.92) and overall low implementation levels of procurement legal framework (M=2.32, STD=0.17), the results hitherto, proved that implementation of the PPP regulations, 2009 is statistically significantly and leads to improvement in performance of the state corporations (R^2 =.574), confirming position of the current study that procurement legal framework is statistically significant and improves the supply chain performance of public entities (R^2=0.502, β=.708, p<.05).

In a similar research by Marendi (2015) on effect of procurement legal framework implementation and organization performance of state corporations in Kenya, this study concentrated on procurement acts and regulations formulated prior to establishment of the constitution of Kenya, 2010 (Public procurement and disposal act PPD Act, 2005; Public procurement disposal regulations, PPDR 2006; Public private Partnership Regulations, 2006; Preferences & reservation regulations, 2011) but did not consider executive orders & decrees. Enforcement mechanisms on the procurement law was further adopted as a moderator. The results of this study showed that there is low implementation levels of the procurement law in the public sector. However, implementation of the procurement law is shown to be statistically significant and positively improves organizations performance of state corporations.

4.4.7 Effect of Procurement Legal Framework Implementation on Supply Chain Performance of Public Entities in Kenya

The first objective of the study was to establish the effect of procurement legal framework implementation on performance of public entities in Kenya. In order to establish the effect of Procurement legal framework implementation (Independent Variable) on supply chain performance (Dependent Variable) of Public Entities in Kenya, a standard multiple regression

model analysis was adopted. This tested the null hypothesis, *H₀₁: Procurement legal framework Implementation has no significant effect on supply chain performance of public entities in Kenya.*

Firstly, a correlation was performed to establish whether procurement legal framework implementation was correlated with performance. To achieve this, Pearson product moment correlation test was adopted.

Table 4.10: Correlation between procurement legal framework implementation and supply chain performance

		Correlations					
		Mean SCP	**Mean IEOD**	**Mean IPRS2011**	**Mean IPPADA2015**	**Mean IPPDR2016**	**Mean IPPPA**
Mean SCP	Pearson Correlation	1	.339**	.529**	.224**	.496**	.401**
	Sig. (2-tailed)		.000	.000	.005	.000	.000
	N	158	158	158	158	158	158
Mean IEOD	Pearson Correlation	.339**	1	.301**	.198*	.105	.079
	Sig. (2-tailed)	.000		.000	.013	.189	.326
	N	158	158	158	158	158	158
Mean IPRS2011	Pearson Correlation	.529**	.301**	1	.111	.270**	.052
	Sig. (2-tailed)	.000	.000		.166	.001	.515
	N	158	158	158	158	158	158
Mean IPPADA2015	Pearson Correlation	.224**	.198*	.111	1	.256**	.052
	Sig. (2-tailed)	.005	.013	.166		.001	.520
	N	158	158	158	158	158	158
Mean IPPDR2016	Pearson Correlation	.496**	.105	.270**	.256**	1	.456**
	Sig. (2-tailed)	.000	.189	.001	.001		.000
	N	158	158	158	158	158	158
Mean IPPPA	Pearson Correlation	.401**	.079	.052	.052	.456**	1
	Sig. (2-tailed)	.000	.326	.515	.520	.000	
	N	158	158	158	158	158	158

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
KEY: IPPPA- Implementation of Public Procurement & Disposal Regulations, IPPADA- Implementation of Public Private Partnership Act, IPRS- Implementation of Preferences & Reservations Schemes, IEOD- Implementation of Executive Orders & Decrees, IPPDR- Implementation of Public Procurement & Disposal Regulations, SCP-Supply Chain Performance.
Source: (Field Survey, 2023)

The results in Table 4.10, the Pearson correlation coefficient showed there was a positive significant correlation between elements of procurement legal framework implementation and performance as shown by IEOD (r= 0.339, p<.01), IPRS, 2011 (r= 0.529, p<.01), IPPADA, 2015 (r= 0.224, p<.01), IPPDR, 2016 (r= 0.496, p<.01) and IPPPA 2013 (r= 0.401, p<.01). Shevlyakov & Oja (2016) suggested that coefficients ranging between .1-.3 indicates a small strength, .3-.5

indicates medium strength while .5-.10 indicates large strength irrespective of the direction, this implying that elements of procurement legal framework were positively associated with supply chain performance.

Subsequently, a multiple regression was carried out to establish effect of procurement legal framework implementation on performance. Supply chain performance was regressed against procurement legal framework implementation subscales. This was modeled using the equation in the following form:

$$Y_i = \beta_0 + \beta_1 X_{11_i} + \beta_1 X_{12i} + \beta_1 X_{13i} + \beta_1 X_{14i} + \beta_5 X_{15i} + \varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(3.1)$$

The findings are presented in Table 4.10 and consequently summarized in the model equation 4.1.

Table 4.11: Model results on effect of Procurement Legal Framework Implementation on Supply Chain Performance of Public Entities

					Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.707ᵃ	.500	.483	.35496	.500	30.364	5	152	.000

a. Predictors: (Constant), Mean IPPPA, Mean IPPADA2015, Mean IPRS2011, Mean IEOD, Mean IPPDR2016

	Coefficientsᵃ						
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.326	.192		1.701	.091		
IEOD	.112	.043	.160	2.617	.010	.877	1.140
IPRS2011	.339	.054	.395	6.319	.000	.844	1.185
1 IPPADA2015	.071	.058	.074	1.231	.220	.898	1.113
IPPDR2016	.226	.066	.238	3.432	.001	.686	1.457
IPPPA2013	.137	.035	.255	3.921	.000	.778	1.286

a. Dependent Variable: Mean SCP

KEY: IPPPA- Implementation of Public Procurement & Disposal Regulations, IPPADA- Implementation of Public Private Partnership Act, IPRS- Implementation of Preferences & Reservations Schemes, IEOD- Implementation of Executive Orders & Decrees, IPPDR- Implementation of Public Procurement & Disposal Regulations, SCP-Supply Chain Performance.
Source: (Field Survey, 2023)

The findings show positive correlation (R=.707) between procurement legal framework implementations and supply chain performance in public entities. When this value is squared, an R square value (R^2=.500, p<.05), the coefficient of determination which indicates the amount of

variation in performance that is explained by procurement legal framework implementation is obtained.

Therefore, it can be noted that procurement legal framework implementation accounts for 50.0% variance in supply chain performance, leaving the remaining half to be accounted for by other variables not in the model. In adjusting for overestimation through a shrinkage process, the Adjusted R Square (Adjusted R^2=.483) which indicates the true population value after controlling for overestimation is obtained. Given a small standard error value that is less than 1, it can be inferred that the model accuracy is high (Shevlyakov & Oja, 2016). Moreover, the model F statistic is high, F (5, 152) =30.364, and significant at 0.05 implying that there was sufficient evidence of the significant amount of variance in supply chain performance accounted for by procurement legal framework implementation. Therefore, this variance is not by chance but as a result of good fit of the model.

Further findings on the model coefficients and constants were presented for each of the predictors of supply chain performance. From the five predictors, it was noted that 4 of them were significant predictors while one did not significantly contribute to supply chain performance. A close examination shows that Implementation of Preferences & Reservations Schemes 2011, had the strongest positive contribution to supply chain performance (β=.395, p<.05) which was also significant. The others included the Implementation of Public Private Partnership Act, 2013 (β=.255, p<.05), Implementation of Public Procurement & Disposal Regulations, 2016 (β=.238, p<.05) and the Implementation of Executive Orders & Decrees (β=.160, p<.05). It is worth to note that all the four predictors were significant at 0.05 thus implying that there was sufficient evidence of their effect on supply chain performance of public entities. However, implementation of Public Procurement & Asset Disposal Act, 2015 was not significant at 0.05 level in its contribution to supply chain performance despite having positive effect. Practically, this implies that implementation of the PPAD Act, 2015 by public entities though has an effect, is low and hence insignificant. Public entities need to give more attention in implementation of the PPAD Act, 2015. Overall, the results show that for a unit variance in any of the explanatory variables (procurement legal framework implementation) there would be 0.160 units increase in performance due to IEOD, 0.395 units increase in performance due to IPRS2011, 0.074 units increase performance due to IPPADA2015, 0.238 units increase in performance due to IPPDR2016 and finally, a unit increase in IPPPA2013 would increase performance by 0.255 units. Further presentation of these findings,

particularly the unstandardized coefficient results were done by fitting in the regression equation 4.1 as follows

$$y = 0.326 + .112X_{IEOD} + 0.339X_{IPRS2011} + 0.071X_{PPADA2015} + 0.226X_{IPPDR2016} + 0.137X_{IPPPA2013}.........(4.1)$$

The typical implication of this model is that all the slopes coefficients are positive, implying that the change in y (supply chain performance) due to the predictors is positive. In practice, the results imply that when public entities implement elements of the public procurement law (executive orders and decrees, preferences & reservations, 2011; public procurement & asset disposal act, 2015; public procurement & disposal regulations, 2016; public private partnership act, 2013) there would marked improvement in performance of the supply chains.

The results of the study agree with Oduma & Getuno (2017) who surveyed secondary schools in Nairobi City County in a bid to assess the effect of procurement regulations on performance of public secondary schools. This study obtained data from procurement staffs who were involved in procurements and store keeping in the schools, making a total of 76 respondents as the target units. The Pearson correlation coefficient (r) examined the relationship between ethical standards, transparency, procurement professionalism, inspection & acceptance and performance and the with the help of SPSS software. Results of this study revealed that compliance to procurement regulation has a significant positive effect with the performance of secondary schools in Nairobi county.

While findings of the study established consonance with other prior scholarly works (Mutangili, 2021; Oduma & Getuno, 2017), they however contrast with the findings by Thanh *et al.*, (2018) who studied impact of public procurement rules and administrative practices of public procurers on bid rigging in Vietnam. This study used secondary data through a systematic review methodology and showed that using public procurement rules buoyed by administrative practices in public procurement contributes to bid rigging. Specifically, inefficiencies begotten through unnecessary and excessive supplier selection criteria (which limited participation of service providers), regulation of joint bidding, expose of information to unwarranted parties in public procurement, numerous communications with suppliers by purchasing were precepts of bid rigging in the Vietnamese public procurement systems.

4.5 Innovation Practices

The second objective of the study sought to ascertain the effect of innovation practices on performance of public entities in Kenya. In regard to this objective, the study sought response on the extent of innovation practices using 16 statements.

4.5.1 Overview of Innovation Practices

Respondents were therefore asked to indicate the extent of implementation of the identified statements on Innovation Practices. A five Point Likert scale was used where: Strongly Agree (**SA**) =5, Agree (**A**) =4, Neutral (**N**)=3, Disagree (**D**)= 2, = Strongly Disagree (**SD**)= 1. The findings are presented as shown in Table 4.11 below.

Table 4.12: Innovation Practices

Purchasing system development (IN_PSD)	SD	D	N	A	SA	M	STD
1. The organization carries out regular monitoring and evaluation of our purchasing systems and applications	84(53.2)	36(22.8)	20(12.7)	11(7)	7(4.4)	1.9	1.15
2. The organization upgrades its purchasing systems and applications to suit need requirements	82(51.9)	38(24.1)	34(21.5)	2(1.3)	2(1.3)	1.8	0.92
3. The organization ensures security of its purchasing systems as inventory control systems, ordering systems	82(51.9)	21(13.3)	31(19.6)	16(10.1)	8(5.1)	2.0	1.26
4. Our procurement activities are carried out through systems such as warehousing systems, inventory planning systems & IFMIS devoid of compromise from stakeholders	55(34.8)	77(48.7)	8(5.1)	8(5.1)	10(6.3)	2	1.09
5. Our management sets aside a budget for developing, monitoring and securing systems & applications used in procurement activities	66(41.8)	31(19.6)	37(23.4)	16(10.1)	8(5.1)	2.2	1.22
E procurement practices (IN_EPP)							
6. The organization uses web technologies in procurement processes	102(64.6)	27(17.1)	20(12.7)	7(4.4)	2(1.3)	1.6	0.96
7. The organization adopts and uses e procurement practices (e-sourcing, e-tendering, e ordering, e reverse auction) in procurement and disposals	103(65.2)	15(9.5)	20(12.7)	13(8.2)	7(4.4)	1.8	1.21
8. The organization has adequate skilled officers, resources and collaborations in implementing e procurement practices	113(71.5)	16(10.1)	23(14.6)	2(1.3)	4(2.5)	1.5	0.96

9. Our data from e procurement activities is always encrypted when being transmitted to outside parties such as customers & suppliers	46(29.1)	22(13.9)	48(30.4)	26(16.5)	16(10.1)	2.6	1.33
10. Our organization has integrated some of its procurement and disposal functions with e procurement applications	60(38)	30(19)	44(27.8)	17(10.8)	7(4.4)	2.2	1.2

Capacity building of procurement practitioners (IN_CBPP)

11. The organization carries out training programs for procurement staff on innovation practices also when adopting new innovations	116(73.4)	18(11.4)	18(11.4)	2(1.3)	4(2.5)	1.5	0.93
12. The organization carries out capacity building programs through sensitization of the procurement staff on emerging and innovative technologies in public procurement	108(68.4)	20(12.7)	16(10.1)	6(3.8)	8(5.1)	1.6	1.13
13. Procurement staffs take part in trainings on procurement and disposals by Kenya Institute of Supplies Management	20(12.7)	39(24.7)	74(46.8)	15(9.5)	10(6.3)	2.7	1.02
14. The organization supports training of staff on new and emerging procurement and disposal acts and regulations by Kenya Institute of Supplies Management	33(20.9)	59(37.3)	57(36.1)	7(4.4)	2(1.3)	2.3	0.89
15. Our organization carries out management seminars and team building to enhance on the job training	23(14.6)	56(35.4)	48(30.4)	23(14.6)	8(5.1)	2.6	1.06

ICT training (IN_ICTT)

16. The organization carries out refresher training programs on ICT tools & technologies	54(34.2)	42(26.6)	49(31)	9(5.7)	4(2.5)	2.2	1.04
17. The organization carries out regular trainings on use of Information Communication Technologies such as tools and systems i.e. computers	53(33.5)	35(22.2)	57(36.1)	4(2.5)	9(5.7)	2.2	1.12
18. Our organization recruits staff in procurement with a level of innovativeness and technology compliance	91(57.6)	33(20.9)	19(12)	10(6.3)	5(3.2)	1.8	1.09
19. Our organization has a technical section which identifies and manages training needs on ICT	37(23.4)	67(42.4)	31(19.6)	10(6.3)	13(8.2)	2.3	1.15
20. Our management sets aside a budget for training staff in procurement on innovations and new technologies	76(48.1)	16(10.1)	32(20.3)	23(14.6)	11(7)	2.2	1.36

Integration of interdepartmental functions (IN_IIF)							
21. There is timely effective communication among departments facilitating integrations	74(46.8)	46(29.1)	25(15.8)	8(5.1)	5(3.2)	1.9	1.05
22. There are cross functional & multi-disciplinary teams which support the procurement function	75(47.5)	36(22.8)	23(14.6)	20(12.7)	4(2.5)	2.0	1.17
23. There is collaboration, respect and sharing resources among chain members for departments	70(44.3)	41(25.9)	37(23.4)	5(3.2)	5(3.2)	1.9	1.05
24. There is integration of departmental activities which harmonizes requirements for procurement & disposals	92(58.2)	34(21.5)	23(14.6)	5(3.2)	4(2.5)	1.7	1
25. Departmental staffs take part in development of technical specifications in making requirements for procurements	73(46.2)	27(17.1)	31(19.6)	12(7.6)	15(9.5)	2.2	1.34

KEY: SA-Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD- Strongly Disagree, M-Mean, STD-Standard Deviation. **Source: (Field Survey, 2023)**

From the findings, majority of the respondents strongly disagreed that the organization carries out regular monitoring and evaluation of its purchasing systems and applications. At least 36(22.8%) of the respondents also disagreed on the same statement thus leading to a low mean (M=1.9, STD=.15). This implies that there was irregular monitoring and evaluation of its purchasing systems and applications. According to the majority of the respondents, 82(51.9%) the organization did not upgrade its purchasing systems and applications, which was also reflected by a low mean and standard deviation (M=1.8, STD=0.92). Furthermore, the findings show less efforts (M=2.0, STD=1.26) of ensuring security of its purchasing systems, also indicated by majority, 82(51.9%) of the respondents as well as less use (M=1.6, STD=.96) of web technologies in procurement processes, which was also indicated by majority, 102(64.6%) of the respondents who strongly disagreed.

Scanning through the results in table 4.2 show that majority of the respondents 102(64.6) strongly disagreed that their organizations use web technologies in carrying out procurements and disposal activities, with another 27(17.1). A low mean and standard deviation (M=1.6, STD=.96) further confirmed this results. Moreover. majority of the respondents, 103(65.2%) strongly disagreed that the organization adopts and uses e procurement practices (e-sourcing, e-tendering, e ordering, e reverse auction) in procurement and disposals, which was also confirmed by a low mean (M=1.8, STD=1.21) although with high standard deviation. It is further clear that public entities have no

adequate skilled officers, resources and collaborations in implementing e-procurement practices as indicated by majority of the respondents at 113(71.5%) who further strongly disagreed and a low mean (M=1.5, STD=.96). The findings also show that 46 of the respondents making 29.1% strongly disagreed that data from e procurement activities is always encrypted when being transmitted to outside parties such as customers & suppliers also confirmed by a low mean and standard deviation (M=2.6, STD=1.33). Moreover, 60 of the participants making 36% strongly disagreed that their organizations integrated some of its procurement functions with e procurement applications, confirmed by low mean and standard deviation (M=2.2, STD=1.23).

From the findings, majority of the respondents 116(73.4%) strongly disagreed that the organization carries out training programs for procurement staff on innovation practices also when adopting new innovations, which was also confirmed by a low mean and standard deviation (M=1.5, STD=.93). Majority, 108(68.4%) of the respondents strongly disagreed that the organizations carries out capacity building programs through sensitization of the procurement staff on emerging and innovative technologies in public procurement. A low mean (M=1.6, STD=1.13) was also obtained although with a high standard deviation thus showing that whereas there was less practices on capacity building indicated by majority, there were variations in the response. Majority of the respondents, 74(46.8%) remained neutral on whether they took part in training on procurement and disposals by Kenya Institute of Supplies Management, although 39(24.7%) disagreed and 20(12.7%) strongly disagreed. A low mean (M=2.7, STD=1.02) with a high standard deviation were obtained implying that whereas majority of the respondents remained neutral, there were variations from low mean with a significant percentage agreeing and a few disagreeing. From the findings, majority of the respondents, 59(37.3%) disagreed and 33(20.9%) strongly disagreed that the organization supports training of staff on new and emerging procurement and disposal acts and regulations by Kenya Institute of Supplies Management. A low mean and standard deviation (M=2.3, STD=.89) indicated there was little organizational support of training of staff. Furthermore, majority,54(34.2%) of the respondents strongly disagreed and were supported by 42(26.6%) who disagreed that the organization carries out refresher training programs on ICT tools & technologies. However, 49(31.0%) remained neutral on the statement with very few, 9(5.7%) agreeing and 4(2.5%) strongly agreeing. A low mean also confirmed the majority response thus indicating that there were little efforts by the organizations to carry out refresher training programs. Majority of the respondents at 57(36.1%) remained neutral on whether the organizations carried

out regular training on use of Information Communication Technologies such as tools and systems i.e. computers, and this was further confirmed by a low mean (M=2.2, STD=1.12) although with a high standard deviation. The results further indicate that 23.4% of participants strongly disagreed that their organizations had a technical section charged with identifying and managing ICT training needs, also supported by (M=2.3, STD=1.15).

Majority, 74(46.8%) of the respondents strongly disagreed and 46(29.1%) disagreed, it merged that there was untimely and less effective communication among departments to facilitate integrations. This was also confirmed by a low mean (M=1.9, STD=1.05). Moreover, majority, 91(57.6%) of the respondents strongly disagreed and were supported by 33(20.9%) who disagreed that ICT training and Development improved supply chain performance. This was also confirmed by a low mean (M=1.8, STD=1.09) although with a high standard deviation. From the findings, majority, 75(47.5%) of the respondents strongly disagreed that there are cross functional & multi-disciplinary teams which support the procurement function, which was also confirmed by a low mean (M=2.0, STD=1.17). Finally, majority, 70(44.3%) of the respondents strongly disagreed and were supported by 41(25.9%) who disagreed that collaboration, respect sharing resources among chain members. This was also confirmed by a low mean (M=1.9, STD=1.05) although with a high standard deviation implying high variation in the response.

4.5.2 Summary Results on Innovation Practices

Further findings were presented to compare the means across the five innovation practices using means and standard deviations. The findings are presented as shown in Table 4.12 below.

Table 4.13: Summary Findings of Innovation Practices

Innovation Practices	Mean	STD
Purchasing systems development (PSD)	2.16	0.92
E procurement practices (EPP)	1.92	0.90
Capacity building of procurement practitioners (CBPP)	2.29	0.64
ICT training (ICT-T)	2.28	0.78
Integration of interdepartmental functions (IIF)	2.31	0.80
Overall Mean Innovation Practices	2.19	0.11

Source: (Field Survey, 2023)

From the findings presented in Table 4.12, the highest rated (M=2.31, STD=.80) innovation practice was Integration of interdepartmental functions. The second was Capacity building of procurement practitioners (M=2.29, STD=.64) followed by ICT training (M=2.28, STD=.78), Purchasing systems development (M=2.16, STD=.92) and finally E procurement practices (M=1.92, STD=.90). The overall mean and standard deviation were low (M=2.19, STD=.11) implying that there was little practice of innovation among the public organizations. Findings of the current study resonates with the results of a Zimbabwean case in which Mabhodha & Choga (2018) used the Technology Acceptance Model (TAM) theory to study the impact of ICT practices on procurement process in the urban councils of Zimbabwe. A quota sampling technique to select respondents of the study drawn from 3 key departments of the councils (procurement, works and finance). In resonance with the current study depicting low use of innovativeness in public procurement in a Kenyan case, Mabhodha & Choga (2018) revealed that the adoption and use of ICT in procurement processes is at low levels, though positive and significant to procurement process success. Additionally, it was shown that adoption and use of ICT in public procurement not only improves procurement processes but also compliments other key firm operations such as administrative and financial practices. Technological practices such as ICT training, resources availability and firm management are critical success factors for a procurement process.

The finding of the study on low adoption and use of technologies and innovativeness in public procurement show coherence with findings by Weeks & Namusonge (2016) who looked at the influence of ICT on procurement performance of public universities by considering 8 campuses of Jomo Kenyatta University of Agriculture and Technology (JKUAT). Target respondents comprised 41 procurement officers and directors of the campuses, where a questionnaire collected data from the procurement officers and interview schedules guided the collection from the directors of campuses. The results of this study disclosed that ICT practices had a positive and significant effect of procurement performance of public universities even though its use and adoption was low in procurement practices in the university.

4.5.3 Effect of Innovation Practices on Supply Chain Performance of Public Entities in Kenya

The second objective of the study was to ascertain the effect of Innovation Practices (IP) on performance of public entities in Kenya. In order to establish the effect of Innovation Practices

(moderating variable) on Supply Chain Performance (Dependent Variable) of Public Entities in Kenya, a standard multiple regression model was carried out.

Firstly, a correlation between innovation practices and supply chain performance was carried in order to establish whether innovations were associated with performance. Pearson correlation coefficient was adopted and results presented as shown in table 4.14

Table 4.14: Correlation between Innovation Practices & Supply Chain performance

		Mean SCP	Mean IN_PSD	Mean IN_EPP	Mean IN_CBPP	Mean IN_ICTT	Mean IN_IIF
		Correlations					
Mean SCP	Pearson Correlation	1	.590**	.469**	.583**	.436**	.535**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	158	158	158	158	158	158
Mean IN_PSD	Pearson Correlation	.590**	1	.373**	.347**	.254**	.460**
	Sig. (2-tailed)	.000		.000	.000	.001	.000
	N	158	158	158	158	158	158
Mean IN_EPP	Pearson Correlation	.469**	.373**	1	.350**	.367**	.311**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	158	158	158	158	158	158
Mean IN_CBPP	Pearson Correlation	.583**	.347**	.350**	1	.509**	.479**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	158	158	158	158	158	158
Mean IN_ICTT	Pearson Correlation	.436**	.254**	.367**	.509**	1	.494**
	Sig. (2-tailed)	.000	.001	.000	.000		.000
	N	158	158	158	158	158	158
Mean IN_IIF	Pearson Correlation	.535**	.460**	.311**	.479**	.494**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	158	158	158	158	158	158

**. Correlation is significant at the 0.01 level (2-tailed). *(Source: Field Survey Data, 2023)*

A scan through the finings above indicates innovation practices have a positive significant correlation with supply chain performance. The highest correlation was between supply chain performance and purchasing systems development, PSD which was positive and significant (r=

0.590, p<.01) while the lowest was ICT training & development, ICTT (r= 0.436, p<.01) which was also positive. All the other elements of innovativeness in public procurement were positive and significantly correlated with performance as shown in the table above.

Subsequently, supply chain performance was regressed against innovation practices subscales using equation 4.2 modeled in the following form:

$$Y_i = \beta_0 + \beta_1 X_{21i} + \beta_2 X_{22i} + \beta_3 X_{23i} + \beta_4 X_{24i} + \beta_5 X_{25i} + \varepsilon_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. (3.2)$$

The findings are presented as shown in Table 4.13 and subsequently modelled in equation 4.2

Table 4.15: Model results on effect of Innovation Practices on Supply Chain Performance of Public Entities

				Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.750[a]	.562	.548	.33211	.562	39.016	5	152	.000

a. Predictors: (Constant), Mean IN_IIF, Mean IN_EPP, Mean IN_PSD, Mean IN_CBPP, Mean IN_ICTT

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
	(Constant)	1.023	.110		9.291	.000		
1	PSD	.181	.034	.336	5.302	.000	.718	1.393
	EPP	.092	.034	.168	2.746	.007	.768	1.302
	CBPP	.237	.052	.305	4.563	.000	.644	1.552
	ICTT	.037	.043	.058	.866	.388	.632	1.582
	IIF	.095	.043	.153	2.208	.029	.604	1.657

a. Dependent Variable: Mean SCP

*KEY: PSD- Purchasing systems development, EPP- E procurement practices, CBPP- Capacity building of procurement practitioners, ICTT- ICT training, IIF- Integration of interdepartmental functions. (**Source: Field Survey Data, 2023**)*

The findings in Table 4.13 shows that innovation practices were highly correlated with performance of public entities (R=.750) which implies that in general, there is an association between the mean innovation practices and performance of public entities. Squaring this value, we

obtain the R Square value (R Square=.562) which is the coefficient of determination. This is the variation in performance accounted for by innovation practices. Multiplying this value by 100 percent, we get 56.2%, which is the percentage variance in supply chain performance of public entities that is accounted for by the innovation practices. When this value is controlled for the overestimation through shrinkage process, we get a slightly lower R square value, termed as the adjusted R square value (Adjusted R square value=.548) that reflects the true population variance. A keen examination of the F statistics, that is $F_{(5, 152)} =39.016$ reveals that these findings were significant at both 0.05 p value as well as 0.01, implying the sample data provides sufficient evidence to conclude that the regression model (consisting of the innovation practices predictor variables) fits the data better than the model with no independent variables. Therefore, the five explanatory variables improve the model fit. However, one weakness of this result is that as much as the sample provides sufficient evidence to conclude that the model is significant, it is not enough to conclude that the individual explanatory subscale of innovation practices is significant. The study therefore examined the model coefficients in order to compare the t-statistic and p value significance for purposes of examining the significance of each of these predictors.

In the results, standardized scores were used for comparison purposes. Using standardized regression coefficients, the findings shows that purchasing system development (β=.336, p<.05) had the largest effect on supply chain performance, the next was capacity building of professional practitioners (β=.305, p<.05). E-procurement practices (β=.168, p<.05) and integration of interdepartmental functions also positively contributed to supply chain performance of public entities. However, ICT training did not significantly contribute to supply chain performance of public entities.

The implications of these findings are that starting with the purchasing systems development, for every unit improvement in purchasing systems development, supply chain performance improves by a magnitude of 0.336. Similarly, every unit improvement in E procurement practices, Capacity building of procurement practitioners, ICT training and Integration of interdepartmental functions results in improvement in performance by magnitudes of 0.168, 0.305, 0.058 and 0.153 respectively. All the explanatories are therefore important except for the ICT training. The t-values correspond to each of the p values, therefore the larger the t value, the more significant the standardized coefficient of the innovations practices exploratory. This means that from the five

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subscales, four are significant with t values 2 or more. Therefore, it can be noted that ICT training did not align well with performance in supply chain. However, in general innovation practices have positive and significant effect on supply chain performance among the public entities.

This is also represented as shown in the equation model using the unstandardized coefficients. The unstandardized coefficients give information on each of the subscales of innovation practices while holding other subscales constant. The intercept term is the constant term that gives performance in supply chain without including other predictors in the model. The model results are presented as shown in equation 4.2 below.

$$Y = 1.023 + 0.181 X_{PSD} + 0.092 X_{EPP} + 0.237 X_{CBPP} + 0.037 X_{ICTT} + 0.095 X_{IIF} \textbf{...................(4.2)}$$

The constant term (1.023) unit implies that there would still be a positive performance in supply chain without including the innovations practices. Improving purchasing systems development by one unit while holding all other variables constant improves supply chain performance by a magnitude of 0.181 units. Consequently, inclusion of e-procurement practices while holding other practices constant improves supply chain performance by 0.092 units, inclusion of Capacity building & training of practitioners while holding other practices constant improves supply chain performance by 0.237 units, 0.037 units in SCP due to ICT training and 0.095 units in SCP due to Integration of interdepartmental functions. It can thus be noted that innovation practices improve supply chain performance for public entities. In practice, if public entities were to increase the development of their purchasing systems, increase the capacity of their procurement practitioners through trainings, increase the use of e procurements, improve the trainings in ICT and increase the integration of department functions, performance of their supply chains would improve.

The results of current study support positions of other prior studies. Gu *et al*. (2016) used a sample of 206 manufacturers of Chinese manufacturing firms to show that technologies and innovations such as supplier information technology exploitative use, supplier IT explorative use, customer IT exploitative use, customer IT explorative use and supplier resilience have a positive significant effect and can help manufacturing firms better their results. Study advised stakeholders in manufacturing firms to exhaustively improve the adoption and utilization of technologies and innovations as this posed the potential to improve their performance.

Findings of the study conform to the findings by Incea *et al.*, (2016) who by an extensive search of literature, developed a framework that assessed the relationship between technology innovation capabilities, absorptive capacities and firm innovativeness. The study found out that absorptive capacity has a positive relationship with technology innovation, technology innovation has a positive relationship with firm innovativeness and absorptive capacity has a positive relationship with firm innovativeness. For a firm to be innovative, then it must possess absorptive capacity and an infrastructure of technologies and this would improve their performance.

Alves *et al.,* (2018) in a bibliometric search and review of literature on a sample of 460 academic articles which were published between the years 2006-2017 and which were indexed in the web science also agreed with findings of the study that innovations in organizations is influenced by learning and evolution, innovation implementation and leadership, creativity and learning innovation. These are antecedents of achieving higher organizational values. As a future endeavor, the writers opined that researchers will be approaching and adopting innovations as tools for resource developments, human resourcing and for building capabilities of learning and knowledge.

It is also worth to note that the findings remain anchored strongly on the Technology, Organization, Environment, TOE, framework model. According to the theory, adoption and use of innovations in form of technology may depend on the Organization, its technology capability and the environment of operation as envisaged by the TOE model, which is likely to improve performance. The study shows that innovations in public procurement, specifically development of systems used in public procurement, adopting e procurement practices, capacity building of practitioners through trainings to enhance professionalism, ICT training of practitioners to abreast with changing technology and integrating departmental functions to harmonize requirements for procurements improves supply chain performance. Previous works failed to adopt this elements of innovativeness (David & Grobler, 2019; Abdullahi *et al.,* 2019; Haabazoka, 2018; Okpalaoka *et al.*, 2022) while majority of reviewed studies were reviews (Gu *et al.*, 2016; Incea *et al.,* 2016; Alves, *et al.,* 2018), yet others did not consider procurement professionals as sample frames (Adeyeyetolulope, 2019; Chege *et al.*, 2019).

4.6 Summary Models

4.6.1 Summary Model on the Effect of Procurement Legal Framework Implementation on Supply Chain Performance of Public Entities

The first step entailed analysis of a simple linear regression of supply chain performance on procurement legal framework implementation. This was done using a mean scales of the variables, whereby the mean supply chain performance and the mean of procurement legal framework implementation were used. The findings are presented as shown in Table 4.14.

Table 4.16: Summary Model on the Effect of Procurement Legal Framework Implementation on Performance of Public Entities

					Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.708ᵃ	.502	.499	.34965	.502	157.121	1	156	.000

a. Predictors: (Constant), Mean PLFI

			Coefficientsᵃ					
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.315	.172		1.838	.068		
	Mean PLFI	.917	.073	.708	12.535	.000	1.000	1.000

a. Dependent Variable: Mean SCP

KEY: PLFI-Procurement Legal Framework Implementation, SCP-Supply Chain Performance. **Source: (Field Survey, 2023)**

Results in Table 4.14 shows there is a correlation between supply chain performance and procurement legal implementation framework implementation (R=.708). This means that there is an association between a combination (mean) of all the subscales (constructs) of procurement legal framework implementation and mean subscales of supply chain performance. Furthermore, procurement legal framework implementation accounted for 50.2% variance in supply chain performance as shown by (R^2=.502), which was statistically significant, $F (1, 156)$ =157.121, $p<.05$, implying that the findings are not by chance but represents a good model fit. It is also worth to note that at a threshold p value of 0.05, there is sufficient evidence of significant variance. Findings using standardized model coefficients indicate that procurement legal framework

implementation had a positive and significant effect on supply chain performance of public entities (β=.708, p<.05). This means that each unit improvement in procurement legal framework implementation leads to improvement in supply chain performance by a magnitude of 0.708 units. Such a magnitude is high and implies that procurement legal framework implementation is a good predictor of supply chain performance and hence explains much of the variance. The remaining less than 50% of variance that is 49.8% could be explicated by other constructs outside the model. The results are represented in the second model as shown in equation below using unstandardized model coefficients.

$$Y = 0.315 + 0.917 X_{PLFI} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots..(4.4)$$

In which y indicates the mean scale of supply chain performance (outcome variable), 0.315 indicates the intercept, that is the magnitude of supply chain performance that increases without including any explanatory variable in the model. The 0.917 units is the magnitude of increase in supply chain performance as a result of improving procurement legal implementation framework implementation while keeping all other variables constant.

The R square value (R^2=0.502) and the standardized coefficient results (β=.708, p<.05) is a sufficient clear indication that implementation of procurement legal framework which spans the acts, regulations and orders guiding public procurement has a significant positive effect on the supply chain performance, explaining 50.2% variance in the performance. The effect of procurement legal framework implementation on supply chain performance evidence mixed results in comparison to prior studies. Shatta *et al*., (2020) for instance, sought to establish the influence of procurement legal framework towards adoption of e-procurement in a developing country, Tanzania. This study purposively selected 157 respondents through a cross sectional survey design. Their findings supported assertions that procurement legal framework can improve performance by showing that in the presence of performance expectations, attitude and relative advantage, procurement legal framework indirectly influences adoption of an e procurement model platform that in turn reduces costs and delays which are important values of firm performance.

Kanyaru & Moronge (2017) in a Kenyan case, also showed support of the position that implementing procurement laws improve performance by surveying 80 employees of Judicial Service Commission to study: Public Procurement Legal Framework and Performance of Public

Institutions in the Judicial Service Commission. Anchored in principal agent and legitimacy theories, the writers concluded that PPAD Act 2015 and policy formulations by the executive (orders and decrees) are the main determinants of procurement legal framework which significantly improves performance.

The findings of current study align with the findings by Panya & Were (2018) who investigated public procurement regulatory compliance and the performance of County Governments in Kenya by using descriptive research design. This study sampled 105 respondents made up of procurement officers in the county assembly, governor's office, county ministries, the sub county referral and sub county hospitals and also Chief officers of departments. Compliance to public procurement regulations showed positive significant effect on performance and specifically, management of the procurement process, ethics in procurement, contract management and cost of finance management highly determines compliance to public procurement regulations.

The effect of procurement legal framework implementation on performance results also disagrees with other empirical evidence. Cantera (2021) showed that difference in management models and leadership styles was responsible for poor adoption and use of public procurement rules in Spain's community metropolis and this brought poor service delivery in public bus transport services. This study opined that since management of community bus transport services were different, this brought about discrimination in application of procurement rules, ensuing poor service delivery. In a nutshell, Cantera recorded that even though Spain is guided by a common procurement law, implementation if this law, hitherto, does not improve performance in the public bus transport due to differences in management and leadership in the towns.

In agreement with Cantera (2021) assertions, Mutangili (2019) from a Kenyan perspective and through a somber search of literature on public procurement and corruption, reported that Kenya is a bed rose of corruption when it comes to public procurement, the country loosing Ksh. 608 billion every year which translates to 7.8% of the GDP. This study also disclosed that procurement processes and regulations have not been effective in combatting corruption since violators of the laws often do not comply to the laws, coupled with weak enforcement mechanisms. Management aspects spanning from political, economic, social and cultural practices are the main causes of corruption in public procurement. Mutangili recommended that transparency & fairness should be

harnessed and policies on stiffer penalties for violators of regulations in order to reduce corruption in public procurement.

Adewole (2014) studying governance reforms & challenges of implementing public procurement law in Nigerian state & local governments also argued that the public procurement law has not borne fruits in raising performance levels, especially in Nigerian states and local governments. The target population comprised 36 states and 774 local governments. It was reported that different public organizations in Nigeria state and local governments were implementing the procurement laws differently, bringing no achievements in terms of transparency, openness, fairness and competitiveness. This study listed lack of political goodwill, lack of compelling & enforcing autonomous institutions, infiltrating corruption, citizens' refusal to demand accountability and take part in political processes as the main factors for poor implementation of the procurement law that stifled performance of Nigeria state & local governments.

In the same vein, Giosa (2020) agreed to the results by Thanh *et al*., (2018) and suggested that framework agreements which guide procurement practices in European public procurement markets are breeding grounds for collusive tendering and bid rigging. This study used secondary data on drawn from publications and website of European countries to demonstrate that framework agreements guiding public procurement have loopholes which make them susceptible to bid rigging and collusive tendering, including the closed nature of the framework agreements and competition based on price at the call off stage of tendering. The study recommended establishing irregularity between the number of suppliers & number of call-offs, variation of call off methods use of the use of Most Economically Available Tender (MEAT) method to avert the weaknesses.

4.6.2 Summary Model on Effect of Innovation Practices on Supply Chain Performance of Public Entities in Kenya

The second step consisted of the Innovation Practices as the predictor of supply chain performance. In this case, the mean scale of innovation practices was regressed against the mean scale of supply chain performance using a simple linear regression model. The findings are presented as shown in Table 4.15 below.

Table 4.17: Summary Model results on effect of Innovation Practices on Performance of Public Entities in Kenya

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
						Change Statistics			
1	.649[a]	.422	.418	.37672	.422	113.744	1	156	.000

a. Predictors: (Constant), Mean Innovation Practices

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.028	.135		7.590	.000		
	Mean Innovation Practices	.604	.057	.649	10.665	.000	1.000	1.000

a. Dependent Variable: Mean SCP

(Source: Field Survey Data, 2023)

From the findings, Innovation Practices has a positive correlation with supply chain performance as shown by the R value (R= 0.649). This means that there is an association between a combination (mean) of the subscales of innovation practices and mean of the subscales of supply chain performance. Furthermore, it is clear that innovation practices accounts for 42.2% variance in supply chain performance, (R^2 =0.422) which is also significant, F (1, 156) =113.744, p<.05, at threshold probability value (p-value) of 0.05. The threshold P- value (P<0.05) is sufficient evidence of significant variance. In addition, the findings using the model standardized coefficient results shows that innovation practices have a positive and significant effect on supply chain performance (β=0.649, p<0.05). The results imply that for every unit increase in adoption and use of innovation practices, supply chain performance improves by a magnitude of 0.649 units. This magnitude is high, implying that innovation practices are a good predictor of supply chain performance and explains much of its variance This is represented in the model as below;

$$Y = 1.028 + 0.604 X_{IP} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(4.5)$$

In which Y denotes the mean supply chain performance (the response variable), 1.028 is the intercept, the magnitude of supply chain performance which increases without including any explanatory variable in the model. 0.6024 units indicates the magnitude of increase in supply chain

performance as a result of improving adoption and use of innovation practices by keeping all other factors constant.

The R square value (R^2=0.422) and the standardized model coefficient (β=0.649, $p<0.05$) is sufficient evidence to conclude that innovation practices have a positive and significant effect and explains a considerable variance of 42.2% in supply chain performance of the public entities in Kenya. In practice, this results infer that by a unit increase in adoption and use of innovation practices, performance of the supply chains would increase by 0.649 units. On the same note, a change in supply chain performance by 42.2% is accounted for by the adoption and use of innovation practices, the remaining 57.8% explained by other factors not considered in the study. Innovations such as training of procurement practitioners in ICT, adoption and use of e procurement practices, building capacity of procurement practitioners by continuous professional trainings, adopting, securing & developing systems used in public procurement practices are important in ensuring the alleviation of supply chains performance.

The results of current study support positions of other prior studies. Cerne *et al*., (2015) who modelled the relationship between technological innovation, management innovation and financial performance of three countries; Slovenia, South Korea and Spain. The study collected primary data in the three countries which were analyzed by structural equation modelling. It is acknowledged that previous evidence in literature on innovations was focused on changes in technology, improving technology and changes in management structures. The view that innovations had to be changes in technology or improvements in technology has been documented in majority of the studies. Study showed that management innovations affects financial performance and that innovations, not just technologies, must be attuned to management in order to improve financial performance.

Likewise, the findings by Kiani *et al*., (2021), studying top managers and CEOs in Chinese SMEs showed that entrepreneurial passion of managers in SMEs improves innovativeness. The writers link innovativeness with the ability for managers to be entrepreneurial. If managers are entrepreneurial, there will be marked innovativeness in the firms and this in turn, will improve profit levels. This study used a structured questionnaire to collect data from 400 SME firms published in the directorate of technology firms of Guangdong province in China. Writers also established that the firm's entrepreneurial orientation has a significant mediating effect on the

relationship between managers' entrepreneurial passion and technology innovation; the CEOs entrepreneurial passion was found to be a significant predictor of firm orientations.

In an African context, results of the study agree with the findings by Donbesuur *et al.*, (2020) who showed that both technological and organizational innovations improve performance. The writers used a questionnaire to obtain data from 730 respondents made up of finance officers, business owners, global business managers as well as research, innovation and development officers. Based on the institutional and dynamic capability theories, the study posits that innovations (both technological and organization) have an effect on performance and this is contingent on the domestic institutional factors. Domestic institutional environment, specifically enforceability and specificity improve the effect of innovations on SMEs international performance.

David & Grobler (2019) also recorded evidence that agrees with findings of the current study. Their study used secondary data generated from 21, 601 agricultural households in South Africa and was anchored on endogenous growth, innovation & technological theories. This study recognized that even though South Africa's economy is the second largest in Africa and one of the largest suppliers of food products on the African continent, 80% of households are not involved in agricultural production activities. This study examined the relationship between ICT and farming productions. Results showed that technologies, communications and innovations such as internet use, telephone use positively and significantly affect agricultural production by the households. Land accessibility was found to pose an indirect significant relationship with food production by the households. The conclusion of the study was that land accessibility is a big obstacle to farming activities in South Africa, therefore ICT innovations may be impossible due to lack of farming land.

Consistent with this study findings, Abdullahi *et al*., (2019) studied the Impact of ICT on productivity in the banking industry in Nigeria by using a questionnaire and purposively selecting 140 participants of 3 bank branches. A descriptive survey design and multiple regression analysis was adopted in the survey study. The results indicated that Information Communication Technology elements (software component, hardware component, internet) have a positive and significant effect on bank productivity. The writers recommended that the banking industry to continuously adopt the use of modernized hardware, software and current internet infrastructure to in order to improve their productivity.

The study by Haabazoka (2018) on the effect of technological innovation on performance of commercial banks in Zambia records findings which are congruent to this study. Haabazoka used secondary data of 19 Zambian commercial banks, with technologies operationalized as internet banking, ATM, and mobile banking transactions. The secondary data obtained was based on a 4-year period, analyzed through descriptive and regression means by help of SPSS software. The results showed that technological innovations positively and significantly affected bank performance. However, only internet banking transaction was found to have a weak relationship with performance.

In conformance to the present study findings, the results by Chege *et al.*, (2019) in a Kenyan perspective used a random sampling technique to select 297 small scale famers and SMEs in Tharaka Nithi County to establish the impact of IT innovation on organization performance. The results of this study showed technology innovation has a positive and significant effect on organization performance. If entrepreneurs and small scale farmers adopt innovative strategies in their business, marked improvements in terms of profit levels and sales volumes would be realized.

Findings of the study relate with the findings by Muriuki (2021) who used different designs (descriptive survey and correlational designs) in a survey of energy sector state corporation with 211 participants chosen through random sampling to show that ICT has a positive and significant effect on performance. This study was carried out in the energy sector state corporations, with a questionnaire used as main research instrument. Factor and multiple regression analysis was used as main analytical technique. Specifically, the study inferred that communication technology, application software, information technology, e procurement policy, and e-procurement technical support staff improves procurement performance. The writer advised stakeholders in the energy sector state corporations to consider regular ICT training, alignment of e procurement policies with the current practices as well as the adoption and use of contract management and spend analysis programs in public procurement.

4.6.3 Summary model on moderating effect of innovation practices on the relationship between procurement legal framework implementation and supply chain performance

In order to determine the moderating effect of Innovation Practices (moderating variable) on the relationship between Procurement Legal Framework Implementation and Supply Chain

Performance of Public Entities in Kenya (Third objective; Hypothesis 3), a hierarchical regression model was adopted as shown in equation 3.3 and modeled as follows;

$$Y_i = \beta_0 + \beta_1 X_{1i} + \varepsilon_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4.3)$$

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_m M_i + \varepsilon_i$$

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_m M_i + \beta_m M_i X_{1i} + \varepsilon_i$$

This was guided by a null hypothesis, *H$_{03}$: Innovation practices has no moderating effect on the relationship between procurement legal framework implementation and supply chain performance of public entities in Kenya*. The findings are presented as shown in Table 4.18.

Table 4.18: Model results on moderating effect of Innovation Practices on the Relationship Between Procurement Legal Framework Implementation and Supply Chain Performance

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.708[a]	.502	.499	.34965	.502	157.121	1	156	.000
2	.812[b]	.659	.654	.29031	.157	71.291	1	155	.000
3	.877[c]	.769	.764	.23980	.110	73.185	1	154	.000

a. Predictors: (Constant), PLFI
b. Predictors: (Constant), PLFI, IP
c. Predictors: (Constant), PLFI, IP, IT

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.315	.172		1.838	.068		
	PLFI	.917	.073	.708	12.535	.000	1.000	1.000
2	(Constant)	-.099	.151		-.655	.513		
	PLFI	.689	.066	.533	10.377	.000	.836	1.197
	IP	.403	.048	.433	8.443	.000	.836	1.197
3	(Constant)	-.228	.125		-1.816	.071		
	PLFI	.834	.057	.645	14.527	.000	.763	1.311
	IP	.533	.042	.573	12.611	.000	.728	1.374
	IT	.107	.013	.393	8.555	.000	.711	1.406

a. Dependent Variable: SCP

KEY: PLFI- Procurement Legal Framework Implementation, SCP- Supply Chain Performance, IP-Innovation Practices, IT-Interaction Term. (Source: Field Survey Data, 2023)

The findings in Table 4.16 shows there exists a positive correlation in Procurement Legal Framework Implementation and Supply Chain Performance as shown by (R=.708). The results further show that there is a positive correlation between combined Procurement Legal Framework

Implementation, Innovation Practices and Performance (R=.812). In the same vein, the results indicate a positive correlation between combined Procurement Legal Framework Implementation, Innovation Practices, the Interaction Term and Supply Chain Performance (R=.877). Examining the R^2 values, the findings shows that Procurement Legal Framework Implementation accounted for 50.2% variance in Supply Chain Performance (R^2=.502) which was significant, F (1, 156) =157.121, p<.05. When Innovation Practices were included in the model, the resulting R^2 value was (R^2=.659) which was also significant, F (1,155) =71.291, p<.05. This implies that both Procurement Legal Framework Implementation and Innovation Practices accounted for 65.9% variance in supply chain performance. However, subtracting the variance accounted for by Procurement Legal Framework Implementation from the one accounted for by both Procurement Legal Framework Implementation and Innovation practices, the result is 15.7% variance as indicated by R square change (R^2=.157). This implies that in the moderation process, Innovation Practices add value of 15.7% variance in supply chain performance, which is significant (p<.05) Finally, when the interaction term was included in the model, the total variance in supply chain performance explained by the three predictors was 76.9 percent (R^2=.769) which was also significant, F (1, 154) =73.185, p<.05. From the results, the net variance in performance accounted for by the interaction term was 11.0 percent as shown by R square change (R^2=.110) and significant (p<.05). This implies that innovation practices significantly moderated the relationship between Procurement Legal Framework Implementation and Supply Chain Performance, agreeing with Field (2005) who discussed that presence of an R^2 change in interacting model denotes presence of moderation effects

Further findings using the model coefficients are presented in Table 4.18. Observing standardized model coefficients, it is clear that Procurement Legal Framework Implementation had a significant positive effect on Supply Chain Performance (β=.708, p<.05). When the mean innovation practices subscale was added to the model, it also had a positive significant effect on supply chain performance (β=.433, p<.05), even though the significant effect of PLFI reduced from β=.708 to (β=.533, p<.05).

Finally, the interaction term was added to the model, and the results show it had a positive significant effect on the relationship between Procurement Legal Framework Implementation and Supply Chain Performance (β=.393, p<.05). Practically, this denotes that unit increase in adoption

of innovation practices in public procurement results to 0.393 units increase in interaction between procurement laws implementation and supply chain performance. On inclusion of the interaction term in the model, the effect of procurement legal framework implementation on performance increased (β=.645, p<.05) and was also significant. The effect of innovation practices on performance also increased and was significant (β=.573, p<.05). The constant term (β=-.228, p>.05) of the interaction model denotes the magnitude of supply chain performance which decreases without including any explanatory variable in the model. The constant coefficient is not significant. This implies that at no implementation of procurement laws and adoption of innovativeness in public procurement, performance of supply chains would decrease.

Observing the significant positive contribution of the interaction term (β=.393, p<.05) on Supply Chain Performance, it is concluded that innovation practices positively moderates the relationship between Procurement Legal Framework Implementation and Supply Chain Performance. Thus we reject the null hypothesis:

H$_{03}$: *Innovation practices has no moderating effect on the relationship between procurement legal framework implementation and supply chain performance of public entities in Kenya*

and adopt an alternative hypothesis which suggests a significant moderation of innovation practices.

The model is thus fitted as below;

$$Y = 0.315 + 0.917X_{PLFI} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (4.3)$$

$$Y = -0.099 + 0.689X_{PLFI} + 0.403M_{IP}$$

$$Y = -0.228 + 0.834X_{PLFI} + 0.533M_{IP} + 0.107MX_{IT}$$

The R^2 value of the interaction term (R^2=.110) and the standardized model coefficient of the interaction term (β=.393, p<.05) is sufficient evidence (Field, 2005; Baron & Kenny, 1986) to conclude that Innovation Practices significantly moderates the relationship between procurement legal framework implementation and supply chain performance in the public entities. The results show that 11.0% variance in the relationship between procurement legal framework implementation and supply chain performance is accounted for by innovation practices, the remaining 89% accounted for by other factors not included in the model. In practice, the findings postulate that interaction of procurement laws implementation and innovativeness in public

procurement practices would realize remarkable improvement in supply chains performance. Thus, where stakeholders of public entities adopt more innovative ways of implementing procurement laws, this would in no doubt result in improved results (better quality of supplies, effective costs of procurement and timeliness in procurements and disposals).

Innovativeness when implementing procurement laws such as: (1) Continuous development of systems used in procurement such that violators of procurement laws do not abet the systems to activate unscrupulous deals. (2) Adopting e procurement practices such as e negotiations, e market surveys, e tendering, e sourcing, e informing such that the 'pen and paper' mantra which is prone to manipulations of laws is reduced. (3) Capacity building and awareness creation for practitioners of public procurement in order to keep abreast with changing laws & regulations & instilling professionalism (4) ICT trainings for stakeholders of public procurement to keep abreast with changing business environments and new tricks by violators of the law (5) Integration of interdepartmental function requirements such that aggregations are more visible & avoiding intentional lotting. These innovations, coupled with effective and 'religious' implementation of procurement laws will ensure achievement of higher values in supply chain firms. When individual procurement practitioners are innovative in implementing the law, then higher results will be achieved, however if implementation is only based on the 'pen and paper' as how it is stipulated, then public procurement can be a cancer and result into loss of public resources.

The findings of the study are in alignment with establishments of the Public Value Theory (Moore, 1995). The theory establishes that managers in the public domain who work for the common good of citizens must mitigate constraints and utilize resources in order to realize added value in their outcomes. Public organizations can give value to their society by adopting and utilizing available resources. In doing so, Moore (1995) cautions that managers in such firms, who are agents of the government must be entrepreneurial and evolve 'new ways' of doing things. Without being entrepreneurial and coming up with new ways in common firm practices, Moore says that the added value that the common citizenry is supposed to enjoy will not be realized since available resources will only be utilized in the normal ways. Not alone, PVT also principles that managers must give opportunity to employees at all levels to suggest new ways about how to achieve added and values and improve results. This in turn will reduce social ills in a firm such as corruption, poor quality and delays which are normally caused by individual employees or group schemes.

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Therefore, Moore suggests that the role of managers (authorizing environment) is not only to make decisions and do managerial roles, but deriving new opportunities and ways about how added public value outcome will be achieved. In achieving this the managers must define the operation capacity (resources of the firm) to be utilized so as to achieve public value outcomes (improved performance)
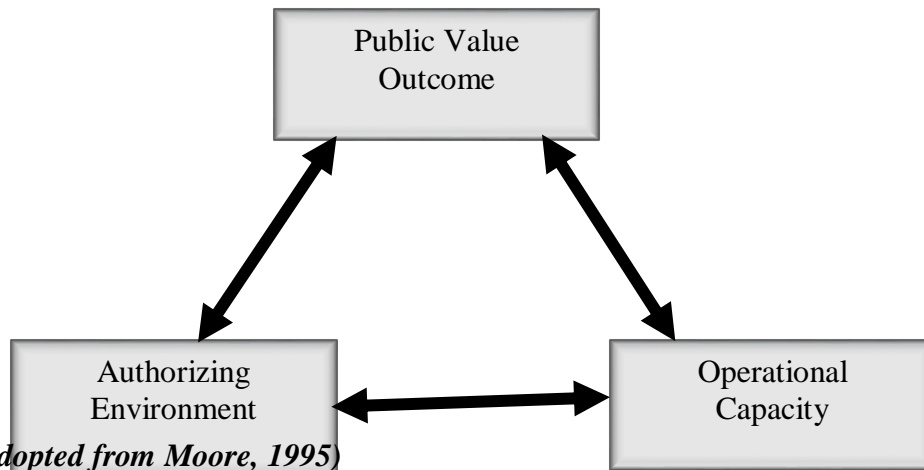
Figure 4.1: **Moore Theory Establishment**

In agreement, the study demonstrates that when public entities adopt more innovative ways of implementing procurement laws and regulations, then this will achieve higher values in terms of improved performance. Stakeholders in public procurement must come to the realization that it is not just implementing procurement laws as established, but implementing procurement laws innovatively. Thus, the role of managers, in this case procurement managers, extends beyond scope of simply implementing procurement laws, but devising new ways of better implementing the laws. Managers, as the authorizing environment agents, must allow individual practitioners an autonomy and independence to suggest new ways of implementation of the laws using the operational capacities, in this resources (procurement laws & regulations and technologies) for this will result in improvements in performance (added public values)

Public Value Outcome		
-Improvement in supply chain performance- better quality, cost effectiveness, timeliness in procurements & disposals		

Authorizing Environment	**Operational Capacity**
-Procurement Managers	-Resources of the firm-available procurement laws & regulations, technologies & systems
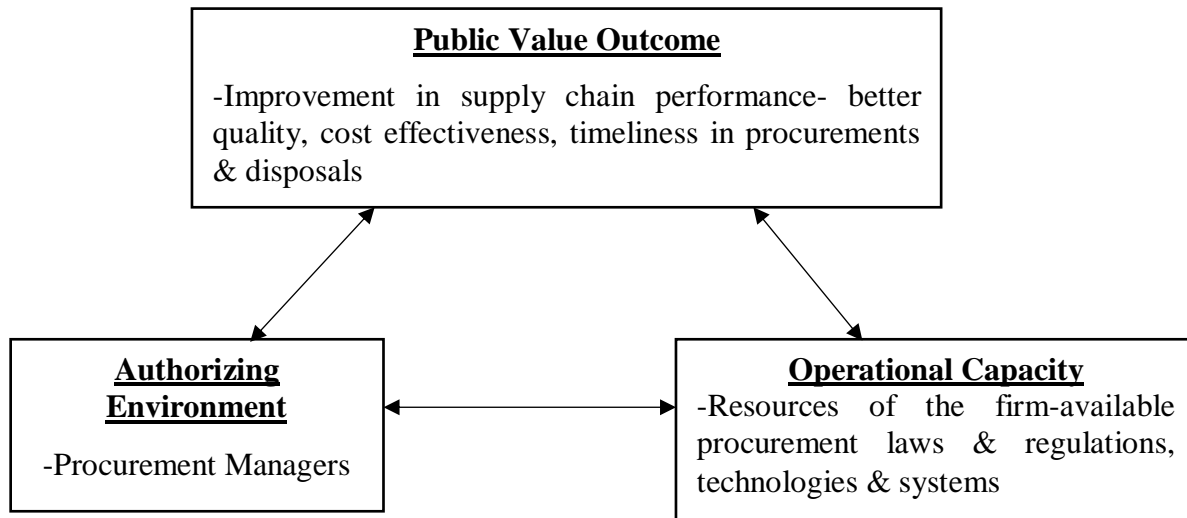
Figure 4.2: Theory Modeling
Source: (Self Modelling; 2023)

The findings confirm positions of other prior studies. Nyambura (2018) for instance, in an attempt to investigate moderating effect of ICT on supply chain risks and performance of manufacturing firms, the researcher surveyed 76 firms in Nairobi which were registered by the Kenya Association of Manufacturers (KAM). This study found out that ICT moderated the relationship between one study variable (organization characteristics) and performance but jointly moderated the relationship between supply chain risks and performance of manufacturing firms.

In a relatedly similar study, findings of the current study show consonance with the findings by Marendi (2015), who advised stakeholders in the public procurement sector to enforce implementation of procurement laws and regulations in order to realize improved results. By using elements of the legal framework prior to promulgation of the new constitution (PPD Act 2005; PPD Regulations 2006; PPP Regulations 2009), the writer argued that enforcement mechanisms in public procurement practices such as compliance audits, compliance levels and review periods can improve the relationship between procurement legal framework and organizational performance since enforcements significantly moderated the relationship.

In the same vein, Awiti *et al*. (2020) focusing on change management and organizational performance of the companies listed in Nairobi Securities Exchange (NSE), determined moderating effect of technology on change management and performance. The study surveyed 38

listed firms which were arrived at purposively, with senior managers of key departments of the companies used as analysis units (CEOs, Human Resource Managers, Finance managers and Marketing managers). By using a cross sectional survey design on 152 managers, the study advised stakeholders to continuously adopt and use technologies in their practices as this heavily improved their change management practices and performance relationship since technology adoption and use significantly moderates the relationship between change management and organizational performance.

It clear that the findings on moderation convolves well with the findings by Bulitia (2014) who found a weak R square value ($R^2 = .052$) to conclude that technology innovation moderated the relationship between human resource management practices and firm performance among large scale manufacturing firms, showing congruence in findings with the current study. The writer states that technologies and innovations blends human resources practices and firm performance, enabling the firm to engage technologies and innovations in practices such as job training, global human resource procurements will ensure that the firm's overall outcome is achieved.

The confirmation of moderating effects of innovation practices convolves with the study by Mkwizu & Sichone (2019) who investigated the moderating effects of technology on user attributes and e government systems success in Tanzania. This study sampled revenue officers from Tanzania Revenue Authority, employing a questionnaire to obtain data from 246 respondents who were based in Dar es Salaam. The results showed that user attribute positively and significantly affected e government information systems success, Additionally, the study results revealed that technology moderated the relationship between user attributes and e government information systems success. When technology is adopted, writers opined that interaction between user attributes and e government information systems would results to higher returns in the Tanzania Revenue Authority.

From a Palestinian perspective, the results of current study agree with the findings by Alzaghal & Mukhtar (2018) who adopted a descriptive survey design on a population consisting of incubators drawn from Gaza and West bank cities. E mail interviews, Focused Group Discussions (FGDs) and a structured questionnaire were used as research instruments to obtain data from 31 participants who were managers and decision makers. Structural equation modelling with the aid of SMART PLS software analyzed the collected data. Findings of this study showed importance

of ICT in network service and incubator success, revealing that more attention be given to ICT since it significantly moderated the relationship between network service and incubator success.

In Malaysia, results of the study confirm the position of a study by Hamdi *et al.* (2015) who surveyed the biotechnology industry and stressed the need for technology in biotechnology practices, specifically product success and innovations speed. This study shows how technology uncertainty improves the relationship between innovation speed and product success, which ultimately realizes the product success. The writers concentrated on CEOs, executive managers, research and development officers, and project managers in biotech firms in health and agriculture industries. A cross sectional survey design employed on 240 biotech firms realized findings which showed that truly, technology firms moderated the relationship of innovations speed and product success. Moreover, innovations were found to have a significant effect on product success. The writers implored firms to consider adopting technologies and avert uncertainty as this would mean improved product success and thrive in innovations.

The results of current study affirmed establishments by Liao *et al.,* (2018) who surveyed 238 high tech firms in China composed of information technology firms, pharmaceutical firms and telecommunication firms. Results of this study proved that technological capability improves open innovation strategies and performance among high tech firms. The technological capabilities of high tech firms is a cornerstone for improved firm performance since it provides better infrastructural environment for better innovativeness.

While the current study agrees heavily with other previous empirical literature, the study nonetheless, contrasts findings of other prior studies. For instance, Anser *et al.* (2018) used secondary data obtained between 2013 to 2016 from 300 firms listed on the Pakistan Stock Exchange to show that innovations do not improve corporate social responsibility of a firm and performance relationship. The writers argued that being socially responsive by a firm to the society in which it operates, calls for simplicity and low level engagements with the society, thus attempts of adopting technologies and innovations will hamper provision of basics social services to the local people, which in turn diminishes corporate social responsibility of the firm and its overall performance.

In the model of relationship between PLFI, innovation practices and supply chain performance, Procurement Legal Framework implementation had the strongest significant effect on supply chain

performance (β=0.708; t=12.35 P<0.05; R2=0.502), followed by innovation practices (β=0.649, R2 =0.422, t=10.665, p<0.05) and finally moderating role of innovation practices (β=0.393, p<0.05; R2=0.110, t=8.555). Therefore, the strongest relationship was the effect of procurement legal framework implementation on supply chain performance

Table 4.19: Summary of Hypothesis Testing & Findings

Objectives	Hypotheses	Results & Decision	Practical Implication
Objective 1 To establish effect of procurement legal framework implementation on supply chain performance of public entities in Kenya	**Hypothesis 1** H_{01}:Procurement legal framework Implementation has no significant effect on supply chain performance of public entities in Kenya	(β=0.708; t=12.35 P<0.05; R^2=0.502). **Reject Null Hypothesis** Conclude that Procurement legal framework implementation has significant effect on supply chain performance, explains 50.2% variance in supply chain performance	A unit increase in procurement legal framework implementation results to 0.708 increase in supply chain performance
Objective 2 To determine effect of innovation practices on supply chain performance of public entities in Kenya	**Hypothesis 2** H_{02}: Innovation practices has no significant effect on supply chain performance of public entities in Kenya	(β=0.649, R^2 =0.422, t=10.665, p<0.05). **Reject Null Hypothesis** Conclude that Innovation Practices has significant effect on supply chain performance, accounts for 42.2% variance in supply chain performance	A unit increase in Innovation Practices leads to 0.649 increase in supply chain performance
Objective 3 To investigate the moderating effect of innovation practices on the relationship between procurement legal framework implementation and supply chain performance of public entities in Kenya	**Hypothesis 3** H_{03}: Innovation practices has no moderation effect on the relationship between procurement legal framework implementation and supply chain performance of public entities in Kenya	(β=0.393, p<0.05; R^2=0.110, t=8.555). **Reject Null Hypothesis** Conclude that innovation Practices significantly moderates relationship between procurement legal framework implementation and supply chain performance of public entities in Kenya	A unit increase in Innovation Practices results to 0.393 increase in interaction between procurement legal framework implementation and supply chain performance

Source: (Research, 2023)

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary, conclusions and recommendations of the findings as well as suggestions for further studies. The purpose of the study was to investigate procurement legal framework implementation, innovation practices and supply chain performance of Public Entities in Kenya. The study was guided by the specific objectives which were; to establish the effect of procurement legal framework implementation on supply chain performance of public entities in Kenya, determine effect of innovation practices on supply chain performance of public entities in Kenya and finally to investigate the moderating effect of innovation practices on the relationship between procurement legal framework implementation and supply chain performance of public entities in Kenya. These are presented in the subsequent sections starting with the summary of findings.

5.2 Summary of Findings

The first objective of the study sought to establish the effect of procurement legal framework implementation on supply chain performance of Public Entities in Kenya. The descriptive statistics revealed that implementation of procurement legal framework elements was lower than supply chain performance. The highest implemented element is Preferences & Reservations Schemes, 2011, which is averagely higher than the overall firm performance of supply chains. However, the elements of firm supply chains performance, (cost and quality compliance) were higher than all other elements of procurement legal framework implementation. The lowest implemented element is PPP Act, 2011. The findings revealed that implementation of procurement legal framework elements accounted for a significant amount of variance in supply chain performance. The regression coefficients show that implementation of Preference and Reservation Schemes, 2011 has the highest significant effect while implementation of Public Procurement & Asset Disposal Act, 2015 has the lowest insignificant positive effect. All elements of procurement legal framework positively contributed to supply chain performance. Whereas all other elements of procurement legal framework were established to have a significant effect on supply chain performance, implementation of Public Procurement and Asset Disposal Act, 2015 was established to have an insignificant effect on supply chain performance. Worth to stress, this element was also the lowest implemented

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The second objective sought to determine the effect of innovation practices on supply chain performance of public entities in Kenya. Innovation practices included purchasing system development, E-procurement practices, Capacity building of procurement practitioners, ICT training and integration of interdepartmental functions. Descriptive statistics revealed an overall low rating across all the elements, with the least being E-procurement practices and highest being Capacity building of procurement practitioners. Comparatively, the overall mean of innovation practices was lower than the mean of supply chain performance. The findings revealed that innovation practices accounted for a significant amount of variance in supply chain performance. The regression coefficients show that capacity building of procurement practitioners has the highest significant positive effect while ICT trainings had the least insignificant positive effect on supply chain performance. The study established all elements of innovation practices have a positive effect. However, ICT training was found to have insignificant effect on performance. To stress, this element also had the least effect on performance.

The third objective of the study was to investigate the moderating effect of innovation practices on the relationship between procurement legal framework implementation and supply chain performance of public entities in Kenya. The main predictor variable in this case was procurement legal framework while the moderator variable was the innovation practices. The outcome variable was supply chain performance which was regressed against procurement legal framework implementation, innovation practices and interaction term. The interaction term was obtained by interacting (cross product) of the standardized values of procurement legal framework implementation and innovation practices. The findings revealed that innovation practices positively moderated the relationship between procurement legal framework and supply chain performance. This was indicated through a significant effect of interaction term on supply chain performance, implying that innovativeness in public procurement improves the effect of implementing procurement laws on supply chain performance.

5.3 Conclusions

Procurement legal framework implementation is low among the public entities as confirmed via low ratings across all its elements. However, it has a significant positive effect on supply chain performance. This implies that the more supply chain firms implement procurement laws and regulations the better the supply chain performance. There is significant amount of variance in

supply chain performance accounted for by procurement legal framework implementation. Even though all elements were established to have a positive significant effect, implementation of Public Procurement & Asset Disposal Act, 2015 was established to have an insignificant effect and was also the lowest implemented. Conclusion is made that implementation of elements of procurement legal framework has a significant positive effect on supply chain performance. Therefore, the null hypothesis is rejected, we adopt the alternative hypothesis that confirms the evidence of positive and significant effect of procurement legal framework implementation on supply chain performance.

In the public entities, there is low innovations as indicated through low rating of its elements such as purchasing system development, E-procurement practices, Capacity building of procurement practitioners, ICT training and integration of interdepartmental functions. However, this aligns with low supply chain performance. Innovations has a significant positive effect on supply chain performance and accounts for a significant amount of variance thus implying that improvement in innovations leads to high supply chain performance. Although majority elements were established to have significant positive effect, ICT trainings was established to have insignificant positive effect and was also the lowest implemented. Therefore, the null hypothesis that innovation practices have not significant effect on supply chain performance was rejected and the alternative hypothesis was adopted, leading to conclusion that innovation practices have a significant positive effect on supply chain performance

The third objective had sought to investigate the moderating effect of innovation practices on procurement legal framework implementation and supply chain performance of the public entities. The findings provide sufficient evidence to agree that innovativeness in public procurement positively and significantly, improves the relationship between implementing procurement legal framework and performance of supply chains. Therefore, the null hypothesis that innovation practices do not significantly moderate the relationship between implementing procurement laws and supply chain performance was rejected, adopting the alternative hypothesis which advocates evidence that innovativeness in public procurement improves the effect of procurement legal framework on supply chain performance. In practice, the study denotes that more innovative ways of implementing procurement laws will result into improved supply chain performance in the public entities

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5.4 Recommendations

The study established that implementation of elements procurement legal framework has a significant positive effect on the supply chain performance in public entities. Implementation of Public Procurement & Asset Disposal Act, 2015 was however established to have an insignificant effect and was also the lowest implemented. Based on this, study recommends that stakeholders (especially government and managers) in public entities to effectively implement elements of procurement legal framework. In particular, attention be given to the effective implementation of Public Procurement & Asset Disposal Act, 2015 as this is the lowest implemented yet has a positive effect on performance. Current study recommends policies and strategies such as punitive punishments for practitioners who condone poor implementation of the law, political goodwill as strategic in ensuring effective implementations. This will remarkably improve performance in the supply chains.

Second objective results show innovation practices have a significant positive effect on performance. ICT trainings was established to have insignificant positive effect and was also the lowest implemented. The current study therefore recommends that stakeholders in public procurement recognize need to continuously adopt innovation practices. In fact, more attention be given to adoption of ICT trainings in public procurement, which though the lowest practiced, have a positive effect on supply chain performance. It is recommended that policies and strategies such as budgetary allocation for innovations, hiring staff in public procurement with a level of innovativeness & technology compliance, periodic monitoring & review of systems for innovativeness, mandatory technological trainings will drastically help in improving the performance of public procurement.

In finality, study advocate for enhancement of procurement legal framework implementation by enhancing innovation practices. Innovativeness when implementing procurement laws such as: (1) Continuous development of systems used in procurement such that violators of procurement laws do not abet the systems to activate unscrupulous deals. (2) Adopting e procurement practices such as e negotiations, e market surveys, e tendering, e sourcing, e informing such that the 'pen and paper' mantra which is prone to manipulations of laws is reduced. (3) Capacity building and awareness creation for practitioners of public procurement in order to keep abreast with changing laws & regulations & instilling professionalism (4) ICT trainings for stakeholders of public

procurement to keep abreast with changing business environments and new tricks by violators of the law (5) Integration of interdepartmental function requirements such that aggregations are more visible & avoiding intentional lotting. These innovations, coupled with effective and 'religious' implementation of procurement laws will ensure achievement of higher values in supply chain firms. When individual procurement practitioners are innovative in implementing the law, then higher results will be achieved, however if implementation is only based on the 'pen and paper' as how it is stipulated, then public procurement can be a cancer and result into loss of public resources.

5.5 Suggestion for further studies

From the first objective of the study, it is proposed that studies be carried out to establish the effect of each of the constructs of procurement legal framework implementation on sustainability performance of public entities apart from supply chain performance alone. In the same vein study recommends punitive punishment for violators of the procurement and important stakeholders in implementation who violate implementations such as ICT stakeholders & system administrators.

Further scholarly studies be carried out to establish the influence of innovation practices on organizational culture and sustainability performance of organizations. Given that the study centered on organizations purely owned by government, it is suggested that focus be shifted to private firms which utilize public procurement laws.

Finally, a study should be carried out on the moderating role of each of the elements of innovation practices on the relationship between each of the elements of procurement legal framework implementation and supply chain performance. In overall terms, the current study centered on a dyadic supply chain. It is suggested that similar study be carried out by considering multi echelon chain firms.

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APPENDICES

Appendix I: Personal Letter of Introduction

Dear Sir/Madam………………………………………………………………………………….

RE: The Relationship Between Procurement Legal Framework Implementation, Innovation Practices and Supply Chain Performance of Public Entities in Kenya

I am a Doctoral Postgraduate student at Maseno University, pursuing the Doctor of Philosophy in Supply Chain Management. I am undertaking a research project in the fulfillment of the Doctor of Philosophy in Supply Chain Management. The research topic is "The Relationship Between Procurement Legal Framework Implementation, Innovation practices and Supply Chain Performance of Public Entities in Kenya"

I am kindly inviting you to participate in this research study by completing the attached questionnaire as briefly and accurately as possible. In order to ensure that all information will remain confidential, please do not include your name anywhere on the attached research questionnaire. The data collected will strictly be used for the purposes of this study and your response will be treated confidentially, your identity will NOT be published or released to any one

Thank you in advance

RENSON WANYONYI, PHD/BE/00068/018
+254 7 106 374 65
renson.wanyonyi@yahoo.com

Appendix II: Approval Letter

MASENO UNIVERSITY
SCHOOL OF GRADUATE STUDIES

Office of the Dean

Our Ref: PHD/BE/00068/018

Private Bag, MASENO, KENYA
Tel:(057)351 22/351008/351011
FAX: 254-057-351153/351221
Email: sgs@maseno.ac.ke

Date: 07ᵗʰ December, 2022

TO WHOM IT MAY CONCERN

RE: PROPOSAL APPROVAL FOR WANYONYI RENSON—PHD/BE/00068/2018

The above named is registered in the Doctor of Philosophy in Supply chain management programme in the School of Business and Economics, Maseno University. This is to confirm that his research proposal titled "The relationship between procurement legal framework implementation, innovation practices and supply chain performance of public entities in Kenya" has been approved for conduct of research subject to obtaining all other permissions/clearances that may be required beforehand.
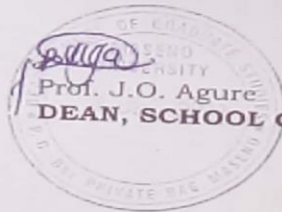
Prof. J.O. Agure
DEAN, SCHOOL OF GRADUATE STUDIES

Maseno University   ISO 9001:2008 Certified

Appendix III: MUERC Ethics Approval

MASENO UNIVERSITY SCIENTIFIC AND ETHICS REVIEW COMMITTEE

Tel: +254 057 351 622   Ext: 3050
Fax: +254 057 351 221

Private Bag – 40105, Maseno, Kenya
Email: muerc-secretariate@maseno.ac.ke

REF: MSU/DRPI/MUSERC/01185/22

Date: 10th February, 2023

TO: Wanyonyi W. Renson
PHD/BE/00068/018
Department of Management Science
School of Business and Economics
Maseno University
P. O. Box, Private Bag, Maseno, Kenya

Dear Sir,

RE: The Relationship between Procurement Legal Framework Implementation, Innovation Practices and Supply Chain Performance of Public Entities in Kenya

This is to inform you that **Maseno University Scientific and Ethics Review Committee (MUSERC)** has reviewed and approved your above research proposal. Your application approval number is MUSERC/01185/22. The approval period is 10th February, 2023 – 9th February, 2024. This approval is subject to compliance with the following requirements;

  i.   Only approved documents including (informed consents, study instruments, MTA) will be used.
  ii.   All changes including (amendments, deviations, and violations) are submitted for review and approval by Maseno University Scientific and Ethics Review Committee (MUSERC).
  iii.   Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to Maseno University Scientific and Ethics Review Committee (MUSERC) within 24 hours of notification.
  iv.   Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to Maseno University Scientific and Ethics Review Committee (MUSERC) within 24 hours.
  v.   Clearance for export of biological specimens must be obtained from relevant institutions.
  vi.   Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
  vii.   Submission of an executive summary report within 90 days upon completion of the study to Maseno University Scientific and Ethics Review Committee (MUSERC).

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

Yours sincerely

10 FEB 2023
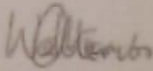
Prof. Philip O. Owuor, PhD, FAAS, FKNAS
Chairman, MUSERC

MASENO UNIVERSITY IS ISO   9001 CERTIFIED

Appendix IV: NACOSTI Approval Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Ref No: 700718

Date of Issue: 02/March/2023

RESEARCH LICENSE

This is to Certify that Mr. RENSON WANYONYI of Maseno University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Baringo, Bomet, Bungoma, Busia, Elgeyo-Marakwet, Embu, Garissa, Homabay, Isiolo, Kajiado, Kakamega, Kericho, Kiambu, Kilifi, Kirinyaga, Kisii, Kisumu, Kitui, Kwale, Laikipia, Lamu, Machakos, Makueni, Mandera, Marsabit, Meru, Migori, Mombasa, Muranga, Nairobi, Nakuru, Nandi, Narok, Nyamira, Nyandarua, Nyeri, Samburu, Siaya, Taita-Taveta, Tanariver, Tharaka-Nithi, Transnzoia, Turkana, Uasin-Gishu, Vihiga, Wajir, Westpokot on the topic: The Relationship Between Procurement Legal Framework Implementation, Innovation Practices on Supply Chain Performance of Public Entities in Kenya for the period ending : 02/March/2024.

License No: NACOSTI/P/23/23987

700718

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY &
INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document,
Scan the QR Code using QR scanner application.

See overleaf for conditions

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Appendix V: Informed Consent Release

Investigator:

"My name is RENSON WANYONYI, and I am a Doctoral Student at Maseno University. I am inviting you to participate in a research study. Involvement in the study is voluntary, so you may choose to participate or not. I am now going to explain the study to you. Please feel free to ask any questions that you may have about the research; I will be happy to explain anything in greater detail.

"I am interested in learning more about The Relationship Between Procurement Legal Framework Implementation, Innovation Practices and Supply Chain Performance. You will be asked to tick in the boxes where appropriate. This will take approximately 30 minutes of your time. All information will be kept anonymous and confidential. This means that your name will not appear anywhere and no one except me will know about your specific answers. A number will be assigned to your responses, and only I will have the key to indicate which number belongs to which participant. In any articles I write or any presentations that I make, I will use a made-up name for you, and I will not reveal details or I will change details about where you work, where you live, any personal information about you, and so forth.

"The benefit of this research is that you will be helping us to understand The Relationship Between Procurement Legal Framework Implementation, Innovation Practices and Supply Chain Performance of Public Entities. Findings will act as a preamble for further research in Supply Chain Management. The findings will also be helpful to practitioners in understanding the role of innovations in Public Procurement and the significance of effective implementation of procurement laws & procedures in elevating performance.

There are no risks to you for participating in this study. If you do not wish to continue, you have the right to withdraw from the study, without penalty, at any time."

Participant:

"All of my questions and concerns about this study have been addressed. I choose, voluntarily, to participate in this research project and I certify that I am above 18 years of age.

Name of participant ………………………………………………………………………......

Signature of participant…………………………..Date…………………………………………

Name of investigator…………………………..Date………………………………………….

Signature of participant………………………….Date…………………………………………..

Appendix VI: Questionnaire

Dear Sir/Madam,

You are kindly requested to answer all questions in this research questionnaire. The information that you will provide shall be treated with a high level of confidentiality and strictly used for the purpose of this study. This study aims at investigating relationship between procurement legal framework implementation, innovation practices and supply chain performance of public entities in Kenya. Record your answer by ticking the   appropriate box

Section A: Procurement Legal Framework Implementation

Indicate the extent of implementation of the following statements on Procurement Legal Framework Implementation in your organization. Use the five-point Likert scale where: Strongly Disagree (**SD**)=1, Disagree (**D**)=2, Neutral (**N**)=3, Agree (**A**)= 4, = Strongly Agree (**SA**)= 5

	SD	D	A	N	SA
Implementation of Executive Orders & Decrees					
1. Our organization normally updates and makes public information regarding procurement & disposals for any activity in our website					
2. The Accounting officer is responsible for procurements and disposals of at least Ksh. 10, 000,000					
3. The organization keeps records for a concluded procurement & asset disposal for at least 6 years					
4. The organization carries out procurements & disposals through the Integrated Financial Management Information Systems (IFMIS)					
5. Our organization normally reports and publicizes information on procurement and disposals arising from procurement activities in the public procurement information portal PPIP					
6. Our organization reports information on procurements and disposals in the format and structure issued by government					
Implementation of Preferences & Reservations Schemes, 2011					
7. The organization reserves contracts to Small & Medium Enterprises, SMEs					
8. The organization reserves contracts to the local contractors					
9. The organization reserves contracts to citizen contractors					
10. There is competition and equal opportunity among the target groups (SMEs, citizen contractors, local contractors)					
11. The organization reserves contracts to the disadvantaged groups (Youth, Women, People with Disabilities)					
12. The organization has implemented the 30% directive for the target groups					

13. Target groups have performed to the required specifications of time, quality, quantity, costs and place					
14. Sensitization of the target groups on procurement and compliance					
Implementation of Public Procurement & Asset Disposal Act, 2015					
15. Our organization prepares procurement plan based on approved budget					
16. Our organization ensures that there is budgetary allocations and sufficient funds are available before commencing a procurement					
17. There are procurements and disposals that have been executed outside the procurement plan					
18. The organization practices lotting in procurements and disposals					
19. Procurement & disposals of standard goods are carried out at the prevailing market price based on a market survey					
20. Suppliers meeting set criteria					
21. Procurements and disposals are contracted to the prequalified service providers					
22. The firm frequently and regularly prequalifies service providers					
23. There are instances where contracting is done to other service providers other than the prequalified					
24. The organization uses standard tender and disposal documents provided by PPRA for procurements & disposals					
25. Employees of the organization do not take part in contracting for procurements and disposals					
26. The organization prepares due specification of requirements beforehand					
27. The organization ensures that submitted bids have declarations of non-engagement in corruption					
28. Communications relating to procurements & disposals among parties are made in writing					
29. The organization does not maintain communication with service providers during and after evaluations to influence the evaluation and award process					
30. The evaluations process is influenced by external parties					
31. Members taking part in procurement proceedings maintain the confidentiality of information					
32. The organization maintains proper records of procurement and disposal proceedings in the office					

33. The organization ensures that approvals are dated and filed with approval numbers					

Implementation of Public Procurement & Disposal Regulations, 2016

34. The Accounting Officer formally appoints members of Tender opening, evaluation, Inspection & Acceptance & Disposal Committees					
35. The Head of Procurement reports to the Accounting Officer of the organization					
36. The Accounting Officer convenes the Evaluations Committee for each tender					
37. The disposal committee is convened based on disposal requirements					
38. Goods and services completed/delivered by service providers are inspected without delay					
39. Open tendering is the main method used for procurements for any procurement					
40. Alternative methods of procurement (restricted, RFPs, RFQs, direct) are approved by the tender committee for any procurement & disposal					
41. Specially permitted methods are used on special occasions when approved by the tender committee for any procurement or asset disposal					
42. The procurement plan is updated to suit requirements for a procurement					
43. The organization has a records management staff with relevant qualification					
44. Staff in procurement & supplies are relevant and familiar with principles, rules and regulations relating to public procurement & disposals					

Implementation of Public Private Partnership Act, 2013

45. The organization enters into Public Private Partnerships by the authority of the Accounting officer					
46. The contracting parties projects and activities are approved by the PPP committee					
47. The organization prequalifies private parties for PPPs					
48. Pricing and costing for PPs are based on prevailing market prices through competitive means					
49. The PPP unit makes public in the print and electronic media list of approved projects and activities of the contracting parties					

50. The contractors for the Public Private Partnership project are selected through competitive open tendering				
51. The organization carries out due diligence on PPP contractors				
52. The organization evaluates service providers' based on time, quality & cost requirements				
53. The organization regularly monitors and evaluates PPP projects for conformance to the set specifications				

Section B: Innovation Practices

Indicate the extent of implementation of the following statements on Innovation Practices in your organization. Use the five-point Likert Scale where: Strongly Disagree (**SD**)=1, Disagree (**D**)=2, Neutral (**N**)=3, Agree (**A**)= 4, = Strongly Agree (**SA**)= 5

Purchasing systems development	**SD**	**D**	**A**	**N**	**SA**
1. The organization carries out regular monitoring and evaluation of our purchasing systems and applications					
2. The organization upgrades its purchasing systems and applications to suit need requirements					
3. The organization ensures security of its purchasing systems as inventory control systems, ordering systems					
4. Our procurement activities are carried out through systems such as warehousing systems, inventory planning systems & IFMIS devoid of compromise from stakeholders					
5. Our management sets aside a budget for developing, monitoring and securing systems & applications used in procurement activities					
E procurement practices					
6. Our organization uses web technologies in procurement processes					
7. The organization adopts and uses e procurement practices (e-sourcing, e-tendering, e ordering, e reverse auction) in procurement and disposals					
8. The organization has adequate skilled officers, resources and collaborations in implementing e procurement practices					

9. Our data from e procurement activities is always encrypted when being transmitted to outside parties such as customers & suppliers					
10. Our organization has integrated some of its procurement and disposal functions with e procurement applications					
Capacity building & training of procurement staff					
11. The organization carries out training programs for procurement staff on innovation practices					
12. The organization carries out capacity building programs through sensitization of the procurement staff on emerging and innovative technologies in public procurement					
13. Procurement staffs take part in trainings on procurement and disposals by Kenya Institute of Supplies Management					
14. The organization supports training of staff on new and emerging procurement and disposal acts and regulations by Kenya Institute of Supplies Management					
15.Our organization carries out management seminars and team building to enhance on the job training					
ICT Training					
16. The organization carries out refresher training programs on ICT tools & technologies					
17. Our organization carries out regular trainings on use of Information Communication Technologies tools and systems such as computers					
18. Our organization recruits staff in procurement with a level of innovativeness and technology compliance					
19. Our organization has a technical section which identifies and manages training needs on ICT					
20. Our management sets aside a budget for training staff in procurement on innovations and new technologies					
Integration of interdepartmental functions					
21. There is timely effective communication among departments facilitating integrations					

Statements				
22. There are cross functional & multi-disciplinary teams which support the procurement function				
23. There is collaboration, respect and sharing resources among chain members for departments				
24. There is integration of departmental activities which harmonizes requirements for procurement & disposals				
25. Departmental staffs take part in development of technical specifications in making requirements for procurements				

Section C: Supply Chain Performance

The following aspects relate to Supply Chain Performance. Indicate the extent to which you agree with the following statements in your organization. Use the five-point Likert scale where: Strongly Disagree (**SD**)=1, Disagree (**D**)=2, Neutral (**N**)=3, Agree (**A**)= 4, = Strongly Agree (**SA**)= 5

Statements	SD	D	A	N	SA
Cycle Time					
1. Our lead time for acquisition of goods and service has shortened and improved our performance					
2. There is reduction in the number of returned and undelivered items for the awarded procurements and disposals					
3. We have saved time in providing solutions during conflicts or challenges with our service providers of products					
4. There is reduction in delays during operations for procurements & disposal activities					
5. The delivery time for ordered goods from service providers has improved					
6. There is improvement in efficiency of operations in procurements and disposals for all user requirements					
Cost					

7. There is reduction in the costs associated with procurements and disposals such as ordering & inventory holding costs					
8. There is reduction in non-value overheads such as Litigation, repurchase, reverse and redesign costs					
9. There is reduction in logistics & transportation costs for materials					
10. There is reduction in external field costs such as market surveys and site visits					
11. Reduction in overall organization costs					
Quality Compliance					
12. There is reduction in the number of defective procured items					
13. There is reduction in customer complaints over rendered services					
14. There is reduction in returned items due to poor quantities delivered					
15. There is reduction in the number of return to store cases due to obtaining substandard items					
16. There is reduction in the number of complaints from the internal users from all departments					

THANK YOU FOR YOUR COOPERATION

Appendix VII: Work Plan

Month	J F M A M J J A S O N D	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	D
Year	**2019 &2020**	**2021**																	**2022**				**2023**						
Course Work	x x x xx x x x x x	x																											
Development of Proposal		x	x	x	x	x	x	x	x	x	x																		
Proposal Presentation at the school												x	x																
Proposal presentation in SGS														x	x	x	x	x	x										
Carry out a pilot survey																				x									
Carry out full survey																					x	x							
Data entry and analysis																							x						
Writing the Thesis report																								x					
Submission of draft report																									x				
Submission of final report																													
External Examination																													

Oral defence																																				
Report Correction																																				
Graduation																																				

Appendix VIII: Proposal Budget

	Item	Unit	Quantity	Unit Cost	Total
1.	Pens	Pkt	100	30.00	3000.00
2.	Secretariat	No.	3	50,000	100,000.00
3.	Research Assistants	No.	10	20,000.00	200,000.00
4.	Travelling& Accommodation	No	15	50,000.00	750,000.00
5.	Binding	Pcs	50	200.00	10,000.00
6.	Airtime	Pcs	20	1,000.00	20,000.00
7.	Modem	Pcs	3	6,000.00	18,000.00
8.	Photocopying Papers	Ream	50	600.00	30,000.00
9.	Foolscap	Ream	10	450.00	4,500.00
10.	Notebooks	No.	100	100.00	10,000.00
11.	Laptops	No.	3	50,000.00	150,000.00
12.	Printer	No.	2	35,000.00	70,000.00
13.	Tonner	No.	2	15,000.00	30,000.00
14.	Flash disk	No.	3	2,500.00	7,500.00
15.	Windows Operating Systems	No.	3	7,500.00	22,500.00
16.	Data Analysis Software (SPSS)	No.	3	5,500.00	16,500.00
17.	Word Processing Software	No.	3	5,500.00	16,500.00
18.	Office Rent	Months	3	10.000.00	30,000.00
19.	Miscellaneous				50,000.00
Total					**1,538,500.00**

Appendix IX: List of Public Entities

Purely Commercial State Corporation

1. Agro - Chemical & Food Company
2. Chemelil Sugar Company Ltd
3. Consolidated Bank of Kenya
4. Development Bank of Kenya Ltd
5. Golf Hotel Kakamega
6. Jomo Kenyatta Foundation
7. Kabarnet Hotel Limited
8. Kenya Literature Bureau (KBL)
9. Kenya Meat Commission
10. Kenya National Assurance Co. (2001) Ltd
11. Kenya National Shipping Line
12. Kenya National Trading Corporation (KNTC)
13. Kenya Reinsurance Corporation Ltd
14. Kenya Safari Lodges Ltd
15. Kenya Wine Agencies Ltd (KWAL)
16. Kenyatta University Enterprise Limited
17. KWA Holdings
18. Mount Elgon
19. Muhoroni Sugar company Ltd
20. National Housing Ltd
21. New Kenya Co-operative Creameries
22. Nyayo Tea Zones Development Corporation
23. Nzoia Sugar company Ltd
24. Research development Unit Company Ltd
25. Rivatex (East Africa) Ltd
26. School Equipment Production Units
27. Simlaw Seeds Kenya
28. Simlaw Seeds Tanzania
29. Simlaw Seeds Uganda
30. South Nyanza Sugar Company Ltd
31. Sunset Hotel Kisumu
32. University of Nairobi Enterprise Ltd
33. University of Nairobi Press (UONP)
34. Yatta Vineyard Ltd

State Corporation with Strategic Function

35. Geothermal Development Company (GDC)
36. Kenya Airports Authority (KAA)
37. Kenya Animal Genetics Resource Centre
38. Kenya Broadcasting Corporation (KBC)
39. Kenya Development Bank (After Merger of TFC, ICDC, KIE, IDB, AFC)
40. Kenya Electricity Generating Company (KENGEN)
41. Kenya Electricity Transmission Company (KETRACO)

42. Kenya EXIN Bank
43. Kenya Pipeline Company (KPC)
44. Kenya Ports Authority (KPA)
45. Kenya Post Office Savings Bank
46. Kenya power & Lightening Company (KPLC)
47. Kenya Railways Corporation
48. Kenya Seed Company (KSC)
49. Kenya Veterinary Vaccine Production Institute
50. Kenyatta International Conference Centre
51. National Cereal & Produce Board (NCPB)
52. National Oil Corporation of Kenya
53. National Water Conservation & Pipeline Corporation
54. Numerical Machining Company
55. Postal Corporation of Kenya

State Agencies - Executive Agencies

56. Agricultural Development Corporation
57. Anti-Female Genital Mutilation Board
58. Biashara Kenya (After Merging Small and Micro Enterprise Authority, Women Fund, Uwezo Fund & Youth Enterprise Development Authority)
59. Bomas of Kenya
60. Constituency Development Fund
61. Crops Development and Promotion Service (new)
62. Custom and Boarder Security Service (Successor to the Kenya Citizens and Foreign National Management Service)
63. Drought Management Authority
64. Export Processing Zone Authority (EPZA)
65. Financial Reporting Centre
66. Fisheries Development and Promotion Service (new)
67. Higher Education Loans Boards
68. Information Communication Technology Authority
69. Internal Revenue Service (After transfer of customers' department from KRA)
70. Investor Compensation Fund Board
71. Kenya Academy of Sports
72. Kenya Accountants & Secretaries National Examination Board
73. Kenya Cultural Centre
74. Kenya Deposits Protection Authority
75. Kenya Ferry Service Ltd (KFS)
76. Kenya Film Development Service
77. Kenya Institute of Curriculum Development
78. Kenya Intellectual Property Service (After Merging with Kenya Copyright board, Kenya Industrial Property Institute and Anti Counterfeit Agency)
79. Kenya Investment Promotion Service (After merging with KTB, EPC, Brand Kenya Board and KenInvest)
80. Kenya Law Reform Commission
81. Kenya Medical Supplies Authority

82. Kenya National Bureau of Statistics
83. Kenya National Examination Council (KNEC)
84. Kenya National Highway Authority (KeNHA)
85. Kenya National Innovation Agency
86. Kenya Ordnance Factories corporation
87. Kenya Road Board (KRB)
88. Kenya Trade Network Agency
89. Kenya Wildlife and Forestry Conservation Service
90. Kenyatta National Hospital
91. Konza Technopolis Authority.
92. LAPSET Corridor Development Authority
93. Leather Development Council
94. Livestock Development and Promotion service (new)
95. Local Authorities Provident Fund
96. Moi Teaching and Referral Hospital
97. Nairobi Centre for International Arbitration
98. National Aids Control Council
99. National Campaign Against Drug Abuse Authority
100.   National Cancer Institute of Kenya
101.   National Coordinating Agency for Population and Development
102.   National Council for Law Reporting
103.   National Council for people with Disabilities
104.   National Hospital Insurance Fund
105.   National Industrial Training Authority
106.   National Irrigation Board
107.   National Museums of Kenya
108.   National Quality Control Laboratories
109.   National Social Security Fund Board of Trustees
110.   National Youth Council
111.   Nuclear Electricity Board
112.   Policy holders Compensation Fund
113.   Sports Kenya
114.   Tourism Fund
115.   Unclaimed Financial Assets Authority
116.   Water Resource Management Authority
117.   Water Service Trust Fund

State Agencies – Independent Regulatory Agencies

118.   Agriculture, Fisheries and Food Authority
119.   Commission for University Education
120.   Communication Commission of Kenya
121.   Competition Authority
122.   Council for Legal Education
123.   Energy Regulatory Commission

124.   Financial Supervisory Council (After merge of Capital Markets Authority, Insurance Regulatory Authority, Retirement Benefits Authority & SACCO Societies Regulatory Authority)
125.   Health service Regulatory Authority
126.   Kenya Bureau Of Standards (KBS)
127.   Kenya Civil Aviation Authority (KCAA)
128.   Kenya Film Regulatory Service
129.   Kenya Maritime Authority
130.   Kenya National Accreditation Service
131.   Kenya Plant and Animal Health Inspectorate Service (After taking over function of National Biosafety Authority)
132.   Livestock Regulatory Authority
133.   Mining and Oil Regulatory Service
134.   National Commission for Science, Technology and Innovations
135.   National Construction Authority
136.   National Environmental Management Authority. (NEMA)
137.   National Land Transport & Safety Authority
138.   Public benefits Organization Regulatory Authority
139.   Public Procurement Oversight Authority
140.   Technical & Vocational & Training Authority.
141.   Tourism Regulatory Authority
142.   Water Service Regulatory Board

State Agencies – Research Institutions, Public Universities, Tertiary Education and Training Institutions

143.   Bukura Agricultural College
144.   Chuka Universiry
145.   Cooperative University college
146.   Dedan Kimathi University
147.   Egerton University
148.   Embu University College
149.   Garissa University College
150.   Jaramogi Oginga Odinga University of Science and Technology
151.   Jomo Kenyatta University of Agriculture and Technology.
152.   Karatina University
153.   Kenya Agriculture and Livestock Research Organization
154.   Kenya Forestry Research Institute
155.   Kenya industrial Research and Development Institute
156.   Kenya Institute of Mass Communication
157.   Kenya Institute of Public Policy Research & Analysis (KIPPRA)
158.   Kenya Marine & Fisheries Research Institute
159.   Kenya Medical Research Institute (KEMRI)
160.   Kenya Medical Training College (KMTC)
161.   Kenya Multi-Media University
162.   Kenya School of Government
163.   Kenya School of Law

164.   Kenya Utalii College (KUC)
165.   Kenya Water Institution
166.   Kenyatta University
167.   Kibabii University College
168.   Kirinyaga University College
169.   Kisii University
170.   Laikipia University
171.   Maasai Mara University
172.   Machakos University College
173.   Maseno University
174.   Masinde Muliro University of Science & Technology
175.   Meru University of Science & Technology
176.   Moi University
177.   Murang'a University College
178.   National Crime Research Centre
179.   Pwani University
180.   Rongo University College
181.   South Eastern Kenya University
182.   Taita Taveta University College
183.   Technical University of Mombasa
184.   The Technical University of Kenya
185.   University of Eldoret
186.   University of Kabianga
187.   University of Nairobi.

Source: (Taskforce on Parastatal Reforms, 2013)

Appendix X: Summary Statistics

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean		Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
The organization makes public information regarding procurement and disposal	158	4	1	5	2.10	.089	1.124	1.264	1.106	.193	.693	.384
SECA2	158	4	1	5	2.25	.080	1.009	1.018	.904	.193	.835	.384
SECA3	158	4	1	5	2.09	.076	.954	.909	1.071	.193	1.474	.384
SECA4	158	4	1	5	2.01	.078	.984	.968	1.275	.193	1.845	.384
SECA5	158	4	1	5	2.69	.105	1.316	1.731	.319	.193	-.929	.384
SECA6	158	4	1	5	2.61	.105	1.315	1.730	.707	.193	-.802	.384
SECA7	158	4	1	5	2.91	.115	1.447	2.094	.029	.193	-1.381	.384
SECA8	158	4	1	5	2.44	.099	1.244	1.548	.815	.193	-.421	.384
SECA9	158	4	1	5	2.48	.097	1.214	1.474	.456	.193	-.589	.384
SECA10	158	4	1	5	2.57	.118	1.478	2.183	.390	.193	-1.312	.384
SECA11	158	4	1	5	2.54	.103	1.290	1.664	.663	.193	-.647	.384
SECA12	158	4	1	5	2.82	.118	1.487	2.210	.097	.193	-1.388	.384
SECA13	158	4	1	5	2.00	.102	1.282	1.643	1.066	.193	-.073	.384
SECA14	158	4	1	5	2.70	.095	1.193	1.423	.608	.193	-.485	.384
SECA15	158	4	1	5	2.43	.091	1.142	1.304	.576	.193	-.350	.384
SECA16	158	4	1	5	2.18	.094	1.187	1.408	.925	.193	-.006	.384
SECA17	158	4	1	5	2.25	.091	1.138	1.295	.893	.193	.052	.384
SECA18	158	4	1	5	2.22	.104	1.305	1.702	.940	.193	-.196	.384
SECA19	158	4	1	5	2.15	.096	1.206	1.454	1.094	.193	.344	.384
SECA20	158	4	1	5	2.45	.103	1.290	1.663	.646	.193	-.578	.384
SECA21	158	4	1	5	2.28	.100	1.256	1.578	.728	.193	-.564	.384
SECA22	158	4	1	5	2.03	.078	.984	.968	.762	.193	.307	.384
SECA23	158	4	1	5	2.61	.074	.929	.863	.217	.193	-.142	.384

SECA24	158	4	1	5	2.59	.097	1.216	1.478	.390	.193	-.850	.384
SECA25	158	4	1	5	1.98	.087	1.091	1.191	1.468	.193	1.726	.384
SECA26	158	4	1	5	2.23	.082	1.029	1.059	1.113	.193	1.066	.384
SECA27	158	4	1	5	2.16	.093	1.172	1.374	.732	.193	-.308	.384
SECA28	158	4	1	5	2.74	.079	.998	.996	.152	.193	-.446	.384
SECA29	158	4	1	5	2.32	.098	1.227	1.507	.574	.193	-.997	.384
SECA30	158	4	1	5	2.58	.076	.953	.908	.540	.193	.239	.384
SECA31	158	4	1	5	2.43	.079	.993	.986	.749	.193	.314	.384
SECA32	158	4	1	5	2.26	.077	.972	.945	.258	.193	-.567	.384
SECA33	158	4	1	5	2.60	.085	1.064	1.133	.373	.193	-.415	.384
SECA34	158	4	1	5	2.34	.091	1.149	1.320	.896	.193	.196	.384
SECA35	158	4	1	5	1.99	.086	1.085	1.178	1.465	.193	1.748	.384
SECA36	158	4	1	5	2.17	.097	1.222	1.493	.686	.193	-.584	.384
SECA37	158	4	1	5	2.37	.097	1.217	1.482	.422	.193	-.643	.384
SECA38	158	4	1	5	2.39	.096	1.209	1.463	.234	.193	-.988	.384
SECA39	158	4	1	5	2.65	.106	1.326	1.759	.179	.193	-1.088	.384
SECA40	158	4	1	5	2.25	.095	1.198	1.435	.524	.193	-.739	.384
SECA41	158	4	1	5	2.13	.099	1.240	1.538	.751	.193	-.640	.384
SECA42	158	4	1	5	2.22	.108	1.362	1.855	.617	.193	-1.007	.384
SECA43	158	4	1	5	2.54	.102	1.280	1.638	.186	.193	-1.073	.384
SECA44	158	4	1	5	1.87	.093	1.166	1.360	1.251	.193	.647	.384
SECA45	158	4	1	5	1.70	.080	1.000	1.000	1.440	.193	1.573	.384
SECA46	158	4	1	5	2.17	.107	1.341	1.799	.838	.193	-.507	.384
SECA47	158	4	1	5	2.30	.107	1.344	1.805	.578	.193	-.923	.384
SECA48	158	4	1	5	1.96	.100	1.256	1.578	1.009	.193	-.112	.384
SECA49	158	4	1	5	1.65	.085	1.070	1.146	1.681	.193	2.180	.384
SECA50	158	4	1	5	1.91	.097	1.214	1.475	1.243	.193	.602	.384
SECA51	158	4	1	5	1.85	.090	1.130	1.276	1.217	.193	.767	.384
SECB1	158	4	1	5	1.87	.092	1.152	1.326	1.252	.193	.638	.384
SECB2	158	4	1	5	1.76	.073	.920	.846	.995	.193	.443	.384
SECB3	158	4	1	5	2.03	.100	1.259	1.585	.871	.193	-.473	.384

	N	Range	Minimum	Maximum	Mean	Std. Error	Std. Deviation	Variance	Skewness	Std. Error	Kurtosis	Std. Error
SECB4	158	4	1	5	1.61	.076	.957	.915	1.523	.193	1.556	.384
SECB5	158	4	1	5	1.77	.096	1.210	1.464	1.344	.193	.532	.384
SECB6	158	4	1	5	1.53	.077	.962	.926	1.843	.193	2.886	.384
SECB7	158	4	1	5	1.48	.074	.929	.863	2.085	.193	4.031	.384
SECB8	158	4	1	5	1.65	.090	1.129	1.275	1.756	.193	2.114	.384
SECB9	158	4	1	5	2.72	.081	1.015	1.030	.213	.193	.036	.384
SECB10	158	4	1	5	2.28	.071	.888	.788	.251	.193	-.127	.384
SECB11	158	4	1	5	2.16	.083	1.044	1.089	.529	.193	-.347	.384
SECB12	158	4	1	5	2.25	.089	1.121	1.257	.597	.193	-.121	.384
SECB13	158	4	1	5	1.77	.087	1.089	1.187	1.377	.193	1.037	.384
SECB14	158	4	1	5	1.89	.084	1.053	1.108	1.160	.193	.791	.384
SECB15	158	4	1	5	2.00	.093	1.168	1.363	.876	.193	-.415	.384
SECB16	158	4	1	5	1.95	.083	1.045	1.093	.949	.193	.395	.384
SECC1	158	4	1	5	1.84	.079	.987	.975	.967	.193	.182	.384
SECC2	158	4	1	5	2.33	.135	1.691	2.859	.751	.193	-1.207	.384
SECC3	158	4	1	5	2.32	.104	1.307	1.708	.608	.193	-.774	.384
SECC4	158	4	1	5	1.97	.101	1.269	1.610	1.140	.193	.241	.384
SECC5	158	4	1	5	2.26	.098	1.232	1.518	.630	.193	-.376	.384
SECC6	158	4	1	5	2.62	.124	1.562	2.441	.266	.193	-1.488	.384
SECC7	158	4	1	5	2.08	.068	.859	.738	1.304	.193	2.453	.384
SECC8	158	4	1	5	3.81	.090	1.130	1.276	-.854	.193	.331	.384
SECC9	158	4	1	5	1.99	.081	1.016	1.032	1.281	.193	1.446	.384
SECC10	158	4	1	5	2.28	.097	1.216	1.479	.814	.193	-.104	.384
SECC11	158	4	1	5	2.16	.103	1.291	1.667	1.019	.193	.027	.384
Mean IEOD	158	2.75	1.25	4.00	2.2321	.05643	.70930	.503	.558	.193	-.812	.384
Mean IPRS2011	158	2.63	1.38	4.00	2.5980	.04571	.57453	.330	.262	.193	-.459	.384
Mean IPPADA2015	158	2.58	1.42	4.00	2.3199	.04100	.51530	.266	.882	.193	.614	.384
Mean IPPDR2016	158	2.27	1.18	3.45	2.2934	.04139	.52024	.271	.211	.193	-.775	.384
Mean IPPPA	158	3.89	1.00	4.89	2.1799	.07339	.92251	.851	.548	.193	-.220	.384
Mean Innovation_Practices	158	2.18	1.45	3.64	2.3331	.04225	.53104	.282	.537	.193	-.601	.384

	N	Range	Minimum	Maximum	Mean	Std. Error	Std. Deviation	Variance	Skewness	Std. Error	Kurtosis	Std. Error
Mean SCP_Cycle_Time	158	3.00	1.00	4.00	2.1139	.07362	.92540	.856	.691	.193	-.571	.384
Mean SCP_cost	158	4.00	1.00	5.00	2.7363	.07874	.98972	.980	.304	.193	-.662	.384
Mean SCP_QC	158	2.75	1.75	4.50	2.6171	.05048	.63451	.403	1.036	.193	.590	.384
Mean SCP	158	2.58	1.42	4.00	2.4368	.03928	.49379	.244	.570	.193	.043	.384
Mean PLFI	158	2.05	1.34	3.39	2.3139	.03035	.38152	.146	.279	.193	-.028	.384
Interaction Term	158	9.79	1.93	11.72	4.7510	.14425	1.81320	3.288	.849	.193	.709	.384
Mean IN_PSD	158	3.33	1.00	4.33	2.1627	.07283	.91542	.838	.500	.193	-.863	.384
Mean IN_EPP	158	4.00	1.00	5.00	1.9208	.07166	.90081	.811	.650	.193	-.386	.384
Mean IN_CBPP	158	3.00	1.00	4.00	2.2933	.05066	.63677	.405	.253	.193	-.424	.384
Mean IN_ICTT	158	4.00	1.00	5.00	2.2830	.06233	.78344	.614	.296	.193	.027	.384
Mean IN_IIF	158	3.67	1.00	4.67	2.3098	.06335	.79630	.634	.271	.193	-.046	.384
Valid N (listwise)	158											

Frequency Table

The organization makes public information regarding procuremnent and disposal

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	54	34.2	34.2	34.2
	Disagree	62	39.2	39.2	73.4
	Neutral	24	15.2	15.2	88.6
	Agree	8	5.1	5.1	93.7
	Strongly Agree	10	6.3	6.3	100.0
	Total	158	100.0	100.0	

SECA2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	35	22.2	22.2	22.2
	2	70	44.3	44.3	66.5
	3	39	24.7	24.7	91.1
	4	6	3.8	3.8	94.9
	5	8	5.1	5.1	100.0
	Total	158	100.0	100.0	

SECA3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	43	27.2	27.2	27.2
	2	74	46.8	46.8	74.1
	3	31	19.6	19.6	93.7
	4	4	2.5	2.5	96.2
	5	6	3.8	3.8	100.0
	Total	158	100.0	100.0	

SECA4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	50	31.6	31.6	31.6
	2	74	46.8	46.8	78.5
	3	23	14.6	14.6	93.0
	4	4	2.5	2.5	95.6
	5	7	4.4	4.4	100.0
	Total	158	100.0	100.0	

SECA5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	37	23.4	23.4	23.4
	2	36	22.8	22.8	46.2
	3	45	28.5	28.5	74.7
	4	19	12.0	12.0	86.7
	5	21	13.3	13.3	100.0
	Total	158	100.0	100.0	

SECA6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	26	16.5	16.5	16.5
	2	78	49.4	49.4	65.8
	3	9	5.7	5.7	71.5
	4	22	13.9	13.9	85.4
	5	23	14.6	14.6	100.0
	Total	158	100.0	100.0	

SECA7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	38	24.1	24.1	24.1
	2	30	19.0	19.0	43.0
	3	26	16.5	16.5	59.5
	4	36	22.8	22.8	82.3
	5	28	17.7	17.7	100.0
	Total	158	100.0	100.0	

SECA8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	33	20.9	20.9	20.9
	2	75	47.5	47.5	68.4
	3	13	8.2	8.2	76.6
	4	21	13.3	13.3	89.9
	5	16	10.1	10.1	100.0
	Total	158	100.0	100.0	

SECA9

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	42	26.6	26.6	26.6
	2	39	24.7	24.7	51.3
	3	49	31.0	31.0	82.3
	4	15	9.5	9.5	91.8
	5	13	8.2	8.2	100.0
	Total	158	100.0	100.0	

SECA10

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	55	34.8	34.8	34.8
	2	32	20.3	20.3	55.1
	3	20	12.7	12.7	67.7
	4	28	17.7	17.7	85.4
	5	23	14.6	14.6	100.0
	Total	158	100.0	100.0	

SECA11

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	34	21.5	21.5	21.5
	2	62	39.2	39.2	60.8
	3	25	15.8	15.8	76.6
	4	17	10.8	10.8	87.3
	5	20	12.7	12.7	100.0
	Total	158	100.0	100.0	

SECA12

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	47	29.7	29.7	29.7
	2	20	12.7	12.7	42.4
	3	34	21.5	21.5	63.9
	4	28	17.7	17.7	81.6
	5	29	18.4	18.4	100.0
	Total	158	100.0	100.0	

SECA13

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	82	51.9	51.9	51.9
	2	30	19.0	19.0	70.9
	3	21	13.3	13.3	84.2
	4	14	8.9	8.9	93.0
	5	11	7.0	7.0	100.0
	Total	158	100.0	100.0	

SECA14

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	20	12.7	12.7	12.7
	2	63	39.9	39.9	52.5
	3	40	25.3	25.3	77.8
	4	15	9.5	9.5	87.3
	5	20	12.7	12.7	100.0
	Total	158	100.0	100.0	

SECA15

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	36	22.8	22.8	22.8
	2	55	34.8	34.8	57.6
	3	40	25.3	25.3	82.9
	4	17	10.8	10.8	93.7
	5	10	6.3	6.3	100.0
	Total	158	100.0	100.0	

SECA16

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	54	34.2	34.2	34.2
	2	57	36.1	36.1	70.3
	3	22	13.9	13.9	84.2
	4	15	9.5	9.5	93.7
	5	10	6.3	6.3	100.0
	Total	158	100.0	100.0	

SECA17

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	43	27.2	27.2	27.2
	2	68	43.0	43.0	70.3
	3	21	13.3	13.3	83.5
	4	17	10.8	10.8	94.3
	5	9	5.7	5.7	100.0
	Total	158	100.0	100.0	

SECA18

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	59	37.3	37.3	37.3
	2	49	31.0	31.0	68.4
	3	23	14.6	14.6	82.9
	4	10	6.3	6.3	89.2
	5	17	10.8	10.8	100.0
	Total	158	100.0	100.0	

SECA19

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	54	34.2	34.2	34.2
	2	63	39.9	39.9	74.1
	3	17	10.8	10.8	84.8
	4	11	7.0	7.0	91.8
	5	13	8.2	8.2	100.0
	Total	158	100.0	100.0	

SECA20

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	44	27.8	27.8	27.8
	2	48	30.4	30.4	58.2
	3	35	22.2	22.2	80.4
	4	13	8.2	8.2	88.6
	5	18	11.4	11.4	100.0
	Total	158	100.0	100.0	

SECA21

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	54	34.2	34.2	34.2
	2	49	31.0	31.0	65.2
	3	23	14.6	14.6	79.7
	4	21	13.3	13.3	93.0
	5	11	7.0	7.0	100.0
	Total	158	100.0	100.0	

SECA22

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	58	36.7	36.7	36.7
	2	50	31.6	31.6	68.4
	3	42	26.6	26.6	94.9
	4	4	2.5	2.5	97.5
	5	4	2.5	2.5	100.0
	Total	158	100.0	100.0	

SECA23

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	17	10.8	10.8	10.8
	2	55	34.8	34.8	45.6
	3	62	39.2	39.2	84.8
	4	20	12.7	12.7	97.5
	5	4	2.5	2.5	100.0
	Total	158	100.0	100.0	

SECA24

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	32	20.3	20.3	20.3
	2	53	33.5	33.5	53.8
	3	32	20.3	20.3	74.1
	4	29	18.4	18.4	92.4
	5	12	7.6	7.6	100.0
	Total	158	100.0	100.0	

SECA25

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	57	36.1	36.1	36.1
	2	75	47.5	47.5	83.5
	3	8	5.1	5.1	88.6
	4	8	5.1	5.1	93.7
	5	10	6.3	6.3	100.0
	Total	158	100.0	100.0	

SECA26

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	33	20.9	20.9	20.9
	2	82	51.9	51.9	72.8
	3	25	15.8	15.8	88.6
	4	9	5.7	5.7	94.3
	5	9	5.7	5.7	100.0
	Total	158	100.0	100.0	

SECA27

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	61	38.6	38.6	38.6
	2	38	24.1	24.1	62.7
	3	39	24.7	24.7	87.3
	4	12	7.6	7.6	94.9
	5	8	5.1	5.1	100.0
	Total	158	100.0	100.0	

SECA28

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	16	10.1	10.1	10.1
	2	50	31.6	31.6	41.8
	3	57	36.1	36.1	77.8
	4	29	18.4	18.4	96.2
	5	6	3.8	3.8	100.0
	Total	158	100.0	100.0	

SECA29

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	48	30.4	30.4	30.4
	2	59	37.3	37.3	67.7
	3	8	5.1	5.1	72.8
	4	38	24.1	24.1	96.8
	5	5	3.2	3.2	100.0
	Total	158	100.0	100.0	

SECA30

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	16	10.1	10.1	10.1
	2	64	40.5	40.5	50.6
	3	56	35.4	35.4	86.1
	4	15	9.5	9.5	95.6
	5	7	4.4	4.4	100.0
	Total	158	100.0	100.0	

SECA31

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	22	13.9	13.9	13.9
	2	75	47.5	47.5	61.4
	3	39	24.7	24.7	86.1
	4	15	9.5	9.5	95.6
	5	7	4.4	4.4	100.0
	Total	158	100.0	100.0	

SECA32

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	42	26.6	26.6	26.6
	2	48	30.4	30.4	57.0
	3	55	34.8	34.8	91.8
	4	11	7.0	7.0	98.7
	5	2	1.3	1.3	100.0
	Total	158	100.0	100.0	

SECA33

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	23	14.6	14.6	14.6
	2	56	35.4	35.4	50.0
	3	48	30.4	30.4	80.4
	4	23	14.6	14.6	94.9
	5	8	5.1	5.1	100.0
	Total	158	100.0	100.0	

SECA34

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	37	23.4	23.4	23.4
	2	67	42.4	42.4	65.8
	3	31	19.6	19.6	85.4
	4	10	6.3	6.3	91.8
	5	13	8.2	8.2	100.0
	Total	158	100.0	100.0	

SECA35

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	55	34.8	34.8	34.8
	2	77	48.7	48.7	83.5
	3	8	5.1	5.1	88.6
	4	8	5.1	5.1	93.7
	5	10	6.3	6.3	100.0
	Total	158	100.0	100.0	

SECA36

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	66	41.8	41.8	41.8
	2	31	19.6	19.6	61.4
	3	37	23.4	23.4	84.8
	4	16	10.1	10.1	94.9
	5	8	5.1	5.1	100.0
	Total	158	100.0	100.0	

SECA37

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	55	34.8	34.8	34.8
	2	22	13.9	13.9	48.7
	3	60	38.0	38.0	86.7
	4	10	6.3	6.3	93.0
	5	11	7.0	7.0	100.0
	Total	158	100.0	100.0	

SECA38

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	56	35.4	35.4	35.4
	2	17	10.8	10.8	46.2
	3	59	37.3	37.3	83.5
	4	19	12.0	12.0	95.6
	5	7	4.4	4.4	100.0
	Total	158	100.0	100.0	

SECA39

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	46	29.1	29.1	29.1
	2	22	13.9	13.9	43.0
	3	48	30.4	30.4	73.4
	4	26	16.5	16.5	89.9
	5	16	10.1	10.1	100.0
	Total	158	100.0	100.0	

SECA40

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	60	38.0	38.0	38.0
	2	30	19.0	19.0	57.0
	3	44	27.8	27.8	84.8
	4	17	10.8	10.8	95.6
	5	7	4.4	4.4	100.0
	Total	158	100.0	100.0	

SECA41

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	70	44.3	44.3	44.3
	2	33	20.9	20.9	65.2
	3	27	17.1	17.1	82.3
	4	21	13.3	13.3	95.6
	5	7	4.4	4.4	100.0
	Total	158	100.0	100.0	

SECA42

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	76	48.1	48.1	48.1
	2	16	10.1	10.1	58.2
	3	32	20.3	20.3	78.5
	4	23	14.6	14.6	93.0
	5	11	7.0	7.0	100.0
	Total	158	100.0	100.0	

SECA43

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	50	31.6	31.6	31.6
	2	20	12.7	12.7	44.3
	3	51	32.3	32.3	76.6
	4	26	16.5	16.5	93.0
	5	11	7.0	7.0	100.0
	Total	158	100.0	100.0	

SECA44

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	85	53.8	53.8	53.8
	2	33	20.9	20.9	74.7
	3	23	14.6	14.6	89.2
	4	9	5.7	5.7	94.9
	5	8	5.1	5.1	100.0
	Total	158	100.0	100.0	

SECA45

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	92	58.2	58.2	58.2
	2	34	21.5	21.5	79.7
	3	23	14.6	14.6	94.3
	4	5	3.2	3.2	97.5
	5	4	2.5	2.5	100.0
	Total	158	100.0	100.0	

SECA46

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	73	46.2	46.2	46.2
	2	27	17.1	17.1	63.3
	3	31	19.6	19.6	82.9
	4	12	7.6	7.6	90.5
	5	15	9.5	9.5	100.0
	Total	158	100.0	100.0	

SECA47

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	66	41.8	41.8	41.8
	2	24	15.2	15.2	57.0
	3	35	22.2	22.2	79.1
	4	20	12.7	12.7	91.8
	5	13	8.2	8.2	100.0
	Total	158	100.0	100.0	

SECA48

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	89	56.3	56.3	56.3
	2	14	8.9	8.9	65.2
	3	37	23.4	23.4	88.6
	4	8	5.1	5.1	93.7
	5	10	6.3	6.3	100.0
	Total	158	100.0	100.0	

SECA49

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	104	65.8	65.8	65.8
	2	21	13.3	13.3	79.1
	3	24	15.2	15.2	94.3
	4	2	1.3	1.3	95.6
	5	7	4.4	4.4	100.0
	Total	158	100.0	100.0	

SECA50

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	86	54.4	54.4	54.4
	2	28	17.7	17.7	72.2
	3	28	17.7	17.7	89.9
	4	5	3.2	3.2	93.0
	5	11	7.0	7.0	100.0
	Total	158	100.0	100.0	

SECA51

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	88	55.7	55.7	55.7
	2	24	15.2	15.2	70.9
	3	36	22.8	22.8	93.7
	4	2	1.3	1.3	94.9
	5	8	5.1	5.1	100.0
	Total	158	100.0	100.0	

SECB1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	84	53.2	53.2	53.2
	2	36	22.8	22.8	75.9
	3	20	12.7	12.7	88.6
	4	11	7.0	7.0	95.6
	5	7	4.4	4.4	100.0
	Total	158	100.0	100.0	

SECB2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	82	51.9	51.9	51.9
	2	38	24.1	24.1	75.9
	3	34	21.5	21.5	97.5
	4	2	1.3	1.3	98.7
	5	2	1.3	1.3	100.0
	Total	158	100.0	100.0	

SECB3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	82	51.9	51.9	51.9
	2	21	13.3	13.3	65.2
	3	31	19.6	19.6	84.8
	4	16	10.1	10.1	94.9
	5	8	5.1	5.1	100.0
	Total	158	100.0	100.0	

SECB4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	102	64.6	64.6	64.6
	2	27	17.1	17.1	81.6
	3	20	12.7	12.7	94.3
	4	7	4.4	4.4	98.7
	5	2	1.3	1.3	100.0
	Total	158	100.0	100.0	

SECB5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	103	65.2	65.2	65.2
	2	15	9.5	9.5	74.7
	3	20	12.7	12.7	87.3
	4	13	8.2	8.2	95.6
	5	7	4.4	4.4	100.0
	Total	158	100.0	100.0	

SECB6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	113	71.5	71.5	71.5
	2	16	10.1	10.1	81.6
	3	23	14.6	14.6	96.2
	4	2	1.3	1.3	97.5
	5	4	2.5	2.5	100.0
	Total	158	100.0	100.0	

SECB7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	116	73.4	73.4	73.4
	2	18	11.4	11.4	84.8
	3	18	11.4	11.4	96.2
	4	2	1.3	1.3	97.5
	5	4	2.5	2.5	100.0
	Total	158	100.0	100.0	

SECB8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	108	68.4	68.4	68.4
	2	20	12.7	12.7	81.0
	3	16	10.1	10.1	91.1
	4	6	3.8	3.8	94.9
	5	8	5.1	5.1	100.0
	Total	158	100.0	100.0	

SECB9

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	20	12.7	12.7	12.7
	2	39	24.7	24.7	37.3
	3	74	46.8	46.8	84.2
	4	15	9.5	9.5	93.7
	5	10	6.3	6.3	100.0
	Total	158	100.0	100.0	

SECB10

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	33	20.9	20.9	20.9
	2	59	37.3	37.3	58.2
	3	57	36.1	36.1	94.3
	4	7	4.4	4.4	98.7
	5	2	1.3	1.3	100.0
	Total	158	100.0	100.0	

SECB11

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	54	34.2	34.2	34.2
	2	42	26.6	26.6	60.8
	3	49	31.0	31.0	91.8
	4	9	5.7	5.7	97.5
	5	4	2.5	2.5	100.0
	Total	158	100.0	100.0	

SECB12

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	53	33.5	33.5	33.5
	2	35	22.2	22.2	55.7
	3	57	36.1	36.1	91.8
	4	4	2.5	2.5	94.3
	5	9	5.7	5.7	100.0
	Total	158	100.0	100.0	

SECB13

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	91	57.6	57.6	57.6
	2	33	20.9	20.9	78.5
	3	19	12.0	12.0	90.5
	4	10	6.3	6.3	96.8
	5	5	3.2	3.2	100.0
	Total	158	100.0	100.0	

SECB14

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	74	46.8	46.8	46.8
	2	46	29.1	29.1	75.9
	3	25	15.8	15.8	91.8
	4	8	5.1	5.1	96.8
	5	5	3.2	3.2	100.0
	Total	158	100.0	100.0	

SECB15

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	75	47.5	47.5	47.5
	2	36	22.8	22.8	70.3
	3	23	14.6	14.6	84.8
	4	20	12.7	12.7	97.5
	5	4	2.5	2.5	100.0
	Total	158	100.0	100.0	

SECB16

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	70	44.3	44.3	44.3
	2	41	25.9	25.9	70.3
	3	37	23.4	23.4	93.7
	4	5	3.2	3.2	96.8
	5	5	3.2	3.2	100.0
	Total	158	100.0	100.0	

SECC1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	77	48.7	48.7	48.7
	2	41	25.9	25.9	74.7
	3	30	19.0	19.0	93.7
	4	8	5.1	5.1	98.7
	5	2	1.3	1.3	100.0
	Total	158	100.0	100.0	

SECC2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	86	54.4	54.4	54.4
	2	16	10.1	10.1	64.6
	3	13	8.2	8.2	72.8
	4	4	2.5	2.5	75.3
	5	39	24.7	24.7	100.0
	Total	158	100.0	100.0	

SECC3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	60	38.0	38.0	38.0
	2	32	20.3	20.3	58.2
	3	35	22.2	22.2	80.4
	4	18	11.4	11.4	91.8
	5	13	8.2	8.2	100.0
	Total	158	100.0	100.0	

SECC4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	85	53.8	53.8	53.8
	2	24	15.2	15.2	69.0
	3	31	19.6	19.6	88.6
	4	5	3.2	3.2	91.8
	5	13	8.2	8.2	100.0
	Total	158	100.0	100.0	

SECC5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	62	39.2	39.2	39.2
	2	22	13.9	13.9	53.2
	3	58	36.7	36.7	89.9
	4	3	1.9	1.9	91.8
	5	13	8.2	8.2	100.0
	Total	158	100.0	100.0	

SECC6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	65	41.1	41.1	41.1
	2	11	7.0	7.0	48.1
	3	28	17.7	17.7	65.8
	4	27	17.1	17.1	82.9
	5	27	17.1	17.1	100.0
	Total	158	100.0	100.0	

SECC7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	32	20.3	20.3	20.3
	2	97	61.4	61.4	81.6
	3	17	10.8	10.8	92.4
	4	8	5.1	5.1	97.5
	5	4	2.5	2.5	100.0
	Total	158	100.0	100.0	

SECC8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	11	7.0	7.0	7.0
	2	2	1.3	1.3	8.2
	3	46	29.1	29.1	37.3
	4	46	29.1	29.1	66.5
	5	53	33.5	33.5	100.0
	Total	158	100.0	100.0	

SECC9

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	54	34.2	34.2	34.2
	2	74	46.8	46.8	81.0
	3	14	8.9	8.9	89.9
	4	10	6.3	6.3	96.2
	5	6	3.8	3.8	100.0
	Total	158	100.0	100.0	

SECC10

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	50	31.6	31.6	31.6
	2	49	31.0	31.0	62.7
	3	37	23.4	23.4	86.1
	4	8	5.1	5.1	91.1
	5	14	8.9	8.9	100.0
	Total	158	100.0	100.0	

SECC11

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	63	39.9	39.9	39.9
	2	46	29.1	29.1	69.0
	3	26	16.5	16.5	85.4
	4	6	3.8	3.8	89.2
	5	17	10.8	10.8	100.0
	Total	158	100.0	100.0	

Appendix XI: Data set

Procurement Legal Framework Implementation

Implementation of Executive Orders & Decrees

No	SECA1	SECA2	SECA3	SECA4	SECA5	SECA6
1	4	5	4	5	5	3
2	4	3	5	4	5	3
3	5	4	5	5	4	3
4	3	3	4	4	3	3
5	3	4	3	3	3	3
6	5	4	4	5	5	5
7	4	4	4	5	3	2
8	3	3	3	3	3	2
9	5	4	4	5	4	4
10	5	4	3	4	4	4
11	4	5	5	4	5	4
12	5	3	4	4	4	2
13	5	3	4	3	5	4
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21	5	4	5	5	4	3
22	3	3	4	4	3	3
23	3	4	3	3	3	3
24	5	4	4	5	5	5
25	4	4	4	5	3	2

26	3	3	3	3	3	2
27	5	4	4	5	4	4
28	5	4	3	4	4	4
29	4	5	5	4	5	4
30	5	3	4	4	4	2
31	5	3	4	3	5	4
32	4	5	4	4	5	3
33	4	4	5	4	4	5
34	4	5	3	4	5	4
35	4	5	5	4	5	4
36	5	4	4	5	3	3
37	4	5	4	5	5	3
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39	5	4	5	5	4	3
40	3	3	4	4	3	3
41	3	4	3	3	3	3
42	5	4	4	5	5	5
43	4	4	4	5	3	2
44	3	3	3	3	3	2
45	5	4	4	5	4	4
46	5	4	3	4	4	4
47	4	5	5	4	5	4
48	5	3	4	4	4	2
49	5	3	4	3	5	4
50	4	5	4	4	5	3
51	4	4	5	4	4	5
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66	5	3	4	4	4	2
67	5	3	4	3	5	4
68	4	5	4	4	5	3

69	4	4	5	4	4	5
70	4	5	3	4	5	4
71	4	5	5	4	5	4
72	5	4	4	5	3	3
73	4	5	4	5	5	3
74	4	3	5	4	5	3
75	5	4	5	5	4	3
76	3	3	4	4	3	3
77	3	4	3	3	3	3
78	5	4	4	5	5	5
79	4	4	4	5	3	2
80	3	3	3	3	3	2
81	5	4	4	5	4	4
82	5	4	3	4	4	4
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93	5	4	5	5	4	3
94	3	3	4	4	3	3
95	3	4	3	3	3	3
96	5	4	4	5	5	5
97	4	4	4	5	3	2
98	3	3	3	3	3	2
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111	5	4	5	5	4	3

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127	4	5	4	5	5	3
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130	3	3	4	4	3	3
131	3	4	3	3	3	3
132	5	4	4	5	5	5
133	4	4	4	5	3	2
134	3	3	3	3	3	2
135	5	4	4	5	4	4
136	5	4	3	4	4	4
137	4	5	4	5	5	3
138	4	3	5	4	5	3
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141	3	4	3	3	3	3
142	5	4	4	5	5	5
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152	4	5	3	4	5	4
153	4	5	5	4	5	4
154	5	4	4	5	3	3

155	4	5	4	5	5	3
156	4	3	5	4	5	3
157	5	4	5	5	4	3
158	3	3	4	4	3	3

Implementation of Preference and reservation scheme, 2011

No	SECA5	SECA6	SECA7	SECA8	SECA9	SECA10	SECA11	SECA12
1	3	3	5	4	3	5	4	4
2	5	4	5	4	5	3	5	4
3	5	5	5	4	5	5	5	5
4	5	2	3	4	5	4	3	5
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6	4	4	5	5	4	5	4	5
7	4	4	4	5	4	5	4	5
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15	3	4	4	4	5	5	4	3
16	4	5	4	3	4	5	3	4
17	3	4	4	5	3	2	4	5
18	4	4	3	3	3	4	3	4
19	3	3	5	4	3	5	4	4
20	5	4	5	4	5	3	5	4
21	5	5	5	4	5	5	5	5
22	5	2	3	4	5	4	3	5
23	3	4	5	5	4	4	4	3
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30	3	4	3	4	3	5	4	5
31	5	4	3	4	4	3	5	5
32	5	5	4	4	5	4	5	3
33	3	4	4	4	5	5	4	3
34	4	5	4	3	4	5	3	4

35	3	4	4	5	3	2	4	5
36	4	4	3	3	3	4	3	4
37	3	3	5	4	3	5	4	4
38	5	4	5	4	5	3	5	4
39	5	5	5	4	5	5	5	5
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47	5	5	5	4	3	5	4	5
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53	3	4	4	5	3	2	4	5
54	4	4	3	3	3	4	3	4
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57	5	5	5	4	5	5	5	5
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59	3	4	5	5	4	4	4	3
60	4	4	5	5	4	5	4	5
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66	3	4	3	4	3	5	4	5
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68	5	5	4	4	5	4	5	3
69	3	4	4	4	5	5	4	3
70	4	5	4	3	4	5	3	4
71	3	4	4	5	3	2	4	5
72	4	4	3	3	3	4	3	4
73	3	3	5	4	3	5	4	4
74	5	4	5	4	5	3	5	4
75	5	5	5	4	5	5	5	5
76	5	2	3	4	5	4	3	5
77	3	4	5	5	4	4	4	3

78	4	4	5	5	4	5	4	5
79	4	4	4	5	4	5	4	5
80	3	4	3	4	3	3	3	3
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87	3	4	4	4	5	5	4	3
88	4	5	4	3	4	5	3	4
89	3	4	4	5	3	2	4	5
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91	3	3	5	4	3	5	4	4
92	5	4	5	4	5	3	5	4
93	5	5	5	4	5	5	5	5
94	5	2	3	4	5	4	3	5
95	3	4	5	5	4	4	4	3
96	4	4	5	5	4	5	4	5
97	4	4	4	5	4	5	4	5
98	3	4	3	4	3	3	3	3
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100	3	4	4	5	5	5	4	5
101	5	5	5	4	3	5	4	5
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103	5	4	3	4	4	3	5	5
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105	3	4	4	4	5	5	4	3
106	4	5	4	3	4	5	3	4
107	3	4	4	5	3	2	4	5
108	4	4	3	3	3	4	3	4
109	3	3	5	4	3	5	4	4
110	5	4	5	4	5	3	5	4
111	5	5	5	4	5	5	5	5
112	5	2	3	4	5	4	3	5
113	3	4	5	5	4	4	4	3
114	4	4	5	5	4	5	4	5
115	4	4	4	5	4	5	4	5
116	3	4	3	4	3	3	3	3
117	4	4	5	4	4	4	5	3
118	3	4	4	5	5	5	4	5
119	5	5	5	4	3	5	4	5
120	3	4	3	4	3	5	4	5

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125	4	4	4	5	3	2	4	5
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128	4	4	5	4	5	3	5	4
129	1	5	5	4	5	5	5	5
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135	4	4	5	4	4	4	5	3
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154	4	4	3	3	3	4	3	4
155	3	3	5	4	3	5	4	4
156	5	4	5	4	5	3	5	4
157	5	5	5	4	5	5	5	5
158	5	2	3	4	5	4	3	5

Implementation of Public Procurement & Asset Disposal Act, 2015

NO	SEC A13	SEC A14	SEC A15	SEC A16	SEC A17	SEC A18	SEC A19	SEC A20	SEC A21	SEC A22	SEC A23	SEC A24	SEC A25	SEC A26	SEC A27	SEC A28	SEC A29	SEC A30	SEC A31
1	4	3	4	5	5	4	5	5	4	3	3	4	4	4	5	3	5	4	4
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6	5	4	5	4	5	4	4	4	4	4	4	4	5	4	5	5	4	4	4
7	5	4	4	4	4	5	4	3	3	3	2	2	4	3	3	2	2	3	3
8	3	3	3	2	2	3	2	2	2	3	3	2	2	2	3	2	2	2	3
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10	5	4	4	4	5	5	4	4	5	4	4	5	5	5	4	4	4	4	5
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14	5	3	5	5	4	5	5	5	5	5	4	3	5	4	5	3	5	5	3
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16	3	5	2	5	3	4	5	5	5	5	4	4	5	4	5	4	4	3	4
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Implementation of Public Procurement & Disposal Regulations, 2016

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Implementation of Public Private Partnership act, 2013

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31	3	1	1	1	1	1	1	1	1
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Innovation Practices

NO	SECB1	SECB2	SECB3	SECB4	SECB5	SECB6	SECB7	SECB8	SECB9	SECB10	SECB11	SECB12	SECB13	SECB14	SECB15	SECB16	SECB17	SECB18	SECB19	SECB20	SECB21	SECB22	SECB23	SECB24	SECB25
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ID																									
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ID	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25
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Supply Chain Performance

NO	SEC C1	SEC C2	SEC C3	SEC C4	SEC C5	SEC C6	SEC C7	SEC C8	SEC C9	SECC 10	SECC 11	SECC 12	SECC 13	SECC 14	SECC 15	SECC 16	SECC 17
1	5	2	1	1	1	1	1	1	1	1	1	1	4	4	4	4	4
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6	4	5	1	4	4	1	4	3	1	3	3	1	4	4	4	4	4
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64	3	1	3	2	1	1	5	5	5	4	5	1	4	5	5	5	5
65	2	5	1	3	5	3	4	3	5	4	5	1	4	4	4	4	4
66	3	5	4	4	3	3	4	3	5	4	5	1	4	4	4	4	4
67	5	5	2	1	1	1	4	4	3	5	5	1	4	4	4	4	4
68	5	2	1	1	1	1	4	5	4	5	3	1	4	4	4	4	4
69	5	1	1	1	1	1	4	5	5	2	3	1	4	4	4	4	4
70	5	1	1	1	1	1	3	4	5	5	4	1	4	4	4	4	4
71	4	5	2	2	3	1	5	3	2	4	5	1	4	4	4	4	4
72	5	1	1	1	3	1	3	3	4	3	2	1	4	4	4	4	4
73	4	5	1	1	2	1	4	3	5	4	4	1	4	4	4	4	4
74	4	1	2	1	2	1	4	5	3	5	2	1	4	4	4	4	4
75	5	5	1	3	1	1	4	5	5	5	5	1	4	4	4	4	4
76	5	1	1	1	2	1	2	3	4	5	4	1	4	5	5	5	5
77	4	1	1	1	1	1	4	5	5	2	4	1	4	5	5	5	5
78	5	1	1	1	1	1	4	5	5	4	5	1	4	5	5	5	5
79	3	5	2	1	3	1	4	4	5	4	5	1	4	5	5	5	5
80	4	1	1	1	3	1	4	3	4	3	3	1	4	5	5	5	5
81	3	1	3	1	3	1	4	5	4	4	5	1	4	5	5	5	5
82	5	3	2	1	2	3	4	4	5	5	5	1	4	5	5	5	5
83	2	1	2	2	3	2	5	5	4	3	5	1	4	5	5	5	5
84	5	1	3	1	1	1	4	3	4	3	5	1	4	5	5	5	5
85	5	1	1	1	3	1	4	3	4	4	3	1	4	5	5	5	5
86	5	5	3	1	3	1	5	4	4	5	4	1	4	5	5	5	5
87	5	1	1	1	2	1	4	4	4	5	5	1	4	5	5	5	5
88	5	2	2	1	3	1	5	4	3	4	5	1	4	5	5	5	5
89	5	3	1	3	1	1	4	4	5	3	2	1	4	4	4	4	4
90	2	3	4	3	3	3	4	3	3	3	4	1	4	5	5	5	5
91	5	5	5	5	5	5	3	5	4	3	5	1	4	5	5	5	5
92	4	1	2	2	3	3	4	5	4	5	3	1	4	5	5	5	5
93	3	2	3	2	4	2	5	5	4	5	5	1	4	5	5	5	5
94	3	5	2	5	5	5	2	3	4	5	4	1	4	5	5	5	5
95	5	1	1	1	1	1	4	5	5	4	4	1	4	5	5	5	5
96	4	3	4	5	3	3	4	5	5	4	5	1	4	5	5	5	5
97	4	1	3	2	3	1	4	4	5	4	5	1	4	5	5	5	5
98	3	1	1	1	1	1	4	3	4	3	3	1	4	5	5	5	5
99	4	1	2	1	3	2	4	5	4	4	4	1	4	5	5	5	5
100	5	1	3	3	1	1	4	4	5	5	5	1	4	4	4	4	4
101	5	5	5	5	5	5	5	5	4	3	5	1	4	5	5	5	5
102	5	5	5	5	5	5	4	3	4	3	5	1	4	4	4	4	4
103	5	5	5	5	5	5	4	3	4	4	3	1	4	4	4	4	4
104	4	1	3	3	1	1	5	4	4	5	4	1	4	4	4	4	4
105	4	1	2	1	3	1	4	4	4	5	5	1	4	4	4	4	4
106	4	1	1	1	3	1	5	4	3	4	5	1	4	5	5	5	5

107	5	5	1	3	1	3	4	4	5	3	2	1	4	5	5	5	5
108	5	5	5	4	3	2	4	3	3	3	4	1	4	4	4	4	4
109	3	5	3	3	3	3	3	5	4	3	5	1	4	4	4	4	4
110	3	2	2	2	1	1	4	5	4	5	3	1	4	5	5	5	5
111	5	1	1	1	1	1	5	5	4	5	5	1	4	4	4	4	4
112	3	2	3	3	3	4	2	3	4	5	4	1	4	5	5	5	5
113	5	1	3	1	3	1	4	5	5	4	4	1	4	5	5	5	5
114	5	1	1	1	1	1	4	5	5	4	5	1	4	5	5	5	5
115	3	3	1	3	1	1	4	4	5	4	5	1	4	5	5	5	5
116	4	1	2	1	2	1	4	3	4	3	3	1	4	4	4	4	4
117	3	1	1	1	1	1	4	5	4	4	4	1	4	5	5	5	5
118	5	1	2	2	3	1	4	4	5	5	5	1	4	5	5	5	5
119	4	2	3	3	1	1	5	5	4	3	5	1	4	5	5	5	5
120	5	1	3	2	2	2	4	3	4	3	5	1	4	4	4	4	4
121	4	1	3	2	3	3	4	3	4	4	3	1	4	4	4	4	4
122	4	1	1	1	1	4	5	4	4	5	4	1	4	5	5	5	5
123	4	2	3	2	2	4	4	4	4	5	5	1	4	5	5	5	5
124	5	1	3	1	1	4	5	4	3	4	5	1	4	5	5	5	5
125	4	1	1	1	1	4	4	4	5	3	2	1	4	5	5	5	5
126	5	1	2	1	1	5	4	3	3	3	4	1	4	5	5	5	5
127	3	1	1	1	1	4	3	5	4	3	5	1	4	5	5	5	5
128	5	1	3	1	3	4	4	5	4	5	3	1	4	5	5	5	5
129	1	1	1	1	1	5	5	5	4	5	5	1	4	4	4	4	4
130	3	5	5	3	2	3	2	3	4	5	4	1	4	4	4	4	4
131	3	1	3	2	1	3	4	5	5	4	4	1	4	4	4	4	4
132	2	5	1	3	5	5	4	5	5	4	5	1	4	4	4	4	4
133	3	5	4	4	3	4	4	4	5	4	5	1	4	4	4	4	4
134	5	5	2	1	1	3	4	3	4	3	3	1	4	4	4	4	4
135	5	2	1	1	1	5	4	5	4	4	4	1	4	4	4	4	4
136	5	1	1	1	1	5	4	4	5	5	5	1	4	4	4	4	4
137	5	1	1	1	1	4	3	5	4	3	5	1	4	4	4	4	4
138	4	5	2	2	3	4	4	5	4	5	3	1	4	4	4	4	4

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NO																	
139	5	1	1	1	3	5	5	5	4	5	5	1	4	4	4	4	4
140	4	5	1	1	2	3	2	3	4	5	4	1	4	5	5	5	5
141	4	1	2	1	2	3	4	5	5	4	4	1	4	5	5	5	5
142	5	5	1	3	1	1	4	5	5	4	5	1	4	5	5	5	5
143	5	1	1	1	2	4	4	4	5	4	5	1	4	5	5	5	5
144	4	1	1	1	1	4	4	3	4	3	3	1	4	5	5	5	5
145	5	1	1	1	1	4	4	5	4	4	4	1	4	5	5	5	5
146	3	5	2	1	3	4	4	4	5	5	5	1	4	5	5	5	5
147	4	1	1	1	3	5	5	5	4	3	5	1	4	5	5	5	5
148	3	1	3	1	3	4	4	3	4	3	4	1	4	5	5	5	5
149	5	3	2	1	2	4	3	5	4	3	4	1	4	5	5	5	5
150	2	1	2	2	3	5	4	5	5	4	4	1	4	5	5	5	5
151	5	1	3	1	1	3	4	3	4	4	4	1	4	5	5	5	5
152	5	1	1	1	3	3	4	4	5	4	3	1	4	5	5	5	5
153	5	5	3	1	3	5	4	3	4	4	5	1	4	4	4	4	4
154	5	1	1	1	2	4	5	4	4	3	3	1	4	5	5	5	5
155	5	2	2	1	3	3	5	3	3	5	4	1	4	5	5	5	5
156	5	3	1	3	1	5	4	5	4	5	4	1	4	5	5	5	5
157	2	3	4	3	3	5	4	5	5	4	5	1	4	5	5	5	5
158	5	5	5	5	5	4	5	2	3	4	5	1	4	5	5	5	5

Summary Mean of Variables

NO	IEOD	IPRS2011	IPPADA2015	IPPDR2016	IPPPA	Innovation Practices	SCP_Cycle_Time	SCP_cost	SCP_QC	Mean_SCP
1	1.50	2.13	1.89	1.73	1.00	2.55	1.25	2.33	4.00	2.53
2	2.00	2.13	1.84	1.55	1.00	2.64	1.00	2.67	4.00	2.56
3	1.25	1.63	2.05	1.45	1.00	2.64	1.00	2.33	4.00	1.48
4	2.50	2.50	2.05	2.55	2.00	3.27	2.75	3.67	3.75	2.32
5	2.56	2.25	2.74	2.00	1.00	2.55	1.00	2.67	4.00	2.11
6	2.94	1.75	1.89	2.36	1.44	3.00	3.00	2.33	3.50	2.08

7	3.42	2.38	2.89	2.45	1.67	3.00	2.00	4.00	4.25	2.56
8	3.92	3.25	3.79	2.09	3.92	3.45	3.25	4.00	4.50	3.39
9	3.06	2.63	2.47	2.82	3.06	2.73	1.75	3.67	3.75	2.81
10	3.39	2.13	1.74	2.64	3.39	3.00	2.75	3.67	3.75	2.66
11	3.31	2.50	1.58	1.82	3.31	2.91	2.50	3.67	3.75	2.50
12	3.50	2.63	2.84	3.36	3.50	3.18	3.00	4.00	3.50	3.17
13	3.53	2.75	1.89	1.73	3.53	3.09	2.75	4.33	3.50	2.69
14	3.08	2.63	1.84	2.64	3.08	2.73	2.25	4.00	3.00	3.08
15	2.64	2.50	1.89	1.91	2.64	2.18	2.25	3.67	2.00	2.64
16	3.17	2.88	2.00	2.09	3.17	2.82	2.75	4.00	2.75	3.17
17	2.72	2.75	2.05	1.82	2.72	2.64	1.75	3.67	2.75	2.72
18	3.31	3.38	2.63	2.18	3.31	3.00	1.50	4.67	3.75	3.31
19	3.69	2.88	2.16	3.00	3.69	3.45	3.00	4.33	3.75	3.69
20	3.19	2.75	2.00	2.09	3.19	2.82	1.50	4.33	4.00	3.19
21	3.28	2.38	2.16	2.91	3.28	3.00	2.00	4.33	4.00	3.28
22	3.28	2.75	2.16	1.73	3.28	2.73	2.00	4.33	3.75	3.28
23	3.19	2.88	2.68	3.09	3.19	2.73	3.50	4.33	4.00	3.19
24	1.50	2.50	1.84	2.00	3.44	3.18	4.00	4.33	3.50	3.44
25	1.75	2.63	2.79	2.91	2.89	2.09	1.75	4.67	4.25	2.89
26	3.50	3.38	3.68	2.73	2.67	2.64	2.50	4.33	4.50	3.11
27	3.25	3.38	2.32	1.82	1.00	3.18	3.75	4.67	2.25	3.56
28	2.50	2.75	1.74	2.27	1.89	1.45	1.00	4.00	2.00	2.33
29	1.50	3.47	1.53	3.00	3.44	2.82	3.50	4.67	2.25	3.47
30	2.00	2.94	2.84	2.91	1.89	2.18	2.00	4.33	2.50	2.94
31	2.25	3.06	1.95	1.91	1.22	2.09	1.50	4.67	3.00	3.06
32	1.75	2.78	1.79	2.09	1.22	2.09	1.50	4.33	2.50	2.78
33	1.75	2.75	1.89	3.36	1.44	1.91	2.00	4.00	2.25	2.75

34	2.00	3.61	1.95	2.18	1.00	3.45	4.00	4.33	2.50	3.61
35	1.50	3.22	2.11	2.00	1.44	3.27	4.00	3.67	2.00	3.22
36	1.50	4.00	2.42	3.27	3.89	3.55	4.00	5.00	3.00	4.00
37	1.50	2.83	2.00	2.91	2.44	1.91	2.25	4.00	2.25	2.83
38	2.00	2.89	2.00	2.73	3.33	2.00	1.50	4.67	2.50	2.89
39	2.25	2.50	2.00	2.09	3.00	1.73	1.25	4.00	2.25	2.50
40	3.75	3.03	1.95	2.82	3.33	2.64	2.50	3.33	3.25	3.03
41	3.25	3.28	2.68	3.00	2.44	2.73	3.75	4.33	1.75	3.28
42	1.50	3.06	1.68	2.45	2.44	2.64	3.50	3.67	2.00	3.06
43	1.75	2.64	2.79	3.45	4.89	1.82	2.25	3.67	2.00	2.64
44	3.00	2.56	3.68	1.91	1.00	1.91	1.00	3.67	3.00	2.56
45	1.50	2.67	2.42	3.00	2.33	2.55	2.75	3.00	2.25	2.67
46	2.75	2.28	1.74	2.36	1.56	1.82	1.50	3.33	2.00	2.28
47	2.50	1.75	1.58	2.91	1.78	1.55	1.00	2.00	2.25	1.75
48	2.75	2.78	2.68	2.73	2.22	2.18	2.50	3.33	2.50	2.78
49	3.50	2.03	2.00	2.18	2.00	1.82	1.50	2.33	2.25	2.03
50	2.25	3.63	1.79	1.73	1.22	1.73	1.50	2.33	2.25	2.03
51	1.75	4.00	1.68	2.91	3.11	2.09	1.50	3.00	2.75	2.42
52	2.00	3.38	2.05	2.18	2.11	2.09	2.50	2.67	2.00	2.39
53	1.50	3.50	2.11	2.82	1.56	2.00	1.75	3.00	2.50	2.42
54	1.50	3.50	2.47	1.73	1.11	2.36	2.00	3.00	2.25	2.42
55	1.50	3.63	2.16	1.64	1.00	1.45	1.25	3.33	1.75	2.11
56	2.00	3.50	2.16	2.56	2.44	2.27	2.25	2.67	2.75	2.56
57	1.25	3.25	2.05	1.94	4.56	1.64	1.50	2.33	2.00	1.94
58	3.25	3.38	1.84	2.33	1.00	1.82	1.25	3.00	2.75	2.33
59	4.00	3.88	2.74	2.44	1.00	1.73	1.25	3.33	2.75	2.44
60	3.25	3.25	1.84	2.06	1.00	1.55	1.50	2.67	2.00	2.06

61	2.75	3.63	2.84	2.17	1.67	1.73	1.50	3.00	2.00	2.17
62	3.50	3.88	3.58	2.67	3.00	2.18	2.00	3.00	3.00	2.67
63	1.50	3.75	2.42	3.17	3.11	2.91	4.00	3.00	2.50	3.17
64	2.00	3.63	1.68	2.50	2.33	1.91	2.25	3.00	2.25	2.50
65	1.50	2.75	1.63	2.44	3.00	2.73	3.25	2.33	1.75	2.44
66	2.00	3.25	2.92	2.92	2.67	2.82	4.00	3.00	1.75	2.92
67	2.25	2.88	2.39	2.39	2.67	2.00	2.25	2.67	2.25	2.39
68	1.75	3.13	2.11	2.11	1.00	1.82	1.25	2.33	2.75	2.11
69	3.00	3.50	2.53	2.53	1.00	1.91	1.00	3.33	3.25	2.53
70	3.50	3.25	1.78	1.78	1.00	1.55	1.00	2.33	2.00	1.78
71	1.50	2.88	2.75	2.75	2.00	2.36	2.75	3.00	2.50	2.75
72	2.25	3.00	2.22	2.22	1.00	2.09	1.00	2.67	3.00	2.22
73	2.25	3.00	2.42	2.42	1.44	2.00	2.25	3.00	2.00	2.42
74	2.00	3.00	2.47	2.47	1.67	2.18	1.50	2.67	3.25	2.47
75	1.25	2.38	2.17	2.17	1.22	2.00	2.50	2.00	2.00	2.17
76	2.75	3.13	2.00	2.00	2.33	1.73	1.00	3.00	2.00	2.00
77	3.25	3.13	2.42	2.36	1.67	1.91	1.25	3.00	3.00	2.42
78	1.50	2.38	1.97	1.73	2.56	1.55	1.00	2.67	2.25	1.97
79	1.75	2.75	2.58	3.45	3.22	2.27	2.75	3.00	2.00	2.58
80	3.50	3.13	2.33	1.82	1.00	2.00	1.25	3.00	2.75	2.33
81	2.50	3.00	2.50	2.73	2.89	2.18	2.00	3.00	2.50	2.50
82	2.75	2.50	2.17	1.82	1.00	1.91	1.75	3.00	1.75	2.17
83	2.00	2.25	2.00	1.91	2.11	2.36	2.25	1.00	2.75	2.00
84	2.00	3.00	2.14	1.82	1.44	1.73	1.50	2.67	2.25	2.14
85	2.25	2.50	1.83	1.91	1.56	1.82	1.00	2.00	2.50	1.83
86	1.75	2.50	2.03	2.55	3.00	2.18	2.50	1.33	2.25	2.36
87	2.25	2.75	1.78	1.91	1.44	1.55	1.00	2.33	2.00	2.03

88	2.50	2.25	1.89	2.73	2.44	1.91	1.50	1.67	2.50	2.36
89	1.50	2.63	2.44	1.36	1.00	2.18	2.00	2.33	3.00	1.79
90	2.50	2.75	2.86	2.91	3.11	3.00	3.50	2.33	2.75	2.83
91	3.25	2.50	3.03	1.82	1.56	3.64	4.00	2.33	2.75	2.43
92	2.50	2.00	2.11	1.94	1.22	2.36	1.75	1.33	2.75	1.95
93	1.25	1.50	2.05	1.92	2.67	2.36	2.50	1.00	2.25	1.88
94	2.50	2.63	2.81	2.81	1.00	3.36	3.75	2.67	2.00	2.35
95	2.75	2.13	1.83	1.83	1.89	1.64	1.00	2.00	2.50	2.09
96	1.50	2.00	2.47	2.47	3.44	2.82	3.50	1.67	2.25	2.38
97	1.75	2.00	2.00	2.00	1.89	2.00	2.00	2.00	2.00	1.93
98	3.00	3.00	2.31	2.31	1.22	1.91	1.50	2.67	2.75	2.31
99	1.50	2.00	1.97	1.97	1.22	2.18	1.50	1.67	2.75	1.97
100	2.75	2.13	2.03	2.03	1.44	1.73	2.00	2.33	1.75	2.03
101	2.25	1.88	2.58	2.58	1.00	3.45	4.00	1.00	2.75	2.58
102	2.00	2.63	2.97	2.97	1.44	3.36	4.00	2.67	2.25	2.97
103	2.25	2.38	2.83	2.83	3.89	3.45	4.00	2.00	2.50	2.83
104	1.75	1.75	1.94	1.94	2.44	1.91	2.25	1.33	2.25	1.94
105	1.75	2.25	1.94	1.94	3.33	1.82	1.50	2.33	2.00	1.94
106	2.75	2.25	1.81	1.81	3.00	1.82	1.25	1.67	2.50	1.81
107	2.25	2.75	2.61	2.61	3.33	2.55	2.50	2.33	3.00	2.61
108	1.50	2.75	2.94	2.94	2.44	3.00	3.75	2.33	2.75	2.94
109	1.75	2.50	2.86	2.86	2.44	3.09	3.50	2.33	2.75	2.86
110	1.75	1.88	2.11	2.11	4.89	2.18	2.25	1.33	2.75	2.11
111	1.25	1.63	1.42	1.42	1.00	1.45	1.00	1.00	2.25	1.42
112	2.25	2.50	2.47	2.47	2.33	2.73	2.75	2.67	2.00	2.47
113	2.75	2.25	2.00	1.91	1.56	2.00	1.50	2.00	2.50	2.00
114	1.50	2.00	1.64	2.64	1.78	1.55	1.00	1.67	2.25	1.64

115	1.75	2.13	2.84	2.64	2.22	2.00	2.50	2.00	2.00	2.17
116	2.75	2.88	3.63	2.18	2.00	2.00	1.50	2.67	2.75	2.31
117	1.50	2.00	2.32	1.82	1.22	1.91	1.50	1.67	2.75	1.97
118	1.75	2.00	1.68	2.64	3.11	1.73	1.50	2.33	1.75	1.86
119	1.75	1.75	1.53	1.91	2.11	2.18	2.50	1.00	2.75	2.08
120	2.00	2.63	2.74	2.91	1.56	2.00	1.75	2.67	2.25	2.22
121	2.00	2.25	1.95	1.36	1.11	2.36	2.00	2.00	2.50	2.17
122	1.75	1.75	1.79	1.18	1.00	1.82	1.25	1.33	2.25	1.61
123	1.75	2.13	1.79	2.36	2.44	2.27	2.25	2.33	2.00	2.19
124	2.00	2.25	2.05	3.36	4.56	2.00	1.50	1.67	2.50	1.89
125	1.50	2.63	2.05	1.64	1.00	2.18	1.25	2.00	3.00	2.08
126	1.50	2.75	2.42	1.45	1.00	2.18	1.25	2.33	2.75	2.11
127	1.50	2.38	2.11	2.09	1.00	2.27	1.50	2.00	2.75	2.08
128	2.00	2.00	2.11	2.18	1.67	2.36	1.50	1.67	2.75	1.97
129	1.25	1.63	2.26	2.18	3.00	2.18	2.00	2.33	2.25	2.19
130	2.50	2.63	2.16	2.82	3.11	3.00	4.00	4.00	2.00	3.33
131	2.75	2.25	2.89	2.36	2.33	2.27	2.25	2.67	2.50	2.47
132	1.50	2.00	2.21	2.09	3.00	3.09	3.25	1.67	2.25	2.39
133	1.75	2.13	2.95	2.09	2.67	3.00	4.00	2.00	2.00	2.67
134	3.00	2.88	3.79	3.18	2.67	2.36	2.25	2.67	2.75	2.56
135	1.50	1.88	2.89	1.55	1.00	2.18	1.25	1.67	2.75	1.89
136	2.00	2.00	2.63	1.55	1.69	1.73	1.00	2.33	1.75	1.69
137	1.50	2.25	2.74	1.36	2.03	2.09	1.00	2.33	2.75	2.03
138	2.00	1.88	3.00	2.18	2.28	2.82	2.75	1.33	2.75	2.28
139	1.25	1.38	2.68	1.91	1.42	2.00	1.00	1.00	2.25	1.42
140	2.50	2.50	3.00	2.27	2.31	2.36	2.25	2.67	2.00	2.52
141	2.75	2.00	3.05	2.00	2.00	2.09	1.50	2.00	2.50	2.36

142	1.50	1.88	2.68	1.55	2.14	2.09	2.50	1.67	2.25	1.95
143	1.75	1.88	3.00	2.91	1.67	1.82	1.00	2.00	2.00	2.24
144	3.00	2.88	4.00	2.73	2.22	2.09	1.25	2.67	2.75	2.96
145	1.50	1.88	2.84	1.91	1.81	2.00	1.00	1.67	2.75	1.99
146	2.00	2.00	2.79	3.18	2.28	2.45	2.75	2.33	1.75	2.45
147	1.50	1.75	2.68	1.55	1.67	2.27	1.25	1.00	2.75	1.83
148	2.00	2.63	3.32	3.18	2.39	2.45	2.00	2.67	2.50	2.70
149	2.25	2.38	2.84	1.91	2.25	2.55	1.75	2.00	3.00	2.33
150	1.75	1.88	2.47	2.00	2.03	2.64	2.25	1.33	2.50	2.03
151	1.75	2.25	2.11	1.55	2.03	1.91	1.50	2.33	2.25	1.94
152	2.00	2.38	2.53	1.91	1.72	2.00	1.00	1.67	2.50	2.11
153	1.50	2.75	2.42	2.73	2.28	2.55	2.50	2.33	2.00	2.34
154	1.50	2.88	2.32	1.91	2.11	2.09	1.00	2.33	3.00	2.14
155	1.50	2.38	1.89	2.73	2.03	2.00	1.50	2.33	2.25	2.03
156	2.00	2.00	1.84	1.36	1.94	2.36	2.00	1.33	2.50	1.94
157	1.25	1.50	1.89	2.82	3.11	3.00	3.50	1.00	2.25	2.25
158	2.50	2.63	1.84	2.00	1.56	3.09	4.00	2.67	2.00	2.89