FACTORS INFLUENCING INFORMATION AND COMMUNICATION TECHNOLOGY ADOPTION IN PUBLIC PROCUREMENT AND DISPOSAL OF ASSETS IN TANZANIA

A CASE STUDY OF THE PREVENTION AND COMBATING OF CORRUPTION BUREAU IN TANZANIA

BY
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Dar es Salaam
2019
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This study is dedicated to all in favor of me without forgetting my husband B. Temba and my lovely Children, throughout out my academic career, for always encouraging me to work hard.
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I declare that this thesis report is my original work except where references are cited.

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KNOWLEDGEMENT
I thank the Almighty God for seeing me through the entire research period. Many thanks go to my supervisor Professor Emanuel Mjema for his guidance, relentless support and patience during this entire thesis period. I’m obligated to you for your guidance and mentorship. In addition, I acknowledge my family, friends and classmates for their encouragement and sustenance during this entire period.
ABBREVIATIONS AND ACRONYMS

ARs  Anonymous Reports from Watchdogs and Oversight Institutions
CILT, UK  Chartered Institute of Logistic and Transport, United Kingdom
ERP  Enterprise Resources Planning
ICT  Information and Communication Technology
LAN  Local Area Network
LGAs  Local Government Authorities
MDAs  Ministries, Departments and Agencies
MIS  Management Information System
NAO  National Audit Office
NIDA  National Identification Authority
NPPP  National Public Procurement Policy, 1st Draft of 2012
PCCB  Prevention and Combating of Corruption Bureau
PPA  Public Procurement Act
PMIS  Procurement Management Information System
PPRA  Public Procurement Regulatory Authority
PMU  Procurement Management Unit
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ABSTRACT

The research was a case study of PCCB which adopted the implementation of E-procurement system. Anderson, K. V., Juul, N.C and Pedersen, J. K. (2003) stated that an organization is able to realize the full benefits of ICT in procurement only when its internal financial system is interconnected with the procurement system.

E-procurement system contributes significantly to national productivity growth through the removal of non-value-added activities in procurement process. However, the adoption has been slow in Tanzania and there is still a lack of studies assessing the impact of e-procurement.

The research aimed at establishing the extent to which PCCB used ICT in procurement system and the strengths and weaknesses of the system. Data was mainly collected through questionnaires, interview and also using secondary data. It was established that whereas response from open ended questions was appealing, the level of neutral responses for closed ended questions was very high. The data was analyzed using the Statistical Package for Social Sciences (SPSS).

The study revealed gaps such as lack of enough procurement professionals, problems adhering to the annual budget since the budget module in PMIS is inactive. To utilize the good knowledge base of Information and Communication Technology (ICT) in the bureau, the research recommended the implementation of the basics of ICT in procurement such as advertisement of tenders via websites. This concept was used by government ministries in Tanzania, according to Nyandimo (2011).
CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE PROBLEM

1.1 Overview
This research describes the factors influencing the Information and Communication Technology adoption in public procurement and disposal of assets in Tanzania. This chapter comprises statement of the problem, research objectives, and research questions, significance of the study, limitations and delimitations of the study.

1.2 Background of the study
Public assets are procured using public money and execution of the expenditure involved is guided by the Public Procurement Act (PPA) no. 7 of 2011 and Regulations 2013 and Public Procurement (amended) Act 2016. Nevertheless, an Act to amend the Public Procurement Act with a view to enabling efficiency in regulating procurement processes, is to ensure value for money in public procurement and to provide for other related matters. The new Act (i.e. PPA No. 7 of 2011) provides better provisions for the regulation of public procurement and it repeals the Public Procurement Act No. 21 of 2004 and its Regulations of 2005 (GN 97 AND 98 OF 2005).

The Public Procurement (amended) Act 2016 has some minimal application of the ICT, which affects Procurement Management Information System (PMIS) to some extents. The application that are missing in PPA no.7 of 2011 and PP (Amended) Act 2016 include, among others, the following: Some Procuring Entities such as; Non-Governmental Entities for procurement financed from specific public finances; and
Public Private Partnership projects at their relevant stages. www.ppra.go.tz (05\textsuperscript{th} Oct. 2018).

The Public Procurement Regulatory Authority (PPRA) has its PMIS that gathers necessary information electronically but it is still limited to applications of some procurement functions such as e-procurement, e-auction and e-disposal in which the policy issue was a boundary towards further applications of ICT (PPRA, Guidelines, 2019).

Cessation of use of any public assets may arise out of the following, the assets may cease to comply with occupational health standards, the assets design may cease to meet modern job performance standards in speed, accuracy, usage patterns, they may have outlived their useful life, individual preference may declare assets for disposal for selfish ends etc (PPRA, complaints-reviews, 2019).

When the Public Procurement Act No. 7 of 2011 came into force, it insisted on the use of public tendering in disposing of the assets, just like Procurement. The use of Information Technology related to management and tracking of assets which requires a system that can manage and track each asset from acquisition stage to disposal stage. The system should keep all relevant records including the asset location, the asset condition, the user of the asset and previous user information. In case of disposition, it must give information regarding the costs of procurement and scrap value at disposal (PPRA, Public Procurement ACT, 2011).

www.ppra.go.tz (05\textsuperscript{th} Oct. 2018).
Through the use of Information Technology in public procurement, bidders will be given equal chances to compete using the electronic system through which internet and database can be used to facilitate procurement and disposal processes without direct contact between key players. This will minimize the compromise of quality and prices. Bidders may be allowed by the system to bid only once and coded to ensure fairness and be given feedbacks through the system retrieval. Computerized system can facilitate record tracking and store all relevant information required for official uses whereby catalog may be developed for key players i.e. sellers and buyers could be well organized and managed (Callendar, G. and Mathews, D., 2000).

Procurement and disposal of public assets has got principles to be used, which are effectiveness, efficiency, transparency, openness, attractiveness more value, economy and value for money. Above all methods of procurement, the Government is insisting on disposing the obsolete items by tender, because disposal of public asset by tender increase efficiency and quality performance, it also makes an impact on internal stakeholders as well as external donors hence minimize the scope of favoritisms and corruption. Disposal of public asset if well maintained with enough information at a time can provide an opportunity to exercise fairness to all bidders and thus shaping the image of the concerning entity (PPRA, Guidelines, 2019).

1.3 Statement of the Research Problem

Imperative phenomenon manifests that mission and vision are essential in management of procurement, logistics and disposal processes whether for private or public
organizations in order to achieve intended targets. Thus, the concept of value for money is not restricted to public procurement alone, but is cuts across to all entities established to achieve economic goals. Good procurement systems in place should bridge the gap between public needs and private needs for development of the country. Quality of products and service deliveries can be determinant factors to both private and public sectors before the eyes of citizens who are at one time or another customer to those entities. In doing so all private and public sectors intends finally to yield value for money which is the ultimate goal of each in the eyes of economical prosperities, (Baily, P.F. and Jessop, D.D and Jones, D, 1994).

Therefore, in achieving value for money in procurement and disposal, ICT adoption will ensure accountability that cuts down all loopholes of corruption, theft and/or selfish behaviors. Indicators for accountable procurement and disposal system are efficiency, effectiveness, transparency and fairness which give equal opportunity in competition during bidding.

According to Chaffey (Thai, K. and Grimm, R, 2000), ICT does not simply involve using technology to automate existing processes, but should also achieve process transformation by applying technology to help change these processes. To be successful in managing e-business, a breadth of knowledge is needed of different business processes and activities from across the value chain such as marketing and sales, through new product development, manufacturing and inbound and outbound logistics. Organizations also need to manage the change required by new processes and
technology through what have traditionally been supporting activities such as human resources management. Electronic business (e-business) is aimed at enhancing the competitiveness of an organization by deploying innovative information and communications technology throughout an organization and beyond, through creation of links between partners and customers. In another study, it was observed that, ICT can enhance transparency and fairness as well as effectiveness and efficiency which at the end sought to be determinants of good procurement and disposal (Awino, 2009).

In Tanzania, some of government institutions have wider coverage countrywide and in possession of many assets which can be diverted and be used for unofficial uses without knowledge of the top leaders.

In 2009, there was an attempt to register a vehicle dubiously in Iringa with false pretense as if someone purchased it from the PCCB. The vehicle was Mitsubishi brand and pickup but unfortunately PCCB had no such brand or make and communicated with TRA which managed to take necessary measures against that person. The exercise of tracking records of that vehicle was too manual and took time to communicate from Iringa to Dar-Es-Salaam and brought feedback in reversible manner. Similarly, early 2012, a public servant in Loliondo District purchased a Government vehicle at very low price that is less than Tshs 2,000,000/= (Two Million) immediate after being heavily serviced by the Government at cost exceeding TShs10,000,000/= (Ten Million) (Anonymous Report ARs, 2012).
The Government has many resources, which cause some challenges in managing them, some of challenges are: failure to know how many resources it has all over the country; actual demand in resource allocations; and the costs of the resources to the Government if needed. This situation causes the acquisition or the disposing of the same goods or assets with same specifications at different prices unreasonably (Anonymous Report ARs, 2012).

The PPA No 7 of 2011 seems to have spelt out very superficially that competitive tendering shall be used in the disposal of public assets but omitted detailed criteria of how public assets may be eligible for disposal. The challenges associated with disposal of public assets are that, the PPA No.7 of 2011 and Regulations 2013 have very few and brief sections, which state how disposal of all public assets should be conducted.

Public Procurement Act No. 7 of 2011 section No. 4 (3) of Part II - General Provisions, Procurement policy states that “The disposal of public assets polices are based on the need to achieve the best available net return when disposing of public assets by tenders whilst conducting all disposal with honesty and fairness”. Section No. 5 (d) states that “The public assets, including assets identified by a board of survey, which are found obsolete, dormant or unserviceable, are disposed of in a manner which attracts maximum competition while reducing the administration and transaction costs. The Act remain silent about status of the assets, policies, methods and knowledge appropriate for disposal of all public assets which aren’t tendered, thus leaving their disposal under the
jurisdiction of the head of the entity concerned. Therefore, this may affect the disposal of public assets on time, be without proper system of disposing the public assets, poor records of useful assets, which may be already become obsolete, which all this factor may lead cause a loss to the government etc. This study assessed factors influencing the Information Communication Technology adoption in managing public assets and how it can facilitate tracking of those assets and through provision of relevant predetermined information and records to improve performance of the institution through effective resources allocation schemes. Lack of system that can help in providing quick response on issues related to information of assets or goods possessed by the Government can be a problem that can cost the government when resources are diverged to individuals illegally. Therefore, applications of ICT can be one of the best solutions in managing resources where data are kept in database and used in sharable manner among key players using networks.

The research aimed to assess the influences of ICT adoption in in procurement and disposal of assets in Tanzania. The case study was carried out at PCCB, and interviews was used for data collection process from PCCB senior officials. This served as a guide and reference to other researchers, scholars and academicians dealing with the matter of application of ICT in procurement and disposal of assets in enhancing value for money and related studies in the future.

1.4 Research Objectives.
The main research objective is: To establish the impact of the factors influencing the ICT adoption in public procurement and disposal of assets in Tanzania
1.4.1 Research Objectives.

1. To identify the ICT tools that are applied in public procurement in Tanzania.
2. To establish the Staffs’ Competence and Skills in adapting e-procurement in Tanzania.
3. To ascertain the impact of Government leadership, rules and policies in ICT adoption in public procurement and disposal of assets.
4. To identify ethical issues that may arise in ICT adoption in public procurement and disposal of assets.

1.5 Specific Questions

The main research question is: What is the impact of the factors influencing ICT adoption in public procurement and disposal of assets in Tanzania?

1.5.1 Research Questions:

1. What are the ICT tools used in procurement and disposal of assets in Tanzania?
2. What is the level of the staffs’ competence and skills necessary in the adoption and use of ICT in procurement and disposal of assets in Tanzania?
3. How do the government leadership, rules and policies influence the ICT adoption in public procurement and disposal of assets?
4. What ethical challenges may arise in the ICT adoption and application in procurement and disposal in Tanzania?

1.6 Significance of the Study

This study expected that, the Public and Private Sectors would make use of it through its approach in enriching value for money in procurement and disposal of public assets or
goods. Private sector will benefit through possible equal opportunity to competition and fairness and minimize chances of face-to-face dialogues and hence increased transparency and fairness. Public sector also, will benefit as the result of highest level of competition that causes competitors to keep their prices as low as possible.

Existing system for disposal of public assets by loan applications do not attract competitive approaches and sometimes may defeat the essence of value for money whereby, lack of proper information can create a room of disposal of assets in good conditions disposed as one in worst condition at relatively low prices. Also, key areas of considerable attention will help the Government in providing proper guidance in fully application of IT in procurement due to emerging technological challenges which intends in increasing level of transparency, fairness and effectiveness.

The purpose of this study was to make a contribution to the effective management of procurement and disposal of public assets through applications of ICT in Tanzania. The ultimate goal is to develop practical guidelines from which it is hoped: -

(i) The Government of the United Republic of Tanzania can make policy decisions with regard to application of ICT in procurement and disposal of assets in enhancing effectiveness in service delivery, strategic policy decision making and investment strategies;

(ii) Decision makers and other stakeholders may acquire ICT application skills to promote value for money, integrity, improve assets management and decision-making skills to ensure the ICT applications rule are in clear and useful.
(iii) Theoretically, the study may be an addition to disposal and procurement literature. It aims at delineating strategic policy interventions to ensure tactical procurement and disposal through ICT applications.

This study involved identifying some of assets that were in possession of the Government and then were disposed using traditional approaches. Assessment will help in establishing elements of achieving value for money through traditional approaches as compared to application of Information Technology in procurement and disposal of public assets. The PCCB is an area of study and interviews involved in collecting data from the staff of PCCB. The study was carried at PCCB in Dar es Salaam.

1.7 Organization of the study

Organization of this study falls under five chapters. In the first chapter, the study explains about introduction, background, statement of the problem, objectives, research questions, significance of the study, and justification of the study. Chapter two of the study covers researcher’s intention to carry out the theoretical framework and literature review so as to collect previous ideas from other researchers. Moreover, chapter three has coverage on research methodology and such aspects as research designs, geographical coverage, population, sample and sampling strategies, data and data collection methods. Chapter four presents the data, analyses and interpretations of the data as related to the main aim of the study.
Finally, chapter five summarizes all the findings reported in chapter four according to the research questions that guided the study. Important aspects in chapter five are Summary of the study, conclusion, recommendations and area for further study.
CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction
This chapter attempts to define various key terms, concepts and reviews basing on theoretical and empirical studies conducted by other researchers within the similar context, research gap on the issues related to the effect of ICT in achieving VfM in public procurement and disposal of assets

2.1.1 Definitions of Terms.

a) Public Procurement
Procurement means buying, purchasing, renting, leasing or otherwise acquiring any goods, works or services by a procuring entity spending public funds or of a ministry, department or regional administration of the Government or public body and includes all functions that pertain to the obtaining of any goods, works or services including description of requirements, selection and invitation public procurement of renderers, preparation and award of contracts (PPRA, Public Procurement ACT, 2011)

b) Disposal
Means the divesture of public assets including intellectual and proprietary rights and goodwill, and any other rights of a procuring and disposing entity by any means, including sale, hire-purchase, licenses, tenancies, rental, lease, franchise, auction or any combination however classified other than those regulated by the Public Corporation Act (1992).

c) Value for money
According to Business dictionary, Value for money is a utility derived from every purchase or every sum of money spent. Value for money is based not only on the minimum purchase price (economy) but also on the maximum efficiency and effectiveness of the purchase.

**d) Communication Technology**

Communication Technology is physical devices and software that link various computer hardware components and transfer data from one physical location to another (Stanley, E.G. and Gregory, M.M., 2001)

**e) Information Technology**

Information Technology encompasses all technologies that involve computer hardware, computer software, storage technology, communication technology and networking (Riley, 2012)

**f) Standard Operating Procedures (SOPs)**

These are formal rules that have been developed over a long time for accomplishing tasks. These rules guide employees in a variety of procedures, from writing an invoice to responding to customer complaints (PPRA, 2019)

**g) E-Commerce**

E-commerce (Electronic commerce) refers to all types of electronic transactions between organizations and stakeholders whether they are financial transactions or exchanges of information or other services. These e-commerce transactions are either buy-side e-commerce or sell-side e-commerce and the management issues involved with each
aspect. Briefly, it involves all electronically mediated information exchanges between an organization and its external stakeholders (Radovilsky, Z and Hegde, G.V., 2004).

h) E-Business

E-business (Electronic Business) is applied as a broader term encompassing e-commerce but also including all electronic transactions within an organization. The e-business era also involves management of a network of interrelated value chains or value networks (Stadtler H. and C. Kilger).

i) Business information systems

Information systems can be defined as a set of interrelated components that collect (retrieve), process, store, and distribute information to support decision making, coordination, and control in an organization. In additional to supporting decision making, coordination, and control, information systems may also help managers and workers analyze problems, visualize complex subjects, and create new products. (Anderson, K. V., Juul, N.C and Pedersen, J. K, 2003).

2.2 Theoretical Literature Review of the Terms.

2.2.1 Theoretical Basis of the Study

In this study, theories to be considered includes Technological acceptance theory, Value for Money theory, Technological delusion theory, Knowledge based theory, institutional theory and New Management practices theory.

a) Technological Acceptance Model
The technology acceptance model (TAM) has been widely used for innovation adoption in light of its parsimonious and applicability across studies of the adoption process (Baily, P.F. and Jessop, D.D and Jones, D, 1994) meanwhile, the theory asserts that notable factors that influence the adoption process are perceived ease of use (PEOU) and perceived usefulness (PU) of technology.

These factors are predictors of user attitude toward using the technology, subsequent behavioral intentions, and actual usage. Perceived usefulness (PU) is defined as “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis et al., 1989). Perceived ease of use (PEOU) on the other hand is defined as “the degree to which a person believes that not much effort would be required in using a particular system.

There are two key determinants of TAM Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) which is widely used by the researchers to find the individual’s acceptance of IT. According to TAM, a lot of research has been done to find out the determinants of Perceived Ease of Use, but Perceived Usefulness is a key determinant that is comparatively overlooked. In TAM, additional theoretical constructs incorporated in TAM that were social influence processes (subjective norm, voluntariness, and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability, and perceived ease of use) which enables commission managers to organize intervention programs to increase individual’s acceptance and usage of new IT applications. According to (Tridapalli, 2008) eight competing models were reviewed and
empirically compared to develop Unified Theory of Acceptance and Use of Technology which identified four constructs that are important determinants of individual’s acceptance. Many researchers used these models to find the adoption of new IT Technologies.

There have been several models widely used by many researchers in IT discipline, to find out the individual’s acceptance of IT applications among them is the Extended Technology Acceptance Model (ETAM). In ETAM, additional theoretical constructs incorporated in TAM that were social influence processes (subjective norm, voluntariness, and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability, and perceived ease of use) which enables commission managers to organize intervention programs to increase individual’s acceptance and usage of new IT applications.

Electronic procurement as an information technology application consists of a useful tool for administrators to save money and increase commissions’ effectiveness and efficiency. Process cost savings, reduced administration costs, decrease in costs through reduced staffing levels, increased quality through increased competition, reduction in time through improved internal workflow and shortened overall procurement cycle times compose some of the benefits that stem of e-procurement process (Eadie et. al 2010). Davis (1986) developed and validated the Technology Acceptance Model (TAM) to explain the mechanisms that influence and shape users’ acceptance of new information technology. According to ETAM, there are two specific variables that are fundamental
determinants of users’ attitude toward using information technology and actual use of the system: perceived usefulness and perceived ease of use relatively to new information system design features.

b) Value for Money theory

The meaning of the term VfM is associated with ideas of efficiency and effectiveness in manner that are infrequently made precise (Heald, 2003). This is the concept which is used to evaluate whether a firm has attained the benefit that is maximum from the products and services it obtains and/or offers, within its available resources (Nditi, 2014).

VfM in public procurement process is the best measure of an economy and efficiency with which the financial resources of the public are transformed into acquired quality goods, works and services (URT, 2012). The major purpose of public procurement is to attain VfM that is procuring products and/or services at the best required quality and lowest possible price in a short period of a time frame with minimal costs of transaction (Stewart, 1994).

The issue of VfM of any physical assets is associated with the consideration of the life cycle costing analysis that is acquisition, operating and disposal costs of such an item (Di Maio, A., 2001). Section 27 of the PPA No. 7 of 2011 mandates the appointed CAG to perform performance audit concerning VfM Audit for the aim of finding the efficiency, economy and effectiveness of any expenditure made or use of public funds in the MDAs, Local Government Authorities s and public Authorities and other entities.
Good practice in procurement is a way to achieve VfM in relation to other associated benefits such as government structure which is clear, improved control environment, reduced purchased cost, improved quality and lower lifetime costs (Awino, 2009).

For a PE to achieve VfM in the procurement process there are various factors other than the purchasing price to be considered. In the past, PEs had regularly determined that the VfM was attained by accepting the lowest possible price submitted by suppliers of goods, contractors and/or service providers (Musanzikwa, 2003).

Nowadays decisions which are made are under a multi-criteria perspective whereby more than one dimension of quality and price are well considered (Jorge, 2010). Though price is no longer the only criterion for the award of government contacts but it should remain the most important criteria during the procurement undertaking (Bolton, 2006).

Also, it must be noted that an indicator of efficient procurement system is the presence of a properly developed and well managed procurement strategy, followed by a good contract management regime (Baily, P.F. and Jessop, D.D and Jones, D, 1994)

c) Knowledge based theory

It is apparent that knowledge and knowledge management (KM) now plays a vital role in organizations and global economies as a means of ensuring competitive advantage (Ram, G. Eric, J., Magazine, M.J and Stephens, P. , 2000). It cannot be ignored that Knowledge Management plays a vital role in mobilizing of organizational knowledge assets and can help facilitate the effective deployment of organizational skills and competencies (Radovilsky, Z and Hegde, G.V., 2004) through e-procurement initiatives.
Knowledge management can help to address issues of culture and organizational structure that are seen to be possible obstacles to effective adoption and implementation of e-procurement processes in construction organizations. The critical need for KM in construction organization is very important because the industry in general is known to resist change.

The adoption of new working processes like e-procurement systems will always face internal resistance by the workers. Furthermore, if employees do not understand the benefits associated with automating procurement processes there will be a lack of confidence and security in executing this new technology. This in turn will cause delays and even reluctance to use the e-procurement system. Knowledge management processes help to identify these softer non-technical concerns and can help to design training and awareness programs for the organization.

Knowledge management can facilitate the creation of an environment where employees are committed and motivated to share knowledge to benefit the organization (Croom, S. and Brandon-Jones, A., 2007). Knowledge management can also play a vital role in identifying knowledge gaps in existing business processes and integrate any organizational processes, knowledge databases or repositories that can be utilized to improve these business processes to complement any e-procurement initiatives. This knowledge gap identification process plays an important role in helping to map out the capability of the organization before any e-procurement initiatives are considered. It also can help to identify appropriate technical infrastructure that compliments the existing
business needs and identify emerging business needs that may face the organization with the introduction of e-procurement initiatives.

Knowledge management can play a significant role in making sure there is a seamless integration of the people, and processes with the appropriate technical infrastructure for e-procurement initiatives. Without this integration and ongoing support, it will be difficult to operate a successful e-procurement initiative.

d) Technological delusion theory

There are ample evidences where the transition to an e-procurement system hasn’t been smooth. Often the system was more complicated, it did not provide enough savings, as expected, the system was error prone and unreliable and lead to abandonment of the system by many administrative bodies (Maniam, K. and Halimah, A. and Hazman, S.A., April 2006).

Heywood, Barton & Heywood (2002) have stated that the gaping hole with the procurement is that, although it requires a tremendous investment of both resources: time and money, it cannot guarantee that the system will be a complete success. It has been observed that the transition from paper procurement to e-procurement is riddled with certain aberrations. Policies that encourage local economy clash with volume purchasing from large supplies (Kiburi, 2008) give rise to difficulties.

e) New Public Management theory

Since the emergence of the New Public Management (NPM) paradigm, growing attention has been paid to public sector innovation, both as a political priority and as a
fully-fledged field of study. A vast and well-established literature exists in respect to the determinants and the adoption of social innovation in the public sector (Owegi, F. and Aligula, E., 2006). The focus is on innovations driven by ICT and how they are characterized by social content.

ICT driven innovations can spread change thanks to their capacity for processing large volumes of data and enabling communication across temporal, functional and geographical boundaries (Bekkers & Homburg, 2005). ICT plays an increasing role in innovation processes in public sector and ICT driven innovations seem to depend on the general ICT infrastructure in a specific policy sector and/or in a particular country (Callendar, G. and Mathews, D., 2000). ICT experienced a significant development in the 1990’s in both developed and developing countries. One of the most significant innovations driven by ICT in public sector is e-government. This can be treated as a logical consequence of the implementation of ICT in public administration (Novack, R.A. and Simco, S.W., 1991).

Buckley (2003) identifies e-government as the provision of government information to citizens and the facilitation of active participation and consultation with citizens. He applies terms such as e-public services or e-administration to define the delivery of public services to citizens, business partners and suppliers, in addition to those working in the government sector by electronic media including information, communication, interaction, contracting and transaction. Based on this definition, e-procurement pertains to e-public services that are influenced by the development of ICT. It utilizes electronic communication, special software for e-auctions and also uses ICT to carry out a number
of stages of the procurement process, including search, sourcing, negotiation, ordering, receipt, and post-purchase review. In other words, e-procurement is connected with ICT development. Information and communications technology are relevant because it contributes to a more transparent and competitive environment in which government has to operate, which might also stimulate innovation.

f) Institutional theory

Institutional theory was deemed to be the most appropriate theoretical lens to understand the factors that enable the adoption of e-procurement in an organization and suited to understand the behavior of public organization. An institution was any standing social entity that exerts influence and regulation over other social entities (Morrison, 2009). An institution that adopt new technology like e-procurement are government authorities, international agencies, professional and trade industry association, research-oriented higher education institutions, trend setting corporations, multinational corporations, financial institutions, labor organization and religious institutions.

g) Basis of Concepts

It is apparent that e-business as part of ICT, involves looking at how electronic communications can be used to enhance all aspects of an organization’s supply chain management. It also involves optimizing an organization’s value chain, a related concept that describes the different value-adding activities that connect a company’s supply side with its demand side, (Chaffey, 2009). All the organizations from initial supplier to final customer of a supply chain. In practice, there are complex relationships between
organizations, so a supply chain is likely to appear as a network of interacting entities, CILT, UK (Awino, 2009).

According to (Di Maio, A., 2001), supply chains encompass the companies and the business activities needed to design, make, deliver, and use a product or service. Businesses depend on their supply chains to provide them with what they need to survive and thrive. Every business fits into one or more supply chains and has a role to play in each of them. The practice of supply chain management is guided by some basic underlying concepts that have not changed much over the centuries. The term “supply chain management” arose in the late 1980s and came into widespread use in the 1990s. Prior to that time,

According to (Musanzikwa, 2003) understanding what information is required by the organization and how properly designed ICT systems can help to manage resources more effectively, may bring many improvement in the way the organization operates and is managed including; Improved inventory control; Better managed manufacturing and increased productivity; Reduced operational costs; Better administration, communications and coordination; Enhanced public image; Better information for decision making, planning and control; Closer relationship with suppliers, customers, clients and the general public; Increased ability to deal with changes; Better management of the organization’s knowledge.
2.3 Empirical Literature Review

2.3.1 Background.

The procurement system before 2000s was governed by the Financial Orders Part III (Stores Regulations), 5th Edition of 1965. The Central Tender Board processed tenders for the ministries and government departments with the exception of Urban and District Authorities, Ministry of education and culture, educational institutions, parastatal enterprises, Ministry of Defense and National Service and Medical Stores Department. During that time, there were no guiding standard documents to be used in procurement proceedings whereby, various documents were differently used such as World Bank Guidelines, ADB guidelines, etc. In the mid of 1990s, the Government of Tanzania undertook the Country Procurement Assessment Report which was the source of the first Public Procurement Act in 2001 with some limitations since LGAs and some other public bodies were still using their procurement guidelines. Procurement reforms aimed at having a fair and transparent procurement system in achieving value for money through wider circulation of information that depended on Medias; there were no legal mechanism to allow electronic data in procurement, (Nditi, 2014).

Between 2002 and 2004, second Country Procurement Assessment Report conducted and gave raise to new public procurement legislation in 2004 which was passed by the Parliament and was subsequently signed into law (The Public Procurement Act No 21 of 2004) by the President and the Act became effective on 1st July, 2004. The Act provides a comprehensive coverage of all regulatory aspects critical to public procurement. The 2004 Act applies to all procurement undertaken by public institutions, PPA No. 21 0f
2004. Public assets are procured using public money and execution of the expenditure involved is guided by the Public Procurement Act (PPA) no. 7 of 2011 and Regulations 2013 and (PPRA, Public Procurement (amended) Act, 2016).

According to NPPP (2012), Tanzania ICT policy framework enabled Tanzanians to participate meaningfully in the knowledge, economy and minimize existing high costs of participation in various socio-economic opportunities including public procurement market. Since 2003 to date the gap is still on the lack of legal framework to enforce application of Electronic procurement in order to utilize the possibilities created by information and communication technology in increasing procurement efficiency. Procurement in other countries, have faced similar trend which called upon procurement reforms and international inventions as experienced in Tanzania and measures are continually undertaken in improving procurement system in many African Countries as well as in other countries being efforts of international intervention towards enhancing efficiency in procurement and disposal system.

In another it was noted that, the features of the Ugandan public procurement system prior to the inception of the procurement reform programs in the late 1990s were typical of many developing African countries that were at one time British colonies or protectorates. However, in recent years, the impetus for reform has increased, partly in consequence of requirements set by the World Bank and other donor organizations as conditions for providing development aid but principally because the inefficiencies of the unreformed systems have become self-evident. Most donors consider that a well-
functioning procurement system is an essential requirement if their funds are to be used effectively to promote development.

The procurement reforms, concerned in renewing procurement system in many developing countries through ensuring increased level of accountability, diminishing level of bureaucracy, increased level of transparency and fairness, efficiency and effectiveness (Callendar, G. and Mathews, D., 2000)

The procurement reforms proposed study of changes in procurement system in which case of ICT and its application in procurement and disposal may be part of it in increasing efficiency in procurement system. Ugandan Task Force on Public Procurement Reform (1999) revealed urgency need of having a study of the changes in the procurement system in Uganda in order to establish new and good procurement system (Ram, G. Eric, J., Magazine, M.J and Stephens, P. , 2000).

2.3.2 ICT tools applied in Public Procurement in Tanzania.

The increased adoption of the internet for business uses globally, has influenced the function of procurement to migrate from traditional paper-based processes to e-procurement. The unique features of the internet and related web-based technologies can potentially support the activities of procurement, and at the same time provide improvements to the procurement process. It is on this ground that e-procurement has, in recent years, been used as a means to significantly reduce costs because its ability to reduce transaction costs and manage the inventory in a more efficient manner.

In its most basic definition, e-procurement is the streamlining of procurement/purchasing processes by eliminating traditional paper-based documents
such as purchase orders, requisitions forms, and invoices and replacing them with electronic based paperless processes. It is a powerful business tool that can revolutionize the buying function of an organization by streamlining and automating the labor intensive procurement routines which in return enable employees to gain direct access to their suppliers' systems, visually confirm technical specifications and view product pictures, price points, and detailed product descriptions, (Morrison, 2009).

- **Installation Costs**

The cost for implementing new technology is very high in the beginning and cost effective in the long run. The need for new equipment, training costs and the cost of the system is relatively high. However, companies that use e-procurement technologies save 42% in purchasing transaction costs due to the simplification in the purchase process and the reduction in purchasing cycle time, which in turn, increases flexibility and provides more up-to-date information at the time of placing a purchase order. Thus, e-procurement tends to leverage the bargaining power of companies willing to establish contracts with their preferred suppliers and as a result, the overall maverick buying is lower (Tridapalli, 2008).

According to Turban et al (2000), many companies and government institutions across the globe are adopting e-procurement primarily to save costs of operations as procurement consumes up to 75% of the budgetary spending. However, apart from saving costs, e-procurement provides more benefits to the organization or government institutions such as reduced purchasing cycle time, reduced inventory levels and costs, obtaining high quality data on purchasing activities, enhanced transparency and
accountability in the purchasing process, enhanced budgetary control and low prices due to product standardization and consolidation of buys.

E-procurement adoptions make purchasing activities more effective in terms of both time and cost. In Tanzania the adoption of e-procurement is at infant stage. In recent years, Tanzania has made a significant progress in ICT. Specific examples are on the adoption of mobile technologies, implementation of the national ICT broadband backbone (NICTBB, 2019).

The ICT infrastructures which enable the government of Tanzania to embark on e-procurement adoption include: national fibre optic cable network, internet service providers (ISP) and internet cafes and increasing the number of mobiles network across the country. E-Procurement emphasizes on the use of modern technology available at our disposal, to perform all the phases involved in procurement. These phases range from search, sourcing, negotiation, ordering, receipt to post-purchase review of the procured item (Bailey, K. and Francis, M., 2008). E-procurement evolved with the concept of involving the end user or the requester in the procurement process through the implementation of an electronic multi-vendor catalog (Di Maio, A., 2001). E-procurement transforms the purchase-to-pay-process online. Benefits obtained through e-procurement are numerous, such as this approach enables the companies to decentralize operational procurement processes, at the same time, centralizing strategic procurement processes. This shift enables the achievement of higher supply chain transparency.

- **Infrastructures (Computer and hardware insufficiency)**
In Tanzania public infrastructure cannot absorb the current technological changes because of computer hardware insufficiency. Moreover, most of the hardware are not networked. They also lack appropriate software necessary to perform such operations. Other problems include suppliers’ insufficiency in terms of computer knowledge. Furthermore, the inventories are not electrified. The firms also suffer from poor e-contract management knowledge and resistance to changes. All these factors tend to undermine computerized procurement. All these issues stem from public procurement, which has become a highly ineffective and mismanaged process. Previously focused on improving the economy by boosting small and medium enterprises, the procurement process has now fallen victim to corruption and bureaucracy which have defeated its main objective. Concentrated measures are required to improve the current scenario and improve the process into a fair, competitive and transparent system that can ensure value for money in public projects (Stewart, 1994)

- **Types of E-procurement systems**

Various types of e-procurement system exist. They have been stated in brief below (Neupane et al., 2012):

a) E-informing: It involves gathering and distributing purchasing information both from and to internal and external parties using internet technology (Bailey, K. and Francis, M., 2008).

b) E-sourcing: It basically focuses on searching for new suppliers for various categories of products (Di Maio, A., 2001). E-tendering: It is the process where
suppliers are requested to send information and prices regarding a product or service on an online platform.

c) E-reverse auctioning: It is an auction conducted over the internet, where emphasis is laid on the price or goods of the services offered (Stadtler H. and C. Kilger).

d) e-MRO and Web based ERP: It is the process involving creation and approval of purchasing requisitions, placing of purchase orders and receiving the goods or services ordered via a software system based on internet technology. eMRO deals with indirect items (MRO), web based ERP deals with product related items.

e) E-ordering: It refers to the usage of internet for smooth and easy purchasing process. The digital stage is also used for ordering (requisitioning), approving the order, order receipt and final payment (Fleischmann, B. and Meyr, H. and Wagner, M., 2002)

f) E-markets: These serve as internet platforms where the component suppliers and purchasers can interact and conduct the procurement process (Block & Neumann, 2008).

g) E-intelligence: It refers to a management that has built in tools for spend analysis (Eakin, 2003).

(i) E-contract management: It refers to the use of ICT in improving the contracting process of companies by enhancing the effectivity and efficiency of the whole process (Rasheed, 2004).
2.3.3 The Staffs’ competence and skills in adopting to e-procurement in Tanzania

The implementation of e-procurement techniques requires personnel who are experts in the e-procurement issues at the country level and organizational level both in the procuring entities and the supplier entities. Hence, to be successful in the application of e-procurement at the country level there is a need of having adequate e-procurement experts at PPRA, supplier organization and PEs who will be in charge of the day to day implementation activities and harmonization of the e-procurement system. The country has inadequate experts on the subject matter; therefore, efforts should be taken by the government and the respective entities to train their experts on e-procurement techniques and technologies so that they may become competent and conversant on e-procurement and in return participate actively on the whole process of installing e-procurement infrastructure.

• Implementation and adaptation of new technology (e-procurement)

When looking at the staff competence and skills, we also look at the implementation and adaptation of new technology in the organization. The social-constructionist theory (Thai, K. and Grimm, R, 2000) states that to develop and implement a new technology is a contingent process that involves different factors. Therefore, technological changes cannot be analyzed through a fixed, unidirectional path. Rather, in order to explain such changes, it is necessary to look at a number of technological controversies and difficulties that emerge randomly throughout the implementation process.
Although it is not possible to determine in advance the evolution path of the ICT implementation process, the theoretical framework mentioned above lays the groundwork for the identification of the phases that characterize such process.

In the first phase, either external or internal drivers may push a firm towards adopting new ITCs. In some cases, such distinction may be blurring. However, internal drivers are made up by perceived opportunities (Stanley, E.G. and Gregory, M.M., 2001) perceived organizational problems (Musanzikwa, 2003) and change-needs related to the implementation of a new ICT gizmo or to the upgrading of antiquated information systems. On the contrary, external drivers are related to actors operating beyond the boundaries of a specific firm. In other words, not only does this category refer to clients, suppliers, competitors. But it also deals with regulators that modify operating standards, governments that change legal frameworks, etc.

In the second phase, the actual implementation process starts. At the very beginning, the new technology and the organization implementing it are not aligned. In regards to internal organizational aspects, there are two factors that play a key role in causing such misalignment: management expectations and the so-called technological frames.

- **Management expectations**

The choice to invest in new technologies is heavily influenced by management-expectations. Such expectations could span different fields: opportunities related to the improvement of some specific processes (Kalakota, R. & Robison, M., 1999) such as procurement and sourcing, the change in the supply-network strategies (Harland, 1996),
etc. Such expectations have to be transferred to both technology experts and end-users. However, despite their power, managers cannot force these organizational actors to share their expectations (Callendar, G. and Mathews, D., 2000).

Moreover, such expectations may be beyond the reach of the technology and may not be in line with the absorptive capacity of the organization adopting it. These phenomena create a misalignment between the technology and the organization implementing it.

**Technological frames**
The way organizational actors describe a new technology is not given. Rather, it is influenced by technological-frames (Croom, S. and Brandon-Jones, A., 2007). New components are characterized by technological features that are beyond the reach of the great majority of organizational actors. In other words, the so called “objective” component of a new technology is not visible to every organizational actor. As a consequence, these actors look at new technologies through their technological frames. Such frames include metaphors and images created through organizational actors’ beliefs and knowledge. Homogeneous organization-actor groups originate similar technological frames. In this respect, technological experts may look at new technologies through a set of lenses that are different compared to those utilized by managers on the one hand, and end-users on the other. As a consequence, such frames lay the ground work for the emergence of different images of the new technology. This in turn may instigate hostile behaviors towards the new technology, such as resistance, rejection, sabotage, etc. (Maniam, K. and Halimah, A. and Hazman, S.A., April 2006). Once identified as the main factors that cause the emergence of misalignments between
new technologies and the organizations adopting them, it is necessary to observe how organizations deal with such misalignments. According to the theoretical framework, these misalignments disappear thanks to adaptive cycles involving both the technological and the organizational dimension. On one hand, the technology is modified and customized in order to fit into the organization adopting it.

On the other, actions either at the macro or at the micro organizational level create the basic conditions for the homogenization of the technological frames of the organizational actors. In this respect, the implementation strategy plays a key role in speeding up the adaptive cycles. According (Owegi, F. and Aligula, E., 2006), it is possible to make a distinction among passive strategies, proactive strategies and total commitment strategies. Besides this classification, the implementation strategy encompasses a huge variety of actions aimed at dealing with the misalignment between the technological and the organizational dimension. Such actions may include providing incentives, implementing learning activities, promoting skill-building policies, modifying the graphic interface of a piece of software, etc.

In the third phase, the implementation process may be considered completed. Nevertheless, as this process is not linear, the so called “arrival-point” may be different from the one initially expected. In this respect, new opportunities may emerge and may originate new adaptive cycles.

Technology is changing rapidly and one key area to increase access to Information Communication Technology (ICT) in the society of both developed and developing
countries through its application in procurement. The World Bank Survey of ICT and procurement in Africa indicates a growing interest in the use of ICT in procurement (NICTBB, 2019).

- **Importance of Training and understanding the value of e-procurement**

Developing skills, knowledge and understanding of the proper use of ICT prepares stakeholders to become literate users of technology in their everyday working environments. However, developing countries like Tanzania still depend on the importation of ICT technologies from developed countries (Awino, 2009). Although ICT has the potential to enhance efficient procurement, this potential has not yet been realized in practice in developing countries because many organizations cannot afford to buy new ICT equipment’s (Awino, 2009).

At the same time, the changes in ICT technologies continue to give more openings for cost effective and powerful technologies of potential use in procurement processes. This becomes more challenging to stakeholders planning to adopt the use of ICT in operations. There is a continuous gap on knowledge of the available ICTs in the market and what works in specific application. The gap is widely reflected the research literature (Musanzikwa, 2003)

Another researcher in Multimedia technologies argues that, historically new forms of technologies never replace the old one, (e.g. TV did not kill radio and Internet did not kill TV), instead new forms complement the old ones and naturally lead to greater choice for people (Jorge, 2010). As a solution for organizations to have access to ICT, (Rasheed, 2004) identifies three categories of ICT provision for schools in developing
nations as, using second-hand equipment, using refurbished second-hand equipment, and using new equipment. However, caution is given that provision of new equipment is usually found in the wealthy organizations, or from centrally financed state provision and cost is one of the hindrances when planning the implementation of ICT in public procurement organs in developing countries.  

2.3.4 Impact of Government leadership, rules and policies in ICT adoption in Tanzania

Consequently, it is important that the value creation of e-procurement spread and emphasized that not only a web-based platform and that it implicates in some beneficial changes to the procurement process. Even though E-procurement is not a new process but in Tanzania is at infant stage (Suleiman, 2013) has argued that the most key challenge for Tanzania to Adopt E-procurement include Policy and Legislative framework, Institutional structures, Procurement processes, ICTs and People. This is supported by (Nditi, 2014) by discussing the main barriers for developing countries to adopt E-procurement are legal difficulties, IT difficulties and Lack of Security.

It is true that Lack of abundant and detailed elaborated research and findings on the aspect of e-procurement in Tanzanian context has result the Government to be late to adopt e-procurement and enjoy the fruits of this new technology to the public sector (Suleiman, 2013). Recognition of E-procurement in recently established Procurement Act of 2011 is a critical mile stone toward full adoption of E-procurement in Public procurement proceedings.
2.3.4 Impact of Government Leadership, rules and policies in ICT adoption in Tanzania

E-procurement referred to the use of internet-based (integrated) information and communication technologies (ICTs) to carry out individual or all stages of the procurement process including searching, sourcing, negotiation, ordering, receipt, and post-purchase review (Callendar, G. and Mathews, D., 2000). Consequently, it is important that the value creation of e-procurement spread and emphasized that not only a web-based platform and that it implicates in some beneficial changes to the procurement process (Fleischmann, B. and Meyr, H. and Wagner, M., 2002). Even though E-procurement is not a new process but in Tanzania is at infant stage (Stewart, 1994), (Suleiman, 2013) has argued that the most key challenge for Tanzania to Adopt E-procurement include Policy and Legislative framework, Institutional structures, Procurement processes, ICTs and People. This is supported by (Morrison, 2009), by discussing the main barriers for developing countries to adopt E-procurement are legal difficulties, IT difficulties and Lack of Security.

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• Background of Public procurement Management and introduction of e-procurement in Tanzania

The trend to establish ICT in procurement in Tanzania started in recently since the PPA came into practice in 2001, so far, the procurement cadre is at infant stage of development). Still there are number of areas to be rectified so as to reach at a level that can be satisfactory for operations, there for it is the duty of procurement professionals to make sure that the cadre moves forward.

To promote electronic procurement, the Government of Tanzania through the Public Procurement Regulatory Authority, started first by training all procurement practitioners in the Public Sector on the Procurement Management Information System (PPRA, Guidelines, 2019). Through such a system, the government can reduce corruption or collusion by minimizing the risk of data manipulation or misuse. At the same time, the procurement data and information can be made transparent for government decision-makers who, by using these data, can make informed decisions regarding public procurement. Electronic Government Procurement (e-GP) is the use of Information and Communication Technology (ICT) by governments in conducting their relationships with suppliers for the acquisition of works, goods, and consultancy services required by the public sector (NICTBB, 2019).

The level of e-GP implementation comprises three basic phases: Online disclosure of information (e.g. publication of procurement notices, awarded contracts, and procurement law and regulations), online procurement transactions (e.g. electronic distribution of bidding documents, electronic submission of bids/proposals/quotations,
electronic bid opening) and online procurement integration (e.g. integration of e-GP with systems for financial management, tax administration, and others) (NICTBB, 2019).

Along the lines of traditional tendering and purchasing procedures, e-GP can be divided into e-Tendering and e-Purchasing: E-Tendering can be defined as a solution designed to electronically handle the process of public tender for the acquisition of specialized works, goods, and consulting services that are of high value and low volume. Contracts are usually awarded on the basis of price and other criteria such as performance, quality, and efficiency. E-Purchasing is a solution designed to electronically facilitate the acquisition of low value but high-volume standard goods and services. Contracts are awarded on the basis of price as the only evaluation criterion (NICTBB, 2019).

Financial Challenges

A number of initiatives have been taken by government to enhance adoption of e-procurement on side of infrastructures. According to (Kalakota, R. & Robison, M., 1999), the Government of Tanzania has embarked on building National information and Communication Technology Broadband Backbone (NICTBB, 2019)Project which began in 2009 with an aim of creating service point at all regional and districts of Tanzania. The number of licensed telecommunications operators increased from 5 in 2003 to 62 in 2009 (TCRA, 2019). This enables proper communication and payment through mobile money. Furthermore, increase the number of Internet Service Provider and Internet cafe across Tanzania and recently signing of Cyber Crime Act of 2015 by formal President Jakaya Kikwete is a one step ahead toward adoption.
Unfortunately, until yet Tanzania face a vast of challenges which hinder both public and private organizations to adopt e-procurement. According to Liang, (2007) and Mark, (2011) Tanzania affected much by ‘Financial challenges’ -Cost of connectivity via VSATs are still high, ‘Organizational challenges’ - Technical support for Tele-centres is often inadequate and weaknesses in the quality of leadership, ‘Cultural challenges’- Resistance to change is reported in some organizations, ‘Connectivity problems’; poor infrastructure for communications, power and transport. According Suleiman (2013) has categorized those challenges on six areas such as ‘Policy framework challenge’-Lack of an overall ICT Policy and poor harmonization of initiatives had previously led to the random adoption of different systems and standards, ‘Regulatory framework challenge’-regulatory environment in building capacity to maintain a proactive legal framework that could keep pace with the rapidly changing telecommunication technology and e-procurement environment, ‘Cyber security challenge’- threats to data, equipment, networks, and people.

- Inappropriate technology challenges

The legal environment in Tanzania is still inadequate for cyber security in the country, ‘Procurement legal framework challenge’- The basic commercial laws in Tanzania are derived from the 19th century, and New PPA of 2011 and its regulations of 2013 does not support in advance the application of e-procurement. Inappropriate technology challenge’- lack the necessary technical know-how and experience to deploy the most appropriate technologies, and ‘Power supply challenge’- Poor electricity supply was a major problem. Efficient power supply in Tanzania is only guaranteed by power
generators. Therefore, the use of information technology for executing procurement process would be a problem; also, the connectivity of internet is not reliable and includes power off of electricity “Mgao wa Umeme” as a nation critical problem.

2.4 Ethical issues that may arise in ICT adoption.

According to Webster’s dictionary, ethics is defined as “Conforming to accepted professional standards of conduct”. In Ecantra’s encyclopedia, ethics is defined as “A system of moral principles governing the appropriate conduct for an individual or a group”.

The public procurement process should uphold integrity by mitigating all malpractices; informed decision-making, which requires public bodies to base decisions on accurate information and ensure that requirements are being met. More still, the Procurement practice should be responsive to aspirations, expectations and needs of the target society. The executing of the responsibility entails professionalism from competent scholars in this paradigm. Also there is need for transparency to enhance openness and clarity on procurement policy and its delivery.

• Stakeholders’ Ethics

Public procurement systems all over the globe have seen their share of corruption. Public procurement system consists of different phases, and each phase is vulnerable to corruption (Di Maio, A., 2001). Corruption affects the public competence and wealth in a country, increases government operation cost, corrodes the social hierarchy and citizen’s trust in government and distorts the composition of the government expenditure
in various sectors such as education, health, operation and maintenance. Developing countries are the worst sufferers.

In the project planning step of public procurement, chances of corruption are high, especially in developing countries. A minister or the government might plan and approve a project for their own personal benefit. In such situation, e-procurement portals can be of a great help. All the details and specifications regarding any project will be available on the portal. This makes it difficult for the officials to carry out any wrongdoing or make any manipulation as per their own wishes. Second phase is Product design and documentation. It is in this phase that all the technical intricacies of any project or product are described in detail. Often, such specifications are made in order to favor a particular supplier. However, if the process is on a digital platform, all the specifications will be presented in simple terms on the portal, for evaluation by the bidders. All bidders will have access to the same data and have to comply with all the standard terms and conditions.

Tendering and contract awarding is the next phase. It is the phase that is susceptible to maximum corruption (Rwoti, 2005). In case of pen and paper-based procurement process, there is a greater tendency for the officials to favor a particular contractor. Or in some situations, powerful and influential contractors don’t allow other contractors to submit tender. This type of behavior is very commonly seen in developing countries. The senior officials are often found to be involved in such scams.
Overall, such a scenario develops into an institutional corruption where different parties play their designated role to reap benefits.

- **Accounting and Audit**

Accounting and audit are another stage where there are ample chances for a person to carry out misconduct. Audits are not conducted regularly or thoroughly, therefore, the manipulations often go undetected. Often the relevant agencies do not cooperate with government audits and as a result, transparency is not ensured (Baily, P.F. and Jessop, D.D and Jones, D, 1994).

There are many attributes of an e-procurement system that tackle the issue of corruption. As previously mentioned, corruption at all the five stages can be significantly lessened using e-procurement. On a global scale, e-procurement has been recognized as a powerful tool that can be employed for curbing corruption (Radovilsky, Z and Hegde, G.V., 2004)

A major reason behind this, is that e-procurement reduces the face to face interaction formalities. All the details are displayed on a digital platform, accessible by everyone. Similarly, after the contractor is selected, it is notified on the same platform. No scope of physical meetings and face to face requesting or offering bribes etc. (Handfield, R. B., Nichols Jr, E. L. , 1999).

2.5 **Conceptual Framework.**

Researcher’s conceptual framework model tried to identify variables that are directly linked to the ICT adoption and find out relationship between dependent and independent
variables. Then after looking on how ICT adoption can contribute towards achieving value for money in e-procurement by making comparable assessments of key parameters such as ICT Tools applied, Competence and skills, Government influence and Ethical issues that may arise in adoption of e-procurement system.
Figure 2.1: Conceptual framework

Source: Author (2018)
Having looked on the researcher’s model, in order to understand the ICT adoption in public procurement we should understand the processes of ICT adoption as well as significance of ICT in procurement and disposal system.

ICT being a system, should be scrutinized in order to have stable and secure system by solving out all problems which can emerge as the results of accompanied challenges, performances and prevailing conditions or status which of these under normal conditions are intended to achieve required goals as stipulated in the researcher’s model in Figure 2.1.

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CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter gives details on the way in which this study was conducted. This part of the study examines the methodology that was employed for data gathering and analysis, including the study design, area of the study, target population, sample and sampling procedure, as well data collection methods. This study is more quantitative as compared to qualitative one and descriptive research approach was taken as one among types of quantitative approach the approach sought to describe the current status of an identified variable in the study areas. Furthermore, it enabled the collection of information from a fairly large population sample, summarize, analyze and interpret it for clarification objectives/purposes.

3.2 Area of the Study

The researcher aimed to assess the influences of the ICT adoption in achieving value for money in procurement and disposal of assets. The case study drawn from PCCB. The study involved employees and staff members of PCCB in Dar es Salaam. The data collection process in the organization served as a guide and reference to other researchers, scholars and academicians dealing with the matter of application of ICT in procurement and disposal of assets in enhancing value for money and related studies in the future.
3.3 Research Design

Research design in this study involved planning on what methods used in carrying out the study. In this study descriptive type of research design employed bearing in mind that, nature of this research is more quantitative as compared to qualitative research. Types of quantitative research designs consider how the research is designed for control of the variable in the investigation.

Briefly, there are four main types of Quantitative research which are Descriptive, Correlation, Causal-Comparative (Quasi-Experimental), and Experimental Research. Quantitative design should bridge between variables which are not controlled at all (only observed such that connections amongst variable are only described) and closely controlled variables whereby relationships amongst those variables are clearly established. Qualitative in most cases explain and describes the whole research phenomenon and qualitative required presentation of data collected and analysed responses of data collected during this study.

The descriptive approach scrutinizes determinants as found from practical reality while a prescriptive interpretation provides prescription and contains a more normative, or opinion-oriented answer to the research question. Such an answer would likely reflect a wish which need not to be grounded on practical reality. A description of practice allows an analysis to be performed basing on the practical reality so as to arrive at conclusions that address that reality.
A description of practices is also critical for gaining insight into practices and provides a sound basis for judging their contribution and relationship a central issue in this research and forms a reliable basis for providing recommendations for further improvements.

Research methodology is the overall plan or program of the research and helps the researcher to measure the extent to which objectives of the study was achieved or deviated. In this study, research methods such as audit interview, audit review and questionnaires were applied during data collections. The research methodology should constitute a logical sequence that connects the empirical data to a study initial research questions and ultimately to its conclusions. It consists of two different, but related, sets of activities. The explication of research design is important because it aids the assessment of the whole process of research (Babbie, 2007).

3.4 Research methods

Quantitative research approach is the approach which was used to collect quantifiable data and in an investigative manner. It is the approach which produced findings arrived at by means of interview procedures or other means of quantification. The rationale for intending to use quantitative approach is that, the approach did not consume time and therefore much data were collected, analyzed and computed within a short period of time. During this study data were computed into percentages for easy analysis and interpretation.

Therefore, the study used mainly quantitative and less qualitative research approaches because both approaches are compatible, and during the study the researcher enjoyed the
rewards from both; numbers and words, thus, the combination of data from interviews, questionnaire and computed percentages enabled the researcher to draw valid conclusions and put forward researchable issues for further studies (Saunders et al., 2003)

3.5 Study Population

According to (Kothari, 2004) population is referred to the group of interest to the researcher, the group to whom he/she would like to generalize the results of the study. The study population was the total members of a defined class of people, objects, places or events selected because they are relevant to your research question. For purpose of this study, targeted population were key players in execution of e-procurement such as PMU staff, Tender Board members, suppliers, contractors and policy makers and ICT staff at PCCB. Issue of gender were considered because as the result of equal opportunity and assumed level of trust of female as compared to male.

3.5.1 Sampling design and procedure

A sample is a representative of the population, and therefore sample units was selected by using non-random for the purpose of facilitating reliability and validity of data and their sources.

3.5.2 Sample Size

Many scholars such as (Kothari, 2004) suggest that the sample should be as large as possible. However, in this study, the determination of sample size was considered to be
in the small population size, due to constraints including time required to complete the study. Sample size was calculated using single population proportion:

**Formula**

This calculator uses the following formula for the sample size n:

\[ n = \frac{N \times X}{X + N - 1}, \]

Where,

\[ X = \frac{Z_{\alpha/2}^2 \times p \times (1-p)}{MOE^2}, \]

And \( Z_{\alpha/2} \) is the critical value of the Normal distribution at \( \alpha/2 \) (e.g. for a confidence level of 95%, \( \alpha \) is 0.05 and the critical value is 1.96), MOE is the margin of error, p is the sample proportion, and N is the population size. Note that a Finite Population Correction has been applied to the sample size formula. Where: n is sample size, Z is standard normal distribution corresponding to significance level at \( \alpha = 0.05 \), d is margin of error assumed to be 5% and p is proportion reported in use of ICT in procurement and disposal of assets in Tanzania >50%. From the calculator, the sample size for this study was 71.
3.6 Methods for data collection

Ndunguru (2007) defines data collection methods as a process of proving reliable and valid answers to investigate question of the study. There are two types of data collection namely primary data and secondary data. Researcher will collect primary data for key respondent in the target population, while secondary data will enable the researcher to collect fast and merger cost since this data are already collected and available, and they are unobtrusive that they are likely to be of higher quality data than could be obtained by your own (Fleischmann, B. and Meyr, H. and Wagner, M., 2002). This method is less expensive as it needs less money and time as researcher will collect data herself such as;
interviews and review. Audit involves examination or assessment subject to contents of this study. The reason for using multiple methods in data collection is that, it might not be possible to get all intended people to do interviews therefore for the left overs we shall use detailed questionnaire.

3.6.1 Interviewing

Audit interview was focused and deal with important personnel in special areas where audit review resulted into requirement of addition information. Open and closed questions were used depending on the situation to be raised. Interview was conducted to 4 PCCB senior officials, but only 2 senior officials were successful reached and the other 2 senior officials were missed in the process as they were not available.

3.6.2 Questionnaire

In gathering research data, questionnaires were given to specific staffs of PCCB that are directly related to the matter and are unable to do interviews. Respondents were contacted timely especially by phone and e-mails to ensure that the exercise is as planned. In addition, the researcher was available as and when needed to collect questionnaires from respondents. Questionnaire method was conducted to 67 PCCB officials, but only 61 officials were successful reached while 6 PCCB Officials could not be reached due to official duties out of the Bureau.

3.6.3 Documentary Review

For the research purpose different documents were reviewed including studies on similar theme, but the review was only limited to documents which were relevant to the research
topic and objectives. This is gathering of information or collecting data from a secondary source. There are two types of documentation that are Published and non-published documents. Usually published documents are available at various publications of the central and local government, trade journals, books, magazines and newspapers, various reports, as well as historical documents.

3.7 Reliability of data

Operationally reliability is defined as the internal consistency of a scale which assesses the degree to which the items are homogeneous that is how consistently individuals respond to the items within a scale. Cronbach’s Alpha (a) is a widely used to measure of internal consistency, (Cronbach, 1995) suggests a cutoff point of 0.7 or higher to be a good retain a variable in adequate scale. In this research Cronbach Alpha (a) was used to assess the reliability of the scale where a cutoff point of 0.7 was adopted.

3.8 Validity

According to Borg and Gall (1983) validity is define as the extent to which the procedure actually accomplishes what is seeking to measure. Sounders et al., (2004) define validity as concerned with whether findings are really about what they appear to be about. To ensure validity of the data collection instrument for this study, a pilot study of 20 employees was conducted by the researcher. The results and comments from 20 respondents were used to modify the questionnaires.
3.9 Data analysis

Data analysis is the process of editing, coding, classification and tabulation of collected data so that they are manageable to analysis (Kothari, 2007). Aims of data analysis is the formulation of conclusion that can be used in decision making in future situations.

In this study, the researcher used Descriptive analysis. Then, the data that was collected from the questionnaires and interviews were entered in SPSS software, by using descriptive statistics, data were analyzed through graphs, charts and tables to measure frequencies and percentage. However, in quantitatively, data were analyzed in numbers and percentages. Data and findings were presented in tables, and charts. The number of questionnaires and interviews done at PCCB were noted down and later the returned once were compared to the number of issued questionnaires.

This enabled the researcher to determine the actual number of respondents and determine unviable respondents which were terminated. The remaining viable response data were coded and entered into the computer software SPSS. Data were entered and analyzed; responses for open ended questions were summarized, categorized and coded using key words. Coding was also be applied to ended questions.

3.10 Results

This study generated an understanding of the Information and Communication Technology (ICT) adoption and its influences in Procurement and Disposal in Tanzania. In this area, picture of how application of Information and Communication Technology can be adopted in Procurement and Disposal is link with which are requirements of facilitating ICT adoption in procurement and disposal.
3.11 Ethical Considerations

Consideration was put on watching the rules during the whole preparation process of the study. During the process of data collection, the researcher introduced herself to the respondents and the respondents were verbally informed on the aim of the study and also were assured of confidentiality of their data.

The respondents were also made aware that the data collected will be used for academic purpose only, and not any other purpose(s) and none of the participants were identified by their names in the report.

Additionally, the researcher informed the respondents that their participation in the course of data collection was deliberate and they are free to withdraw their participation at any point of data collection process.
CHAPTER FOUR
DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction
This chapter presents the results and discussion of the data obtained from the study area. The data were gathered using a questionnaire and an interview guide that were prepared and administered according to the research objectives. Secondary data were also gathered from comprehensive reading of relevant documents.

4.2 Response rate
The study targeted sample of 67 respondents in the process of questionnaire data collection with regard to the factors influencing Information and Communication Technology adoption in public procurement and disposal of assets in Tanzania. Out of the 67 respondents who were approached during the study, about 63 respondents from Prevention and Combating of Corruption Bureau (PCCB) responded to the study. The response rate is 94%, it is significant to give reliable findings for the study. This rate agrees with (Nyandimo, 2011) who states that the response rate that is above 50% is adequate for analysis and reporting.

4.3 Demographic Characteristics of Respondents
This section presents and discusses the analysis of demographic characteristics of respondents from the study. The section summarizes the background characteristics of respondents which include gender, age, level of education and working experience.
4.3.1 Distribution of Respondents by Gender

The study examined the gender distribution of respondents (employees) at Prevention and Combating of Corruption Bureau (PCCB). The attribute of gender assists the researcher to understand the distribution of the males and females across the study population in PCCB as well as increasing the reliability of the study. The difference in gender numbers came in as a result of available respondents within PCCB head office during the study. The data shows that the majority of the respondents 73% were males and 27% of the respondents were females. The findings show that men were more than women during the study. This also shows that both male and female participated in the study and therefore gender equity was considered as both males and females were given equal chance during the study.

4.3.2 Distribution of Respondents by Age

Distribution of respondents by age at PCCB is characterized by the respondents with the age ranged between those below 30 years to those above 45 years as shown in Figure 4.1. Most respondents (56%) were in a group with the age range of 35-39 while the least one 2% had the age range of 30-34. Distribution of Respondents by age is presented in Figure 4.1:
The findings from Figure 4.1 show that human resource at PCCB is mostly dominated by young age between 35-39 years whose number were tallying to 56% of the respondents. Others were in the age categories of over 45 years 14% of the respondents, between 40-45 years were 14% of the respondents, below 30 years were 14% of the respondents and at least those between 30-34 years was 2% of the respondents. These results unveil that respondents at PCCB has working group which can be regarded as the good approach to be able to manage the changing situation associated with technological changes. In addition to that, this is a productive age as it has also been supported by (Awino, 2009) as cited by (Kiburi, 2008) that in Tanzania the economically productive class ranges between the age of 15 to 60 years.
4.3.3 Working experience of the respondents at PCCB

The study aimed at finding out the number of working experiences of the respondents at PCCB. Working experience is an important aspect in this study as it gives the general overview of the trending issues in procurement system at PCCB. The number of working experiences of the respondents at PCCB is presented in Table 4.1:

**Table 4.1 Distribution of Respondents by Working Experience at PCCB**

<table>
<thead>
<tr>
<th>Working Experience</th>
<th>Freq. (n=63)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 3 years</td>
<td>18</td>
<td>29</td>
</tr>
<tr>
<td>Between 7-9 years</td>
<td>12</td>
<td>19</td>
</tr>
<tr>
<td>From 10 years and above</td>
<td>33</td>
<td>52</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>63</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

The results shown in Table 4.1 indicate that about 33 PCCB staff (52%), have the working experience of more than 10 years, followed by 29% officials with working experience that fall below 3 years working experience and remaining group of 19% officials with 29% counting between 7-9 years. Working experience plays vital role in the adoption of the new technology as the experienced staff can easily cope with the trending technology to improve day to day business processes. Results disclose that the majority of the respondents at PCCB had the working experience which is suitable for adoption of ICT tools and e-Procurement in particular, the observation relate with that of (Nditi, 2014) who emphasized that working experience plays vital role in the adoption of the new technology.
4.4 ICT Tools Applied in Public Procurement at PCCB

The study intended to identify the ICT tools that are applied in public procurement in Tanzania. The study attempted to investigate various ICT tools and their role in enhancing e-Procurement at PCCB. ICT tools in use at PCCB ranges from Computers, Internet services, Procurement Management Information System (PMIS), Website and Database system.

4.4.1 Availability of Internet

Internet is one among the ICT tools used at PCCB for e-Procurement. In this study, respondents were asked for their replies about the availability of internet services at PCCB. Study findings about the availability of internet services at PCCB is presented in Table 4.2:

<table>
<thead>
<tr>
<th>Table 4.2 Availability of Internet Services to Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freq. (n=63)</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>At most 2 Hours</td>
</tr>
<tr>
<td>At most 4 Hours</td>
</tr>
<tr>
<td>At most 8 Hours</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

From the above Table, the results display that out of the 63 approached respondents, about 57% respondents replied that internet services were made available for at most 4 hours in a day, again about 25% respondents acknowledged that availability of internet services were at most 2 hours in a day whereas the rest of the respondents, 18% suggested that internet services were only available in the period of only 2 hours a day. Looking at these findings, there were respondents who explained that the availability of
the internet is not constant in a day. For instance, in an interview, one of the respondents said that, “conferring to my working experience here, not once or twice in a day, I have seen internet going down and up frequently and so I can’t comment how long internet is available in a day. Such kind of comment showed that availability of internet was not much satisfactory. Above all these results from the study indicate that, internet is an important tool in e-Procurement as suggested by (Thai, K. and Grimm, R, 2000) accepts the potential role of all electronically mediated information exchanges between an organization and its external stakeholders.

4.4.2 Access to Computers and Internet in at PCCB

Another significant ICT tool used at PCCB for e-Procurement is Personal computers. The study aimed at identifying accessibility of both personal computers and internet services. The findings point out that, all respondents approached for the study, agreed that they had access to both personal computers and internet services.

4.4.3 The Use of Procurement Management Information System (PMIS) in e-Procurement

Procurement Management Information System (PMIS) is an example of enterprise resource planning (ERP) software designed purposely to exchange information about procurement system. In this study, respondents were asked about their views on the use of PMIS in procurement procedures. The results about the Use of PMIS in e-Procurement are shown in Table 4.3
The findings above reveal that, majority of the respondents 34 (54%), denote that the use of PMIS in e-Procurement is very important. The tool can handle large number of suppliers as well as serve time of procurement processes. However, about 30% respondents suggested that the use of PMIS is important, 11% of the respondents argued that the use of PMIS in e-Procurement is unimportant while 5% respondents claimed that the use of PMIS in e-Procurement is moderately important. The same results about the advantages of e-procurement in public procurement were also mentioned by (Awino, 2009).

4.4.4 The Use Database of Prequalified Suppliers in e-Procurement

The study intended to examine the ICT tools that are applied in public procurement in Tanzania. The study attempted to investigate the Use Database of Prequalified Suppliers and its role in enhancing e-Procurement at PCCB. The results on the Use Database of Prequalified Suppliers are presented in Table 4.4:
Table 4.4 The Use Database of Prequalified Suppliers in e-Procurement

<table>
<thead>
<tr>
<th></th>
<th>Freq. (n=63)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unimportant</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Moderately important</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Important</td>
<td>38</td>
<td>60</td>
</tr>
<tr>
<td>Very important</td>
<td>15</td>
<td>24</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>63</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

From the Table above, the results disclose various responses about the use of Database of Prequalified Suppliers and its role in enhancing e-Procurement at PCCB. The results show that majority of the respondents, 60% suggested that the Use Database of Prequalified had important impacts in e-Procurement. Others are 24% respondents who suggested that the use of Database of Prequalified Suppliers is very important, 8% respondents recommended the use of Database of Prequalified Suppliers as moderately important and again the other 8% respondents also had similar recommendation. In their study they found that computerized database is crucial because it manages data efficiently and allows users to perform multiple tasks with ease (Corsi, M. and Gumina, A. and Ciriaci, D., 2006).

4.4.5 The Use of Website for Tenders Advertisements

The study intended to identify the ICT tools that are applied in public procurement in Tanzania. Here the study attempted to investigate The Use website in to improve e-Procurement at PCCB. The use of website for tender’s advertisement is presented in Table 4.5:
Table 4.5 The Use of Website for tender’s advertisement

<table>
<thead>
<tr>
<th></th>
<th>Freq. (n=63)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unimportant</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Moderately important</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Important</td>
<td>39</td>
<td>62</td>
</tr>
<tr>
<td>Very important</td>
<td>17</td>
<td>27</td>
</tr>
<tr>
<td>Total</td>
<td>63</td>
<td>100</td>
</tr>
</tbody>
</table>

From the Table above, the results unveil numerous responses about the use of website for tender’s advertisement at PCCB. The results express that majority of the respondents, 62% appealed that the use of website for tender’s advertisement had important impacts in e-Procurement. Others 27% respondents suggested that the use of website for tender’s advertisement is very important, 8% respondents recommended the use of website for tender’s advertisement as unimportant and again the other 3% respondents saw the use of website for tender’s advertisement as moderately important, the same results were also discovered by (Kalakota, R. & Robison, M., 1999) who suggested that the use of website for tender’s advertisement is very important in public procurement.

4.4.6 Computerization of Procurement Process

The study attempted to investigate the role of computerization of procurement system in enhancing e-Procurement at PCCB. The results on computerization of procurement process are presented in Figure 4.2:
From the Figure 4.2, the results expose that majority of the respondents, 68% appealed that computerization of procurement process played important effect in e-Procurement. Others 25% respondents suggested that computerization of procurement process is very important, 3% respondents recommended computerization of procurement process as moderately important and those who suggested computerization of procurement process as unimportant were 2%, the same way to those who claimed it to have little importance. Some respondents had to give the reason for their reactions. One of them said that she is happy because at least she can be able to minimize paper works. “I’m happy with computerization of procurement process because now I’m free from paper works and that everything is accomplished through electronic system.” Findings reveal that computerization of procurement process is a basic tool in e-Procurement and that has the opportunity to minimize time and provision of handling large number of suppliers as the majority of the employees claimed. These finding are in line with the

**Table 4.6 Model Summary of adoption of ICT and ICT Tools Applied in Public Procurement**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.901(^a)</td>
<td>.812</td>
<td>.809</td>
<td>.13225</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), ICT Tools in Use

In this case \( R = 0.901 \), which is a strong relationship. This suggests that the model is a relatively good predictor of the outcome. \( R^2 \) value indicates the proportion of variation in the outcome variable (ICT adoption in public procurement) that can be explained by the model (i.e. by the ICT tools applied in public procurement). In this case \( R^2 \) is said to be 81% of the variance in the data can be explained by the predictor variables.
Table 4.7 ANOVA analysis of the variables - adoption of ICT and ICT Tools in use

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>4.598</td>
<td>1</td>
<td>4.598</td>
<td>262.907</td>
<td>.000b</td>
</tr>
<tr>
<td>Residual</td>
<td>1.067</td>
<td>61</td>
<td>.017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5.665</td>
<td>62</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Adoption of ICT  
b. Predictors: (Constant), ICT Tools in Use

The output tells whether or not the model (which includes ICT tools applied in public procurement) is a significant predictor of the outcome variable. As the significance value is less than p=0.05, hence the regression model significantly predicts the adoption of ICT in public procurement. The results indicated that the model was a significant predictor of ICT adoption, F(1,61) = 262.9079, p = .000.

Table 4.8 Coefficients of the variables - adoption of ICT and ICT Tools in use

<table>
<thead>
<tr>
<th>Coefficientsa</th>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>.772</td>
<td>.172</td>
<td>4.495</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>ICT Tools in Use</td>
<td>.912</td>
<td>.056</td>
<td>16.214</td>
<td>.000</td>
</tr>
</tbody>
</table>

da. Dependent Variable: Adoption of ICT

A multiple regression was carried out to investigate whether application of ICT tools could significantly predict the adoption of ICT in public procurement. The results of the regression indicated that the model explained 81% of the variance and that the model
was a significant predictor of adoption of ICT in public procurement. As the significance value is less than \( p=0.05 \), hence the regression model significantly predicts the adoption of ICT in public procurement. The results indicated that the model was a significant predictor of ICT adoption, \( F(1,61) = 262.9079, p = .000 \).

### 4.5 Staff Competence and Skills in adapting e-procurement in Tanzania

The study attempted to inspect Staff competence and skills in adapting e-procurement at PCCB. Professional qualification in procurement management, awareness on public procurement act, advantages and disadvantages of Public Procurement Act.

#### 4.5.1 Professional Qualification in Procurement Management

The study claimed to discover the status of Professional qualification in procurement management as the fact that Professional qualification plays very important role in the modern e-Procurement system. The findings convey that the status of Professional qualification in procurement management of the staff at PCCB fell on average as 52% staff were reported to have no professional qualification in procurement management whereas about 48% staff were described to have no professional qualification in procurement management. (Di Maio, A., 2001) in his study on government procurement found that professional qualification plays very important role in the modern e-Procurement system.

#### 4.5.2 Awareness on Public Procurement Act

On awareness on public procurement act, the study appealed to discover the level of PCCB staff understanding on awareness of public procurement in the modern e-Procurement system. The findings on the question about PCCB staff awareness on
public procurement claim that the level of understanding of PCCB staff on awareness of public procurement act was satisfactory as more than a half of the PCCB Staff 56% had an understanding about awareness of public procurement act while about 28 PCCB staff 44% were described to lack an awareness of public procurement act. These results relate with the findings that procurement rules must guide employees in a variety of procurement procedures by (Anderson, K. V., Juul, N.C and Pedersen, J. K, 2003).

4.5.3 Advantages of Public Procurement Act

Respondents were requested to list down on their understanding of the act, the advantages of public procurement Act. Public Procurement Act serves as the guidelines in the whole of public procurement system, it was deemed to have standardized procurement and disposal in public entities thus enhancing accountability, competitiveness, fairness, objectivity and transparency both within and without the public entities. The findings about the advantages of public procurement act are presented in the following table.

<table>
<thead>
<tr>
<th></th>
<th>Freq. (n=63)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guidelines</td>
<td>17</td>
<td>27</td>
</tr>
<tr>
<td>Transparent</td>
<td>26</td>
<td>41</td>
</tr>
<tr>
<td>Value for money</td>
<td>20</td>
<td>31</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>63</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 4.9 Advantages of Public Procurement Act
From the findings discovered in Table 4.9 respondents mentioned guidelines, transparency and value for money as the advantages of Public Procurement Act. Public Procurement Act (2005) was considered to have ensured value for money, 31%. Transparency 41% was highlighted to be evident since the Act stipulates that there should at least exist quotations from 3 suppliers for the process to be considered as fair and transparent. Of all 63 respondents, 27% of the respondents agreed that Public Procurement Act serves as a guideline to suppliers, was also cited as a major plus for PPDA (2005).

4.5.4 Disadvantages of Public Procurement Act

Researcher wanted to know whether there are disadvantages associated with the implementation of the Public Procurement Act. Respondents were requested to list down on their understanding of the act, the disadvantages of public procurement Act.

<table>
<thead>
<tr>
<th></th>
<th>Freq. (n=63)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bureaucracy</td>
<td>36</td>
<td>57</td>
</tr>
<tr>
<td>Low quality</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>goods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overpricing</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Time delay</td>
<td>13</td>
<td>21</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>63</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

From the findings Table 4.10, the Public Procurement Act was described as bureaucratic by 57% respondents specifically so while procuring goods and services which are not expensive. It was discovered by 21% respondents that the time spent in various
procurement committees was viewed as a major restraining of PPDA (2005) since it made the procurement process long and cumbersome. At least 8% of the respondents endorsed Public Procurement Act with a room of overpricing of goods by the suppliers in the public sector, this was cited as a restriction of the legislation to the annual budget of the public entities.

Table 4.11 Model Summary of Adoption of ICT and Staff competences and skills.
A multiple regression was carried out to investigate whether Staff competences and skills could significantly predict adoption of ICT in public procurement in public sector.
Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.309&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.095</td>
<td>.081</td>
<td>.28983</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Staff Competences

In this case, R=0.31 which is a weak relationship. This suggests our model is relatively not a good predictor of the outcome. R<sup>2</sup> value indicates the proportion of variation in the outcome variable (Adoption of ICT in public procurement) that can be explained by the model (i.e. by Staff competences and skills). In this case R<sup>2</sup> =0.1, and can be explained that 10% of the variance in the data can be explained by the predictor variable.

Table 4.12 ANOVA analysis of the variables - adoption of ICT and staff competence

<table>
<thead>
<tr>
<th>ANOVA&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>Regression</td>
</tr>
<tr>
<td>1. Residual</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Adoption of ICT
b. Predictors: (Constant), Staff Competences and skills

ANOVA tells whether or not the model (which includes Staff Competences and skills) is a significant predictor of the outcome variable. This is tested using Analysis of Variance. As the significance value is less than p=0.05, this indicate that the regression model significantly predicts adoption of ICT. The results indicated that the model was a significant predictor of ICT adoption, F(1,61) = 6.439, p = .014.
Table 4.13 Coefficients of the variables: adoption of ICT and staff competence

While the ANOVA table shows whether the overall model is a significant predictor of adoption of ICT in public procurement, coefficients table tells the extent to which the individual predictor variable contributes to the model.

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>3.038</td>
<td>.202</td>
<td>15.018</td>
<td>.000</td>
</tr>
<tr>
<td>Staff Competences</td>
<td>.216</td>
<td>.085</td>
<td>.309</td>
<td>2.537</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Adoption

From the model, the results show that Staff Competences and skills significantly contributed to the model (p=.01). Staff Competences and skills are important in public procurement as it is observed by (Morrison, 2009).

4.6 Ethical Issues in ICT Adoption in Public Procurement and Disposal of Assets.

The study aimed to recognize Ethical Issues in ICT Adoption in Public Procurement and Disposal of Assets. The discussion on Ethical Issues in ICT Adoption was put under such aspects as provision of handling large number of suppliers, rejection of prequalified suppliers, regular trainings on procurement procedures, availability of enough computers for PMIS, adherence to PPRA and accountability and transparency in procurement.

4.6.1 Provision of Handling Large Number of Suppliers

The study aimed to recognize provision of handling large number of suppliers as an aspect of ethical issues in ICT adoption in Public Procurement and Disposal of Assets.
The Likert scale responses of the views of the PCCB Staff show that the majority of the respondents 89% agreed that always PMIS had provision of handling large number of suppliers, followed by 9% respondents who suggested provision of handling large number of suppliers as often and lastly 2% respondent who claimed provision of handling large number of suppliers was possible in sometimes. Findings reveal that PMIS as basic tool in e-Procurement has provision of handling large number of suppliers as the majority of the employees claimed, this is similar to the findings by (Nyandimo, 2011) who reveal that PMIS is a basic tool in e-Procurement.

4.6.2 Rejection of Prequalified Suppliers

The study aimed to recognize rejection of prequalified suppliers as another aspect of ethical issues in ICT adoption in Public Procurement and Disposal of Assets. Table 4.14 demonstrate the Likert scale responses of the views of the PCCB Staff on rejection of prequalified suppliers.

<table>
<thead>
<tr>
<th>Rejection of Prequalified Suppliers</th>
<th>Freq. (n=63)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sometimes</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Often</td>
<td>33</td>
<td>52</td>
</tr>
<tr>
<td>Always</td>
<td>28</td>
<td>45</td>
</tr>
<tr>
<td>Total</td>
<td>63</td>
<td>100</td>
</tr>
</tbody>
</table>

Results in Table 4.14 confirm that the majority of the respondents 33 (52%) agreed that often e-Procurement and specifically PMIS was characterized by rejection of prequalified suppliers meanwhile 45% respondents observed that there was always
rejection of prequalified suppliers by PMIS. At least 3% respondents described rejection of prequalified suppliers as only in sometimes. Findings reveal that PMIS as basic tool in e-Procurement was effectively used in rejection of prequalified suppliers as the majority of the PCCB Staff appealed, the results similar to the guidelines provided by (PPRA, Public Procurement ACT, 2011).

4.6.3 Regular Trainings on Procurement Procedures

Another aspect is basically regular training. This paper meant to identify regular trainings on procurement procedures as aspect of ethical issues in ICT adoption in Public Procurement and Disposal of Assets. Table 4.15 establishes the Likert scale responses of the views of the PCCB Staff on regular trainings on procurement procedures.

<table>
<thead>
<tr>
<th></th>
<th>Freq. (n=63)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Seldom</td>
<td>23</td>
<td>37</td>
</tr>
<tr>
<td>Sometimes</td>
<td>33</td>
<td>52</td>
</tr>
<tr>
<td>Always</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>63</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Results in Table 4.15 confirm that the majority of the respondents about 52% understand that sometimes there were regular trainings provided on procurement procedures. About 37% respondents appealed that seldom there were regular trainings on procurement procedures, other 8% respondents experienced that there had never been regular trainings on procurement procedures while at least 3% held that there were
always regular trainings on procurement procedures. Results discloses that there were regular trainings on procurement procedures as the majority of the PCCB Staff stated. (Novack, R.A. and Simco, S.W., 1991) who emphasized that staff should be equipped with regular trainings on procurement procedures.

4.6.4 Availability of Enough Computers for PMIS

The study intended to identify the availability of enough computers for PMIS at PCCB. The respondents were requested to explain the on the availability of computers for PMIS. Table 4.16 demonstrates the Likert scale responses of the opinions of the PCCB Staff on availability of enough computers for PMIS.

<table>
<thead>
<tr>
<th>Opinion</th>
<th>Freq. (n=63)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Seldom</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Sometimes</td>
<td>44</td>
<td>70</td>
</tr>
<tr>
<td>Often</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>63</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Of all the 63 respondents, answered to the affirmative to the question whether they used computers on a daily basis for PMIS. About 70% of the respondents claimed to have used computers in some time, 9 (14%) respondents agreed that often they used computers and 11% respondents asserted that they seldom used computers. Only 5% respondents retorted that they had never used computers. The response was very reassuring since every respondent was expected to understand the basics of ICT. Results discloses that the majority of the respondents at PCCB agreed on the
availability of enough computers for PMIS as stated, these results relate with that of (Thai, K. and Grimm, R, 2000) who found that about 72% of the respondents appealed to have used computers in some time, while (19%) respondents agreed that often they used computers and 9% respondents asserted that they seldom used computers.

4.6.5 Adherence to PPRA

The study aimed to recognize Ethical Issues in ICT adoption in public procurement and disposal of assets. One of these ethical issues in ICT adoption is adherence to PPRA. Table 4.17 indicates the Likert scale responses of the views of the PCCB Staff on adherence to PPRA.
### Table 4.17 Adherence to PPRA

<table>
<thead>
<tr>
<th></th>
<th>Freq. (n=63)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sometimes</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Often</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Always</td>
<td>59</td>
<td>94</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>63</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

From the findings in Table 4.17 majority of the respondents 94% claimed that there was always adherence to PPRA in the Public Procurement. About 5% respondents asserted that often there was adherence to PPRA while at least 1% respondents ordained that sometimes there was adherence to PPRA. Results reveal that the majority of the respondents at PCCB agreed on adherence to PPRA as specified by the majority. The results recount with the result of (Croom, S. and Brandon-Jones, A., 2007) in their study about How E-Government May Enhance Public Procurement who found that majority of the respondents 89% in their study argued that there was always adherence to PPRA in the Public Procurement.

### 4.6.6 Accountability and Transparency in Procurement

The study sought to perceive accountability and transparency in procurement at PCCB as part of the basics of public procurement. The respondents were entreated to describe their perception on accountability and transparency as the basics of public procurement. The results of the Likert scale reveal that responses of the perceptions of the PCCB Staff on accountability and transparency as the basics of public procurement. Results authorize that the majority of the respondents 79% agreed that always there was accountability and transparency in procurement procedures as the basics of public
procurement meanwhile 21% respondents assumed that often there was accountability and transparency in procurement procedures. Findings reveal there was accountability and transparency in procurement procedures as the basics of public procurement as the majority of the respondents claimed.

Table 4.18 Model summary of ethical issues in ICT adoption in Public procurement

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.042&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.002</td>
<td>-.015</td>
<td>.30447</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Ethical Issues

R can be interpreted like any regular correlation coefficient, only it tells the strength of the relationship between the outcome variable (adoption of ICT in public procurement) and the predictor variable (Ethical issues). In this case R = 0.04, which is a weak relationship. This suggests the model is a relatively not a good predictor of the outcome. R<sup>2</sup> value indicates the proportion of variation in the outcome variable (adoption of ICT in public procurement) that can be explained by the model (i.e. by ethical issues). In this case it could be said that 0.2% of the variance in the data can be explained by the predictor variable.

Table 4.19 ANOVA analysis of the variables: Adoption of ICT and Ethical Issues
This tells whether or not our model (which includes ethical issues) is a significant predictor of the outcome variable. This is tested using Analysis of Variance. As the significance value is greater than $p=0.05$, this indicates that the regression model significantly does not predict the adoption of ICT in public procurement. The results indicated that the model was not a significantly predictor of ICT adoption, $F(1,61) = 0.107$, $p = 0.745$

Table 4.20 Coefficients of ethical Issues in ICT Adoption in Public Procurement

<table>
<thead>
<tr>
<th>Coefficients$^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unstandardized Coefficients</td>
</tr>
<tr>
<td>B</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>3.412</td>
</tr>
<tr>
<td>.8550</td>
</tr>
</tbody>
</table>

This table expresses the extent to which the individual predictor variable contributes to the model. Ethical issues significantly do not contribute to the model ($p=.745$).

4.7 Impact of government leadership, rules and policies in ICT adoption

The study required to recognize the impact of government leadership, rules and policies in ICT adoption in public procurement and disposal of assets. This is categorized in conformity to set specifications, decentralization of procurement process, viability of
4.7.1 Conformity to Set Specifications

The researcher wanted to know whether there is conformity to set specifications in procedures of public procurement and in precise e-Procurement. The results reveal the responses towards conformity to set specifications in public procurement. Results denote that the majority of the respondents 81% agreed that conformity to set specifications in procedures of public procurement was very important while 19% respondents proposed that conformity to set specifications in procedures of public procurement was important. These findings reveal that there was conformity to set specifications in procedures of public procurement as the majority of the respondents described, results of similar nature were also seen by (Bailey, K. and Francis, M., 2008).

4.7.2 Decentralization of Procurement Process

The study required to recognize whether there was decentralization of procurement process in e-Procurement. Figure 4.3 reveals the responses towards decentralization of procurement process in public procurement.
Figure 4.3: Decentralization of Procurement Process

Results in Figure 4.3 demonstrate that the majority of the respondents 44% observed that decentralization of procurement process in public procurement was important. About 35% of the respondents claimed decentralization of procurement process to be very important, 8% of the respondents pointed out that decentralization of procurement process was unimportant, another 8% of the respondents supposed that decentralization of procurement process was moderately important while at least 5% of the respondents demanded that decentralization of procurement process was of little importance. These findings reveal that decentralization of procurement process in public procurement is important as the majority of the respondents described. This relate with the finding of (Jorge, 2010) who found that decentralization of procurement process in public procurement is important.
4.7.3 Viability of Electronic Reports in Procurement System

The study required to identify viability of electronic reports in procurement system especially in e-Procurement. The findings reveal that, majority of the respondents 78% realize that there was viability of electronic reports in procurement system in public procurement and that was important. About 22% of the respondents claimed viability of electronic reports in procurement system to be very important.

The respondents were asked whether viability of electronic reports in procurement system could be achieved throughout the use of PMIS. Respondents agreed that viability of electronic reports in procurement system could be achieved throughout the use of PMIS and they gave reasons for their answers. One of the respondents said that, “I’m happy with electronic reports in procurement system because they save time, no more headachy of reports preparations, actually they are available when needed”.

These findings reveal that viability of electronic reports in public procurement is important as the majority of the respondents commented. These findings are in line with the finding by (Kalakota, R. & Robison, M., 1999) in their study about E-business, roadmap for success, who came up with the argument that electronic reports in procurement system saves time and accuracy in documentation.

4.7.4 Top Management Support of Procurement

The study required to recognize top management support in procurement system especially in e-Procurement. Figure 4.4 reveals the responses towards top management support of procurement in procurement system in public procurement.
Figure 4.4 Top Management Support of Procurement

Findings in Figure 4.4 show that the majority of the respondents 44% realize that top management support was important in public procurement. About 35% of the respondents claimed that top management support was very important in public procurement. Almost 8% respondents ascertain that top management support was moderately important, again 8% respondents agrees that top management support was of little importance whereas at least 5% respondents acknowledged that top management support was unimportant in e-Procurement. These results disclose that top management support was important in public procurement as the many of the respondents appealed. Another study by (Tridapalli, 2008) has similar observations on realization of the top management support in public procurement.

4.7.5 Generation of Procurement Reports from e-Procurement

The study intended to understand generation of procurement reports from e-Procurement. The respondents were demanded to describe their understanding on
generation of procurement reports from e-Procurement. From the findings revealed, majority 52% of the respondents asserted that generation of procurement reports from e-Procurement was very important in Public Procurement while about 48% of the respondents considered generation of procurement reports from e-Procurement was important. These results unveil that generation of procurement reports from e-Procurement was important as per the understanding of the respondents. Karim, M.R.A. and Khalid, N.M. (2003) also highlighted that generation of procurement reports from e-Procurement was very important in Public Procurement.

Table 4.21 Model Summary of the impact of Government leadership, rules and policies

<table>
<thead>
<tr>
<th>Mode</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.264a</td>
<td>.070</td>
<td>.054</td>
<td>.29396</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Govt rules

In this case R = 0.264, which indicates a weak relationship. This suggests that the model is a relatively not good predictor of the outcome. R² value indicates the proportion of variation in the outcome variable (ICT adoption in public procurement) that can be explained by the model (i.e. by the Government leadership, rules and policies in ICT adoption in public procurement). In this case R² is said to be 7% of the variance in the data can be explained by the predictor variables.
Table 4.22 ANOVA analysis of the impact of Government leadership, rules and policies

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>.394</td>
<td>1</td>
<td>.394</td>
<td>4.557</td>
<td>.037b</td>
</tr>
<tr>
<td>Residual</td>
<td>5.271</td>
<td>61</td>
<td>.086</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5.665</td>
<td>62</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Adoption of ICT
b. Predictors: (Constant), Govt rules

The output tells whether or not the model (which includes Government leadership, rules and policies in ICT adoption in public procurement) is a significant predictor of the outcome variable. As the significance value is greater than p=0.05, hence the regression model significantly does not predict the adoption of ICT in public procurement. The results indicated that the model was not a significant predictor of ICT adoption, F(1,61) = 4.557, p = .037.

Table 4.23: Coefficients of the impact of Government leadership, rules and policies

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>2.958</td>
<td>.276</td>
<td>10.704</td>
</tr>
<tr>
<td></td>
<td>Govt rules</td>
<td>.227</td>
<td>.106</td>
<td>2.135</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Adoption

A multiple regression was carried out to investigate whether Government leadership, rules and policies in ICT adoption could significantly predict the adoption of ICT in
public procurement. The results of the regression indicated that the model explained 7% of the variance and that the model was a significant not a good predictor of adoption of ICT in public procurement. As the significance value is greater than p=0.05, hence the regression model significantly does not predict the adoption of ICT in public procurement. The results indicated that the model was not a good significant predictor of ICT adoption, \( F(1,61) = 4.557, p = .037 \).
CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes all findings reported in chapter four according to the questions of the study, draws conclusions, suggests recommendations and also proposes some areas for further study.

5.2 Conclusion

The study sought to establish the factors influencing the successful adoption of e-procurement in the public sector in Tanzania.

5.2.1 ICT tools that are applied in public procurement in Tanzania.

From the study findings, it can be concluded that ICT tools applied in public procurement have shown positive effects. Results indicate that, internet is an important tool in e-Procurement. Analysis of data denotes that the use of PMIS in e-Procurement is very important as the tool can handle large number of suppliers as well as serve time of procurement processes in public procurement meanwhile the regression model significantly predicts the adoption of ICT in public procurement through the use of ICT tools.

5.2.2 Staffs’ Competence and Skills in adapting e-procurement in Tanzania

The study showed that basic knowledge of ICT to the working staff is important to both the staff in the department of procurement as well as in the whole process of modernizing public procurement. However, the findings show that, adoption of ICT in public procurement improves efficiency and ensures fair grounds to the suppliers. The
findings convey that the status of Professional qualification in procurement management of the staff at PCCB fell on average and thus the government and its operating agencies should improve professional qualification in management of public procurement.

5.2.3 Impact of Government leadership, rules and policies in ICT adoption

The results show that, decentralization of procurement process has got very important role. Again, the study realized viability of electronic reports generated from PMIS and that public procurement could be achieved throughout the use of PMIS. Also, the study findings show that, despite the positive contribution of ICT has in modernizing public procurement, yet there are some challenges related to adoption of ICT, these include unstable availability of network connections as well low speed of the network. More initiatives are needed to enhance harmonization of ICT infrastructures to achieve the best public procurement.

5.2.4 Ethical issues that may arise in ICT adoption in public procurement

The study recognizes that there was always adherence to PPRA in the public procurement as an aspect of ethical issues that may arise in ICT adoption. Again, the study comprehended that the use of PMIS in public procurement has numerous outcomes including provision of handling large number of suppliers. Results suggests that there was accountability and transparency in the procedures of public procurement as the basics of procurement management.
5.3 Recommendations

The study sought to establish the factors influencing the successful adoption of e-procurement in the public sector in Tanzania. Given the aforementioned conclusions, the study recommends that;

i) Integration of ICT in public procurement should encompass latest ICT technologies ranging from current personal computers, server computers, interactive websites, systems and software as well as networking devices so as to achieve the best out ICT tools used in procurement and disposal of assets in Tanzania.

ii) Staff should be equipped with basic knowledge and skills to boost their competences which is necessary in the adoption and use of ICT in procurement and disposal of assets in Tanzania. Well-equipped staff can make maximum utilization of ICT tool in public procurement.

iii) Some of the members of staff team have no or little understanding of the rules and policies set by the government to influence the ICT adoption in public procurement and disposal of assets, to resolve this, hence strategies should be adopted to raise awareness of the staff on government rules and policies regarding adoption of ICT in public procurement.

iv) Cultural change precedes technology adoption to reduce resistance to change. The authorities should involve all responsible users and conduct periodic training sessions for capacity building in the time of any new technology change.
5.4 Areas for further research

Further studies can be conducted on the benefits of adoption of e-procurement in the public sector in Tanzania.
References


NICTBB. (2019, sept 26). NICTBB. Retrieved from nictbb.co.tz/service:
http://www.nictbb.co.tz/service.php?in=pnt


PPRA. (2011). Public Procurement ACT. Public Procurement ACT. DSM: PPRA.


https://www.ppra.go.tz/i


## APPENDICES

### RESEARCH ACTIVITY SCHEDULE.

**APPENDIX A**

<table>
<thead>
<tr>
<th>RESEARCH ACTIVITY</th>
<th>DURATION MONTHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of Literature</td>
<td>June, 2018</td>
</tr>
<tr>
<td>Draft Literature review &amp; submit research topic to supervisor for consultation.</td>
<td>July-September, 2018</td>
</tr>
<tr>
<td>Write research proposal &amp; agree research strategy with supervisor.</td>
<td>October, 2018</td>
</tr>
<tr>
<td>Compile, plot &amp; review questionnaire &amp; interview guide then submits the research proposal to the supervisor.</td>
<td>November - December, 2018</td>
</tr>
<tr>
<td>Agree formal access to organizations for collection of Primary Data, distributing questionnaires &amp; Administer them.</td>
<td>April - May 2019</td>
</tr>
<tr>
<td>Final collection of questionnaire &amp; conduction interview, Data processing.</td>
<td>May - June 2019</td>
</tr>
<tr>
<td>Data analysis &amp; interpretation &amp; making the first draft of the research, correction of any errors from first draft.</td>
<td>July-August, 2019</td>
</tr>
<tr>
<td>Final writing of research report and submission</td>
<td>September, 2019</td>
</tr>
</tbody>
</table>
APPENDIX B

WORK PLAN

The table below indicates time of the whole research process

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Pre-proposal writing</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Proposal writing and presentation</td>
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<tr>
<td>Proposal submission</td>
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<tr>
<td>Data collection</td>
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<tr>
<td>Data entry, editing and analysis</td>
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<tr>
<td>Report writing and presentation</td>
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</tbody>
</table>
**RESEARCH BUDGET**

The field work (research) is expected to commence on July, 2018 and will end in July 2019. It will cover a minimum of 12 months. At the end of the study the research paper will be submitted at the CBE- Dar es Salaam as the Research work. The budget expects to be used is Tzs. 5,600,000/= (Five Million Six Hundred Thousand only) and is summarized below.

<table>
<thead>
<tr>
<th>No</th>
<th>Cost Category</th>
<th>No.of Units</th>
<th>Cost breakdown</th>
<th>Sub Total Cost Tzs.</th>
<th>Total Costs Tzs.</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Up-keeping Cost: Meal &amp;break fast</td>
<td>140 days</td>
<td>20,000 x 140</td>
<td>2,800,000</td>
<td>2,800,000/=</td>
</tr>
<tr>
<td>2.</td>
<td>Transport Cost: Back &amp; forth</td>
<td>140 days</td>
<td>14,500 x 140</td>
<td>2,030,000</td>
<td>2,030,000/=</td>
</tr>
<tr>
<td>3.</td>
<td>Stationery: Plain Paper Reams</td>
<td>2 reams</td>
<td>10,000 x 2</td>
<td>20,000</td>
<td>50,000/=</td>
</tr>
<tr>
<td></td>
<td>Pens</td>
<td>10 Pens</td>
<td>500 x 10</td>
<td>5,000</td>
<td></td>
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<tr>
<td></td>
<td>2 Pencils</td>
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<td>200</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Ruler</td>
<td>100 x 1</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Flash disc 2 CD-R</td>
<td>20,000 x 1</td>
<td>20,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2,300 x 2</td>
<td>4,700</td>
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<tr>
<td>4.</td>
<td>Secretarial Services: Typing</td>
<td>50,000</td>
<td>50,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Printing</td>
<td>100,000</td>
<td>100,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Photocopying</td>
<td>50,000</td>
<td>50,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Binding</td>
<td>20,000</td>
<td>20,000</td>
<td></td>
<td>220,000/=</td>
</tr>
</tbody>
</table>
APPENDICES

Appendix I

DATA GATHERING: QUESTIONNAIRE

Dear Respondents,

You are kindly requested to answer the set of questions below giving relevant details. They are purely meant for academic purpose. Your contribution toward smooth realization of the intended purpose is highly appreciated and inconveniences that may arise highly regretted too.

The study is conducted at the PCCB Dar es Salaam, study, and the topic being “Factors influencing Information and Communication Technology adoption in Public Procurement and Disposal of assets in Tanzania”.

Your identity as a respondent will remain anonymous and you are highly appreciated in advance for any information you will give.

I also abide to confidentially and accuracy of information before and after being in my hands.

Thank you for your cooperation.

Please return the filled questionnaire to:

Glory Mtana
Questionnaires:

A: General Information of the Respondent:

1. Sex: Male (  )
   Female (  )

2. Age (Years): 18-27 (  )
   26-37 (  )
   37 and above (  )

3. Level of education (Optional):
   Certificate/or Diploma (  )
   Bachelor Degree (  )
   Above Bachelor Degree (  )
   None of the Above (  )

B: Please choose appropriate answers by ticking (√) to the following questions:

1. Is it true that, lack of integrity can contribute in untimely deliveries, poor services, and low quality of deliverables?
   a) True (  )
   b) False (  )
   c) Don’t know (  )

2. As the responsible body to fight corruption in Tanzania, e-procurement can be the solution to fight against unethical behaviors such as corruption in procurement sector.
   a) True (  )
   b) False (  )
   c) Don’t know (  )

3. Do you think that, Information and Communication Technology can help in fast tracking procurement processes and provide necessary information that provides good control of procured items and integrity of system and key players?
4. Does your office prioritize training in application of new technology such as e-procurement systems?
   a) Yes
   b) No
   c) Don’t know

5. Do employees have a clear understanding of importance and application of e-procurement?
   a) Yes
   b) No
   c) Don’t know

6. Is it true that, policy and technology gaps are key drivers to hindrances in application of Information Technology in procurement and disposal in Tanzania?
   a) Yes
   b) No
   c) Don’t know

7. Does the organization whether through its policies or government ready to implement, invest and improve e-procurement?
   a) Yes
   b) No
   c) Don’t know

8. Should inappropriate technical challenges such as power supply and poor network be the reasons enough to ditch e-procurement and go back to practice traditional procurement practices?
   a) Yes
   b) No
   c) Don’t know
9. Is it true that introduction of new system/technology face internal resistance of the departments?
   a) Yes (  )
   b) No (  )
   c) Don’t know (  )

10. Do you think that, your office or company have staff with capacity to solve technical issues related to information and Communication technology in area of e-procurement?
    a) Yes (  )
    b) No (  )
    c) Don’t know (  )

11. Can e-procurement adoption reduce imperfections?
    a) Yes (  )
    b) No (  )
    c) Don’t know (  )

C: Choose appropriate answer as it will be illustrated below:

1. What is E-procurement? (Please, use tick (✓) to your selection)
   a) Digital purchase of goods. (  )
   b) Using technology to conduct buy and sale services. (  )
   c) Electronic purchase and sale of goods and services through Internet based platform. (  )

2. Which of the following can lead to good procurement and disposal system? (Please, use tick (✓) to your selection)
   a) Policies and procedures (  )
   b) Training and technology adaptation (  )
   c) Don’t know (  )
3. What has been the challenging issue in e-procurement adoption and implementation at your organization? (Please, write 1 for the most appropriate and 2 for the next and 3 for the last one)
   a) Government and Organization policies (  )
   b) Competence and Skills of employees (  )
   c) Financial constraints in implementation (  )

4. Please tick (√) the status of utilization of Information and Communication Technology of procurement proceedings in your organization.
   a) Fully utilized i.e. e-procurement and e-auction used (  )
   b) Partially utilized (  )
   c) Not utilized at all (  )
   d) Don’t know (  )

D: Fill each blank to following questions below:

1. What are advantages of using Information and Communication Technology in procurement and disposal proceedings? (Please explain if you can do or if you don’t know write ‘Don’t know’)

                           ..........................................................
                           ..........................................................
                           ..........................................................
                           ..........................................................
                           ..........................................................
2. How does your organization use e-procurement in tendering? (Please explain if you can do or if you don’t know write ‘Don’t know’)

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........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

THANK YOU FOR YOUR COOPERATION