ELECTRONIC GOVERNMENT PROCUREMENT SYSTEMS IN SOLVING PRECEDENT PUBLIC PROCUREMENT PROBLEMS IN UGANDA

KENNETH OLOYA KOMAKECH

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A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT FOR THE AWARD OF A BACHELOR'S DEGREE IN PROCUREMENT AND LOGISTICS MANAGEMENT SCHOOL OF BUSINESS OF UGANDA CHRISTIAN UNIVERSITY

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DECLARATION

I Komakech Kenneth Oloya declare that this dissertation is my original work and affirm that it is true and correct to the best of my knowledge and that it has never been submitted to any other academic institution of higher learning for the award of a Bachelor's Degree in Procurement and Logistics Management.

Sign..... Date.....

Komakech Kenneth Oloya

APPROVAL

This research dissertation report drawing empirical evidence from the Ministry of Water and Environment titled "Electronic Government Procurement Systems in solving precedent Public Procurement Problems in Uganda. "has been written and completed under the supervision of.

Signature.....Date.....

Mr. Muloosi Pascal

(Research Supervisor)

DEDICATION

I dedicate this thesis to my family and to all the citizens of Uganda who are aware of the emergence and adoption of e-procurement and the Electronic- Government Procurement systems and how it is trying to solve the crisis of Public Procurement in Uganda.

I also dedicate this work to Uganda Christian University for education and tutoring purposes.

Lastly, I dedicate this work to fellow researchers carrying out studies on e-procurement concerning other phenomena.

ACKNOWLEDGMENT

First and foremost, I thank the Almighty God for granting me the gift of life and good health throughout my studies. I also want to thank God for giving me the capacity to execute this study that will be of enormous help and a great contribution to my family and I, my university, my country, and fellow practitioners of Procurement and Logistics Management.

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Finally, I thank the University for the Research program which has helped several students gain skills and learn more about research, working environment problems, and solutions concerning their theoretical knowledge and areas of study.

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LIST OF ABBREVIATIONS

E-GP	Electronic Government Procurement System
MoWE	Ministry of Water and Environment
PPDA	Public Procurement and Disposal Authority
OECD	Organization for Economic Co-operation and Development
SDG's	Sustainable Development Goals
EU	European Union
ICT	Information and Communication Technology
KPIs	Key Performance Indicators

ABSTRACT

The study examined the Electronic Government Procurement system(E-GP) on solving procurement problems in Public Procurement drawing empirical evidence from the Ministry of Water and Environment(MoWE), Luzira Kampala Uganda. The study was based on the following study objectives: to investigate transparency under E-GP system, to investigate the efficiency of procurement processes under the E-GP system and to analyze contract management under the E-GP system in the Ministry of Water and Environment (MoWE), Luzira Kampala, Uganda. The study adopted a descriptive cross sectional survey design where both quantitative and qualitative approaches where used. In this study, a total number of 74 respondents were expected but 49 respondents returned the survey instruments representing a response rate of 79.3%. The data was collected using questionnaires and interviews and quantitative data analysis was done using Pearson correlation coefficients. Qualitative analysis was done using content and thematic analysis. Findings revealed that there is a positive significant relationship between the E-GP system and transparency in purchasing at the Ministry of Water and Environment(MoWE) at r=271*. There is a positive significant relationship between the E-GP system and efficiency in public procurement processes at r=.271* and lastly, there is a positive relationship between contract management and the Electronic Government Procurement system at r=0.786. Conclusively: The adoption and implementation of the E-GP system in the purchasing procedures in the Ministry of Water and Environment(MoWE) has significant solved its underlying procurement issues by increasing transparency in procurement activities in the entity whereby all the concerned stake holders clearly have visibility of procurement information which is availed to them on the E-GP system. The system has notably increased the efficiencies of the purchasing activities in the entity as it has significantly reduced costs and enhanced the speed of the stages associated with purchasing in the entity. The E-GP system has reduced unnecessary administrative reviews hence increasing the rate at which projects and purchasing activities are executed in the entity. The E-GP system has also embedded smart contracting in the entity as most of the important stages of the contracting process-oriented and executed on the E-GP platform.

CHAPTER ONE

1.1. INTRODUCTION.

This study examined how the E-GP system is solving Public Procurement problems in Uganda drawing empirical evidence from MoWE. This chapter introduces and consists of the background of the study, statement of the problem, general research objective, specific objectives, research questions, research hypothesis, the scope of the study, the significance of the study, anticipated problems, solutions, and the ope-rationalization of variables.

1.2 BACKGROUND OF THE STUDY.

E-GP System is a web-based tool used to carry out public procurement and disposal of government assets. It uses information and communication technology (ICT) to conduct the end-to-end government procurement and disposal processes and activities online.
Procurement refers to the legal acquisition of goods, works, and services in the right quality, and quantity at the right price from the right place and to the right place.

Effective, sustainable, and ethical Public Procurement is one of the biggest challenges facing the government of Uganda today. The researcher ascertained, gauged and measured the convenience and practicability of the E-GP Systems with regard to solving the precedent Public Procurement problems in Uganda. The prevalence of underlying procurement problems highlighted the need for more effective procurement systems that mitigate the risks associated with the Public Procurement processes.

The independent variable of this study was the E-GP System that was incorporated on the 1st of July, 2021, and rolled out by the government to eleven selected entities for example the Ministry of Water and Environment as a pilot project with hopes of solving various procurement problems and vices in the Public Procurement.
Public Procurement offers the largest business opportunities in Uganda with more than 60% of the national budget spent through Public Procurement. Public Procurement like any other Public

Finance management functionalities had undergone several reforms which resulted in the need for an electronic Government Procurement System.

The dependent variables of this study where the precedent procurement problems and vices in the Public sector for-example conflict of interest, lack of transparency, rigged solicitations and bids, poor contract management, corruption and embezzlement of public funds, bureaucracy, increased lead times, bid rigging, poor distribution and so many more.

The E-GP System was inception-ed to tackle such problems that had held Uganda's Public sector captive for a very long time. Through this study, the researcher found out and reported how the E-GP System has lived up to its expectations and objectives.

The current situation was that the E-GP System was still undergoing a pilot study and it was very crucial that this system was effective per its objectives other wise Public Procurement and Uganda's Economy at large were destined for doom which was projected by the underlying Procurement problems in the country.

1.3 STATEMENT OF THE PROBLEM;

The prevalence of precedent and underlying procurement problems have highlighted the need for more effective procurement systems a case in point is the E-GP System which can mitigate the risks associated with Public Procurement processes. Even after the incorporation of the E-GP systems in the selected government entities, there is still a surge of Procurement problems in the Public sector for example the misappropriation and embezzlement of iron sheets scandal that were not distributed to the rightful beneficiaries in the Karamoja region which called for reprimand-able action against the Minister of Karamoja and her close associates. This showed that there is an existing gap that is being exploited and manipulated by unethical stakeholders for personal motives and benefits in Public Purchasing entities. This study thus bridges the gap of such issues persisting even after the inception of the e-GP systems hence the need to establish a phenomenon study of the relationship between the E-GP System on solving precedent Public Procurement problems.

1.4 GENERAL RESEARCH OBJECTIVES;

The long-term goal of this research was to bring to light how the E-GP System has solved the various issues concerning Public Procurement and to also point out the gaps, loopholes that the system hasn't fully addressed with regards to Public Procurement and also suggest possible solutions to the shortcomings of the system if any is found.

1.4.1 SPECIFIC OBJECTIVES.

The objectives of the study where;

1. To investigate how the E-GP system has created transparency in MoWE.
2. To investigate how the E-GP system has created efficiency in the procurement activities of MoWE.
3. To analyze contract management of Public Procurement under E-GP Systems in MoWE.

1.5 RESEARCH QUESTIONS.

The study answered the following research questions

a) How has the E-GP System solved precedent Public Procurement problems?
b) In what ways has the E-GP System amplified transparency and accountability in Public Procurement in the MoWE?
c) What is the analysis of contract management in Public Procurement under the E-GP System in the MoWE?
d) What measures can be undertaken to improve the E-GP System in the MoWE?

1.5.1 RESEARCH HYPOTHESIS.

The study tested the following research hypothesis.

The E-GP System has been designed to improve the quality of service delivery to the people of Uganda by the government through Public Procurement. The E-GP System is capable of solving the underlying Public Procurement issues based on its core objectives and functionalities. Although the E-GP System is still undergoing a pilot study in selected government entities, the researcher believes that this system has to a greater extent partially solved some of the issues concerning Public Procurement despite the fact that there are still some irregularities in Public Procurement even with the system in place.

1.6 SCOPE OF THE STUDY.

This states the limits of the study to ensure that is manageable.

1.6.1 CONTENT SCOPE.

This study focused on how the E-GP System has solved Public Procurement problems and the measures that can be undertaken to improve the system to make sure that it fulfills its core objectives and functionalities.

1.6.2 TIME SCOPE.

The study was limited to a period of four months that is to say from April 2023-July 2023. This enabled the researcher to come up with a comparative analysis of how the E-GP System has solved precedent Public Procurement problems drawing empirical evidence from the MoWE.

1.6.3 GEOGRAPHICAL SCOPE.

The study was carried out at the Ministry of Water and Environment headquarters in Kampala. Luzira.

1.7.1 SIGNIFICANCE OF THE STUDY.

With the study of the E-GP System has solved precedent Public Procurement problems, the researcher hopes that the study will be of the following benefits;

i. This study enabled the researcher to acquire skills in data collection, interpretation, and analysis that will be of great help to the researcher in the future as a Procurement and Logistics management officer.
ii. This study will also help the government of Uganda to enhance its E-GP Systems to adequately execute Public Procurement appropriately.
iii. The findings of this study will also help fellow researchers from institutions of higher learning in the same line of study.
iv. The findings of this study will also be of great help to the organizations that actively use the E-GP Systems. It will enable better decision-making in these organizations concerning Public Procurement.
v. This study will also ensure the delivery of quality services to the people of Uganda through effective Public Procurement.
vi. The findings of this study will improve the spending analysis of the government and also ensure value for money by managing resources appropriately.

1.8 ANTICIPATED PROBLEMS AND SOLUTIONS.

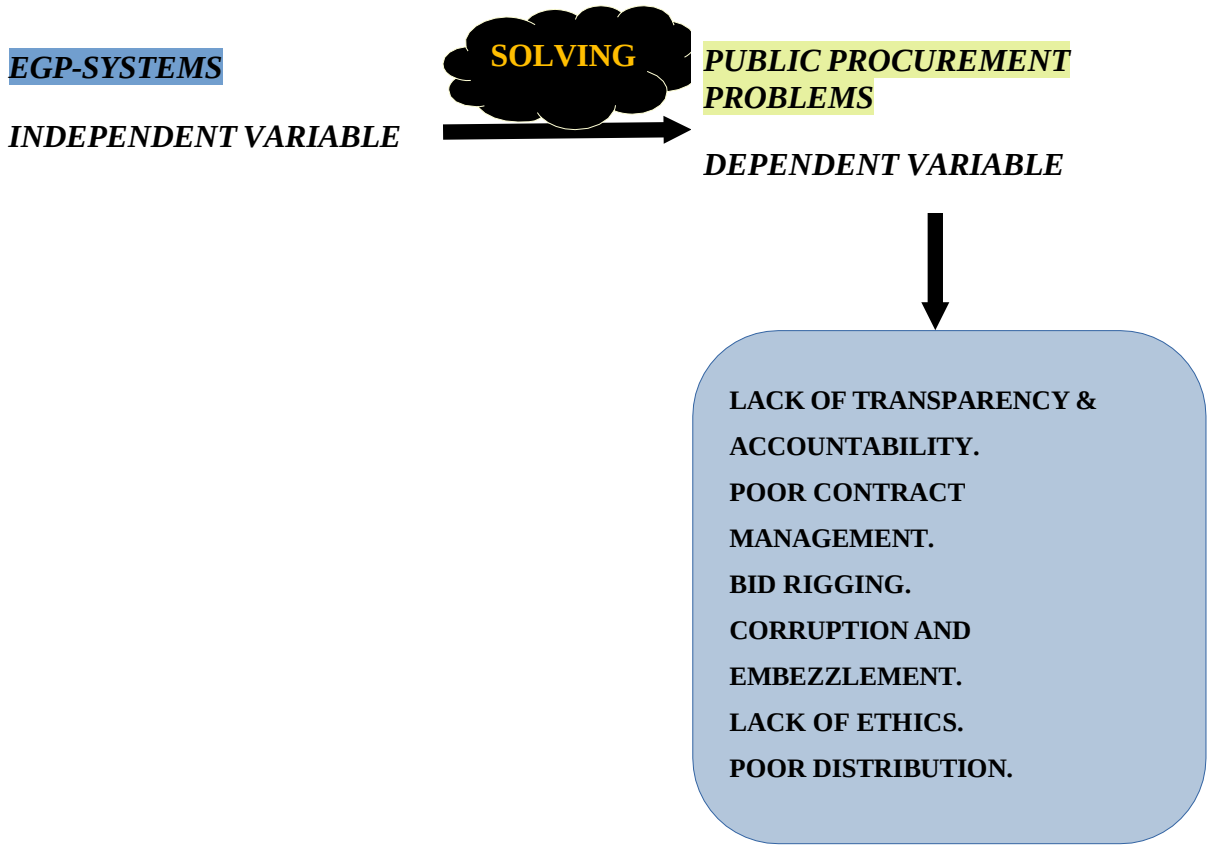
PROBLEMS.

- Data collection was one of the problems that the researcher faced when executing the study as some respondents failed to return the instruments used to collect data.
- Data analysis was another problem that the researcher encountered during the study as triangulating both qualitative and quantitative data analysis methods was a bit difficult.
- Limited time was another problem that the researcher faced especially during the collection of data and analysis of contract management in Public Procurement under the E-GP Systems since most contracts are long-term.

SOLUTIONS.

- The researcher used efficient data collection techniques and methods to obtain data.
- The researcher learned how to use S.P.SS software to help him analyzing the findings.
- The researcher used efficient sampling techniques while executing the study.

1.9 OPE-RATIONALIZATION OF VARIABLES.



CHAPTER TWO

2.0 **Literature review.**

2.1 **Introduction.**

This chapter explores the role of e-Government Procurement (e-GP) systems in addressing procurement problems in Uganda. The review examines a range of scholarly articles, reports, and case studies to evaluate the impact of e-GP systems on procurement efficiency, transparency, contract management, and overall effectiveness in the Ugandan context. The findings highlight the positive outcomes of e-GP implementation, including improved procurement processes, enhanced competition, reduced corruption, and increased access to opportunities for suppliers. However, challenges related to infrastructure, capacity building, and user adoption are also discussed.

2.2 **How the E-GP system has created transparency.**

This literature review provides an in-depth analysis of how e-GP systems have addressed procurement problems in Uganda. It offers valuable insights into the benefits, challenges, and lessons learned from e-GP implementation. Policymakers, practitioners, and the researchers can utilize these findings to guide the effective adoption and utilization of e-GP systems in Uganda and similar contexts to solve various procurement problems.

Nineteen countries ‟ governments focus on how e-procurement helps to increase competition among the bidders and suppliers in public procurement processes. For example, the Republic of Bangladesh introduced National e-Government Procurement (e-GP) in public tenders to eliminate corruption and collusive bidding practices to ensure transparency and increase competition among the bidders (Mahmood, 2010). Mahmood argued that if the government implement e-GP system this could save public money and erase the political power in public bidding process. In Nigeria, the e-GP system has lead Nigerian public sectors to increase competition among bidders in public projects and ultimately government can better select actual bidders. The e-GP system helps the Nigerian government to eliminate the associated bottlenecks with existing system (Adebiyi et al., 2010). E-procurement technology performance of other countries like Bahrain, Norway, Italy, Singapore, Turkey, India, and Malaysia indicate that e-procurement helps to increase competition

among bidders in public work and services. As a result, it helps the government to get the actual bidders at the right government project.

Countries have been promoting open government strategies in order to improve transparency, accountability and citizens' trust in the public sector. Open government is defined as "a culture of governance that promotes the principles of transparency, integrity, accountability and stakeholder participation in support of democracy and inclusive growth" (OECD, 2017[19]).

Two of the pivotal advantages linked to the introduction of e-Procurement are transparency and integrity. One of the driving forces creating the necessity for both is the issue of corruption (Neupane et al. 2012) given the substantial financial volume of public procurement (See section 1). Especially the direct human interaction as well as the lack of options for monitoring enabled government officials to get bribed or use their power for personal enrichment (Neupane et al. 2012). Hence, centralizing procurement's within a publicly available electronic platform is hoped to create sufficient publicity to discourage contracting authorities from opening unnecessary tenders or hiding relevant information due to the elevated likelihood of detection (compare, e.g., Neupane et al. 2012). Beyond fighting corruption, transparency, e.g., in terms of process transparency, is also important to keep the public informed about decisions and performance—and through this to finally establish trust (Armstrong 2005). While the public as one, if not the major stakeholder of public administration has a right to be informed about procurement decisions and performance, transparency also simplifies supplier participation and increases trust.

Trust is an important key facilitator of e-commerce (Kartiwi, 2006). Trust builds a good atmosphere between government and bidders in the contracting process. The key measurement items of trust of public e-procurement are tracking and monitoring bidder's information and documents, security of transactions, fairness in competition, and the user friendly nature of the commercial environment. (Evaluating the Anti-Corruption Capabilities of Public e-Procurement in a Developing Country, (Neupane-2012).

Access to public information has been the cornerstone of an open and inclusive government, because it is a fundamental element to reduce corruption and increase trust among citizens and their governments. (OECD, 2016) Access to information is also one of the targets of the Sustainable Development Goals (SDGs) adopted by all United Nations Member States in 2015. (United Nations, 2015[21]) Proactive disclosure refers to disclosing relevant information without a prior public request. This voluntary disclosure of information contributes to enhanced transparency and

openness, as well as avoiding the costs associated with the administrative procedures and fees to file a request for information (OECD, 2016).

When public sector information is proactively published in open and machine-readable formats and, where possible, free of cost, it becomes open government data, facilitating its reuse by anyone-anywhere – without legal or technical limitations (e.g. copyrights, proprietary formats) (OECD, 2017[22]). The reuse of open government data enables any stakeholder such as citizens, civil society, and businesses to better understand and monitor governmental activities.

E-procurement is considered as one of the most important thematic areas of the open government strategy, and one of the most popular initiatives is open contracting, or publishing information related to public procurement in open and machine-readable formats.

However, in cases where the opportunities for corruption are directly linked to the procurement function, e-procurement may be helpless, as in cases of entrenched or systemic corruption. This is a much deeper cultural problem and goes beyond opportunistic corruption. In such cases even if the rules are followed it does not guarantee there will be no corruption or that e-procurement will be conducted well. As a response to these problems the tendency, especially among countries newly introducing e-procurement reforms, is to seek to impose very strict regulations, eliminating any possibility for the e-procurement agent to exercise his discretion. E-procurement, however, requires skill, training and experience.

The system has strengthened accountability by enhancing transparency and improved access to information from a central source. Because transactions are electronic, it is easy to trail, trace and access data on the e-GP system for auditing, reporting obligations and accountability requirements.

Most importantly, all tender opportunities are posted on the system and are accessible anywhere any time. There has also been a good development for the business community because providers registered on the E-GP get automated alerts about any new opportunities posted on the system.

The E-GP is also very secure for the bidders who want to do business with government. The system will ensure that only authorized users will be allowed to access given data and information. This is because it provides for encryption of providers' bid documents from the time of submission up to the bid opening date and time.

2.3 **How the E-GP system has created efficiency in Public Procurement.**

This literature review examines the impact of the Electronic Government Procurement (e-GP) system on improving the efficiency of public procurement in Uganda. The review explores various scholarly articles, reports, and studies published between 2010 and 2023, focusing on the benefits, challenges, and outcomes associated with the adoption and implementation of e-GP in Uganda. The findings of this review provide insights into the effectiveness of e-GP in enhancing transparency, accountability, competitiveness, and overall efficiency in public procurement processes.

The digital transformation of public procurement, the EU developed a phased nine-year (2014 - 2023) public procurement reform to introduce a compulsory and fully transactional e-procurement tool, including modules on e-invoicing, e-notification, e-access, e-submission and other e-forms, as well as a comprehensive reform to public procurement directives. According to the guidelines published by the European Commission in 2014, the EU supports the process of rethinking public procurement process with digital technologies in mind. This goes beyond simply moving to electronic tools; it rethinks various pre-award and post-award phases. The aim is to make them simpler for businesses to participate in and for the public sector to manage. It also allows for the integration of data-based approaches at various stages of the procurement process.

According to the EU, digital government is one of the key drivers toward the implementation of the 'once-only principle' in public administrations – a cornerstone of the EU's Digital Single Market strategy. And with the adoption of digital tools, public spending should become more transparent, evidence-oriented, optimized, streamlined and integrated with market conditions. This puts e-procurement at the heart of other changes introduced to public procurement in new EU directives and introduces the notion that in the age of big data, digital procurement is crucial in enabling governments to make data-driven decisions about public spending.

E-procurement systems increase efficiency in public procurement by introducing standardization, streamlining and integration of processes and result in better value for money in the use of public funds. E-procurement can increase competition in the market, thus reducing the prices paid by government, which can yield between 5% and 25% in cost savings (The Asian Development Bank, 2004).

Recognizing the benefits of e-procurement in increasing efficiency in public procurement processes, countries have gradually been expanding functionalities of e-procurement systems to shift from platforms providing procurement information to more transactional systems. The Organization for Economic Co-operation and Development (OECD) is a unique forum where the governments of 37 democracies with market-based economies collaborate to develop policy standards to promote sustainable economic growth.

The evolution of functionalities of e-procurement systems in OECD countries from 2012 to 2018. according to The Asian Development Bank, 2004), all OECD countries published tender announcements as of 2012, provided tender documents as of 2014, and carried out award notification as of 2016 in their e-procurement systems. Of all OECD countries, 82% had already put e-submission in place in 2012 and this rate increased to 94% in 2018. On the other hand, the introduction of e-invoicing has stagnated at around 55% with little progress between 2012 and 2018.

Similar to New Haven, the city of Columbia, SC also has a team of dedicated professionals (public and private) that took the archaic procurement process and transformed it into the contemporary e-procurement program. Columbia's primary goal is to clarify the procurement process and create an effortless site, yet at the same time they hope to make access available to potential bid opportunities. Moreover, the city strives to upgrade the level of competition by maximizing the involvement of bidders and contractors who aim to supply services to the city residents ("Columbia's Purchasing Division", 2013). In the case of Savannah, GA, a new e-procurement system was developed to streamline the flow of information between the municipal government, vendors, and resident users. The new system facilitates the e-procurement process by primarily enabling bidders to register online, receive bid notifications, and submit bids and view bid results online. The e procurement website also offers an online question/answer session and includes sealed bids with lock box and bid encryption for safety and privacy concerns. The city places a great deal of emphasis on maintaining privacy and safety through the procurement process, which they argue enhances the value of their resident's tax dollars ("E-Procurement", 2013).

The city of Columbus, OH has established the Columbus Vendor Services, an e-government initiative that provides a one stop online portal for potential bidders and vendors through which they can register and compete for the city bids. The website provides all relevant information on the procurement process and helps conduct business in an open environment that will lead to better public trust. Moreover, the online process results in numerous choices of suppliers, lower process costs, improved quality and service delivery. The website is user friendly with complete instructions

listed throughout the entire process and enables vendors to be notified of current openings, submit and view bids online, and keep track of the company's information such as goods, services provided and payment invoices ("About Vendor Services", 2013). This narrative suggests that cities are working hard not only to gain efficiencies and save money for tax payers, but develop partnerships with vendors that establish clear protocols in a user-friendly manner. Similar to the findings that high performing private sector firms increase performance for both buyers and suppliers (Vaidyanathan and Devaraj, 2008); it seems high performing public organizations seek to accomplish a similar goal.

Any organization's success relies on sound financial management. Due to liquidity problems, public projects are either delayed or not implemented as anticipated. Business and people without internet access may not participate in the processes of e-procurement (Njihia, 2013).

Eighteen countries‟ governments were obtaining best quality and price ratio after implementing public e-procurement technology. This factor has important contribution to reduce corruption in public procurement. For example, Turkey introduces e-procurement project in 2002 and its main objective was to achieve efficiency and regulate government procurement to obtain the best quality and performance among bidders (Bayraktar et al., 2009). Other countries‟ government such as Peru, Pakistan, New Zealand, Italy, Fiji, and Hong Kong (China) obtain best quality of governance by implementing e-procurement in government level. Consistency in procurement process and accessing real time information through e-procurement are important anti-corruption factors. These two factors were found in seventeen countries including Australia, Singapore, South Korea, India (AP), Indonesia, China, and Ireland. For example, the Singapore government using GeBIZ on-stop e-procurement portal which enhance transparency in government procurement, easy access to information, increase procurement efficiency, global reach among the bidders and suppliers, and increase more competition among bidders (GeBIZ, 2005). The Costa Rican Government adopted The Korean online e-procurement system called Mer-Link, which allows public agencies to acquire goods and services through an electronic platform. The main implementation benefits of this system are to make more consistency in procurement process, more visibility into procurement process, and secure document transmission (Guadamuz & Jiménez, 2009). Accessing real time information through e-procurement is another important factor to control corruption in government procurement. In seventeen countries, governments used real time bidding information through e-procurement. As a result, e-procurement helps to mitigate the asymmetric information problems by increasing access to information between government and bidders (Xinzhang & Yonggang, 2011).

Efficiency in document transmission and automation of procurement process are key elements to reduce corruption in government procurement. Fifteen countries‟ focus on e-procurement helped increase efficiency in document transmission and reduce more chances of corruption. Fourteen countries were focused on increased automation in the procurement process. Twelve countries‟ result indicated that government and bidders could monitor and track bidding information through e-procurement system. Nine countries‟ government e-procurement implementation benefits result indicated that e-procurement helped to reduce human interference in bidding process and avoided unnecessary physical threat to the other bidders in tendering process. These similar results were investigated by Liao and Cheng (2003). Online bidding procedure helps the companies with fair competition opportunities, enhances efficiency in military procurement, and reduces the opportunity for human interference in bidding procedure. The study found that five countries‟ governments were focused on public e-procurement to increase managerial control and collaboration among bidders, to make procurement process faster and easier, and reduce unnecessary hidden cost.

However, there have been challenges with e-procurement system malfunctioning to a case that National and County Governments cannot literally pay the suppliers bills, creating problems for the firms and in the process causing a confidence crisis which is a gap of the E-GP system that has to be addressed for e-procurement to thrive. There are infrastructure issues too required to support electronic procurement. This is a barrier against the anti-corruption aspect of the system.

2.4 **Contract management under the E-GP system.**

The concept of electronic contract (also known as smart contract) was first introduced to the information systems research. It encodes obligation definitions among parties in an electronic form, which can be properly used for monitoring and observation. With the development of information technologies, electronic contracts were widely used in many different fields. For example, contract management, which is used to execute and track an electronic contract via information systems with limited human intervention.

Electronic contract is a computer interpret-able technical specification, illustrated as a group of obligation definition that are fulfilled among involved parties, refused or waived when future event occurs. Electronic contract is becoming a useful approach to organize expected process among parts

in a distributed system, which is able to create, execute and communicate among different parties without any intervention from human.

According to Prier and Mc Cue (2007), developing monitoring systems that are transparent, accountable and independent allow for civil society participation and operate at all levels; from contracting decisions and supplier selection, to contract implementation. Monitoring systems include an annual external audit to verify the procurement office's accounting records. Faisol et al (2006) defines contract management as a series of administrative procedures and office work, which in their majority are performed by the project manager.

In December 2013, the Ministry of Commerce of the People's Republic of China promulgated the Code of Practice for the Online Conclusion of Electric Sub-Contracts. As an industry standard, the specification clearly defines the scope of application of electronic contracts, confidentiality, and security requirements; and at the same time, provides the contract signing process, inquiry and custody norms. China has a series of privacy and security requirements for the electronic contract platform. Whether the electronic contract platform will cross the border illegal, depending on the management system and its word-of-mouth endorsement, which is also the common disease of the central network. Blockchain's trust endorsement-free nature is ideal for electronic contract applications(Lingling Guo, Qingfu Liu, Ke shi, Yao Gao, Jia Luo, and JingJing Chen, 2021).

According to (Lingling Guo, Qingfu Liu, Ke shi, Yao Gao, Jia Luo, and JingJing Chen, 2021). Blockchain technology contract management, a process-oriented contract management system (BEcontractor) for a Hangzhou-located power grid enterprise X, aiming to solve a series of security issues existing in the traditional electronic contract system. By deploying BEcontractor, procurement activities could be resumed online among X and its nation-widely commodity suppliers during COVID-19 epidemic. Up to September 2020, 6336 electronic contracts have been signed, with an accumulated amount of U 6.5 billion. It is showed that the cost for accomplishing the contract signing process was significantly reduced, and the payment period was shortened from three months to around one month.

Compared with paper contracts, the advantages of electronic contracts are economy, speedy, safety and readily available. China's legal protection of electronic contracts is found in the General Principles of Civil Law, the Contract Law, the Electronic Signature Law and other laws and regulations. The Electronic Signature Law adopted on August 28, 2004, which determines the legal effect of electronic signatures.

In this case, the procurement contract consists of one-to-many parties and the process can be described as follows: 1) all parties sign the electronic contract, which includes details regarding the procurement value, payment frequency, purchaser, and commodity supplier; 2) contract payments is subjected to terms and conditions of the procurement agreement. The smart contract invokes the procurement payments from the purchaser to commodity suppliers.

The outbreak of COVID-19 since 2020 forced the business actives in China postponed or suspended, hence it's difficult to complete the contract signing in the traditional manner. In such situation, the smart contract, a unique solution for the contract-related business activities, was officially launched on February 21, 2020 to provide the electronic contract service for both commodity suppliers and power enterprise X. Up to now, 6336 electronic contracts have been signed, and the total contract amount is up to RMB 6.5 billion. Notably, 68% suppliers are from Wuhan, Beijing and other areas severely affected by COVID-19. The successful application of smart contracts has effectively supported the commodity procurement during the epidemic period. Electronic contracts help reduce travel inconvenience and costs, and also effectively improve the efficiency of the material supply for power enterprises.

It is attribute to that traditional signature mode usually requires courier delivery and the traveling to sign in person. Because of different meeting places, the trip costs and time varied. Moreover, due to the flat fee for an electronic contract is RMB 200, the average expense to accomplish the contract signing can be reduced from RMB 2363 to RMB 229 per contract. Although some additional information still requires signing in person, the total cost including the out of city trip is significantly lower than the traditional mode.

In this paper, we proposed a BCT-driven procurement contract management system – Becontractor, which implements the management of contract documents and signing process tracking, and provides automatic contract execution services enabled by smart contract. Compared with traditional paper-based contract management, BEcontractor overcomes the inefficiencies and high labor cost, and significantly reduces the risk of content tampering and signature forgery. Besides, it also solves the problem of data loss, which always occurs in the centralized system. Since the system was put online in early 2020, it has helped power enterprise X successfully complete 6336 online signature of electronic contracts with more than RMB 6.5 billion. It is confirmed that 11 days can be saved from drafting a contract to finally signing the contract on average when compared with the traditional paper contract. The average cost per contract can be reduced as much as RMB 2000, and the management efficiency and user experience are significantly improved. In addition, the system is integrated with the ERP system of power grid company X, so that all the documents

related to the contract existing in the BEcontractor can be directly pumped to the ERP system, further speeding up the internal business processes. For example, the payment period can be shortened to one month from the previous three months. The power grid industry comprises a large and long supply chain, which includes a large number of small and medium-sized enterprises (SMEs). In the future, this system will be integrated with the technique of supply chain finance. By effectively utilizing the transaction data and contract files in BEcontractor and inviting the financial institutions to join in the ecosystem, BEcontractor could help the SMEs in the supply chain to improve the financing efficiency and promote the rapid development of SMEs. From the business perspective, our study is a successful attempt of Blockchain technology in the power industry, where the efficiency of commodity procurement contract management has been significantly improved. From the technical perspective, our study provides researchers with a comprehensive picture of the design rationale ranging from system architecture to business process.

2.5 **Summary of literature review.**

There is no doubt that e-procurement can play an important part in the fight against corruption, ensuring transparency, efficiency and good contract management. It has also succeeded in reducing the opportunities for corruption by applying procedural and transparency requirements. However, in the case of systemic collusion and corruption, its eradication calls for a broader campaign and much will depend on the government's willingness to reform the attitude of civil society towards e-procurement. The situation may be exacerbated when, whatever the good intentions are, regulators impose stricter regulations on the procurement officers in the name of anti-corruption. In extreme cases, this over-regulation erodes the ability of the procurement officer to exercise his discretion and have serious negative effects on public expenditure because it often condemns the government to inefficient and expensive purchasing. Care must be taken therefore to identify those opportunities in the e-procurement system that may be reduced through regulation and transparency. The systems need to address the misuse of discretion and not seek to remove all discretion as procurement agents need to be in position to make professional procurement decisions and regulation should not prevent the exercise of that judgement.

CHAPTER THREE METHODOLOGY

3.1 INTRODUCTION.

This chapter consists of research paradigms, design, type of measurement, data collection methods used, sources of data, sample size and sampling procedures, the description of the study area where data was collected, the reliability and validity, data management and analysis.

3.2 Research Design.

This is the blue print that the researcher followed while undertaking the research study. (Kothari, 2004), presented it as a structural conceptual arrangement for collection and analysis of data, it constitutes a blueprint for the collection, measurement and analysis of data. Research design is a master plan of method, procedures that should be used to collect and analyze the data needed for decision making.

The researcher used a descriptive design as the researcher aimed at providing conclusive information from the established particular cause of action.

A descriptive research design is one that aims at describing or depicting the characteristics, behaviors, or phenomena of a particular subject or population. It focused on providing accurate and detailed account of existing conditions, rather than investigating causal relationships or making predictions. This design involved collecting and analyzing data to summarize, organize, and present information in a systematic and objective manner whereby information was collected in order to get different opinions of how the E-GP system has solved Public procurement problems, how it has created transparency, efficiency and an evaluation of contract management under this system.

The researcher used Triangulation of both qualitative and quantitative descriptive designs to effectively and rigorously execute this study.

3.3 Study Population.

The target population for this study was government agencies that have had the opportunity to access and use the Electronic-Government Procurement system as a pilot study. The system was

rolled out to eleven government entities so far. The researcher focused on the Ministry of Water &Environment (MoWE) to execute this study.

3.4 Sample size.

The researcher used purposive or judgemental sampling among the Government entities. A purposive sample refers to selection of units based on personal judgement rather than randomization according to Elder (2009). This judgemental sampling was "representative" of the population of interest without sampling at random. One of the commonest uses of purposive sampling is in studies based on very small numbers of areas or sites. It was more applicable in this study since the researcher only targeted Government entities that had adopted e-procurement.

$$n = \frac{N}{1+N(e)^2}$$

n= Sample size
N= Population
e= error terms(0.01-0.10) (0.05) 5%

The study population was 11 government entities.

$$n = \frac{11}{1+11(0.05)^2}$$

$$n = \frac{11}{1.0275}$$

$$n = \underline{10.71}$$

$$n = \frac{60}{11} x10.71$$

$$n = \underline{\underline{58}}$$

The researcher obtained and collected data from 49 respondents out of the 58 targeted respondents in-order to fulfill the research objectives of this study.

3.5 Data source.

Primary Data source.

Primary data refers to the original data that is collected firsthand by the researcher specifically for the research study at hand. These are first hand information collected through methods like observation and interviews (Krishnashwami, 2003).
It is collected through various methods, such as surveys, interviews, observations, experiments, or measurements, with the purpose of addressing the research questions and objectives.

Primary data is valuable because it will provide direct and tailored information relevant to this specific research study, allowing the researcher to gather firsthand insights and analyze data according to the research objectives.

Some of the of primary data collection methods the researcher used include:

Surveys: The researcher used questionnaires surveys to collect data from participants. These surveys where administered in person.

Interviews: The researcher conducted semi-structured interviews to gather information from participants. Interviews where face-to-face and conducted via video conferencing tools for example Google Meet.

Observations: The researcher directly observed and recorded behaviors, interactions and phenomena in their natural setting. The researcher used structured observation protocols to engage in participant observation.

Secondary Data.

This refers to data that is got from secondary sources, so are data already exist (Mugenda, 2003). For the purpose of this study, the researcher collected the available information from different sources such as books, internet searching, journals and different research materials done by other researchers. The aim was to relate, compare and draw conclusion from existing problem.

3.6 Data collection methods.

Both primary and secondary data was obtained. In this current study, data was collected using two key methods: the questionnaire survey method and the interview method.

3.6.1 Questionnaire Survey method.

A questionnaire is a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents. A questionnaire was used to collect quantitative data, it enabled the researcher to obtain firsthand information and more experience over a short period of time (Creswell, 2003). The researcher chose to use the questionnaire survey because it was practical, large amounts of information was collected from a large number of people in a short period of time. The questionnaire was cheap and fast to administer (Kothari, 2004). Questionnaire survey as a method increased the degree of reliability as well as enhanced the chances of getting valid data (Amin, 2005). Questionnaires where self-administered to Procurement Professionals, key officers in the Ministry of Water and Environment (MoWE) and its designated suppliers and service providers.

3.6.2 Interview Method.

An interview is a conversation between people where items are asked by the interviewer to extract a response or statements from the interviewee (Basheka, Barifaijo and Oonyu, 2010). According to Kothari (2004), interviews are an oral interaction between the interviewee and interviewer on a particular issue, interviews describe the life events and experiences of the respondents with respect to analysis of the significance of the portrayed phenomena. Interviews allowed the researcher to collect qualitative data. Person to person interviews where conducted with a selected number of respondents. Interviews where used because they have the advantage of ensuring probing for more

information, clarification and capturing perceptions of the interviewees according to the study (Amin, 2005). Interviews also gave an opportunity to the researcher to revise some of the issues that had been an over-sight in other instruments and yet are considered vital for the study. Interviews where used to explore in detail the study variables. Sekaran(2003) viewed interviews as one of the most essential sources of data. Creswell (2003) further emphasized that "with grounded theory the most common form of interviews is the face to face unstructured or more realistically, semi structured, open ended, ethnographic, in depth conversational interview.

3.6.3 Documentary Review Analysis.

The documentary review checklist involved reviewing documentary data. Documentation cannot be underestimated as it provides necessary background and much needed context both of which make re-use a more worthwhile and systematic endeavor according to Creswell (2009). Secondary data was obtained through the use of published and unpublished documents. According to Amin (2005), secondary data is helpful in the research design of subsequent primary research and provides a baseline with which the collected primary data results can be compared to other methods. The researcher used this method to obtain existing data to measure the variables of this study.

3.7 Data collection instruments.

The key data collection instruments used where the questionnaires, interview guide and documentary review checklist.

3.7.1 Questionnaire.

A questionnaire is a reformulated written set of questions to which respondents record their answers, usually within rather closely defined alternatives (Kothari, 2004). Questionnaires allowed the researcher to obtain relative information from a large sample, because it gave respondents time to answer, allowed respondents to remain anonymous. Self-administered questionnaires where embraced by the researcher to collect data from Procurement Professionals and other stakeholders that use the E-GP system at the Ministry of Water and Environment and its designated service providers. According to Mugenda(1999), the questionnaire is considered the best way of collecting data from respondents because it is easy to administer and obtain data within a short time from a large number of respondents. In this study, a self-administered questionnaire was used to gather data

regarding the study. The researcher used a questionnaire as an instrument because the study is virtually descriptive and the tool is an easy method of data collection. The questionnaire consisted closed ended questions purely structured in nature whose variables where measured on a 5 point Likert scale (5 Strongly Agree, 4 Agree, 3 Not sure, 2 Disagree and 1 Strongly Disagree). The 5 point Likert scale was the most appropriate way to formulate the different questions for measuring different items from different variables in this study.

3.7.2 Interview Guide.

An interview guide is an instruments that guides the conversation between people where items are asked by the interviewer to elicit a response or statements from the interviewee (Basheka, Barifaijo and Oonyu, 2010:34). Interviews where conducted on a face to face basis with key respondents. Interviews where conducted with 4 Procurement Professionals, 3 Ministry of Water and Environment Officials and 3 Service providers of the Ministry. Interviews have the advantage of ensuring probing for more information, clarification, different perceptions and capturing facial expression of the interviewees, investigate issues in an in depth way, discover how individuals think and feel about a topic and why they hold certain opinions, investigate the use, effectiveness and usefulness of particular library collections and services (Amin, 2005). Interviews comprised semi-structured and unstructured questions that where written basing on the variables of the study.

3.7.3 Documentary Review Check list.

The documentary review check list was used for purposes of reviewing documentary data. Documentary data was obtained through the use of published and unpublished documents like PPDA Reports and Ministry of Water and Environment Procurement Reports. Various publications, magazines, newspapers reports, contract documents, historical documents and other sources of published information where critically reviewed by the researcher. Amin (2005) stated that secondary data is helpful in the research design of subsequent primary research and provides a baseline with which the collected primary data results can be compared to other methods.

3.8.1 Validity.

Validity refers to the extent to which a research instrument accurately measures what it intends to measure. In other words, a valid instrument should assess the specific concept or construct it is designed to assess. The validity of the instrument quantitatively was established using the Content Validity Index (C.V.I). This involved the researcher scoring of the relevance of the questions in the instrument in relation to the study variables. Basing on Amin (2005), a C.V.I of more than 0.7 implies that the tool is valid; this ensured that all items used to measure each variable where relevant in measuring what they where supposed to measure hence the instruments where valid as the coefficient of determination was above 0.7.

To be more specific, the instruments where discussed with the supervisor to ensure construct and content validity. The construct validity of the instrument focused on ensuring that the respondents found the questions simple to understand and answer with regards to the study.
To establish validity qualitatively, the instruments where given to an expert (supervisor) to evaluate the relevance of each item in the instrument to the objectives and rate each item on the scale of very relevant (4), quite relevant (3), somewhat relevant (2), and not relevant (1).

3.8.2 Reliability.

Qualitatively, reliability of the instruments was established through a pilot test of the questionnaire to ensure consistency and dependability and its ability to extract data that answered the objectives of the study. The results of the findings where subjected to a reliability analysis there after.

Quantitatively, reliability was established using the Cronbach's Alpha Reliability Coefficient test. Upon performing the test, the values 0.7 and above, showed that the items in the instrument where reliable. Based on Cronbach's Alpha Coefficient, the scales for the variables were reliable. In the case of psychometric tests, must fall within the range of 0.7 above for the test to be reliable (Katebire, 2007).

3.9 Data Collection Procedure.

The researcher through proper channels obtained an introductory letter from Uganda

Christian University which he used for purposes of introduction before the participants when Collecting data from the field. A close ended questionnaire was administered in a period of a week to all categories of respondents and after the instruments where collected and the data was analyzed both quantitatively and qualitatively. Interviews were also conducted in a period of two weeks with a few selected respondents to obtain primary data from the designated respondents.

3.10 Data Analysis Techniques.

The researcher used both qualitative and quantitative methods of data analysis. Data Analysis followed an inductive content analysis that permits identification of themes and patterns of explicit word used in raw data and literature reviews (Ragin, 2007:99).

3.10.1 Quantitative Data Analysis.

Data was analyzed using the Statistical Package for Social Sciences (SPSS) method. This study adopted descriptive and inferential statistics to analyze data. The quantitative data was obtained from the questionnaires, computed frequencies, percentages, standard deviation and mean was obtained. The researcher adopted inferential statistics that enabled the use of bi-variate analysis techniques in analyzing data. The techniques adopted where Pearson Correlations
Coefficients, and Regression analysis. According to Sekaran (2003), a correlation study is most appropriate to conduct the study in the natural environment of an organization with minimum interference by the researcher and no manipulation.

3.10.2 Qualitative Data Analysis.

This study embraced content and thematic analysis to analyze qualitative data. Thematic analysis was the most common form of analysis in qualitative research of this study as it emphasized pinpointing,
examining, and recording patterns (or "themes") within data. Themes are patterns across data sets that are important to the description of a phenomenon and are associated to a specific research question. The themes become the categories for analysis. Thematic analysis is performed through the process of coding in six phases to create established, meaningful patterns (Creswell, 2003).
These phases are: familiarization with data, generating initial codes, searching for themes among codes, reviewing themes, defining and naming themes, and producing the final report. Thematic

analysis goes beyond simply counting phrases or words in a text and moves on to identifying implicit and explicit ideas within the data (Kothari, 2004). The interpretation of these codes can include comparing theme frequencies, identifying theme co-occurrence, and graphically displaying relationships between different themes. Data was coded to undertake thematic development and analytical categorization, the researcher also had to reduce the data to small and manageable levels by use of coding and later transcribing.

CHAPTER FOUR
DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This Chapter presents the response rate, a description of the background variables, the relationship of the findings with the study objectives, data analysis, and interpretation of the findings. The study examined how the Electronic Government Procurement system is solving precedent procurement problems of public procurement in Uganda drawing empirical evidence from the Ministry of Water and Environment (MoWE), Luzira Kampala, Uganda. The objectives of this study were: to investigate transparency under the E-GP system in Public procurement, to investigate efficiency under the E-GP system in Public Procurement and to analyze contract management under the E-GP system in Public procurement with case of the Ministry of Water and Environment (MoWE), Uganda.

4.1 Response Rate

Presentation of tabulated data according respondents' response rate.

Table 4.1: Response Rate

Instrument	**Target response**	**Actual response**	**Response rate**
Questionnaire	58	46	79.3%
Interview	16	9	56.2%
Total	74	49	

From Table 4.2 above, out of the 16 respondents who were expected to be interviewed, actually 9 were finally interviewed making a response rate of 56.2%. Out of the 58 questionnaires that were distributed, 46 were returned making 79.3% response rate. This response rate was considered sufficient since according to Mugenda (1999), a response rate of 50% and above is good enough for a study.

4.3 Findings on Demographic characteristics of the respondents

The background characteristics of respondents included age, gender and education. The findings are presented in the next sub-sections:

4.3.1 Age of respondents

The age distribution of respondents was observed and findings are presented in Table 4.2 below

Table.4.2 Age respondents

Age	Frequency	Percentage
20-30 years	11	22.4%
30-40 years	21	42.8%
Above 40 years	17	34.6%
Total	49	100%

From the above table, all the respondents that took part in the study were above the age of 20. A total percentage of 22.4% were between the age of 20-30 years, 42.8% were between the age of 30-40 years, above 40 years 34.6%. This indicated that all categories of respondents in reference to different age groups were represented in this study.

4.3.2 Gender characteristics

Gender was investigated for this study, and related data presented in Table 4.3.

Table 4.3: Gender of the Respondents

Gender	Frequency	Percentage
Male	33	67.3%
Female	16	32.6%
Total	49	100%

Table 4.3 shows that the majority of the respondents (33) were males (67.3%) and (16) of them were females (32.6%). Although results show gender variation between the males and females, the study was representative since both males and females provided their views on the objectives of the study. These results indicated the study was representative of all sexes since both males and female were included in the study.

Table 4.4: Highest level of education the Respondents

The table below presents the summary of statistics on the education level of the respondents

Highest level of education

Education	**Frequency**	**Percentage**
Certificate	3	6.1%
Diploma	7	14.2%
Degree	27	55.1%
Others	12	24.4%
Total	**49**	**100%**

Majority of the respondents were degree holders (55.1%) compared to (24.4%) that belong to the category of others, (14.2%) diploma holders and (6.1%) certificate holders. These results indicate that the respondents had reasonably good education qualifications and the desired skills and knowledge to deliver the desired data for the study. On the basis of the education levels, the respondents were able to read, understand the questionnaire and gave appropriate responses.

4.4 Presentation of Descriptive Findings

This section gives an insight on the three objectives of the study as laid down in chapter one. The study tools were made up of four sections respectively. These responses ranged from Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD), to Neutral (N) ,and the respondents were required to indicate the extent to which they agree or disagree with the statements. The questions were assigned weight on a 5-point scale rated 1 to 5 as follows: Strongly Agree (1), Agree (2), Neutral (5), Disagree (3) and Strongly Disagree (4).The findings were presented on the basis of the study objectives.

4.4.1 Transparency and efficiency under the E-GP system in Public Procurement.

The first objective investigated the level of transparency and efficiency under the Electronic Government Procurement system. The findings to address this objective were obtained using questionnaire surveys and interviews. The self administered questionnaire measured transparency and efficiency under E-GP using ten items on a five point Likert scale. The ten items on transparency and efficiency are presented in Table 4.5. The items were scaled using the five-point

Likert scale where code 1 = Strongly Agreed, 2 = Agreed, 3 = Disagreed, 4 = Strongly Disagreed and 5 = Neutral. For each of the above items, descriptive statistics that include frequencies, percentages and means are presented in table 4.5 below.

Table 4.5: Descriptive Statistics for Transparency and Efficiency under the E-GP system.

Item measures for Transparency and Efficiency	**Mean**	**Standard Deviation**	**SA/A**	**SD/D**
Procurement policies, guidelines, and procedures are easily accessible to all relevant stakeholders.	4.448	.756	90.6%	9.4%
Stakeholders have visibility into the factors influencing procurement decisions.	3.888	.666	73%	27%
The organization has a clear process for managing and disclosing conflicts of interest in procurement processes.	1.995	.3775	19.5%	80.5%
The e-procurement processes are monitored and audited for transparency and compliance.	4.223	.567	77.3%	22.7%
Audit reports and findings are shared with relevant stakeholders.	3.779	.779	71.1%	18.9%
Procurement decisions and outcomes are communicated effectively to relevant parties.	4.563	.9305	94.0%	6.0%
The organization ensures confidentiality for relevant information about suppliers/vendors participating in procurement processes.	1.97	.453	25.5%	74.5%
The organization provides avenues for stakeholders to provide feedback on procurement processes.	3.888	.666	73%	27%
The E-GP system has led to a cost reduction in procurement processes of the organization.	4.448	.756	90.6%	9.4%
The E-GP system has increased competition among bidders in procurement processes of the organization.	4.855	.797	97.4%	2.6%

Source: Field data, 2023 ***N=49***

Generally, the results as presented in the above table 4.5 indicate a high degree of rating of almost all the items that measured the level of transparency and efficiency under the E-GP system based on the mean scores which were all above 3 on the basis of a maximum score of 5 since the survey instrument had a 5 point Likert scale. This position is supported by the high

percentage scores on those who agreed with each of the statements. The quantitative results presented above reflect the perception of the respondents. On the other hand, there are findings from interviews and documentary reviews that give the status of the E-GP system in driving transparency and efficiency whereby the respondents were asked if procurement policies, guidelines, and procedures are easily accessible to all relevant stakeholders. The trend of responses which was more inclined to agreement was further reflected through the mean of 4.448 that indicated that the majority agreed with the item.

On conditions of anonymity, a senior procurement officer noted that:

" Even the least concerned citizens of Uganda can easily access policies and guidelines that govern procedural activities of public purchasing by simply navigating through the official website of the PPDA where almost all information on the E-GP system is availed to the people of Uganda."

This implies that all the required policies and guidelines of Public procurement are available on the E-GP system to enable the relevant stakeholders to execute their procurement activities efficiently and transparently while following the set regulations.

The findings of the study further revealed that 73% of the respondents agreed with the item that stated that the stakeholders have visibility into the factors influencing procurement decisions. The computed test figures reveal that the mean 3.888 indicated that stakeholders have an insight into the drivers of decision making in the procurement activities on this system for example: cost, quality, supplier reputation, regulatory compliance, sustainability and strategic alignment with organizational goals.

Survey findings further revealed that the majority 80.5% disagreed with the item that stated that the organization has a clear process for managing and disclosing conflicts of interest in procurement processes. The computed test figures reveal that the mean 1.995 indicated that the majority of the respondents disagreed with the item implying that disclosing conflicts of interest among individuals involved in the procurement processes is still difficult.

A procurement officer noted that:

" Since most of the procurement activities are carried out online, relevant stakeholders initiate and carry out procurement activities at different stages of the procurement process making it a challenge to identify the relationship between the bidders being evaluated and the evaluators. It is very difficult to know when an individual is subject to two coexisting interests that are in direct conflict with each other."

This implies that a person is capable of deriving some advantage for personal benefit or to avoid a personal disadvantage if a decision made in their official capacity has a particular outcome hence this study showed that identifying conflicts of interests is still a major gap in the E-GP system in ensuring transparency in public purchasing procedural activities and needs to be addressed. This also makes it difficult to mitigate collusive vices and behaviors in public procurement.

The findings of the study further revealed that 77.3% of the respondents agreed with the item that stated that e-procurement processes are monitored and audited for transparency and compliance. The computed test figures reveal that the mean 4.223 indicated that majority of the respondents agreed with the item implying that there are effective metrics that have been put in place to measure and monitor the performance, compliance and transparency in the procurement processes which leads to efficiency and management of audit trails in the E-GP system.

On conditions of anonymity, one of the commissioners noted that:

" the E-GP system generates electronic trails of all procurement-related activities, providing a transparent record of the entire process, right from the point of requisition to the point of payment."

This implies that user access controls on the E-GP system limit who can access and modify procurement data, ensuring that only authorized personnel can perform specific actions and multi-tier approval workflows ensure that procurement decisions are reviewed by relevant parties, preventing unauthorized personnel can access specific parts of the system, reducing the risk of unauthorized actions for-example manipulating the data and decisions. The E-GP system also generates real-time reports that provide insights into the procurement process. These reports enable stakeholders to identify any deviations from established protocols. The study also discovered that the E-GP system incorporates document management systems that securely store and manage procurement-related document. This ensure that all necessary documents are available for audit and

review hence ensuring transparency and compliance is maintained throughout the procurement processes.

The respondents were asked whether audit reports and findings are shared with relevant stakeholders. The trend of responses which was more inclined to agreement was further reflected through the mean of 3.779 that indicated that the majority agreed with the item.

One of the Human Resource officers noted that:

" the E-GP system is comprised of transparency and accountability measures, which include sharing audit reports with relevant stakeholders. These reports help to ensure that the procurement process is fair, efficient, and in compliance with regulations."

The study also discovered that the E-GP system supports feedback and reviews from different stakeholders for-example suppliers as they are able to access the complaints platform on the supplier guide assistant portal which gives them the opportunity to air out their grievances and suggestions about procurement issues at different stages of the procurement process, the systems functionality and the general user experience on the system.

On conditions of anonymity, a manager of one of the suppliers of MoWE confirmed that:

"on different occasions, emails from the E-GP system administrators where issued to service providers requesting feedback and inviting them to participate in surveys to gather insights about their experience with this system."

The findings of the study further revealed that 94.0% of the respondents agreed with the item which stated that procurement decisions and outcomes are communicated effectively to relevant parties. The computed test figures reveal that the mean 4.563 indicated that majority of the respondents agreed with the item implying that stakeholders are notified about various decisions made at different stages of the procurement process on the system. The voluntary disclosure of information contributes to enhanced transparency and openness, as well as avoiding the costs associated with the administrative reviews, procedures and fees to file requests for information by relevant

stakeholders. The E-GP system often maintains audit trails of the procurement process, including decisions made at various stages. These audit trails can be accessed by authorized stakeholders to understand the rationale behind the decisions. The system also issues automated email notifications to stake holders when procurement decisions are made. These email contain details about awarded suppliers, contract terms and other relevant information. The study further revealed that the E-GP system provides real-time notifications to stakeholders for-example suppliers, government entities and other relevant people about updates on bid evaluations, contract awards and other important decisions hence ensuring transparency and efficiency through streamlining procurement activities and processes.

The respondents were asked whether the organization ensures confidentiality for relevant information about suppliers/vendors participating in procurement processes. The trend of responses which was more inclined to disagreement which was further reflected through the mean of 1.97 that indicated that the majority disagreed with the item. This implied that the E-GP system focuses on transparency and leaves little to no room for the organization to maintain discretion and confidentiality about its suppliers because information about the awarded suppliers is made public on the system.

In contradiction to the trend of response of this item. The researcher discovered that the E-GP system implements access controls which ensure that only authorized individuals for-example procurement officials have access to sensitive supplier information. During the bidding processes, suppliers' identities and bid details are kept confidential until the evaluation process is completed to ensure a fair competition. Therefore, sensitive information about suppliers participation in procurement processes is kept confidential up to particular later stages in the process where such information is mandatory to be shared with the public on the E-GP system.

The findings of the study further revealed that 90.6% of the respondents agreed with the item which stated that the E-GP system has led to a cost reduction in procurement processes of the organization. This implied that the E-GP system provides data analytics that can help procurement officials make more informed decisions for-example analyzing suppliers performance and historical pricing trends of suppliers. The system enforces standardized procurement procedures and documentation which reduces the potential for unnecessary expenses resulting from non-standard practices.

A Records officer stated:
" By adopting a digital platform for procurement operations, there has been a significant reduction in paper based documentation and printing costs because digital documents are easier to manage and store in the organization."

An administrator additionally stated:
" the E-GP system automates various procurement tasks for-example bid submission, evaluation, and contract award. This has reduced the need for manual processes, minimizing administrative costs and the associated possible human errors thus leading to a reduction in costs and enhancing efficiency in the procurement activities of the Ministry of Water and Environment."

The investigation confirmed that the E-GP systems audit trail enables clear tracking of all procurement activities, making it easier to identify inefficiencies and areas of improvement. The study further revealed the systems online bid submissions and communication minimizes the need for suppliers and officials to travel for physical submissions or meetings. Faster communication and streamlined processes in the E-GP system leads to shorter procurement cycles, reducing the time and effort involved thus resulting into operational cost savings.

The respondents were asked whether the E-GP system has increased competition among bidders in procurement processes of the organization. The trend of responses which was more inclined to agreement was further reflected through the mean of 4.855 that indicated that the majority agreed with the item. The response to this item had the highest mean in this study which implied that the E-GP system has widened the pool of potential suppliers, promoting healthy competition. The study further reveals that the increase in competition has significantly drove down prices thus leading to more cost-effective procurement decisions in the organization.

An accounting officer noted that:
" the E-GP system enables suppliers from various geographical locations to participate in procurement processes. This widens the pool of potential bidders, increasing competition."

Survey findings revealed that the E-GP platform provides equal access to procurement opportunities, preventing favoritism or bias. This encourages new and diverse suppliers to participate and compete on a level playing field. The on-line nature of the E-GP system eliminates barriers related to physical presence which has allowed more suppliers to easily submit bids without

the need for travel, reducing costs and time constraints. The transparent processes involved in the E-GP system builds trust among suppliers. This confidence in fair evaluation and award processes encourages more suppliers to participate and compete.

4.4.1.2 Hypothesis testing one(1):

The hypothesis stated that: there is a significant influence of the E-GP system ensuring transparency and efficiency in public procurement processes in the MoWE. The hypothesis was tested using Pearson Correlation Coefficient and Regression analysis.

Table 4.6: Correlation matrix for the relationship between the E-GP system in ensuring transparency and efficiency.

Correlations			
E-GP system		**E-GP system**	**Transparency&Eff**
	Pearson correlation	1	.271*
	Sig. (2-tailed)		.000
Transparency&Efficiency	**N**	49	49
	Pearson correlation	.271*	1
	Sig. (2-tailed)	.000	
Correlation is significant at the 0.01 level (2-tailed)			

Source: primary data (2023) **N=49**

The findings of the survey show that the correlation coefficient is .271* and its significance level 0.000, was positive with a probability value ($p = 0.000$) that is less than $\alpha = 0.01$ level of significance portrayed a positive significant relationship between the E-GP system and ensuring transparency and efficiency in the procurement processes in the MoWE. Transparency and efficiency in the Ministry of Water and Environment is significantly influenced by the E-GP system. Therefore, an improvement and development of the E-GP system will lead to a significant improvement in the transparency and efficiency of the procurement activities in the Ministry of Water and Environment. The results of the hypothesis that stated that there is a positive significant relationship between the E-GP system in ensuring transparency and efficiency in the procurement processes in the Ministry of Water and Environment is upheld. Correlation coefficient is a numerical way to quantify the relationship between two variables, that is to say the independent and

dependent and it is denoted by the symbol R. The correlation coefficient is mostly between -1 and 1, thus -1 < R < 1. The hypothesis is rejected if the earlier hypothesis was alternate and the finally tested hypothesis is null and the vice versa. Example if the calculated value is greater than the P value we accept the hypothesis.

4.4.1.3 Regression Analysis

Analysis using regression analysis technique was made to check for the level of influence the E-GP system in ensuring transparency and efficiency in the Ministry of Water and Environment and results are portrayed in the table 4.7 below

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.271[a]	.511	.521	10.98772

a: (Constant), E-GP system.

Source primary data (2023)

The Adjusted R square value is 0.521; this implied that the E-GP system explained only 52.1% of transparency and efficiency in the procurement activities in the MoWE. Therefore the E-GP system drives transparency and efficiency in the MoWE by 52.1%. From all the results, the hypothesis earlier suggested and stated that there is a positive significant relationship between the E-GP system in ensuring transparency and efficiency is therefore upheld.

4.4.2 Contract management under the E-GP system.

This objective of the study looked at how contracts are managed under the E-GP system in the MoWE. Survey findings to address this objective were obtained using a variety of methods including questionnaire surveys, interviews and document analysis. The self-administered questionnaire measured contract management under the E-GP system using 8 items on a Likert scale. The 8 items measuring contract management are presented in Table 4.8. The items were scaled using the five-point Likert scale where code 1 = Strongly Agreed, 2 = Agreed, 3 = Disagreed, 4 = Strongly Disagreed and 5 = Neutral. For each of the above items, descriptive statistics that include frequencies, percentages and means are presented in table 4.8 below.

Table 4.8: Descriptive Statistics for contract management under the E-GP system.

CONTRACT MANAGEMENT UNDER THE E-GP SYSTEM	Mean	S. Deviation	S.A/A	S.D/D
Contracts are typically generated by the E-GP system in your organization (e.g., automated templates).	4.520	.3012	90.3%	9.7%
Contract information is accessible to relevant participants when needed. (e.g., digital repository, physical files).	4.801	.7032	91.1%	8.9%
The organization monitors contract milestones, such as renewal dates or deliverables.	4.009	.432	80.0%	20.0 %
The organization has a way to send automated notifications for critical contract events on the E-GP system. (e.g start, closure, handover).	4.855	.797	97.4%	2.6%
Contract terms are never misunderstood or misinterpreted under the E-GP system.	3.896	.6780	69.1%	31.9 %
Contracts can be modified under the E-GP system due to performance issues.	4.710	.5012	88.2%	11.8 %
Risks can be identified and addressed within contracts under the E-GP system.	2.201	.6071	22.3%	77.7 %
The organization seeks feedback from vendors/suppliers on contract-related processes on the E-GP system.	4.201	.7098	75.2%	24.8 %

The general results as presented in the above table 4.8 show a high degree of rating of almost all the items that measured contract management under the E-GP system based on the mean scores which were all above 2 on the basis of a maximum score of 5 since the survey instrument had a 5 Likert scale. This position is further supported by the high percentage scores on those who agreed with each of the statements. The quantitative results presented above reflect the perception of the respondents. However there are findings from interviews that provide the status of how contracts are managed under the E-GP system.

Survey findings revealed that the majority 90.3% agreed with the item that stated that contracts are typically generated by the E-GP system in your organization (e.g, automated templates). The computed test figures reveal that the 4.520 mean indicating that the majority of the respondents agreed with the item implying that the E-GP system plays a big role in generating contracts for

procurement processes of the organization enabling contracts to managed easily on this system. Once the evaluation is complete, the system facilitates the contract award process electronically, notifying the successful bidder and generating contract documents.
As a result of this, cost savings can be obtained through lower transaction costs, increased procurement process accuracy and quality, shorter procurement cycle times while relationships with contractors is enhanced, risk is better controlled and strategic sourcing is exploited (Neff, 2001).

It was established from the respondents that 91.1% the majority of the respondents agreed with the item that stated that contract information is accessible to relevant participants when needed. (e.g., digital repository, physical files). The statistical tabulation shows a mean of 0.7032 which indicated that contracts are typically created and sorted electronically, making them easily accessible to all relevant parties. This includes terms and conditions, specifications, and other contract details that are availed to the relevant participants in a contract. Parties are able to digitally sign contracts and issue digital time stamps which provide authentication and security during contract execution.

Basing on survey findings, it was established from the respondents in relation to the third item that the organization monitors contract milestones, such as renewal dates or deliverables.. The majority 80.0% agreed with the statement scoring a mean of 4.009 corresponding which implies the organization is able to monitor contracts and manage them effectively. The E-GP system uses a combination of digital tools and processes to ensure compliance, track performance and manage issues that arise.
A Senior Procurement officer noted that:
" the Key Performance Indicators are always defined in the contract, specific KPI's and milestones that must be met are clearly stated in the contract terms. The KPI's are tracked electronically to measure contractor performance."
This means that the Electronic Government Procurement system has tools for monitoring contract performance including milestones, deliverables and payments. This helps to ensure that contracts are executed as per the contract terms. This implies that contract management on the E-GP system is reliable ensuring that procurement activities run smoothly in the MoWE.

It was established the majority of the respondents 97.4% agreed with the item that stated that the organization has a way to send automated notifications for critical contract events on the E-GP system. (e.g start, closure, handover). The statistics revealed a mean of 4.855 indicating that the E-GP system uses predefined notification templates that specify the content and format of the

notifications. The relevant parties in the organization are able to trigger notifications in real time for-example if the contractor submits a request for a contract amendment that requires immediate attention, the system is able to send an instant notification to the relevant parties.

In connection to the item which stated that the contract terms are never misunderstood or misinterpreted under the E-GP system., the majority 69.1% agreed with the statement. A mean value of 3.896 and a standard deviation of 0.6780 was observed. This implied that contract terms, KPI's and specific milestones are fairly understood on the E-PG system.

A secretary to the administrative office noted that:
" in some cases especially for complex contracts, legal experts are involved to ensure that all parties fully understand the legal implications and obligations outlined in the contract."

The study further discovered that contracts within the E-GP system are usually drafted with clarity and precision. The contracts include detailed terms and conditions, specifications, performance metrics and other information that is relevant to minimize ambiguities. It should also be noted proper user training and on-boarding for different stakeholders of the E-GP system improves their understanding of how to navigate and interpret contract documents. However, whether contract terms are always understood heavily depends on various factors, including the complexity of the contract, the communication among stakeholders and the usability of the E-GP system.

Basing on the survey findings, it was established from the respondents in relation to the item that Contracts can be modified under the E-GP system due to performance issues. The majority 88.2% agreed with the statement hence a mean of 4.710 implied that contracts can be modified on the system.
A Records Officer noted that:
" whenever there are changes to the contract during its execution, these changes are documented within the system, along with approvals to ensure proper management of modifications."
This implies that necessary amendments to the contract can be documented and managed digitally through the system with appropriate approvals. Whenever performance issues or non-compliance with the contract terms and specifications is identified, the concerned parties in the MoWE for-example contract managers are able to initiate the contract modification process on this system. As the issues and proposed modifications are documented within the E-GP system whereby, the documentation contains clear description of the problem, the desired changes and the reasons for

the modifications. In most cases where the amendments affect contract terms for-example scope, schedule and pricing, negotiations between the parties may be necessary to reach a mutually acceptable agreement. The E-GP system is able to facilitate this negotiation process by providing a platform for communication and documentation.

It was established that the majority of the respondents 77.7% disagreed with the question that stated that Risks can be identified and addressed within contracts under the E-GP system. The statistical tabulation revealed a mean of 2.201 where the majority of the respondents disagreed with the item.

Management of one of the service providers of the MoWE noted that:

" we have not exploited the option of identifying and assessing risks om the E-GP system."

This implies the most of the suppliers and service providers of the MoWE have not explored and exploited the risk management options on the E-GP system.

In contradiction to the trend of responses for this item. The study investigated and discovered that the E-GP system allows stakeholders to identify potential risks associated with various contracts during the procurement process for-example delays, budget over runs, quality issues and legal compliance issues.

Upon identification of the risks, the E-GP system facilitates the assessment of these risks by quantifying their potential impact and likelihood. This helps to prioritize which which risks should actively be managed.

A procurement officer noted that:

" when a risk event occurs, for-example a delay or quality issue, the E-GP system is able to document the event, including its impact and any action that may be taken to mitigate the risk."

4.4.2.1 Hypothesis Two Testing: There is a positive significant influence of the E-GP system on contract management at the MoWE.

The hypothesis was tested using Pearson correlation coefficient and the regression analysis, the results of the hypothesis are given table 4.9 below**.**

Table 4.9: Correlation Coefficient matrix between the E-GP system and contract management.

Correlations			
E-GP system		**E-GP system**	**Contract mgt**
	Pearson correlation	1	.786*
	Sig. (2-tailed)		.000
Contract Management	**N**	49	49
	Pearson correlation	.786*	1
	Sig. (2-tailed)	.000	
Correlation is significant at the 0.01 level (2-tailed)			

Source: primary data (2023) **N=49**

The results show that the correlation coefficient is 0.786* and its significance level 0.000, which was positive with probability value ($p = 0.000$) that is less than $\alpha = 0.01$ level of significance showing a positive significant relationship between the E-GP system and Contract management in the Ministry of Water and Environment. Therefore an improvement in the performance of the E-GP system will lead to a significant improvement in Contract Management in the procurement processes in the Ministry of Water and Environment. From all the results the alternate hypothesis that stated that there is a positive significant relationship between the E-GP system and Contract Management in the Ministry of Water and Environment is upheld. The correlation coefficient is a numerical way to quantify the relationship between two variables, i.e the independent and dependent and it is denoted by the symbol R. The correlation coefficient is mostly between -1 and 1, thus $-1 < R < 1$. The hypothesis is rejected if the earlier hypothesis was alternate and the finally tested hypothesis is null and the vice versa. Example if the calculated value is greater than the P value we accept the hypothesis.

4.4.2.2 Regression Analysis

Further analysis using regression analysis technique was made to analyze how contracts are managed under the E-GP system in the MoWE and results are shown in the table 4.10 below.

Table 410: Regression analyzing the relationship between the E-GP system and Contract Management in the MoWE.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.786[a]	.684	.662	9.69201

a: (Constant), E-GP system.

Source primary data (2023)

The coefficient of determination (Adjusted R square) value is 0.662; this implied that the E-GP system explained only 66.2% of contract management pf procurement processes in the MoWE. Therefore infrastructure and general performance of the E-GP system determines how contracts are managed in procurement processes in the MoWE by 66.2%. From all the results above, the alternate hypothesis earlier stated in chapter four that there is a significant relationship between the E-GP system and contract management of procurement processes in the MoWE is therefore upheld.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS.

5.1 Introduction

This chapter presents the summary of findings, discussion of the study findings as presented in chapter four, conclusions and recommendations and areas for further research.

5.2 Summary of Findings

5.2.1 E-GP system in ensuring transparency and efficiency.

Pearson's Correlation Coefficient for the E-GP system in driving efficiency and transparency is .271* indicating a positive significant relationship between E-GP system and transparency and efficiency in the MoWE at the 52.1 % level of significance. Therefore, transparency and efficiency in the procurement processes at the MoWE is significantly influenced by the Electronic Government Procurement system. In addition, the regression analysis results portray that there is a positive relationship between the E-GP system in ensuring transparency and efficiency in procurement activities at the MoWE. Therefore, it should be noted that the E-GP system highly influences and drives transparency and efficiency in procurement activities at the MoWE. The alternative hypothesis earlier suggested in chapter one was upheld.

5.2.2 Contract Management under the E-GP system.

Pearson's Correlation Coefficient for the E-GP system and Contract management of procurement processes is .786* showing a positive significant relationship between the E-GP system and contract management of procurement processes at a one percent level of significance. This therefore implies that, contract management of procurement processes is significantly influenced by the E-GP systems performance. In addition, the regression analysis results portrayed that there is a positive relationship between the E-GP system and contract management of procurement processes at the

MoWE. Therefore, it should be noted that the E-GP system will continue to influence the way contracts are managed in the procurement processes of the Ministry of Water and Environment.

5.3 Discussions.

This subsection presents the discussion of the findings which was carried out according to the respective research objectives.

5.3.1 E-GP system in ensuring transparency and efficiency.

The Republic of Bangladesh introduced National e-Government Procurement (e-GP) in public tenders to eliminate corruption and collusive bidding practices to ensure transparency and increase competition among the bidders (Mahmood, 2010). Mahmood argued that if the government implement e-GP system this could save public money and erase the political power in public bidding process. According to the EU, digital government is one of the key drivers toward the implementation of the 'once-only principle' in public administrations a cornerstone of the EU's Digital Single Market strategy. And with the adoption of digital tools, public spending should become more transparent, evidence-oriented, optimized, streamlined and integrated with market conditions. This puts e-procurement at the heart of other changes introduced to public procurement in new EU directives and introduces the notion that in the age of big data, digital procurement is crucial in enabling governments to make data-driven decisions about public spending. According to (Adebiyi et al 2010), e-procurement was implemented with the hopes of eliminating bottlenecks with the previous manual system of procurement. (Neupane et al 2012), also stressed that the adoption and implementation of e-procurement led to an increase in transparency and integrity through the proactive disclosure of information without prior public requests for information.
According to the guidelines published by the European Commission in 2014, the EU supports the process of rethinking public procurement process with digital technologies in mind. This goes beyond simply moving to electronic tools; it rethinks various pre-award and post-award phases. The aim is to make them simpler for businesses to participate in and for the public sector to manage. It also allows for the integration of data-based approaches at various stages of the procurement process.

According to the EU, digital government is one of the key drivers toward the implementation of the 'once-only principle' in public administrations – a cornerstone of the EU's Digital Single Market strategy. And with the adoption of digital tools, public spending should become more transparent, evidence-oriented, optimized, streamlined and integrated with market conditions. This puts e-procurement at the heart of other changes introduced to public procurement in new EU directives and introduces the notion that in the age of big data, digital procurement is crucial in enabling governments to make data-driven decisions about public spending. A great deal of emphasis on maintaining privacy and safety through the procurement process, which they argue enhances the value of their resident's tax dollars ("E-Procurement", 2013). E-procurement systems increase efficiency in public procurement by introducing standardization, streamlining and integration of processes and result in better value for money in the use of public funds. E-procurement can increase competition in the market, thus reducing the prices paid by government, which can yield between 5% and 25% in cost savings (The Asian Development Bank, 2004). The Singapore government using GeBIZ on-stop e-procurement portal which enhance transparency in government procurement, easy access to information, increase procurement efficiency, global reach among the bidders and suppliers, and increase more competition among bidders (GeBIZ, 2005).

5.3.2 Contract management under the E-GP system.

According to Prier and Mc Cue (2007), developing monitoring systems that are transparent, accountable and independent allow for civil society participation and operate at all levels; from contracting decisions and supplier selection, to contract implementation. According to (Lingling Guo, Qingfu Liu, Ke shi, Yao Gao, Jia Luo, and JingJing Chen, 2021). Blockchain technology contract management, a process-oriented contract management system (BEcontractor) for a Hangzhou-located power grid enterprise X, aiming to solve a series of security issues existing in the traditional electronic contract system. a BCT-driven procurement contract management system – Becontractor, which implements the management of contract documents and signing process tracking, and provides automatic contract execution services enabled by smart contract. Compared with traditional paper-based contract management, BEcontractor overcomes the inefficiencies and high labor cost, and significantly reduces the risk of content tampering and signature forgery.
Besides, it also solves the problem of data loss, which always occurs in the centralized system.
Since the system was put online in early 2020, it has helped power enterprise X successfully complete 6336 online signature of electronic contracts with more than RMB 6.5 billion. It is

confirmed that 11 days can be saved from drafting a contract to finally signing the contract on average when compared with the traditional paper contract. The average cost per contract can be reduced as much as RMB 2000, and the management efficiency and user experience are significantly improved.

5.4. Conclusions of the Study.

5.4.1. E-GP system in ensuring transparency and efficiency.

In conclusion, the findings of this study have established and confirmed that there is a significant positive relationship between the E-GP system and transparency in the procurement processes in the Ministry of Water and Environment. The survey also established that the E-GP system has reduced corruption and collusive bidding in the procurement activities in the MoWE as discussed the literature in chapter two. The system has also enabled data driven decision making, proactive disclosure of information and increased the level of competition among bidders which has enabled the government to enjoy best quality and price ratio after implementing the E-GP system proving that the system is actively solving past procurement problems associated with the previous manual Public purchasing model. The findings further revealed that E-GP system has streamlined the flow of information thus creating consistency in the procurement activities in the MoWE. It is evident that the E-GP system created real time tracking of procurement activities which has ensured visibility of procurement processes. This has improved on real time monitoring of the purchasing activities making it difficult for irregularities to go unnoticed. The system has provided public access to procurement information which has fostered trust among its users and the citizens and also helping to fight corruption in Public Procurement. The E-GP system has also strengthened the audit trails of different stakeholders and activities executed in the procurement processes of in the Ministry of Water and Environment. All these trails are reviewed to identify any discrepancies or unethical practices in the procurement activities in the MoWE. The study also determined that the bidding processes conducted online ensure a leveled field for all potential vendors. The study has established that its to a greater extent that the E-GP system fostered transparency in the procurement activities and processes in the MoWE. Though, the system has reduced costs that where attached to the manual and archaic procurement processes, the findings revealed that the E-GP system has some elements of cost attached to it for-example full time internet connectivity costs and system

maintenance costs which must be carefully addressed and managed to ensure that the E-GP system is fully operational and reliable to its users. The E-GP system plays a significant role in modernizing and improving procurement processes. When appropriately implemented and managed, it not only enhances transparency by reducing opportunities for corruption but also increases efficiency by automating tasks and streamlining workflows. These combined benefits make E-GP a valuable tool for governments and organizations committed to transparent and efficient procurement practices. The E-GP system automates various procurement tasks, reducing manual efforts and the potential for errors. E-GP stores all procurement data in a centralized database, making it easily accessible to stakeholders and minimizing the risk of data manipulation. However, the effectiveness of E-GP in ensuring transparency and efficiency depends on proper implementation, governance, and addressing challenges like data security, training, and integration with existing systems. Regular audits, robust Cyber security measures, and change management strategies are essential for sustaining the benefits of the E-GP system.

5.4.2. Contract management under the E-GP system.

In conclusion, The findings of the study confirm that Contract management ensures that all parties involved adhere to the terms and conditions of the contract, promoting fairness and transparency as discussed in the literature reviewed. The system further allows continuous monitoring of vendor performance, ensuring that goods or services are delivered as agreed upon. The E-GP system provides a digital trail of all contract-related activities, enhancing transparency and accountability in the procurement processes in the Ministry of Water and Environment. It should be noted that the E-GP system provides stakeholders with easy access to contract information, ensuring that all parties have up-to-date, accurate details to make sure that they are able to ensure compliance with contract terms and specifications. contract management under the Electronic Government Procurement (E-GP) system is a crucial component of modernizing and optimizing procurement processes. The effective use of E-GP for contract management requires training for procurement professionals and vendors and integration with other systems, which can be challenging but is essential for success.
Effective contract management through the E-GP prevents unauthorized changes to contracts and ensures accurate payments, contributing to cost control. The E-GP system’s contract management features help ensure that all parties adhere to the terms and conditions of the contract, promoting transparency and fairness. Continuous monitoring of vendor performance ensures that goods or services are delivered as agreed upon, enhancing accountability. In summary, contract management under the E-GP system plays a vital role in enhancing the efficiency, transparency, and

accountability of procurement processes. While it comes with challenges, including data security and training, when executed effectively, it leads to better governance, reduced costs, and improved procurement outcomes. Embracing best practices and addressing challenges will further strengthen the role of contract management in the E-GP system, ensuring its continued success in modern procurement processes. The survey findings have vividly confirmed and extended that the e-procurement is proactively solving procurement problems that where tied to the old manual system of public procurement.

5.5. Recommendations of the Study

5.5.1. E-GP system in ensuring transparency and efficiency.

Regular training programs must be provided for procurement professionals, vendors, and other stakeholders on how to effectively use the E-GP system. Training on best practices, data security, and compliance should be offered to ensure all users are proficient in using the system which will boost the efficiency and transparency in the procurement processes. In addition, strong Cyber security measures should be implemented to protect sensitive procurement data and ensure the integrity of the system.

It is also recommended that key performance indicators (KPIs) should be developed to measure the efficiency and transparency of the E-GP system on a regular basis. Regular reports on these metrics will help to to identify areas for improvement and showcase the system's impact on solving procurement issues in the Public Sector. By implementing these recommendations, governments and organizations for-example the MoWE can maximize the potential of the E-GP system to enhance transparency and efficiency in procurement processes while mitigating challenges and ensuring its long-term success.

5.5.2. Contract management under the E-GP system.

For effective contract management within the Electronic Government Procurement (E-GP) system, it is imperative to invest and develop the E-GP platform, provide comprehensive training to all stakeholders to ensure that there is compliance with the set regulations governing contractual processes on the E-GP system.

Standardizing processes, establishing clear policies and procedures, and ensuring data security and transparency are vital. Engaging with suppliers and implementing automated alerts, performance

monitoring, and risk management mechanisms promote healthy supplier relationships and mitigate potential issues. Legal and regulatory compliance, continuous process improvement, robust audit trails, stakeholder involvement, and efficient dispute resolution mechanisms complete the framework for successful contract management in the E-GP system. Suppliers should also use the risk identification and mitigation tools on the E-GP system to their advantage to ensure that they provide quality goods and services to the purchasers thus ensuring efficiency and value for money in procurement activities.

5.6 Limitations of the study.

One of the limitation of the study is that the researcher heavily depended on primary data collected using a questionnaire and interview guide without consideration of secondary data that should have helped triangulate the study findings. The researcher also relied on a single questionnaire to measure all constructs included. Therefore. The strength of the relationships could have been altered since the findings point to the important contribution of values which relate to specific individuals and groups. Long-term studies on the impact of E-GP systems are limited due to the relatively recent adoption of these systems in some regions and the small time frame or scope that was availed to the researcher to execute this study because the E-GP landscape is continually evolving, with new technologies and regulations being introduced. Research findings may become outdated relatively quickly. Therefore, these recognized limitations should inspire researchers to define their future research agendas early enough to ensure that the study is executed excellently.

5.8 Areas for further research.

More research has to be done on how E-GP adoption influences economic development and governance outcomes in Uganda's economy. Further research should be conducted to investigate how the E-GP system can be used to promote supplier development, encourage participation by small and medium-sized enterprises (SME’s), and foster innovation within the supplier ecosystem. Since this research was carried out at a government entity, There is need to do research on the Use of E-Procurement in the purchase of goods and services in the Private Sector. Finally, further research should Explore the role of E-GP systems in promoting sustainable procurement practices, such as green procurement, social responsibility, and ethical sourcing.

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APPENDICES

APPENDIX A

A QUESTIONNAIRE ABOUT THE E-GP SYSTEM IN SOLVING PROCUREMENT PROBLEMS IN UGANDA.(MoWE).

My name is Komakech Kenneth Oloya. I am a third year student at Uganda Christian University (UCU), Mukono. I'm carrying out a research study on how the Electronic Government Procurement system has solved procurement problems in Uganda with the case of the Ministry of Water and Environment (MoWE). And the primary objective of this questionnaire is to gather information about the E-GP system and how its solving precedent and prevailing procurement problems for example corruption due to lack of transparency, inefficiencies and complacent contract management in Public Procurement.

Please note that all the information in this questionnaire will be treated with utmost confidentiality. Your information will be analyzed in an anonymous and organized manner to ensure privacy and security of your personal data.

Instructions: To complete this questionnaire, please read each question carefully and select the most appropriate response based on your experiences and observations within the E-GP system. In some cases, you may be required to give additional comments regarding the topic. Your honest and accurate responses will contribute significantly to the validity and reliability of this study.

PART I: DEMOGRAPHIC INFORMATION.

1. Age Bracket.

19 – 28 _____

29 – 38 _____

39 – 48 _____

49 – above _____

2. Gender

Male _____

Female _____

3. Level of Education

Primary _____

Secondary _____

Diploma _____

Undergraduate _____

Masters _____

Other _____

4. Employment Status.

Full- time _____

Part- time _____

5. Years of Work Experience.

1 – 5 _____

6 – 10 _____

11 – 15 _____

16 – 20 _____

21 and above _____

PART II: THE ELECTRONIC GOVERNMENT PROCUREMENT SYSTEM ON TRANSPARENCY AND EFFICIENCY.

In the table below, you'll tick the number that corresponds with the most appropriate answer.
1. Strongly Agreed 2. Agreed 3. Disagreed 4. Strongly disagreed 5. Neutral

THE E-GP SYSTEM ON TRANSPARENCY AND EFFICIENCY	1	2	3	4	5
Procurement policies, guidelines, and procedures are easily accessible to all relevant stakeholders.					
Stakeholders have visibility into the factors influencing procurement					

decisions.					
The organization has a clear process for managing and disclosing conflicts of interest in procurement processes.					
The e-procurement processes are monitored and audited for transparency and compliance.					
Audit reports and findings are shared with relevant stakeholders.					
Procurement decisions and outcomes are communicated effectively to relevant parties.					
The organization ensures confidentiality for relevant information about suppliers/vendors participating in procurement processes and different stages.					
The organization provides avenues for stakeholders to provide feedback on procurement processes.					
The E-GP system has led to a cost reduction in procurement processes of the organization.					
The E-GP system has increased competition among bidders in procurement processes of the organization.					

Please care to share any additional comments, insights and perceptions that you have regarding the Electronic Government Procurement Systems on transparency and efficiency.

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PART III: CONTRACT MANAGEMENT UNDER THE ELECTRONIC GOVERNMENT PROCUREMENT SYSTEM.

In the table below, you'll tick the number that corresponds with the most appropriate answer.
1. Strongly Agreed 2. Agreed 3. Disagreed 4. Strongly disagreed 5. Neutral

CONTRACT MANAGEMENT UNDER THE E-GP SYSTEM	**1**	**2**	**3**	**4**	**5**

Contracts are typically generated by the E-GP system in your organization (e.g., automated templates, manual drafting).					
Contract information is accessible to relevant participants when needed. (e.g., digital repository, physical files).					
The organization monitors contract milestones, such as renewal dates or deliverables.					
The organization has a way to send automated notifications for critical contract events on the E-GP system. (e.g start, closure, handover).					
Contract terms are never misunderstood or misinterpreted under the E-GP system.					
Contracts can be modified under the E-GP system due to performance issues.					
Risks can be identified and addressed within contracts under the E-GP system.					
The organization seeks feedback from vendors/suppliers on contract-related processes on the E-GP system.					

Please care to share any additional comments, insights and perceptions that you may have regarding contract management under the Electronic Government Procurement Systems.

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Thank you for answering this questionnaire, your participation is greatly appreciated, your responses are valuable and will contribute to our research on how the E-GP system is solving Public procurement problems in Uganda.

GOD BLESS YOU ABUNDANTLY.

APPENDIX B:

INTERVIEW GUIDE

a. To what extent has E-GP system contributed to cost savings for your organization?

b. How has the E-GP system influenced the overall time efficiency of procurement processes?

c. How has E-GP system impacted your interaction with suppliers/vendors?

d. Have you noticed any changes in the supplier selection process after implementing E-GP system?

e. How frequently does the E-GP system experience downtime or technical issues?

f. How does this downtime affect your procurement activities and overall productivity?

g. In your opinion, has the E-GP system contributed to a more efficient procurement environment?

h. How long does it take to onboard a new supplier into the E-GP system?

i. Are there mechanisms in place to continuously evaluate supplier performance and efficiency on the E-GP system?

j. How do you monitor contract milestones, such as renewal dates or deliverables on the E-GP system?

k. How would you rate the level of transparency in your organization's e-procurement processes?

Thank You.