

**EFFECTIVENESS OF THE UMUCYO E-PROCUREMENT SYSTEM UNDER
DONOR PROCUREMENT REQUIREMENTS IN PUBLIC INSTITUTIONS: A
CASE STUDY OF REMA- SPIU**

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**UGANDA CHRISTIAN
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DECLARATION

I Uwase Gatama Naomie declared that this research proposal is my original work and has not been presented for examination in any other University or Institute of Learning.

Signature.....


Date 20/04/2026

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S23B12/072

APPROVAL

This research titled “Effectiveness of the UMUCYO E-Procurement System under Donor Procurement Requirement in Public Institutions” (A case study of REMA - SPIU) has been submitted by UWASE GATAMA NAOMIE Reg No: S23B12/072 for examination with my approval and is ready for presentation to the School of Business for Award of a Bachelors’ Degree in Procurement and Logistics Management of Uganda Christian University.

Signature 

Date 20/04/2026

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LIST OF ABBREVIATIONS

DS: Donor Standards

DOI: Diffusion of Innovations

E-Procurement: Electronic Procurement

E-Tendering: Electronic Tendering

GEF: Global Environment Facility

GoR: Government of Rwanda

IC: Institutional Capacity

ICT: Information and Communication Technology

IPF: Investment Project Financing

MAPS: Methodology for Assessing Procurement Systems

MINECOFIN: Ministry of Finance and Economic Planning

OECD: Organization for Economic Co-operation and Development

R²: Coefficient of Determination

REMA: Rwanda Environment Management Authority

RPPA: Rwanda Public Procurement Authority

SP: System Performance

SPIU: Single Project Implementation Unit

SPSS: Statistical Package for Social Sciences

TI: Technology Integration

UMUCYO: Rwanda National E-Procurement System

UNDP: United Nations Development Programme

WB: World Bank

ABSTRACT

This study examines the effectiveness of the UMUCYO e-procurement system under donor procurement requirements in public institutions, using the Rwanda Environment Management Authority (REMA) Single Project Implementation Unit (SPIU) as a case study. The research is motivated by the need to understand how institutional capacity, technology integration, and donor standards compliance influence the performance of e-procurement systems in donor-funded projects.

A quantitative cross-sectional research design was thereby adopted. Data was collected using structured questionnaires that were administered to all 32 staff members involved in procurement and donor-funded project implementation at REMA-SPIU. The study also employed a census sampling technique for the purpose of ensuring full representation. Data was then analyzed using SPSS version 27, while applying descriptive statistics, correlation analysis, and regression analysis. The findings revealed that institutional capacity, technology integration, and donor standards compliance all have a strong positive relationship with the effectiveness of the UMUCYO system.

The results did highlight that many people do believe that UMUCYO boosts transparency, accountability, efficiency, and record keeping. The connection analysis found strong, meaningful links between the factors studied and how well the system performs ($p < 0.01$). The regression analysis did reveal that these factors all together account for 96.6% of the differences in UMUCYO's performance, which shows that they have notable ability to predict power. The study in its findings and conclusion highlights and notes how well the UMUCYO e-procurement system works mostly in donor-funded projects by largely relying on solid support from the institutional, the reliable technology, and alignment with donor procurement safeguards and guidelines. It also suggests that the ongoing training, improvements to ICT infrastructure, better coordination between donor expectations and national e-procurement processes can boost system performance even further.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter explores how effectively e-procurement functions at REMA, particularly when donor requirements are involved. It further provides the contextual background while outlining the problem statement, defining the research objectives both general and specific and explains the scope and significance of the study. In essence, this chapter finally highlights the key issues that give meaning and essence of the entire research.

1.1 Background of study

Public procurement is fundamental to how most governments manage resources, while aiming for efficiency, transparency, and accountability. In the past, procurement mostly relied on a more manual, paper-based systems which for the most part slow, costly, vulnerable and exposed to high chances of corruption. This research suggests that such systems can increase transaction times by up to 40% and intensify the risks of manipulation (OECD, 2020).

To address these challenges, organizations like the World Bank, UN, and OECD have over the years promoted e-procurement as a way to modernize processes. It is key to note that the countries that implemented these integrated platforms report savings of 15-20% in procurement costs and stronger audit outcomes (World Bank, 2018). In Africa, donor-backed initiatives have accelerated this shift, which has in turn improved transparency and compliance (African Development Bank, 2021), (Muthoni Ndei & Mutuku, 2021). You cannot nevertheless ignore that these donor requirements ever so often mean extra documentation and procedural obligations. This study focuses on how effective Rwanda's national e-procurement platform (UMUCYO) is in practice.

By launching UMUCYO, Rwanda became one of the first African nations to completely systematize public procurement. At the moment, over 98% of government tenders are handled through UMUCYO (RPPA, 2022). Nevertheless, donor-funded projects managed by REMA's SPIU often face challenges because international procurement standards do

not always align precisely with UMUCYO's system. This therefore creates supplementary documentation and bureaucratic burdens, raising questions about the platform's general and complete effectiveness.

Rwanda's procurement journey replicates global trends but also carries its own regional distinctions. For so many years, the country did rely heavily on manual, paper-based systems that caused delays, postponements, inadequacies, and audit challenges (Uwadede, 2016). To overcome these issues, Rwanda introduced UMUCYO, its national e-procurement platform, in 2016. This courageous move positioned Rwanda among the first African nations to completely automate public procurement (World Bank, 2018). Today, UMUCYO handles more than 98% of government tenders (RPPA, 2022). Within this setting, REMA's Single Project Implementation Unit (SPIU) plays a very important and critical role, managing donor-funded environmental projects from organizations like the World Bank, UNDP, and GEF. These projects demand firm and strict compliance with donor procurement standards, which do not always align faultlessly with UMUCYO's processes (MAPS, 2020).

Notwithstanding Rwanda's remarkable progress in revolutionizing procurement, the connection between donor requirements and the national e-procurement system remains a multifaceted and an under explored area. Given the country's heavy dependence on donor-funded projects, it is more important than ever to understand how well UMUCYO performs in practice. While present and current studies highlight the profits of digital procurement, there is still limited tangible evidence on how efficiently these systems function in real-world donor-driven contexts.

1.2 Statement of the problem

Modernizing public procurement through e-procurement has become one of Rwanda's key and important reform priorities and significances. The government's goal is to reinforce transparency, accountability, and the resourceful and effective use of public resources. In the past, procurement was handled manually, a very painfully slow, error-prone, and difficult to track that often times led to delays, higher costs, and unfair contract awards. The current research shows that manual systems can increase

transaction times by up to 40% and make corruption more likely (OECD, 2020). To address these challenges, Rwanda introduced UMUCYO, its national e-procurement platform, in 2016. By systematizing procurement tasks, UMUCYO reduces human meddling and interference, improves audit trails, and improves service delivery. Today, more than 98% of government tenders are processed through the system (RPPA, 2022), marking substantial and significant progress in Rwanda's digital transformation.

A large portion of Rwanda's public projects carried out by REMA's SPIU are funded by development partners such as world bank. These donors set procurement standards that must be met for funding. While these standards help promote transparency and fairness along with ensuring value for money, they also add layers of documentation and reporting requirements. As noted by (Muthoni Ndei & Mutuku, 2021), donor requirements enhance transparency but significantly increase in the institutional workload. Because donor guidelines are not fully harmonized with UMUCYO's digital processes, REMA-SPIU must navigate both systems.

This dual-system environment can reduce the effectiveness of the UMUCYO e-procurement platform, limiting timely project implementation and reducing the platform's ability to deliver its expected benefits. (Wolfram et al., 2023) observes that donor contracting conditions can complicate procurement workflows and extend implementation timelines when donor and national procedures diverge. Consequently, expected gains from e-procurement such as process efficiency, reduced paperwork, automated compliance and strengthened transparency may not be fully achieved in institutions.

Despite Rwanda's progress in digital procurement, there is limited empirical evidence on the effectiveness of UMUCYO into institutions managing donor-funded projects. Current studies highlight the benefit of implementing e-procurement (Gilbert & Celestin, 2021; World bank, 2018), but they frequently do not look thoroughly at how well the system operates or its influence on processes and user experience.

This issue is especially important for REMA/SPIU with a focus on a selected project funded by the world bank. It will specially look at how the UMUCYO platform impacts

operational efficiency, usability of the system, transparency in processes and overall performance.

1.3 Main objective of the study

This research aims at assessing the effectiveness of E-procurement under donor requirements in public institution, specifically at REMA in Rwanda.

1.3.1 Specific objectives of the study

- To assess how institutional capacity influences performance and effectiveness of the UMUCYO e-procurement system in donor funded projects at REMA/SPIU.
- To examine the effect of technology integration on the efficiency and accuracy of the UMUCYO e-procurement system.
- To evaluate the role of donor standards compliance in promoting transparency, accountability, and effectiveness of the UMUCYO e-procurement system.

1.4 Research questions

The study seeks to answer the following questions:

- How does institutional capacity influence the performance and effectiveness of the UMUCYO e-procurement system in donor-funded projects at REMA-SPIU?
- What is the effect of technology integration on the efficiency and accuracy of the UMUCYO e-procurement system?
- How does compliance with donor standards affect transparency, accountability, and overall effectiveness of the UMUCYO e-procurement system?

1.5 Justification of the study

The study of the effectiveness of e-procurement systems is justified by the need for public institutions to deliver transparent and accountable procurement processes while maintaining system efficiency. For instance, the GoR has made considerable progress using UMUCYO E-procurement platform.

However, the implementation of donor funded projects, guided by various procurement standards and compliance frameworks, continues to present challenges that may affect

the effectiveness of the system. The understanding of the co-relationship between donor standards and the effectiveness of e-procurement is therefore a necessity regarding the differences between national procedures and donors' requirements which in most cases lead to challenges.

This study looks at highlighting evidence-based values that can co-relate national procedures through promoting smooth management of donor funded projects.

Further more, with the rise of technology development and ethical procurement practices, E- procurement platforms are used for system improvement and value use of resources in public expenditure. This research aims to provide valuable insights for UMUCYO.

The study contributes to strengthening different E-procurement platforms for more resilient and responsive organization of good governance in an increasingly digital economy.

1.6 Significance of the study

The significance of studying the effectiveness of E-procurement platforms under donor standards requirements is for both practical and academic gains.

Academically, it will address the gap in knowledge concerning international standards over national procedures using technology such as Umucyo. Particularly in Rwanda, where donor funded projects often operate alongside national procurement systems.

Practically, the study provides evidence that will help decision-makers design frameworks that promote better coordination between internal and external agencies with the objectives of reducing procedural delays, conflicts and improve transparency in the public sector.

Furthermore, with the rise in more projects, the research looks at E-procurement legislation to faster procurement cycles, build institutional capacity and sustainable service delivery. Understanding the barriers faced by local e-procurement platforms in complying with international standards will inform policymakers and donors about the support required to improve UMUCYO's effectiveness during donor-funded projects.

1.7 Scope of the study

1.7.1 Geographical scope

This study is geographically limited to Rwanda, focusing specifically on the Rwanda Environment Management Authority (REMA) on a specific project financed by World bank. It was selected because they implement a considerable number of donor-funded projects and actively utilize the national e-procurement system, UMUCYO, thereby providing an appropriate context for examining the effectiveness of e-procurement in a context of funded project.

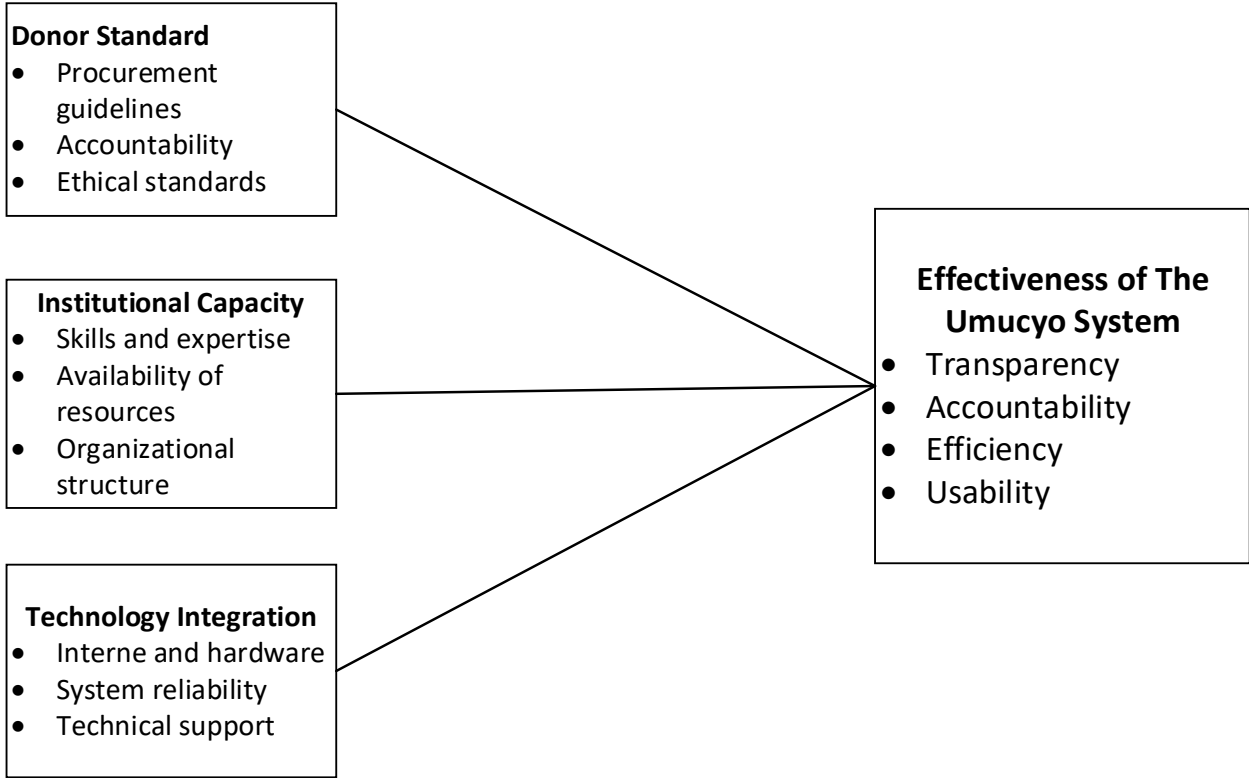
1.7.2 Content scope

The research analyzes the effectiveness of E-procurement on a funded-project, UMUCYO at REMA in Rwanda.

1.7.2 Time scope

The study targets the period of 8 months. This allows research and engagement in conducting a complete understanding of the topic. The respondents are then prepared and eager to recall recent events and answer by offering information, enhancing correct and accurate statical data for a fruitful inquiry into the research.

1.8 Conceptual framework



CHAPTER TWO

LITTERATURE REVIEW

2.0 Introduction

This chapter reviews the existing literature about E-procurement systems effectiveness. It helps to get a full understanding of the variables before going to the field to conduct the study and this gives a basis to the study. In this literature review, explore the effectiveness of E-procurement under donor requirement in public institutions, examining its benefits, challenges, and prospects.

2.1 Definition of key variables

2.1.1 Donor standards

Donor standards refer to the set of guidelines, rules, and operational requirements that public institutions must follow when implementing projects financed by external development partners. These standards define how funds should be managed, monitored, and reported, and they establish expectations related to transparency, accountability, efficiency, and value for money. Donor standards provide clear guidelines for public institutions on how to properly use funds from donors. They plan necessary measures and procedures for things like procurement, auditing, reporting and manage money (Mayavo, 2024).

In Rwanda, particularly within institutions like REMA that manage projects funded by organizations such as the World Bank, UNDP, and others, donor standards play an important role. These standards set clear and strong expectations that often redesign how institutions function internally. By emphasizing proper documentation, careful planning, oversight, and standardized procedures, they encourage organizations to adopt more transparent and accountable practices (Nakamya et al., 2025). As a result, institutions develop stronger discipline and governance, which eventually progresses and improves how projects are managed and delivered.

Observing donor standards is important and vital for building trust with external partners. When SPIU aligns its internal procedures with these expectations, it strengthens its credibility with donors. This not only increases the likelihood of

safeguarding future funding but also improves its reputation for good governance and accountability (Olando Oundo, n.d.).

Furthermore, donor standards create an environment where technology such as e-procurement systems can accurately flourish. By requiring strong workflows, digital documentation, audit trails, and traceability, they inspire and encourage institutions to make operative use of online procurement tools. Applying e-procurement in public institutions is therefore a step toward meeting international governance benchmarks (OECD, 2025).

These systems bring perceptible benefits: mechanisation of tasks, digital record-keeping, and improved visibility of transactions. They decrease human error, strengthen institutional control over procurement, and ensure better readiness for audits (Sheila Akankunda, 2025).

2.1.2 e-procurement systems

E-procurement systems refer simply to online systems that are meant to streamline the procurement process in the government and the corporate arena. They substitute the use of paper-based procedures with electronic applications that assist in every step of the procurement process, including registering suppliers up to managing contracts with the goal of cultivating productivity and transparency and reducing (Dickson Sserulika, 2023). E-procurement systems are simply electronic applications that are intended to streamline the procurement process in the government and the privatized world. It is these systems that have substituted the previous paper-based systems with electronic tools that assist in all aspects of supplier registration to contract management as well as enhancing efficiency and transparency and reducing errors by creating digital audit trails in the form of e-catalogues or online submissions of documents among other tools, and e-procurement significantly enhances control.

It would thus reduce the risks of corruption and would enable the procurement officers to monitor (Sheila Akankunda, 2025). Since its inception in 2016, UMUCYO which is translated as transparency has revitalized and changed the way public procurement is being conducted. Tenders are now accessible online and suppliers can submit bids

digitally and monitor various stages in real-time (MINECOFIN, 2010). Since its implementation, this system has resulted in reduced paperwork and reduced face-to-face interaction which has resulted in high reduction of corruption risks whilst improving efficiency.

The research conducted in Kicukiro District along with various hospitals in Kigali shows that UMUCYO has improved resource management along with improving and boasting transparency as well as overall performance in procurement (Byiringiro & Madichie, 2022; Paterne & Jean De Dieu, 2022). As a central workflow can be accessed and made available digitally via UMUCYO accountability, fairness will increase resulting in accurate data retention across all stages of procurement. E-procurement systems strengthen the presentation and performance of institutions, in general, through offering organizations better control and addressing technical flaws. They are instrumental in assuring effectiveness and transparency hence are essential resources to the contemporary accountable operations.

2.1.3 Correlation between donor standards and E-procurement effectiveness

Examining the efficiency of donor standards versus e-procurement is particularly relevant for platforms like UMUCYO and development partners such as the World Bank. Donors provide thorough guidelines that cover every aspect of procurement from monitoring methods to required documentation and reporting obligations (OECD, 2025; World Bank, 2023). These standards form how institutions function, prompting both compliance and efficiency, while e-procurement platforms aim to modernize processes and reduce administrative burdens. Understanding how these two frameworks relate is vital for evaluating whether systems like UMUCYO can fully deliver on their promise of transparency, accountability, and efficiency in donor-funded projects.

Platforms like UMUCYO turn those standards into practical technological outcomes streamlining compliance needs by mechanizing and systematizing processes ensuring accurateness which reduces manual involvement all designed towards fulfilling donor regulations too while strengthening traceability providing easy access via records helping combat corruption through upholding clear evidence traces of every purchase action (Nakamya et al., 2025; Uwimpeta & Akims, 2025).

In conclusion, corresponding elements together increases overall success by promoting steadiness ensuring thorough documentation mitigating risks related without strong manual support structures. When operations harmoniously both components lead institutions to achieve higher levels regarding transparency accountability efficiency yielding value added returns E-procurement supports compliance with donor requirements by improving consistency(Byiringiro & Madichie, 2022; Paterne & Jean De Dieu, 2022).

The analysis of the effectiveness of donor standards vs e-procurement would be of special interest to the sites like UMUCYO and the development partners such as the World Bank. Donors give detailed instructions that encompass all the elements of procurement such as monitoring techniques and the documentation and reporting requirements (OECD, 2025; World Bank, 2023). These standards shape the nature of operations within the institutions, which induce compliance as well as efficiency whereas e-procurement platforms are designed to transform operations and minimize administrative costs.

The relationship between these two frameworks is crucial in assessing how systems such as UMUCYO can be able to execute their promise of transparency, accountability, and efficiency in projects funded by donors. Solutions such as UMUCYO transform those requirements into actualized technological results that simplify compliance requirements by automating and standardizing processes that guarantee accurateness that mitigates manual activity all aimed at satisfying donor requirements too and enhancing traceability that ensures easy access through records (Nakamya et al., 2025; Uwimpeta and Akims, 2025).

Finally, the joint presence of corresponding elements boosts overall success by enhancing stability to guarantee comprehensive documentation to counter risks without well-established manual support frameworks. By ensuring consistency(Byiringiro & Madichie, 2022; Paterne & Jean De Dieu, 2022) and making sure that both components work together effectively ensures that institutions can reach greater heights in terms of transparency accountability efficiency that brings value added returns E-procurement also helps in meeting the requirements of the donor(Byiringiro & Madichie,

2022; Paterne Under world bank requirements on world bank mandated strict compliance with harsh process rules under strict compliance with severe process rules maintained accurate records under world bank requirements, vital in REMA/SPIU setting due to environmental climate linked activities fund.

2.2 Theoretical review

2.2.1 Public Institutional Capacity

Institutional theory, as made known by DiMaggio and Powell in 1983, is the way that organizations change their structure and behavior to achieve the expectations of the outside world so as to gain legitimacy and survive in the long-term. It emphasizes that organization behavior is conditioned not only by efficacy or internal strategies, but also by broader social norms and demands of the supervisors. The coercive pressures are on the influential actors like governments or other donor agencies which enforce strict adherence to rules and procurement standards. Normative pressures are based on collective professional values and professional ethical standards in a field, which promotes organizations to evolve towards accepted practice. Meanwhile, mimetic pressures arise when institutions replicate successful practices by others that are mostly found in uncertain settings with the hope that they can get the same results. The involvement of donor agencies in the context of the public procurement is not less significant both in the form of coercion and normative influence due to the fact that their funding is often based on the implementation of specific procurement procedures and on the maintenance of documentation standards. This pressure changes not only procedures but can also influence the level of performance of e-procurement platforms depending on the existing institutional capacity and system design (Lydia Asare-Kyira et al., 2023).

These outside influences play a vast role in how operative and effective e-procurement systems are. By adopting digital tools, institutions demonstrate their ability to comply with requirements and demonstrate that they uphold good governance practices; this is connected with the overall reforms that are aimed at legitimizing operations and adherence to international transparency, accountability and value-for-money standards (Galleli et al., 2021). Therefore, the system of public procurement is in a perverted

amalgamation of regulations, laws on a national level, donor regulations, and international regulations that interact mutually both to affect performance and accountability (Fushimi, 2024; Jenkins et al., 2024).

From this viewpoint, institutional capacity becomes vital for effective procurement reform. It refers to organizational 'ability to implement changes effectively, manage resources well, keep up with technology shifts and support new systems. (Jean Bosco Harelimana & Bosco Harelimana, 2018) highlights that how well institutions use platforms like UMUCYO reflects their readiness to boost transparency and accountability. According to (Omwono et al., 2020) management support along with financial resources, ICT infrastructure and staff skills directly affect how well e-procurement is put into practice. (Picho, 2017) shows that gaps in ICT skills can hinder understanding donor requirements within e-procurement platforms. This illustrates that institutional capacity includes both technical effectiveness as well as managerial aspects like the quality of human resources available and overall leadership effectiveness

Human resource quality matters a lot here too. (Manta & Mansi, 2024) report that motivated staff who are properly trained play a crucial role in incorporating donor standards into e-procurement processes. On the other hand, weak systems or insufficient training can cause interruptions and irregularities, even when donor reforms are formally implemented. As Mohungoo et al. (2020) point out, such deficiencies and limitations often create gaps between donor expectations and what institutions are able to deliver in practice.

Addressing these challenges entails deep institutional reforms. Ramasimu et al. (2025) emphasize that it is vital to introduce easily understandable technical and procedural models and robust monitoring mechanisms to enhance procurement activities. These reinforcement of institutional roles and responsibilities and normalization of documentation processes to achieve consistency, reliability and accountability.

2.2.2 Technology integration

Diffusion of Innovations (DOI) Theory is a theory by Rogers (2003) that is enlightening in the sense that it gives a picture of how new ideas and technologies diffuse through organizations with time. It goes on to point out that adoption is not only based on the nature of the innovation itself but also on communication channels through which information is shared in social systems which in turn shape and create organizational behavior.

This framework is most useful in studies in the public sector since it assists in comprehending why technologies such as e-procurement systems take off at a rapid rate in certain contexts and meet opposition or slowdown in others. DOI states that there are five key qualities that affect adoption. Relative advantage is the extent to which an innovation is related or connected with the current processes those related with efficacy or lower costs tend to be adopted (Cheng et al., 2020).

The compatibility factor is based on the fit of the innovation to the current values and workflows; the more the systems are compatible with national protocols, the easier it is to integrate (Zondo and Nodoro, 2023). The complexity indicates the perceived ease of use of an innovation; the less well trained the innovation is, the slower its adoption is likely to be (Nasibu, 2024). Trialability makes innovations testable on a smaller scale, decreasing uncertainty and promoting acceptance within organizations (Park & Choi, 2019).

Lastly, there is the observability aspect that is concerned with the visibility of the benefits e.g. when the benefits such as transparency or speedy processing are noticeable, adoption becomes easier to propagate (Drența et al., 2024). In addition to these features, DOI focuses on the importance of communication. The training sessions, manuals, workshops, and policy guidelines are formal ways to make the staff familiar with new systems, whereas the informal ones include peer discussions and shared experiences, which form attitudes and disseminate knowledge (De Vries et al., 2018). Adoption is further enhanced by leadership commitment and a supportive organizational culture, which promote learning, innovation and accountability.

Integration of technology, however, does not only rely on the perceptions of the user but also on the institutional preparedness.

According to Mugwe (2023), e-procurement systems require a good ICT infrastructure to operate, which includes a reliable hardware, good software, and a stable internet connection. On the other hand, Waduu and Omido (2025) emphasize that low uptake may be caused by a lack of ICT skills, training, and technical support, which decreases institutional capacity. The DOI framework is useful in this study to understand the performance of e-procurement systems in the performance of public institutions based on technology integration. With a high level of integration, institutions will be able to use digital platforms to the fullest to achieve compliance standards and enhance efficiency. However, with poor integration, performance suffers, and this restricts transparency and accountability. DOI, therefore, depicts how digital tools can either become a success or impediment based on the adoption and support process.

2.3 Empirical Review

2.3.1 Donor standards and Public Procurement Outcomes

The section reviews the available literature and report to gain insight on how the implementation of donor standards, implication of e-procurement, and adherence to regulations of both sides, affect the results, especially in Rwanda. It points out the evidence on the way the factors promote transparency, efficiency and accountability into projects. 2.3.1 Donor Standards and public procurement outcome. Considering the results of donor standards and public procurement, it can be concluded that these standards have a profound influence on the practice of procurement in the country relying on external financial resources. The other requirements of the donor may involve strict regulations on the bidding procedures, documentation, reporting and monitoring to make sure that funds are used properly and reduce the risk of mismanagement.

According to (World Bank, 2018), these standards serve as guides to governance enhancing transparency and accountability when executing funded projects. The same trend is observed in Rwanda, (Ufitiwabo Teta Aurore, 2025) states that the institutions of the public with donor recommendations demonstrate good procurement discipline

with less deviations. This showed that donor structures have the ability to improve the performance of institutions. Researchers stress that reporting and audit systems imposed by donors enhance accountability by ensuring procurement operations are traceable and variable (Falcón-Cortes et al., 2022) claim that donor-imposed standards can also affect the institution behavior because they direct decision-making processes, (Uwimpeta and Akims, 2025) assert that donor standards can also influence the institutional behavior.

Consequently, organizations can change their in-house operations to acculturate to perceived governance standards abroad towards more formal and transparent procurement operations. In spite of these benefits, studies note some issues. Donor requirements can be problematic in situations where they are less than perfect in line with national rules. Such a mismatch can cause a doubling of records of additional reviews that increase administrative overhead, particularly in situations where bandwidth is already stretched to its limits. These problems tend to decrease efficiency when it comes to procurement procedures and raise pressure on employees that are left with work to do and make sure compliance.

2.3.2 E-Procurement Adoption and Effectiveness

When it comes to adoption of e-procurement and its effectiveness, evidence shows there is a strong link between successfully applying donor standards and both institutional readiness as well as technological capabilities. The institutional capacity is critical in determining the way the organizations perceive the demands of the donors (Omwono et al., 2020) discovered that trained personnel are essential in the process of coordination as well as sufficient allocation of resources. Conversely, technical incompetent organizations tend to struggle with document accuracy or to satisfy reporting requirements thus creating inconsistencies on compliance performance.

The technological capacity is also important, as Rwanda is not using manual means anymore, but rather digital, research indicates that those with strong ICT infrastructure are more likely to succeed in introducing donor reporting to their e-procurement. (Delphine & Nkechi Irechukwu, 2022) highlight that good connectivity along with functional systems aids in sooth documentation processes while allowing real-time

tracking of procurement information. Nonetheless, the ongoing technological constraints continue to create drawbacks such as lack of access to internet or use of outdated technology which might drag institutions back to manual methods that only contribute to delays and further burden administration.

The regulatory environment also affects the implementation of the donor requirements. The laws of Rwanda are intended to ensure fairness and at the same time value money and accountability (RPPA, 2024); nevertheless, occasionally they do not fit the guidelines of the donors as per (African Development Bank, 2021) the mismatch creates overlaps in the implementation of the procurement work and overloads the staff further. The results in general indicate that institutional capability in conjunction with technology infrastructure as well as regulatory compatibility are highly significant in defining the overall effectiveness of these systems.

The regulatory landscape also influences how donor requirements are implemented. Rwanda's laws aim for fairness while promoting value for money and accountability (RPPA, 2024); however sometimes these do not align perfectly with donor guidelines according to (African Development Bank, 2021) such mismatches introduce procedural overlaps complicating the implementation of procurement tasks while burdening staff even more. Overall findings suggest institutional capability paired with technological infrastructure plus regulatory harmony play critical roles determining the overall effectiveness of these systems.

2.3.3 Compliance with Regulation and Rules

Compliance with Regulation and Rules It has been found out that e-procurement systems can truly enhance transparency, accountability and operational efficiency within the public institutions. Digital procurement reduces paperwork, lessens the human interaction in major steps and accelerates procurement procedures. The authors of (Byiringiro & Madichie, 2022) were glad to find that applications such as UMUCYO facilitate the tasks of tender publication, bid submission and contract awards. This does not only reduce processing times but also restricts possibilities of manipulation.

In the same line of thought, (Paterne & Jean De Dieu, 2022), observed that automation establishes sound audit trails that can improve traceability as well as enhance internal and external controls. Transparency is much improved by digital platforms. According to (Gilbert and Celestin, 2021) UMUCYO users like procurement information to be shared with the community such as tender notices, evaluation outcomes and contract awards. Such openness can prevent favoritism and create fairness among suppliers as well as, due to decreased direct human contact, e-procurement minimizes persona effects in decision-making processes, resulting in more valuable outcomes. These findings also highlight access equity. As was shown in (Diane Gihozo, 2020), e-procurement platforms increase the number of suppliers, including small and medium enterprises, which lacked timely access to procurement information previously.

This growth in competition has enhanced fairness and diversification of supplier base in the public procurement. In general, the results of empirical studies indicate that e-procurement enhances the main values of governance, transparency, accountability, and fairness. The question however is how much of these benefits are fully achieved based on the alignment of institutional and technological systems to e- process effectiveness. A lack of alignment between digital processes can constrain the functionality of the system and make the e-procurement less effective in the donor-funded project settings.

2.4 Research Gap

Although studies have examined public procurement reforms, donor-funded projects, and the adoption of e-procurement in Rwanda, significant knowledge gaps remain regarding the on the effectiveness of the national e-procurement system. Existing literature acknowledges that donor requirements play a crucial role in strengthening governance, promoting transparency, and enhancing accountability in public sector procurement (Gilbert & Celestin, 2021; Jean Bosco Harelimana & Bosco Harelimana, 2018). However, there is limited empirical evidence of the challenges impacting the performance of UMUCYO, Rwanda's national e-procurement platform.

It remains unclear whether UMUCYO fully accommodates requirements or whether institutions must rely on parallel manual processes that reduce system

effectiveness(Kubwimana & Nimpano, 2021; Venant, 2022). Research indicates that donor-funded projects frequently use additional digital tools for financial reporting, safeguards monitoring and project performance management. Weak interoperability regarding digital platforms may lead to duplication, inconsistencies, or delays, yet this relationship has not been adequately investigated. As a result, there is insufficient evidence on the digital coordination challenges faced by institutions required to comply.

Finally, although donors increasingly emphasize sustainability, environmental safeguards and green procurement practices, the literature provides limited insight into how these emerging expectations relate to the performance of e-procurement systems in Rwanda. Existing studies do not sufficiently explain whether e-procurement supports or constrains the integration of donor-driven sustainability requirements (Delphine & Nkechi Irechukwu, 2021).

These gaps demonstrate that e-procurement effectiveness is not yet well understood, particularly within public institutions operating under multiple compliance frameworks. Therefore, this study seeks to address this gap the effectiveness of e-procurement systems in the selected Rwandan public institution, with a focus on compliance challenges, system performance, and digital procurement processes.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

The chapter outlines the research methodology use to achieve the study objectives on understanding a transparent, accountable, and analytical the effectiveness of the UMUCYO e-procurement system in a World Bank-funded project at REMA. It details the research design, target population, sampling techniques, data collection methods, and data analysis procedures.

3.1 Research Design

To effectively capture these dynamics, the study utilized a cross-sectional survey design. This design allows the collection of data at a single point in time (Cohen et al., 2017; Wang & Cheng, 2020). The researcher adopted the cross-sectional survey design (Olsen & Marie, 2004). The cross-sectional design was used because cross sectional studies are generally quick, easy, and cheap to conduct because limited time is spent in the field. With the cross-sectional design, the researcher was able to collect appropriate data quickly and cheaply (Gravlee, Kennedy, Godoy & Leonard, 2009). This study also used the quantitative research approach.

A quantitative approach enables the researcher to collect numerical data and statistically analyses patterns related to compliance requirements, system performance, and operational efficiency.

3.2 Study population

The population of the study included the staff that was part of the procurement processes and the implementation of the donor-funded projects at Rwanda Environment Management Authority (REMA). In particular, the target population comprised the personnel of the Single Project Implementation Unit (SPIU) and other important departments whose activities are directly connected with the needs of the donor procurement and the national e-procurement platform (UMUCYO). The target population comprised of SPIU procurement specialists, procurement officers, project managers, finance officers (including project accountants) and information

technology/management information system officers. These types of staff were deemed suitable in the study due to their direct dealing with planning, executing, monitoring, and reporting procurement activities in the donor-funded projects and their direct interaction with UMUCYO in conducting procurement transactions, compliance, and reporting. A total of 32 staff members were included in the study population, as in Table 1. Since the population is relatively small and manageable, all the identified staff were deemed to be relevant to the study to cover all perspectives and experiences around donor procurement processes and e-procurement system use at REMA. **Table 1: Number of Staff**

Position	Number of staff
SPIU procurement specialists	3
procurement officers	8
project managers	7
finance officers	8
IT/MIS officers	6
Total	32

Source: REMA SPIU, Human resource department (2025)

3.3 Sample size and Sample technique

The research methodology was census whereby all the members of the study population were enlisted in the research. The census method was deemed suitable since the number of the staff members engaged in the procurement procedures and implementation of the projects funded by donors at REMA-SPIU was quite limited and easy to count. Consequently, this minimized the incompleteness, inaccuracy, and unrepresentativeness of collected data by involving all the respondents who were eligible.

The census included 32 staff, who were representatives of key functional areas that are directly related to donor procurement operations and use of the UMUCYO e-procurement platform. These were SPIU procurement specialists, procurement officers,

project managers, finance officers (including project accountants) and IT/MIS officers. The categories were felt to be important in the study because all of them were directly related to the donor procurement needs and the electronic procurement systems. Conducting the research as a census and not a sampling method helped to rule out sampling error and capture the views and experiences of all the concerned stakeholders in the REMA-SPIU. As a result, the overall sample size was 32 respondents which equated to the overall population under study. A pilot test on three or five respondents was done before the actual data collection to determine the clarity, reliability and relevance of the research instrument. The pilot study feedback was utilized to improve the questionnaire and then become effective in the administration to the entire census population. The researchers were able to contact and include 32 staff and had a 100-percent response rate. Booker et al. (2021) consider a response rate of over 80% best. The properties of the Staffs involved are in Table 2.

Table 2: characteristics of staff included in the study

	Category	Frequency	Percentage
Position of staff	SPIU procurement specialists	3	9,3%
	procurement officers	8	25%
	project managers	7	21.8%
	finance officers	8	25%
	IT/MIS officers	6	18.7%
	total	32	100%
Years of experience in the institutions	Less than 1 year	2	6.25%
	1-3 years	5	15.62%
	4-6 years	15	46.8%
	7-10 years	5	15.62%
	Above 10 years	5	15.62%
	total	32	100%
	Yes	32	100%

the UMUCYO e-procurement system	No	0	0%
	Total	32	100%

Source: primary data

The presentation of respondents by position, as it can be seen in Table 2, shows that the representation of the staff engaged in procurement and project implementation of REMA- SPIU is equal. The biggest proportions of respondents were procurement officers (8 respondents or 25% of the sample) and finance officers (8 respondents or 25% of the sample). This was then followed by the project managers where 7 respondents were identified (21.8%), and IT/MIS officers as 6 respondents (18.7%).

The smallest group of respondents was comprised of SPIU procurement specialists, and since 3 respondents (9.3%). This distribution is a manifestation of multidisciplinary of procurement operations in donor-funded projects, which includes technical, financial, managerial, and information systems operations. As far as the years of experience in the institution is concerned, majority 15 (46.8) respondents indicated that they had 4-6 years' experience in the institution; this indicates that the organization has a workforce with a lot of institutional knowledge and familiarity with how things work in that institution.

The respondents who reported 1-3 years, 7-10 years, and experience of 10 years and above had 5 respondents (15.62) each with only 2 respondents (6.25) having less than one year of experience. This implies that the majority of the respondents had sufficient work life experience to give informed and valid answers on the issue of procurement practices and system utilization at REMA. Moreover, 32 (100) participants answered that they use the UMUCYO e-procurement system and none of the participants answered that they do not use it. This universal adoption highlights the key position of UMUCYO in procurement activities at REMA- SPIU and justifies the applicability of the study population in investigating the problem of e-procurement compliance, efficiency, and the use of donor-funded projects.

To further determine the practical applicability, coherence and clarity of the instrument, a pilot test was carried out on 5-8 respondents. The responses of the expert review and the pilot study provided feedback that was used to make required changes and improvements to the research instrument, thus increasing its accuracy, relevance, and general validity.

3.4 Data Collection Methods

Hashim et al., 2022; Sekaran & Bougie, 2016 posits that a questionnaire is A systematic collection of pre-written questions, mostly multiple-choice, but can also include open-ended ones to get more detailed or qualitative responses. In this study, The Primary data was collected using a structured questionnaire, developed to obtain quantitative information from respondents involved in donor-funded procurement processes across the selected institution. The questionnaire consisted of closed-ended, Likert-scale items aligned with the study objectives, focusing on the objectives of the study. The questionnaire survey was very helpful because it was simple to use when gathering data.

3.5 Data collection instruments and procedure

The researcher obtained an introductory letter from the university particularly from the school of Business and Administration. This letter was issued to all respondents and the letter helped to introduce the researcher to the respondents, explaining the general purpose of the study. The researcher personally distributed research questionnaires through a mixed-mode approach. Hard copy questionnaires were distributed to staff available on site, while secured Google Forms was shared with respondents who are more accessible digitally.

The researcher used a self-administered questionnaire guide to gather qualitative data (Siniscalco & Auriat, 2015). Closed questions were included in the self-completed questionnaires. Closed-ended questions were chosen because they produce fully completed questionnaires while avoiding irrelevant answers, are simple to administer, simple to code, and easy to analyze. They also allow for comparison and quantification. The closed-end questionnaire questions were scored on a Likert scale of 1 to 5, where

1 means "strongly agree," 2 means "agree," 3 means "not sure," 4 means "disagree," and 5 means "strongly disagree."

3.6 Data quality control

Quality control covered validity and reliability tests that were undertaken as detailed below.

3.6.1 Validity

The validity of the research instrument was established by ensuring that all questionnaire items were grounded in previous empirical and theoretical studies and closely aligned with the study objectives. Content validity was assessed through expert review, during which the research supervisor evaluated the relevance, clarity, wording, and completeness of the questionnaire items in relation to the study constructs. Moreover, a pilot test was carried out with 5-8 respondents to evaluate the clarity, integrity and utilization applicability of the instrument. Feedback received during the expert review and pilot study provided information on the revision and refinements necessary thus improving the accuracy, relevance and general validity of the research instrument.

3.6.2 Reliability

Reliability refers to the consistency and stability of a research instrument in measuring a construct overtime (Nunnally & Bernstein, 1994). In this research, Cronbachs Alpha () was used to evaluate the reliability of the questionnaire to evaluate the internal consistency of measurement scales of the key constructs of the study. Cronbachs Alpha has been known to be a good indicator of scale reliability, and a scale reliability of 0.70 or more is believed to be satisfactory in social science study (Nunnally and Bernstein, 1994; Tavakol and Dennick, 2011). The reliability analysis was conducted for four main constructs: Institutional Capacity, Technology Integration, Donor Standards Compliance, and System Performance and Effectiveness (UMUCYO). Table 3 shows the results of the reliability test.

Table 3: Summary of Constructs Reliability

Construct	No. of Items	Cronbach's Alpha (α)
Institutional Capacity	4	0.850
Technology Integration	3	0.877
Donor Standards Compliance	5	0.938
System Performance and Effectiveness (UMUCYO)	5	0.868

Source: Primary data, N = 32

Table 3 indicates that all of the constructs exhibited strong internal consistency with Cronbach's Alpha values surpassing the recommended value of 0.70. Donor Standards Compliance achieved the best reliability coefficient (0.938) meaning that it has high consistency among its measurement items. Technology Integration (= 0.877), System Performance and Effectiveness of UMUCYO (= 0.868) and Institutional Capacity (= 0.850) also showed high levels of reliability, showing that the items used in the questionnaire were effective in measuring their respective constructs. In general, the results on reliability validate that the research instrument was stable and reliable, and thus it can be subjected to additional statistical analysis and interpretation.

3.7 Data Analysis

In this study, to ensure that the information is correct and comprehensive, we exported the answers to the questionnaire filled in through Google Forms and then analyzed the whole data with the SPSS version 27 and Excel to create simple charts and tables. In the first part of the analysis, we looked at descriptive statistics like frequencies, percentages, averages, mean and standard deviations (Greasley, 2007). The results helped to summarize information about the demographic traits of respondents, including their positions, years of experience (O'Neil & Koekemoer, 2016).

In addition, correlation analysis was applied to examine the relationship between donor requirements and the effectiveness of the UMUCYO e-procurement system within the

selected project. This approach was appropriate because it enabled the researcher to determine whether a relationship exists between the variables and the direction of that relationship without assuming a predictive or causal effect.

The absence of multicollinearity among the independent variables, linearity, and the normality of the residuals were among the fundamental presumptions upon which the regression analysis was done. In this analysis, a p-value below 0.05 ($p < 0.05$), which indicates a 95% confidence level in rejecting the null hypothesis and a less than 5% chance that the result was an accident, were deemed statistically significant.

3.8 Data Management

The data gathered using online surveys was safely stored in a password-protected digital database in Google drive, offered by the survey tool (Google Forms), which guaranteed limited access and data integrity. In the case of respondents who completed the paper-based questionnaires, information was keyed in the same digital system manually, to ensure consistency and minimize keying differences. Prior to analysis, we systematically reviewed the completeness and logical consistency and adherence of the responses to the questionnaire framework. We cleaned the data with the help of the standard method, such as locating and eliminating every duplicate, identifying any odd responses, and dealing with any lack of data. We also sought contradictory responses so that all makes sense.

In case of necessity, we approached some respondents to seek clarification of any unclear or incomplete data. This detailed procedure served to enhance the quality, validity and reliability of the data and ensured the information was correct and accurately reflected the answers (Kumar, 2019).

3.9 Ethical Considerations

The research was conducted in accordance with the set guidelines of ethical research when using human subjects. All the respondents gave an informed consent before the questionnaire was given to them. Participants were thoroughly informed on the aim of the study, procedures that were followed during data collection, voluntary nature of

participation and that the information they availed was solely used as an academic resource.

All the collected data was stored in digital files with passwords that could be accessed by the researcher only, thus ensuring confidentiality and anonymity since the research instrument did not include any personal identifiers. Respondents were also told that they could pull out of the study any time without incurring any penalty or adverse effects. Besides this, the research was done in accordance with the ethical standards of Uganda Christian University (UCU).

Ethical consent and institutional permission were taken and a formal introductory/support letter of the university was appended to the questionnaire to validate the study and accessibility to the respondents. These ethical considerations brought integrity, transparency and respect to the rights and dignity of all the subjects in the research.

3.10 Limitations of Studies

There were a number of limitations to this study that must be taken into account when interpreting the results. To begin with, the study was carried out in a single government agency, which is Rwanda Environment Management Authority (REMA), and in the unit of the agency known as Single Project Implementation Unit (SPIU). Consequently, the results might not be generalizable to other publicly-supported institutions or donor-funded initiatives in Rwanda.

Second, it was a cross-sectional study, and the data were gathered at a single time. This restricted the possibility of following the variations in the effectiveness of the UMUCYO e-procurement system and user experiences over time. Third, the information provided by self-reported questionnaires, which can suffer a response bias, specifically in a situation when UMUCYO is mandatory, and adherence to the public procurement rules is highly promoted.

Lastly, the limited advanced statistical analysis was constrained by the small population size (N = 32) despite the fact that a census method was employed. In addition, access to detailed system performance records was restricted due to institutional

confidentiality policies within Rwandan public institutions. Irrespective of these weaknesses, the study offers valuable information on whether the UMUCYO e-procurement system is effective at REMA-SPIU and adds to the knowledge on the implementation of e-procurement in the Rwandan government.

3.11 Summary of Methodology

This study adopted a quantitative, cross-sectional research design to examine the effectiveness of the e-procurement system within the Rwanda Environment Management Authority (REMA) Single Project Implementation Unit (SPIU), with a specific focus on a World Bank-funded project. Primary data were collected exclusively through structured questionnaires administered to staff directly involved in procurement processes and donor-funded project implementation.

The study employed a census approach, whereby all 32 staff members involved in procurement and project implementation at REMA-SPIU were included in the study. The respondents comprised procurement specialists, procurement officers, project managers, finance officers (including project accountants), and IT/MIS officers who interact with donor procurement requirements and routinely use the UMUCYO e-procurement platform. The census approach was considered appropriate due to the small and manageable size of the study population and ensured comprehensive representation of relevant stakeholders.

The questionnaires provided information that was coded and analyzed using the Statistical Package of the Social Sciences (SPSS). The characteristics of respondents and the main trends in their responses were summarized with descriptive statistics (frequencies, percentages, means, standard deviations, etc.). Moreover, correlation and descriptive analyses were performed to evaluate the efficiency of the e-procurement system to facilitate procurement processes and compliance in REMA-SPIU.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.0 Introduction

This chapter introduces, discusses, and explains the data obtained through the respondents to explore the objectives of the study and answer the research questions. It is analyzed on the data received with the help of structured questionnaires sent to the staff of the organization that is engaged in procurement operations and implementation of the projects funded by donors in the Rwanda Environment Management Authority (REMA) Single Project Implementation Unit (SPIU). The data were coded and analyzed with the use of Statistical Package of the Social Sciences (SPSS). The chapter starts by providing the demographic attributes of the respondents in terms of frequencies and percentages.

This is followed by discussion of the main study variables such as institutional capacity, integration of technology, adherence to donor standards and system performance and effectiveness of the UMUCYO e-procurement system. Patterns, relationship, and trends in the data are analyzed using descriptive statistics and correlation. The results are stated in tables and figures in order to be clear and interpreted according to the aim of the studies and the literature. The findings of this chapter are the foundation of the discussion, conclusions and recommendations of the next chapter.

4.1 Descriptive Statistics of Study Variables

In this section, the main variables of the study, which are Institutional Capacity, Technology Integration, Donor Standards Compliance, and System Performance and Effectiveness of UMUCYO are introduced with descriptive statistics. Mean scores and standard deviations are used to analyze the perceptions of various respondents towards each construct. Those means that are nearer to 5 represent a greater degree of agreement with the statements and the degree of variability in the views of respondents is represented by the standard deviations.

4.1.1 Institutional Capacity

Table 4 shows the descriptive statistics of the items used to measure institutional capacity to support the use of the UMUCYO e-procurement system. Generally, the findings demonstrate that there is a high degree of consensus amongst respondents implying that REMA- SPIU has sufficient institutional capability to facilitate procurement activities.

The highest mean score ($M = 4.31$, $SD = 0.644$) was in the statement about the provision of adequate guidance on how to comply with project procurement requirements, which means that the respondents acknowledged that institutional guidance was clear and facilitating. This was then succeeded by the sufficiency of training offered to the staff to utilize the UMUCYO system ($M = 4.25$, $SD = 0.718$) as a strong institutional investment on capacity building.

Moreover, the internal coordination and interdepartmental communication facilitated the smooth procurement processes, according to the respondents, was also rated with the relatively high mean ($M = 4.16$, $SD = 0.574$), and the timely technical assistance in the case of UMUCYO system issues also obtained a rather high mean score ($M = 3.94$, $SD = 0.716$). The standard deviations among all items are not very high, which shows some consistency in the perceptions of respondents of institutional capacity.

Table 4: Respondents' Ratings on institutional capacity

Code	Statement	Mean	SD
IC1	The institution provides timely technical support when UMUCYO system issues occur.	3.94	0.716
IC2	Staff receive adequate training to use the UMUCYO system effectively.	4.25	0.718
IC3	Internal coordination and communication between departments support smooth procurement operations.	4.16	0.574
IC4	The institution provides sufficient guidance on complying with project procurement requirements.	4.31	0.644

Source: Primary data

4.1.2 Technology Integration

Table 5 indicates the descriptive statistics of technology integration in correlation to the use of the UMUCYO e-procurement system. The results show that there is moderate to high degree of agreement among the respondents on the issue of the impact of technological factors on procurement performance. The fact that a user-friendly system design facilitates procurement efficiency had the highest mean score ($M = 3.75$, $SD = 0.568$) and the respondents tended to believe that the design and usability of the e-procurement system is conducive to the efficient procurement processes.

This brings out the significance of system usability towards the improvement of operational effectiveness. The respondents also concurred that speed and accuracy of the procurement activities is determined by the reliability of the e-procurement system ($M = 3.53$, $SD = 0.507$) and thus the stability and consistency of the system performance is a key factor that determines the efficiency of procurement activities.

Moreover, the statement about the hardware constraints disrupting the healthy implementation of procurement operations reported an average score of 3.56 ($SD = 0.504$), which can be seen as a recognition of the respondents of the infrastructural-related issues that can influence the performance of the systems.

Table 5: Respondents' Ratings on technological integration

Code	Statement	Mean	SD
TI1	Reliability of the e-procurement system affects the speed and accuracy of procurement activities.	3.53	0.507
TI2	User-friendly system design improves procurement efficiency.	3.75	0.568
TI3	Hardware limitations interfere with smooth execution of procurement activities.	3.56	0.504

Source: Primary data

In general, the standard deviations of the items are rather low, which indicates that respondents share a similar perception about the role of technology integration in determining the procurement processes.

These results highlight why there is a need to invest more in system reliability, user-centric design, and proper ICT infrastructure in order to make the UMUCYO e-procurement system more effective in REMA-SPIU.

4.1.3 Donor Standards Compliance

Table 6 shows the descriptive statistics of compliance with donor standards, where the mean scores were high all along the items and this shows a high level of agreement among the respondents. The greatest mean scores were found to be in the statements of which the respondents have a clear understanding of the standards in donor procurement ($M = 4.50$, $SD = 0.568$) and where the respondents have a clear understanding of how the donor standards contribute to the transparency in the procurement process ($M = 4.50$, $SD = 0.508$). These results indicate that there are great awareness and sensitivity of donor procurement systems. Also, respondents affirmed that the UMUCYO system procedures are in line with donor procurement requirements ($M = 4.31$, $SD = 0.693$) and that donor requirements encourage effective utilization of UMUCYO system ($M = 4.34$, $SD = 0.653$). Another high mean score was on accountability enhancement using donor standards ($M = 4.37$, $SD = 0.707$). In general, the low inter-item variance is indicative of high agreement about the importance of the donor standards in enhancing procurement practices.

Table 6: Respondents' Ratings on donor standards Compliance

Code	Statement	Mean	SD
DS1	I clearly understand the donor procurement standards that apply to this project.	4.50	0.568
DS2	Donor procurement requirements are aligned with UMUCYO system procedures.	4.31	0.693
DS3	Donor requirements promote effective use of the UMUCYO system in procurement activities.	4.34	0.653
DS4	Donor standards enhance transparency within the procurement process.	4.50	0.508

DS5	Donor standards positively influence accountability in procurement operations.	4.37	0.707
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Source: Primary data

4.1.4 System Performance and Effectiveness of UMUCYO

Table 7 presents the summary of descriptive statistics of system performance and effectiveness of the UMUCYO e-procurement system. These findings show that the perception of the role played by UMUCYO in improving procurement performance is very positive. Transparency in all procurement steps had the highest mean score ($M = 4.41$, $SD = 0.615$), which means that respondents highly perceived UMUCYO as a tool that fosters transparency. Likewise, the respondents gave affirmation that UMUCYO results in better accountability in procurement decision-making ($M = 4.38$, $SD = 0.660$) and better transparency in procurement of goods and services under the project ($M = 4.38$, $SD = 0.609$). Moreover, the respondents felt that UMUCYO enhances the efficiency of procurement activities ($M = 4.31$, $SD = 0.644$) and offers precise and complete digital records of procurements ($M = 4.13$, $SD = 0.609$). The mean scores and low standard deviations are high enough to show an unanimity on the effectiveness of UMUCYO in facilitating the procurement processes in the REMA-SPIU.

Table 7: Respondents' Ratings on systems performance and effectiveness of UMUCYO

Code	Statement	Mean	SD
SP1	The UMUCYO system provides adequate transparency across all procurement steps.	4.41	0.615
SP2	UMUCYO provides accurate and complete digital records for procurement activities.	4.13	0.609
SP3	UMUCYO improves accountability in procurement decision-making.	4.38	0.660
SP4	UMUCYO enhances transparency in the procurement of goods and services under the project.	4.38	0.609
SP5	UMUCYO improves the efficiency of procurement operations in the project.	4.31	0.644

Source: Primary data

4.2 Correlation Analysis of Study Variables

This section presents the results of the Pearson correlation analysis conducted to examine the direction and strength of the relationships between the independent variables Institutional Capacity (IC-com), Technology Integration (TI-com), and Donor Standards Compliance (DS-com) and the dependent variable, System Performance and Effectiveness of UMUCYO (SP-com). The SPSS was used to analyze it with the level of significance of 0.01 (two-tailed).

Institutional Capacity had a very high positive and statistically significant correlation with System Performance and Effectiveness of UMUCYO ($r = 0.974$, $p < 0.01$) as seen in Table 8. This implies that the greater the institutional support, coordination and guidance the better the performance and effectiveness of the UMUCYO e-procurement system in REMA-SPIU. Likewise, there was a strong positive relationship between Technology Integration and system performance ($r = 0.942$, $p < 0.01$).

This observation implies that reliability of the system, user-friendliness and sufficient technological infrastructure are important factors in promoting efficiency and effectiveness of UMUCYO-sponsored procurement processes. The findings also demonstrate a extremely good positive and statistically significant correlation between the Donor Standards Compliance and the system performance ($r = 0.974$, $p < 0.01$). This means that effective visibility of donor procurement needs and congruence of donor requirements and UMUCYO processes would go a long way in enhancing transparency, accountability and system efficiency. Also, the independent variables were found to have strong positive correlations with each other. Technology Integration was clearly correlated with Institutional Capacity ($r = 0.923$, $p < 0.01$) and Donor Standards Compliance ($r = 0.961$, $p < 0.01$), and Technology Integration itself was also correlated with Donor Standards Compliance ($r = 0.945$, $p < 0.01$). These findings indicate that there is a high level of interrelationship between institutional, technological and compliance factors in determining performance in e-procurement.

On the whole, the correlation findings demonstrate that the performance and effectiveness of the UMUCYO e-procurement system in the donor-funded projects at

REMA-SPIU is strongly and positively related to the improvement of institutional capacity, technology integration, and compliance with donor standards.

Table 8: Correlation Analysis

correlation		IC-com	TI-com	DS-com	SP-com
IC-com	Pearson Correlation	1			
	Sig. (2-tailed)				
TI-com	Pearson Correlation	.923**	1		
	Sig. (2-tailed)	.000			
DS-com	Pearson Correlation	.961**	.945**	1	
	Sig. (2-tailed)	.000	.000		
SP-com	Pearson Correlation	.974**	.942**	.974**	1
	Sig. (2-tailed)	.000	.000	.000	
**. the significant level of the correlation is 0.01 level (2-tailed), N=32					

from primary data, using SPSS

4.3 Regression analysis

This section presents the results of the linear regression analysis conducted to examine the effect of the independent variables Institutional Capacity, Technology Integration, and Donor Standards Compliance as captured by the overall composite mean, on the System Performance and Effectiveness of the UMUCYO e-procurement system. The regression analysis was done with SPSS at 95% level of confidence. Multicollinearity was

reduced by the use of an overall composite mean in the regression analysis because of the high interrelations among the independent variables. Table 9: Results of Regression Analysis (Regression Coefficients and Model Summary)

Table 9: Regression Analysis Results (Regression Coefficients and Model Summary)

Variables	Model				
	B	Std. Error	B	t	p
Constant (DV)	0.446	0.134	—	3.338	.002
Overall Composite Mean	0.954	0.033	0.983	29.243	< .001
Model Summary					
R	0.983				
R Square (R ²)	0.966				
Adjusted R ²	0.965				
F-statistic	855.179				
Standard Error of Estimate	0.095				

N=32, Significance. (F) **P<.001, Dependent variable: SP

The regression model showed that the relationship between the predictor and the dependent variable was very strong with a correlation coefficient of R = 0.983. The coefficient of determination (R²) was 0.966 which means that 96.6 percent of the variation in the system performance and effectiveness of UMUCYO is attributed to the overall composite mean of the independent variables. The fact that the value of Adjusted R² is 0.965 also supports the strength of the model even after taking into consideration the size of the sample. The standard error of the estimate was 0.095 which means that there was low degree of error in prediction. The model was significant statistically because it had an F-statistic of 855.179 (p < 0.001). This establishes that the model is a good fit to the data and can be used to explain the differences in the effectiveness of the UMUCYO e-procurement system.

The regression coefficients also revealed that there was a positive and significant effect of the entire composite mean on the system performance and effectiveness of UMUCYO. The unstandardized coefficient ($B = 0.954$) demonstrates that an increase of one unit in the overall composite mean results in a substantial increase of system performance by 0.954 units and the standardized beta coefficient ($B = 0.983$) depicts the size of effect is very strong and demonstrates that the constructs of the overall independent variables (institutional capacity, technology integration, donor standards) have a substantial This impact was very strong ($t = 29.243$, $p < 0.001$), which indicates the strong predictive value of the independent variables in combination. The constant term was also statistically significant ($B = 0.446$, $p = 0.002$) and reflects the level of system performance, when the predictor variable is held constant.

In general, the results of the regression analysis reveal that the positive and statistically significant effect of the combination of the institutional capacity, technology integration, and adherence to the donor standards on the performance and effectiveness of the UMUCYO e-procurement system in donor-funded projects at REMA-SPIU is strong.

4.4 Chapter Summary

This chapter has provided the analysis, presentation and interpretation of the data obtained by the researcher through engaging the staff that is involved with procurement and donor projects implementation at REMA-SPIU on the effectiveness of UMUCYO e-procurement system. The SPSS was used to conduct the analysis and descriptive statistics; correlation and regression analysis were used to meet the study objectives. The descriptive findings revealed that the institutional capacity of REMA- SPIU was strong in general.

Respondents confirmed that the institution offers sufficient training, procurement instructions, coordination, and technical support that is timely and has helped the UMUCYO system to run smoothly. These results indicate that institutional structures are important in improving e-procurement performance. Integration of technology was also identified to have a positive impact on procurement effectiveness. The respondents

found the UMUCYO system to be relatively reliable and user-friendly, but certain hardware constraints were reported.

Technological issues like system usability, infrastructure, and reliability as a whole were considered to be significant in the effective procurement practices. The compliance with donor standards showed constant high rates of agreement among respondents. The findings were that the staff is fully aware of the demands in donor procurement requirements and that these standards enhance transparency, accountability, and efficient utilization of the UMUCYO system. The high correlation of donor requirements with system processes also increases the performance of procurement.

In terms of system performance, respondents are in agreement that UMUCYO enhances transparency, accountability, efficiency, and record keeping in the procurement operations. This qualifies the efficiency of the system in aiding the donor-funded project procurement operations at REMA- SPIU. The correlation analysis showed that there were very strong positive relations between the institutional capacity, technology integration, compliance with donor standards, and system performance.

This indicates that improvements in these factors are closely associated with increased effectiveness of the UMUCYO e-procurement system. Moreover, the regression analysis showed that the combined effect of institutional capacity, technology integration, and compliance with standards of the donors significantly predicts the performance and effectiveness of the systems. The model described an extremely high percentage of variance within UMUCYO performance, which validates these to be the crucial drivers behind successful e-procurement implementation.

In general, the results of this chapter prove that institutional support, effective integration of technology, and strict adherence to donor requirements are the collective success factors of the UMUCYO e-procurement system in the performance and effectiveness of donor-funded projects at REMA-SPIU.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

5.0 Introduction

This chapter is the discussion of the findings of the study on the basis of the quantitative findings provided in Chapter Four. The primary aim of the study was to investigate how effective the UMUCYO e-procurement system is in projects funded by donors at REMA-SPIU focusing on the impact of institutional capacity, technology integration, and donor standards compliance. The chapter interprets the effects of these factors on the performance of the systems in regard to transparency, accountability, efficiency and correctness of procurement processes. Besides that, the chapter also makes a conclusion based on the findings and offers some practical recommendations to enhance the implementation and performance of the UMUCYO e-procurement system.

5.1 Discussions of findings

5.1.1 Institutional Capacity and System Performance

The findings revealed that institutional capacity has a strong positive influence on the performance and effectiveness of the UMUCYO e-procurement system. High mean scores indicated that staff training, internal coordination, technical support, and guidance on procurement compliance were adequate at REMA-SPIU. The very strong positive correlation between institutional capacity and system performance confirms that strong organizational support structures enhance procurement efficiency, transparency, and accountability.

These findings are consistent with previous studies which emphasize the importance of institutional readiness in successful e-procurement implementation. (Picho, 2017) found that human capacity and organizational support significantly improve procurement compliance and efficiency in public institutions. Similarly, (Kubwimana Bernard & Desire Nimpano, 2025) reported that institutional coordination and staff competence positively influence procurement performance in Rwanda's public sector. (Omwono et al., 2020) also observed that institutional preparedness is a key driver of effective adoption of e-procurement systems in Rwandan public institutions.

This suggests that investments in staff training, internal communication, and technical support are critical for maximizing the benefits of digital procurement systems such as UMUCYO.

5.1.2 Technology Integration and System Performance

The paper has also shown that technology integration has a considerable impact on the performance of the UMUCYO e-procurement system. The respondents admitted that system reliability, user-friendliness, and ICT infrastructure are significant to facilitate efficient procurement processes, but noted some hardware limitations. The positive relationship between technology integration and system performance is also high, which is in line with the literature on the integration of digital procurement systems (Mohungoo et al., 2020) found technological infrastructure and stability of the system to be significant determinants of successful e-procurement implementation in the public sector. The positive relationship between technology integration and system performance is also high, and that is aligned with the literature on the integration In the Rwandan scenario, (Jean Bosco Harelimana & Bosco Harelimana, 2018) discovered that the transparency and efficiency of the public procurement is improved by the technological readiness. These findings mean that donor standards do not only bring about accountability but also support the best procurement practices in national e-procurement systems like UMUCYO.

5.1.3 Donor Standards Compliance and System Performance

The findings showed that donor standards compliance plays a critical role in enhancing the effectiveness of the UMUCYO e-procurement system. High mean scores demonstrated strong understanding of donor procurement requirements and their contribution to transparency and accountability. The strong positive relationship between donor standards compliance and system performance suggests that adherence to standardized procurement frameworks strengthens procurement discipline and reduces risks.

This is consistent with donor-funded procurement literature. (Wolfram et al., 2023) demonstrated that donor contracting conditions improve accountability and procurement outcomes in public sector projects. (Mayavo, 2024) also found that

compliance with donor procurement standards enhances effectiveness in donor-funded public institutions. Furthermore, (OECD, 2020, n.d.) highlights that harmonized procurement frameworks promote transparency and good governance in public procurement systems.

These findings imply that donor standards not only ensure accountability but also reinforce best procurement practices within national e-procurement platforms such as UMUCYO.

5.1.4 Combined Influence of the Study Variables

Regression analysis established that institutional capacity, technology integration and compliance with donor standards are factors that influence performance of UMUCYOs. This implies that the model has a high explanatory power since most of the variations in effectiveness can be attributed to these three areas. This reinforces the literature on innovation and institutional change that underscores organizational preparedness and positive regulatory conditions to effectively embrace systems. (De Vries et al., 2018) noted that the public sector is more successful in innovation that is supported by the institutional arrangements, (Drența et al., 2024) also noted that the proliferation of innovation is dependent on usability, organizational support, and environmental factors. The results indicate that successful e-procurement needs to be achieved through a combination of strategies.

5.2 Conclusions

As the research results indicate, the UMUCYO e-procurement system has had a significant positive impact on procurement practices in the donor-funded projects at the REMA-SPIU. It has increased transparency, improved accountability, better record keeping and increased efficiency-all contributing to better performance in the public procurement.

Institutional capacity proved to be a determinant of system effectiveness. Well trained employees, proper internal coordination, technical assistance on time and clear guidance ensures easier operations and better results. This shows how important it is for organizations to be ready when using digital procurement systems. It is also important

to note that technology integration is critical in improving the usability and reliability and reducing the number of operational problems; this will directly translate into an increase in the performance of the system. Besides, compliance with the standards of donors is critical to developing disciplined processes and supporting transparency and accountability within procurement practices. Mindset matching of donor requirement with UMUCYO processes enhances governance and creates confidence in our national e-procurement system.

In conclusion, the paper has affirmed that successful e-procurement systems in state entities require a combined method that incorporates preparedness on organizational level together with technological competence and legal adherence. When combined in an effective manner, these elements contribute greatly to the performance of procurement in the donor-funded projects.

5.3 Recommendations

Based on the findings, the following are some of the recommendations:

- **Strengthening Institutional Capacity:** REMA-SPIU needs to continue investing in training activities of personnel associated with procurement and IT. In my opinion, enhancing internal coordination to make sure work flows operate well and decisions are made in time through establishment of rapid technical support can be used to address operational issues.
- **Enhancing Technological Infrastructure:** REMA management needs to improve the reliability of the e-procurement system through collaboration with the RPPA as well as its user interface and hardware setup. Periodic system upgrades and maintenance will contribute to preventing technical issues and enhancing productivity. An improvement in alignment with donor standards: The development partners and procurement authorities should collaborate to ensure that donor procurement rules are more in line with UMUCYO procedures. Clear instructions and easy procedures can contribute to compliance and decrease the burden on admins.

- **Monitoring and Evaluation:** Performance evaluation of the system on a regular basis and the user feedback will aid in finding the areas of weakness to be improved upon.

5.4 Suggestions for further research

Further research is needed to examine other state agencies in order to understand the performance of e-procurement in various industries. Extensive studies may be conducted to determine the impact of continued reforms and technological advancements on the procurement outcomes in the long run. Analyzing factors such leadership system, organizational culture and user attitudes and competences would be beneficial.

5.5 Chapter Summary

The chapter summarized the most significant results of my research, made conclusions and provided suggestions on how to improve the UMUCYO e-procurement system. The finding underscores the fact that institutional capacity building, incorporation of technology and adherence of the donor needs with the procurement process is critical to the performance. By highlighting these aspects, more transparency, accountability, and efficiency in procurement by the public sector will be promoted.

REFERENCES

1. African Development Bank. (2021). AFRICAN ECONOMIC OUTLOOK 2024 Driving Africa's Transformation the Reform of the Global Financial Architecture.
2. Byiringiro, K. D., & Madichie, N. (2022). E-PROCUREMENT PRACTICES AND PERFORMANCE OF PUBLIC INSTITUTIONS IN RWANDA: A CASE OF KICUKIRO DISTRICT.
3. Cheng, E., Lam, H. K. S., Lyons, A. C., & Yeung, A. C. L. (2020). Guest editorial. In *International Journal of Operations and Production Management* (Vol. 40, Issue 5, pp. 509-530). Emerald Group Holdings Ltd.
4. Citation; Waduu, J., & Omido, K. (2025). Challenges Affecting the Implementation of e-Government Procurement in Kenyan County Governments. *International Journal of Social Science and Humanities Research*, 3(3), 221-228.
5. De Vries, H., Tummers, L., & Bekkers, V. (2018). The diffusion and adoption of public sector innovations: A meta-synthesis of literature.
6. Delphine, U., & Nkechi Irechukwu, E. (2021). E-PROCUREMENT COMPONENTS AND PERFORMANCE OF PUBLIC INSTITUTIONS: A CASE OF MUHANGA DISTRICT.
7. Delphine, U., & Nkechi Irechukwu, E. (2022). E-PROCUREMENT COMPONENTS AND PERFORMANCE OF PUBLIC INSTITUTIONS: A CASE OF MUHANGA DISTRICT.
8. Diane Gihozo. (2020). Adoption of e-procurement in Rwandan Public institutions.
9. Dickson Sserulika. (2023). ASSESSING THE READINESS OF PUBLIC SECTOR TO EMBRACE E-PROCUREMENT IN UGANDA CASE OF GOMBA DISTRICT.
10. Drența, R. F., Micle, D.-E., & Pop, D. A. (2024). TECHNOLOGY ADOPTION. ELEMENT OF DIFFUSION THEORY (Vol. 23, Issue 2).
11. Falcón-Cortés, A., Aldana, A., & Larralde, H. (2022). Practices of public procurement and the risk of corrupt behavior before and after the government transition in México. *EPJ Data Science*, 11(1).
12. Fushimi, K. (2024). Institutional Environment Pressures Perceived by Bilateral Development Cooperation Agency's Constituents. *Public Organization Review*, 24(1), 217-235.
13. Galleli, B., Semprebon, E., Dos Santos, J. A. R., Teles, N. E. B., de Freitas-Martins, M. S., & da Silva Onevetch, R. T. (2021). Institutional pressures,

- sustainable development goals and covid-19: How are organisations engaging? Sustainability (Switzerland), 13(21). <https://doi.org/10.3390/su132112330>
14. Gilbert, T., & Celestin, M. (2021). 26 CHALLENGES AND OPPORTUNITIES OF IMPLEMENTING E-PROCUREMENT IN PUBLIC INSTITUTIONS: A COMPARATIVE STUDY OF COMESA COUNTRIES. *International Journal of Engineering Research and Modern Education (IJERME) International Peer Reviewed-Refereed Research Journal*, 10(1), 2455-4200.
 15. Implementing the OECD Recommendation on Public Procurement in OECD and Partner Countries. (2025). OECD Publishing.
 16. Isango, E. (2024). An Assessment of the Impact of E-Procurement Practices on Organizational Performance in Tanzania. *NG Journal of Social Development*, 14(2), 237-241.
 17. Jean Bosco Harelimana, B., & Bosco Harelimana, J. (2018). The Impact of E-Procurement on the Performance of Public Institutions in Rwanda. Type: Double Blind Peer Reviewed International Research Journal Publisher: Global Journals Online, 18.
 18. Jenkins, M., Greco, A., & Khaghaghordyan, A. (2024). Transparency International Anti-Corruption Helpdesk Answer.
 19. Kubwimana, & Nimpano. (2021). Effect of E-Procurement Practices on Institutional Efficiency in Complying with Procurement Principles; A Case of Rwanda Polytechnic (2021-2023). *Journal of Procurement & Supply Chain*, 9(2), 49-66.
 20. Kumar, R., Cathie, S., Moore, C., Vermillion, J., & Koenig, E. (2015). GOOD GOVERNANCE IN PUBLIC PROCUREMENT: AN EVALUATION OF THE ROLE OF AN E-PROCUREMENT SYSTEM.
 21. Lydia Asare-Kyira, M.A kodom, Owusu Ackah, & Mawutor H.A Korda. (2023). Antecedent and Consequence of E-procurement Implementation on Performance of Small and Medium Enterprises: An Institutional Theory Perspective. *European Journal of Business and Management*.
 22. Manta, O., & Mansi, E. (2024). The Impact of Globalization on Innovative Public Procurement: Challenges and Opportunities. *Administrative Sciences*, 14(4).

23. MAPS. (2020). Rwanda Assessment of the Public Procurement System Volume I- Main Report Methodology for Assessing Procurement Systems (MAPS).
24. Mayavo, C. (2024). Donor-funded procurement effectiveness in the public health medical laboratory services: Examining the moderation role for government policy in donor-support. *GHMJ (Global Health Management Journal)*, 7(2), 55-65.
25. MINECOFIN. (2010). REPUBLIC OF RWANDA MINISTRY OF FINANCE and ECONOMIC PLANNING (MINECOFIN).
26. Mohungoo, I., Brown, I., & Kabanda, S. (2020). A Systematic Review of Implementation Challenges in Public E-Procurement. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 12067 LNCS, 46-58.
27. Mugwe, M. K. (2023). Role of Information Technology Infrastructure on Adoption of Electronic Procurement in State Corporations in Kenya.
28. Muthoni Ndei, F., & Mutuku, M. (2021). Electronic Procurement and Performance of Non-Governmental Organizations in Kenya. Empirical Evidence from Pathfinder International, Kenya. *Journal of Business and Management Sciences*, 9(2), 71-80.
29. Nakamya, S. A., Gikandi, E. B., & Kizza, J. (2025). Effect of E-Tendering Practices on Procurement Performance of State Corporations in Uganda. *Journal of Procurement and Supply Chain Management*, 4(1), 1-21.
30. Nasibu, S. (2024). Innovation Adoption and Organizational Agility in Tanzania.
31. OECD, 2020. (n.d.). OECD Publishing.
32. Olando Oundo, E. (n.d.). Effectiveness of Public Procurement Process Guarantees in Donor Funded Projects in Eastern Africa.
33. Omwono, G. A., Mayanja, S. N., & Rodrigue, K. (2020). Factors Influencing E-Procurement on the Implementation of Public Institution in Rwanda: A Case of Kigali City (2014-2016). *Randwick International of Social Science Journal*, 1(2), 126-142.
34. Park, H. J., & Choi, S. O. (2019). Digital innovation adoption and its economic impact focused on path analysis at national level. *Journal of Open Innovation: Technology, Market, and Complexity*, 5(3).

35. Paterne, R., & Jean De Dieu, D. (2022). E-PROCUREMENT EFFECT OF E-PROCUREMENT IMPLEMENTATION ON THE EFFECTIVENESS OF RWANDAN HOSPITALS: A CASE OF KABAYA DISTRICT HOSPITAL (2019-2020).
36. Picho, E. O. (2017). European Journal of Management and Marketing Studies INSTITUTIONAL HUMAN CAPACITY AND PUBLIC PROCUREMENT IN TERTIARY INSTITUTIONS IN WEST NILE SUB-REGION OF UGANDA. 2.
37. Ramasimu, M. G., Ramasimu, N. F., & Ramasimu, M. A. (2025). Public Procurement and Local Economic Development: Unpacking the Challenges Faced by Small and Medium Enterprises. *International Journal of Applied Research in Business and Management*, 6(2).
38. RPPA. (2022).
New_LAW_N__0312022_OF_21112022_GOVERNING_PUBLIC_PROCUREMENT.
39. RPPA. (2024). APPN_MASTER_CN-AGENDA-LOGISTICAL_NOTE.
40. THE WORLD BANK Procurement Regulations for IPF Borrowers. (2023).
41. Ufitiwabo Teta Aurore. (2025). Do you have an idea for The New Times to cover? Submit it here! https://www.newtimes.co.rw/article/25999/news/law/public-procurement-four-malpractices-that-can-get-your-company-banned-in-rwanda?utm_source=
42. Uwadede, D. I. (2016). ADOPTION OF E-PROCUREMENT AND IMPLEMENTATION OF BASIC PRINCIPLES OF PUBLIC PROCUREMENT IN RWANDA i.
43. Uwimpeta, E., & Akims, M. (2025). E-procurement System and Public Contract Management Performance at Rwanda Biomedical Center. *Journal of Public Policy and Administration*, 10(2), 29-48.
44. Venant, G. (2022). available at journal-ems. In *European Modern Studies Journal* (Vol. 6, Issue 6).
45. Wolfram, C., Miguel, E., Hsu, E., Berkouwer, S. B., Fatajo, B., Kilby, C., Opalo, K., Ryan, N., Sadeque, Z., Thomas, D., Zane, G., Kim, O., Pickmans, R., Shah, N., Streff, A., Suandi, M., Velichkov, K., Vial, F., Wang, A., ... Miguel, © Edward. (2023). NBER WORKING PAPER SERIES DONOR CONTRACTING CONDITIONS AND PUBLIC PROCUREMENT: CAUSAL EVIDENCE FROM KENYAN ELECTRIFICATION.
46. World Bank. (2018). *Ending Poverty Investing in Opportunity*.

47. Zondo, W. N. S., & Ndoro, J. T. (2023). Attributes of Diffusion of Innovation's Influence on Smallholder Farmers' Social Media Adoption in Mpumalanga Province, South Africa. *Sustainability (Switzerland)*, 15(5).