E-Procurement Adoption and Perceived Procurement Efficiency in Malawi: A Case Study of the Public Procurement and Disposal of Assets Authority (PPDA)

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ABSTRACT

This study examines e-procurement adoption and perceived procurement efficiency in Malawi, focusing on the Public Procurement and Disposal of Assets Authority (PPDA). It responds to the need for evidence on how digital procurement reforms are experienced in a developing-country context. A mixed-methods approach combined structured questionnaire responses from 68 participants with semi-structured interviews involving 15 participants. The findings show that respondents generally associated e-procurement with faster procurement activities, improved documentation accuracy, fewer errors and duplication, and better access to procurement information. Specifically, 49 of the 68 questionnaire respondents (72.1%) reported a significant reduction in procurement time, while 19 (27.9%) reported a moderate reduction. In addition, 62 respondents (91.2%) reported improved documentation accuracy and 57 (83.8%) reported reduced errors and duplication. These results represent participants' assessments rather than independently verified changes in procurement performance. The study did not analyse comparable administrative records, baseline indicators, or before-and-after performance data; therefore, it cannot quantify the actual change in procurement cycle time, transaction costs, or compliance rates. Interviews also identified continuing constraints, including poor internet connectivity, system downtime, limited ICT skills, and reliance on manual procedures for some approvals. The study concludes that e-procurement is perceived as useful for improving procurement processes at PPDA, but stronger performance monitoring is needed to establish its measurable effects. Continued investment in infrastructure, training, and institutional support remains important.

Keywords: E-procurement, Perceived Procurement Efficiency, Digital Procurement, Public Procurement and Disposal of Assets Authority (PPDA), Malawi, E-Government Procurement, Procurement Reform

Problem Statement: E-procurement has been introduced to improve transparency, reduce administrative burden, and strengthen procurement efficiency. However, evidence of its actual performance effects at the Public Procurement and Disposal of Assets Authority (PPDA) remains limited. Continuing delays, compliance concerns, and workflow problems raise questions about whether expected benefits have been achieved. Respondents' views show how users experience the system, but do not establish the magnitude of actual performance changes.

Without comparable indicators—such as procurement cycle time, cost per transaction, error rates, supplier participation, and compliance rates before and after implementation—it is difficult to verify efficiency gains. This study therefore examines adoption, perceived efficiency, and implementation challenges at PPDA while distinguishing reported perceptions from objectively verified outcomes.

Purpose of the Study: The study aimed to examine the extent of e-procurement adoption at PPDA, how respondents perceived its influence on procurement efficiency, and the challenges affecting its implementation.

General and Specific Objectives

General Objective: To examine e-procurement adoption and perceived procurement efficiency at the Public Procurement and Disposal of Assets Authority (PPDA) in Malawi.

Specific Objectives

- To examine the extent of e-procurement adoption at the PPDA.
- To assess respondents' views on how e-procurement has influenced procurement process efficiency.
- To analyse challenges affecting effective e-procurement implementation at the PPDA.
- To recommend measures for improving e-procurement adoption and use.

INTRODUCTION

Public procurement is a fundamental government function and plays a central role in delivering public goods and services. It involves acquiring goods, works, and services using public funds and accounts for a significant proportion of expenditure in many countries. Procurement therefore affects economic development, service delivery, and public trust. Efficient systems support effective use of resources, while inefficient systems can cause delays, waste, and poor service outcomes (John, 2025). Assessing efficiency requires attention to user experience and performance indicators showing how quickly, accurately, and economically procurement activities are completed.

In many developing countries, including Malawi, public procurement systems have traditionally relied on manual and paper-based processes. These systems are often associated with a range of challenges, including slow processing times, excessive bureaucracy, high administrative costs, and limited transparency (John, 2025). Manual systems require physical handling of documents, multiple layers of approval, and face-to-face interactions, all of which contribute to delays and inefficiencies. In addition, the lack of proper record-keeping and monitoring mechanisms increases the risk of errors, duplication, and corruption. These challenges have raised concerns about the effectiveness of procurement systems and their ability to support efficient service delivery.

To address these challenges, governments around the world have increasingly turned to digital technologies to modernize procurement systems. E-procurement, which refers to the use of electronic systems to conduct procurement activities, has emerged as a key reform initiative aimed at improving efficiency, transparency, and accountability (Aboelmaged, 2010). E-procurement systems automate various stages of the procurement process, including tender advertisement, bid submission, evaluation, and contract management. By reducing reliance on manual processes, these systems are expected to streamline operations, reduce costs, and improve access to procurement information (Kaira & Banda, 2023).

In Malawi, efforts to modernize public procurement have been led by the Public Procurement and Disposal of Assets Authority (PPDA), which is responsible for regulating and overseeing procurement activities in public institutions. The introduction of the electronic Government Procurement (e-GP) system represents a significant step towards digital transformation in the public sector. The e-GP platform aims to improve procurement efficiency by providing a centralized system for managing procurement activities, enhancing communication between procurement entities and suppliers, and increasing transparency in the procurement process (Kaira & Banda, 2023).

The adoption of e-procurement is expected to bring several benefits. First, it is anticipated to reduce procurement cycle time by automating processes and eliminating delays associated with manual handling of documents. Second, it is expected to improve accuracy and reduce errors through automated data entry and validation. Third, e-procurement systems are designed to enhance transparency by creating digital records and audit trails that make it easier to monitor procurement activities. These improvements are expected to

strengthen accountability and reduce opportunities for corruption, which is a major concern in public procurement (Aboelmaged, 2010).

However, despite these expected benefits, the implementation of e-procurement systems is often associated with various challenges. In many developing countries, including Malawi, issues such as poor internet connectivity, limited ICT infrastructure, and lack of technical skills among users can hinder effective adoption (Kaira & Banda, 2023). In addition, resistance to change among employees and organizational constraints may slow down the transition from traditional to digital systems. These challenges raise important questions about the extent to which e-procurement systems can achieve their intended objectives.

Although literature on e-procurement is growing, much research focuses on developed countries or other African regions, leaving limited empirical evidence from Malawi. A further issue is that positive user perceptions do not necessarily demonstrate objectively measured performance improvements. Actual changes are best assessed alongside indicators such as procurement cycle time, processing duration by stage, administrative cost per transaction, error rates, supplier participation, and compliance rates. This study addresses the Malawi-specific evidence gap by documenting users' assessments at PPDA and clarifying the limits of the available evidence on objectively measured outcomes.

This study examines e-procurement adoption and perceived procurement efficiency in Malawi, using PPDA as a case study. It assesses the extent of adoption, considers respondents' assessments of efficiency-related outcomes, and identifies challenges affecting implementation. The study contributes evidence on how e-procurement is experienced by users in a public procurement institution. Because the data comprise questionnaire responses and interviews rather than comparable administrative performance records, the findings are interpreted as reported perceptions and experiences, not as a definitive measurement of causal impact.

LITERATURE REVIEW

Concept of E-Procurement

E-procurement refers to the use of information and communication technologies (ICTs) to conduct procurement activities electronically. These activities include tender advertisement, supplier registration, bid submission, contract management, order processing, invoicing, and payment procedures. According to Subramaniam and Shaw (2004), e-procurement involves the use of internet-based systems to perform some or all procurement functions in an organisation. The purpose of e-procurement is to replace traditional paper-based procurement systems with automated digital systems that improve efficiency, transparency, and accountability.

E-procurement has become increasingly important in both private and public sector organisations due to the advancement of digital technologies and the growing need for efficient procurement systems. Vaidya (2012) explains that e-procurement systems include several components such as e-tendering, e-sourcing, e-ordering, e-catalogues, and e-auctions. These systems simplify procurement procedures and improve communication between procurement entities and suppliers.

E-tendering involves the electronic advertisement of tenders and submission of bids through online platforms. This system allows suppliers to participate in procurement processes remotely, reducing geographical barriers and increasing competition. E-sourcing enables organisations to identify, evaluate, and engage suppliers electronically. E-auctioning creates a competitive environment where suppliers bid in real time, often leading to reduced procurement costs. E-ordering and e-catalogues facilitate the electronic purchase of goods and services using standardised digital platforms. These components collectively improve procurement coordination, reduce paperwork, and minimise delays in decision-making processes (Vaidya 2012).

The Organisation for Economic Co-operation and Development (OECD, 2019) identifies e-procurement as one of the key tools for strengthening public sector governance and accountability. Through digital systems,

procurement institutions are able to maintain proper records, improve audit trails, and monitor procurement activities more effectively. The use of electronic systems also increases transparency because procurement information can be accessed more easily by stakeholders, including suppliers and oversight institutions.

Globally, governments have increasingly adopted e-procurement systems as part of broader public sector reforms. Countries such as South Korea, Singapore, Rwanda, and Kenya have successfully implemented electronic procurement systems aimed at reducing procurement inefficiencies and corruption. In many developing countries, public procurement has traditionally been associated with delays, bureaucracy, poor record management, and opportunities for manipulation. E-procurement systems are therefore viewed as a strategic solution for improving service delivery and strengthening accountability in public institutions.

In Malawi, the Public Procurement and Disposal of Assets Authority (PPDA) introduced the electronic Government Procurement (e-GP) system to modernize procurement operations within public institutions. The system was established to reduce paperwork, improve efficiency, and promote transparency in procurement activities. According to PPDA (2022), the e-GP system was introduced as part of wider public financial management reforms aimed at improving accountability and value for money in public procurement. However, despite these efforts, implementation challenges such as poor internet connectivity, limited ICT infrastructure, and inadequate user skills continue to affect the effectiveness of the system (Kaira & Banda, 2023).

Although e-procurement offers numerous benefits, its successful implementation depends on organisational readiness, adequate infrastructure, management support, and user acceptance. Feinstein and Stefanelli (2002) argue that technology alone cannot guarantee efficiency unless organisations also invest in skilled personnel and proper management systems. Therefore, e-procurement should not only be viewed as a technological innovation, but also as an organisational transformation process that requires institutional commitment and behavioural change.

Public Sector Efficiency

Public sector efficiency refers to the ability of government institutions to deliver services effectively while minimizing the use of resources such as time, cost, labour, and materials. Efficiency is achieved when public institutions maximize outputs using the least possible resources while maintaining quality service delivery. According to Afonso et al. (2019), public sector efficiency involves improving administrative processes, reducing operational costs, and ensuring timely delivery of services to citizens.

Efficiency in procurement systems is particularly important because public procurement accounts for a significant proportion of government expenditure in many countries. Efficient procurement systems ensure that public resources are utilized responsibly and that goods and services are delivered on time and at the right cost. In contrast, inefficient procurement systems contribute to delays, waste of public funds, poor service delivery, and corruption.

One important dimension of public sector efficiency is process efficiency. This refers to the ability of organisations to complete procurement activities within shorter periods while reducing unnecessary procedures and bottlenecks. Traditional procurement systems often involve manual approval processes, excessive paperwork, and physical movement of documents between departments. These procedures increase procurement cycle time and negatively affect service delivery.

Cost efficiency is another important aspect of public sector performance. Procurement systems are expected to minimize administrative expenses and obtain value for money in purchasing processes. E-procurement systems improve cost efficiency by reducing printing costs, transportation expenses, and administrative overheads associated with manual procurement systems. Electronic systems also promote competitive bidding and improve supplier selection, resulting in reduced procurement costs.

Transparency and accountability are also key indicators of public sector efficiency. Transparent procurement systems allow stakeholders to access procurement information openly, thereby reducing opportunities for

corruption and favouritism. Digital procurement platforms create electronic records and audit trails that make it easier to monitor procurement activities and detect irregularities. Quinot and Arrowsmith (2013) argue that transparency and competition are fundamental principles for achieving effective public procurement systems.

Compliance with procurement regulations is another dimension of efficiency. Efficient procurement systems ensure that procurement procedures are conducted according to established laws and standards. Non-compliance with procurement procedures often results in financial losses, project delays, and weak institutional credibility. Electronic procurement systems support compliance by standardizing procurement procedures and automating approval processes.

In many developing countries, including Malawi, traditional procurement systems continue to face several challenges such as poor documentation, procurement delays, weak monitoring systems, and excessive bureaucracy. Chizimba and Chihana (2021) found that manual procurement processes in Malawi contribute significantly to inefficiencies within public institutions. These inefficiencies affect service delivery and undermine public trust in government institutions. As a result, governments have increasingly adopted digital procurement systems to improve operational efficiency and strengthen accountability.

E-procurement is therefore considered an important tool for improving public sector efficiency because it simplifies procurement procedures, reduces delays, improves information management, and strengthens transparency. However, the extent to which these benefits are realized depends on several factors including infrastructure availability, staff competence, management support, and institutional readiness.

Impact of E-Procurement on Public Sector Efficiency

The adoption of e-procurement systems has been widely associated with improvements in public sector efficiency across many countries. One of the major impacts of e-procurement is the reduction in procurement cycle time. Traditional procurement systems rely heavily on manual processing of documents, physical approvals, and face-to-face interactions, all of which contribute to delays. E-procurement systems automate procurement procedures, enabling procurement activities to be completed more quickly and efficiently.

Aboelmaged (2010) found that organisations that adopted e-procurement systems significantly reduced the time required to generate purchase orders and process procurement transactions. Automation reduces repetitive manual tasks and minimizes human errors, thereby improving the speed and accuracy of procurement operations. Similarly, Osei-Tutu et al. (2019) reported that e-procurement systems improve supplier management and payment processing, leading to enhanced procurement performance.

Another important impact of e-procurement is cost reduction. Electronic systems eliminate many costs associated with traditional procurement methods, including printing, paper storage, transportation, and administrative handling of documents. E-procurement also enables organisations to compare supplier prices more easily and conduct competitive bidding processes electronically. According to Grant (2011), e-procurement enhances organizational control over purchasing activities and contributes to cost savings by streamlining procurement procedures.

E-procurement also improves transparency and accountability within procurement systems. Digital procurement systems create audit trails that record procurement activities electronically, making it easier to monitor transactions and identify irregularities. OECD (2019) explains that e-procurement reduces opportunities for corruption by limiting unnecessary human interaction and increasing visibility in procurement processes. Open access to procurement information also improves stakeholder confidence and strengthens public trust in government institutions.

Another important contribution of e-procurement is improved access to procurement information. Digital systems allow procurement officers, suppliers, and managers to access procurement data in real time, thereby improving communication and decision-making. Electronic systems also support better planning and coordination of procurement activities. Manoharan and Holzer (2012) argue that countries that successfully

implemented e-procurement systems experienced improvements in market access, supplier participation, and procurement efficiency.

Despite these benefits, several studies show that the success of e-procurement systems depends on organizational and technological factors. Inadequate infrastructure, poor internet connectivity, resistance to change, and lack of technical skills can negatively affect implementation outcomes. Rajkumar (2001) argues that managerial and organizational challenges may limit the successful adoption of e-procurement systems in public institutions.

Empirical studies from African countries also provide evidence of the positive impact of e-procurement. In Kenya, Ngugi and Mugo (2020) found that e-procurement systems improved procurement efficiency and reduced delays in procurement processes. In Rwanda, Ruranga (2021) reported that digital procurement systems enhanced transparency and supplier participation. However, studies in Ghana and other developing countries indicate that technical and organizational barriers continue to limit the full realization of e-procurement benefits.

In Malawi, research on e-procurement remains limited despite ongoing digital procurement reforms. Existing studies suggest that the implementation of e-procurement systems has improved transparency and operational efficiency in some public institutions. However, challenges such as system downtime, limited ICT infrastructure, inadequate training, and resistance to change continue to affect effective implementation (Kaira & Banda, 2023). This highlights the need for further empirical studies to assess the actual impact of e-procurement adoption on public sector efficiency within the Malawian context.

Global E-Procurement Experiences

The adoption of e-procurement systems has increased rapidly across the world as governments and organizations seek to improve procurement efficiency, transparency, and accountability. Developed countries such as South Korea, Singapore, the United Kingdom, and the United States are among the global leaders in implementing electronic procurement systems. These countries have successfully integrated digital technologies into procurement processes, resulting in improved service delivery and reduced procurement costs.

South Korea is widely recognized as one of the most successful examples of e-procurement implementation through its Korea ON-line E-Procurement System (KONEPS). The system integrates procurement activities electronically, including tender advertisement, supplier registration, contract management, and payment processing. According to the World Bank (2016), KONEPS significantly reduced procurement processing time and improved transparency in government procurement. The system also reduced opportunities for corruption by minimizing direct contact between procurement officers and suppliers.

Similarly, Singapore introduced electronic procurement systems as part of its broader e-government strategy aimed at improving public sector efficiency. The GeBIZ procurement platform allows suppliers to access procurement opportunities online and submit bids electronically. The implementation of the platform improved supplier participation and strengthened accountability within public procurement processes.

In Europe, the European Union has actively promoted the adoption of e-procurement systems among member states. The European Commission identified e-procurement as an important mechanism for improving competition, reducing procurement costs, and increasing cross-border participation in public procurement markets. Countries such as Italy, France, and the United Kingdom have reported significant improvements in procurement efficiency following the adoption of electronic systems.

The United States government has also implemented several digital procurement initiatives aimed at improving procurement management and reducing administrative costs. Federal procurement systems allow government agencies to conduct procurement transactions electronically and monitor procurement activities more effectively. These systems improve efficiency by automating repetitive procurement tasks and increasing access to procurement information.

Despite the successes observed globally, studies show that successful implementation of e-procurement systems requires substantial investment in ICT infrastructure, staff training, and institutional support. Countries that achieved positive results often combined technological investments with strong governance systems and policy reforms. This demonstrates that technology alone is insufficient without organizational readiness and effective management support.

African Public Sector Procurement Reforms

African governments have increasingly adopted procurement reforms as part of wider public sector modernization and governance improvement strategies. Public procurement has historically been associated with inefficiency, corruption, and lack of transparency in many African countries. As a result, governments and development partners have promoted e-procurement systems to strengthen accountability and improve service delivery.

Countries such as Rwanda, Kenya, Ghana, South Africa, and Botswana have made significant progress in implementing electronic procurement systems within public institutions. In Rwanda, the government introduced an e-procurement system aimed at improving procurement transparency and reducing delays in procurement processes. Ruranga (2021) found that the Rwandan e-procurement system enhanced supplier participation and improved procurement monitoring.

Kenya has also implemented major procurement reforms through the Integrated Financial Management Information System (IFMIS), which includes e-procurement functionalities. Ngugi and Mugo (2020) reported that the adoption of electronic procurement systems in Kenya improved procurement efficiency by reducing procurement cycle time and enhancing compliance with procurement regulations. The system also improved access to procurement opportunities for suppliers across different regions.

In Ghana, procurement reforms focused on improving financial accountability and minimizing corruption in public procurement processes. Khan (2020) observed that e-procurement systems in Ghana contributed to improved transparency and cost efficiency. However, implementation challenges such as inadequate ICT infrastructure and resistance to organizational change continued to affect effectiveness.

South Africa has also invested heavily in digital procurement systems to improve accountability and strengthen public financial management. The government introduced centralized supplier databases and electronic tender systems aimed at improving procurement coordination and reducing fraud. Botswana similarly implemented electronic government procurement systems to simplify procurement processes and improve service delivery within public institutions.

In Malawi, procurement reforms have mainly been coordinated by the Public Procurement and Disposal of Assets Authority (PPDA). The introduction of the electronic Government Procurement (e-GP) system marked a major step towards procurement modernization in the country. The system was introduced to improve procurement efficiency, enhance transparency, and reduce reliance on paper-based procurement procedures. However, studies indicate that challenges such as weak ICT infrastructure, limited user capacity, and system downtime continue to affect implementation (Kaira & Banda, 2023).

Overall, procurement reforms across Africa demonstrate growing recognition of the importance of digital systems in strengthening public sector governance. However, the effectiveness of these reforms depends on institutional readiness, infrastructure development, policy implementation, and continuous staff training.

Benefits of E-Procurement

E-procurement systems provide numerous benefits to both public and private sector organizations. One of the major benefits is improved efficiency in procurement operations. Electronic systems automate procurement activities and reduce the time required to complete procurement processes. Automation eliminates repetitive manual tasks and reduces delays associated with physical movement of procurement documents.

Another important benefit is cost reduction. E-procurement systems minimize administrative costs related to printing, storage, transportation, and document handling. Organizations are also able to achieve better pricing through increased supplier competition and electronic bidding processes. According to Aberdeen Group (2012), organizations that adopted e-procurement systems experienced substantial cost savings and improved procurement control.

E-procurement systems also enhance transparency and accountability in procurement processes. Electronic systems create digital records and audit trails that allow procurement activities to be monitored more effectively. This reduces opportunities for corruption, fraud, and manipulation. OECD (2019) argues that transparency is one of the key strengths of e-procurement because procurement information becomes more accessible to oversight institutions and the public.

Improved supplier participation is another important benefit of e-procurement. Online procurement platforms allow suppliers from different geographical locations to access procurement opportunities without physical travel. This increases competition and improves fairness in procurement processes. Electronic systems also improve communication between procurement entities and suppliers by providing centralized access to procurement information.

E-procurement additionally improves data management and decision-making within organizations. Procurement officers and managers are able to access procurement information in real time, enabling better planning and resource allocation. Digital systems also improve accuracy by reducing manual data entry errors and ensuring consistency in procurement records.

Environmental sustainability is another emerging benefit of e-procurement systems. Reduced use of paper and physical transportation contributes to environmental conservation and supports green procurement practices. The transition from paper-based procurement systems to digital systems therefore supports both operational efficiency and environmental sustainability.

Challenges of E-Procurement Implementation

Despite its numerous benefits, the implementation of e-procurement systems is associated with several challenges, particularly in developing countries. One of the major challenges is inadequate ICT infrastructure. Effective operation of e-procurement systems requires reliable internet connectivity, computer hardware, and stable system performance. In many developing countries, poor internet infrastructure limits access to electronic procurement systems and disrupts procurement operations.

Limited ICT skills among users also affect effective implementation. Procurement officers, suppliers, and other stakeholders require adequate digital literacy to use electronic systems efficiently. Without sufficient training, users may struggle to operate the system, resulting in errors, delays, and resistance to adoption. Gunasekaran and Ngai (2008) emphasize that user competence is a critical factor influencing successful technology adoption.

Resistance to change is another common challenge affecting e-procurement implementation. Employees who are accustomed to traditional procurement systems may fear technological change or perceive electronic systems as complex and difficult to use. Resistance may also arise due to concerns about increased transparency and accountability. Rogers (2003) explains that individuals adopt innovations at different rates depending on their perceptions, attitudes, and willingness to change.

System downtime and technical failures also negatively affect implementation outcomes. Frequent system interruptions reduce user confidence and may force organizations to revert to manual procurement procedures. Inadequate technical support and poor system maintenance further worsen implementation challenges.

Financial constraints represent another major barrier to implementation. Establishing and maintaining e-procurement systems requires significant investment in ICT infrastructure, software development, training,

and system maintenance. Many public institutions in developing countries face budget limitations that affect their ability to fully implement and sustain electronic procurement systems.

Organizational and policy-related challenges also affect implementation. Weak management support, lack of clear procurement policies, and poor coordination among institutions may limit the success of e-procurement initiatives. Successful implementation therefore requires strong leadership, institutional commitment, and effective policy frameworks.

Technology Adoption Theories

This study is guided by three major theories that explain technology adoption and implementation within organizations: the Technology Acceptance Model (TAM), the Theory of Reasoned Action (TRA), and the Diffusion of Innovations (DOI) theory.

The Technology Acceptance Model (TAM), developed by Davis (1989), explains that individuals are more likely to adopt a technology if they perceive it as useful and easy to use. Perceived usefulness refers to the extent to which users believe that the system improves their job performance, while perceived ease of use refers to the degree to which users believe that the system is free from difficulty. In the context of e-procurement, procurement officers are more likely to adopt electronic systems if they believe the systems improve efficiency and simplify procurement activities.

The Theory of Reasoned Action (TRA), developed by Fishbein and Ajzen (1975), suggests that individual behaviour is influenced by attitudes and subjective norms. According to the theory, users are more likely to adopt e-procurement systems if they have positive attitudes towards the technology and perceive support from colleagues, management, and organizational culture.

The Diffusion of Innovations (DOI) theory by Rogers (2003) explains how innovations spread within organizations and societies over time. The theory categorizes adopters into innovators, early adopters, early majority, late majority, and laggards. DOI theory emphasizes that adoption depends on factors such as relative advantage, compatibility, complexity, trialability, and observability of the innovation.

These theories are relevant to this study because they help explain the factors influencing adoption and usage of e-procurement systems within public institutions. The theories also provide a framework for understanding user behaviour, organizational readiness, and implementation outcomes.

Empirical Studies from Developing Countries

Several empirical studies have examined the impact of e-procurement systems on public sector efficiency in developing countries. These studies generally indicate that e-procurement improves procurement performance, although implementation challenges continue to affect outcomes.

In Kenya, Ngugi and Mugo (2020) found that e-procurement systems significantly improved procurement efficiency by reducing procurement cycle time and enhancing transparency. The study also reported increased supplier participation and improved compliance with procurement regulations.

Ruranga (2021) conducted a study in Rwanda and found that electronic procurement systems improved transparency, reduced delays, and strengthened procurement monitoring. The study highlighted the importance of strong government support and infrastructure investment in ensuring successful implementation.

In Ghana, Khan (2020) observed that e-procurement systems contributed to cost reduction and improved accountability in public procurement processes. However, the study identified challenges such as limited ICT infrastructure, resistance to change, and inadequate technical skills among users.

Studies conducted in Nigeria also show positive impacts of e-procurement adoption. Chukwuemeka et al. (2018) found that electronic governance systems improved service delivery and reduced bureaucratic inefficiencies within government institutions. Similarly, Ibikunle et al. (2019) reported that ICT adoption enhanced operational efficiency and reduced delays in service provision.

In Malawi, empirical evidence on e-procurement remains limited despite ongoing procurement reforms. Existing studies suggest that electronic procurement systems have improved transparency and procurement coordination in some public institutions. However, implementation challenges such as poor internet connectivity, limited ICT skills, and resistance to change continue to affect effectiveness (Kaira & Banda, 2023).

The reviewed studies demonstrate that e-procurement systems have strong potential to improve public sector efficiency in developing countries. However, the extent of success depends on organizational readiness, infrastructure development, policy implementation, and continuous capacity building.

METHODOLOGY

This study adopted a mixed-methods design to examine e-procurement adoption and perceived procurement efficiency at PPDA. Questionnaire data summarised respondents' assessments of adoption and efficiency-related changes, while semi-structured interviews provided context on system use and implementation challenges. Combining the approaches allowed comparison of numerical patterns with participants' explanations (Creswell & Creswell, 2018). The study did not analyse administrative performance records or conduct a before-and-after comparison; it therefore does not estimate the causal effect or magnitude of e-procurement's impact on actual performance.

Research Design

The study used a descriptive design with an explanatory element in interpreting respondents' views. It described the extent of adoption and reported efficiency-related changes, while interviews explored participants' experiences and implementation barriers. As the data were self-reported and collected at one point in time, relationships between e-procurement and efficiency are treated as perceived associations, not objectively verified causal effects.

Study Area and Population

The study was conducted at the Public Procurement and Disposal of Assets Authority (PPDA) in Malawi. PPDA is responsible for regulating procurement processes in public institutions, making it an appropriate case study for examining the implementation of e-procurement systems.

The target population included employees involved in procurement-related activities, such as procurement officers, ICT personnel, finance staff, and management. These individuals were selected because they interact directly with the e-procurement system and have practical knowledge of its functionality and impact.

Sampling Techniques and Sample Size

A combination of purposive sampling and simple random sampling was used in this study. Purposive sampling was used to select key informants for interviews, including senior management and ICT specialists, because of their expertise and involvement in system implementation. Simple random sampling was used to select respondents for the questionnaire in order to ensure representativeness and reduce bias.

A total of 75 questionnaires were distributed, and 68 were completed and returned, giving a response rate of 90.7% (John, 2025). These responses provide a substantial account of participants' experiences, although a high response rate does not itself validate reported performance changes. In addition, 15 participants were interviewed.

Data Collection Methods

Data was collected using two main methods: questionnaires and interviews. The questionnaire consisted of structured questions designed to collect quantitative data on the extent of e-procurement adoption, efficiency outcomes, and challenges. The use of structured questions ensured consistency in responses and facilitated statistical analysis.

Semi-structured interviews were conducted to collect qualitative data. This method allowed participants to express their views freely while still focusing on key research themes. Interviews provided deeper insights into user experiences, system challenges, and organizational factors affecting e-procurement adoption.

Data Analysis

Quantitative data were analysed using frequencies and percentages to summarise responses on adoption and perceived efficiency. The analysis reports respondents' assessments of processing time, documentation accuracy, and errors or duplication. These statistics describe reported views, not actual cycle times, transaction costs, or error rates from administrative records.

Interview data were analysed thematically to identify recurring patterns concerning system benefits, challenges, and user experiences. The themes helped contextualise questionnaire results, including reports of faster electronic tender advertisements and bid submissions alongside continued delays in some manual approvals. Combining the data sources supported interpretation of perceived efficiency while distinguishing participants' accounts from verified institutional performance.

Validity and Reliability

To ensure validity, the research instruments were carefully designed based on existing literature and research objectives. The questionnaire was pre-tested to ensure clarity and relevance. Reliability was enhanced by using standardized questions and consistent data collection procedures.

Ethical Considerations

Ethical considerations were strictly observed throughout the study. Participants were informed about the purpose of the study and their consent was obtained before participation. Confidentiality and anonymity were maintained by ensuring that responses were not linked to individual identities. The study also adhered to institutional research guidelines.

FINDINGS AND DISCUSSIONS

The findings are organised around the study objectives: extent of e-procurement adoption, perceived procurement efficiency, and implementation challenges. Of the 75 questionnaires distributed to PPDA officers and suppliers, 68 were completed, giving a response rate of 90.7%. In addition, 15 participants took part in semi-structured interviews, providing qualitative perspectives on system use, staff capacity, and implementation barriers. The questionnaire results are presented as respondents' reported experiences and assessments. The study did not analyse administrative records, baseline data, or comparable performance indicators from before and after e-procurement implementation. It therefore identifies perceived changes and implementation experiences but cannot independently verify the magnitude of changes in actual procurement performance or establish causation.

Extent of E-Procurement Adoption

The findings indicate that e-procurement adoption at PPDA is relatively extensive but not comprehensive. Respondents described use of the electronic Government Procurement (e-GP) system for tender advertisement, bid submission, supplier communication, and record management. This suggests a shift towards digital platforms, consistent with reform efforts in Malawi (PPDA, 2022). It also aligns with

Subramaniam and Shaw (2004), who describe internet-based systems as a means of conducting procurement electronically. However, reported use does not establish that every procurement stage is digitised or that efficiency gains have been objectively measured.

The results also show that adoption remains incomplete, with some activities continuing to rely on manual procedures. Questionnaire responses indicated that 44 of 68 respondents (64.7%) considered that e-procurement had mostly replaced manual processes, while 24 (35.3%) reported only partial replacement. Although 51 respondents (75.0%) reported moderate or full integration of the system, 17 (25.0%) indicated limited integration or uncertainty. Only 11 respondents (16.2%) reported using all modules, whereas 57 (83.8%) reported using selected modules. These results suggest that PPDA operates a hybrid model in which digital and manual procedures coexist. The pattern is consistent with the implementation challenges discussed by Kaira and Banda (2023) and Rajkumar (2001), including infrastructure limitations, institutional readiness, and managerial constraints.

Interview responses further suggested that management support exists but that employees differ in their level of confidence and adaptation to the system. This is consistent with Rogers' (2003) Diffusion of Innovations theory, which recognises that adoption occurs at different rates among users. It also aligns with Gunasekaran and Ngai (2008), who emphasise the importance of user competence in technology implementation. Overall, the evidence suggests meaningful but incomplete adoption at PPDA. The results describe the level of use reported by participants; they do not establish whether adoption has produced a specific measured change in institutional performance.

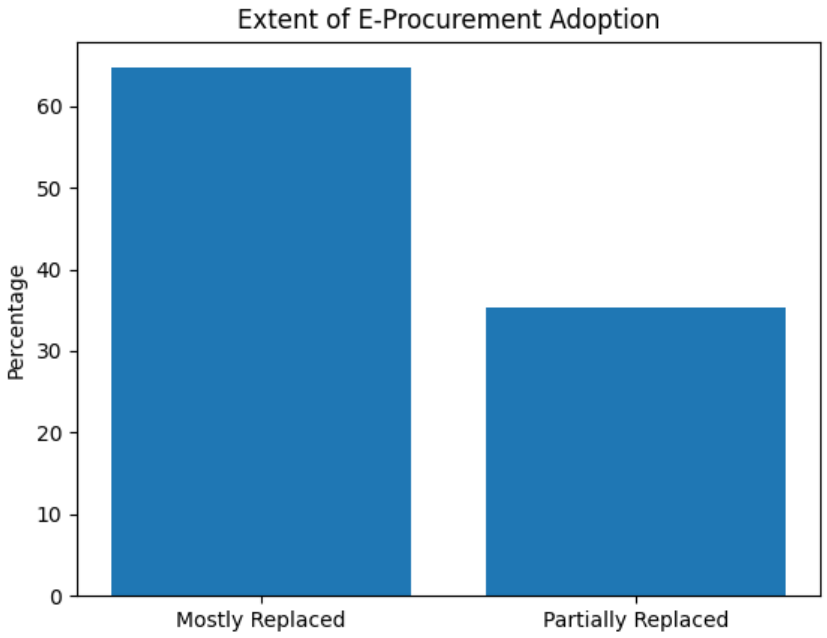


Figure 1: Extent of E-procurement adoption

Perceived Effects on Procurement Efficiency

Respondents generally associated e-procurement with faster procurement processes. Of the 68 respondents, 49 (72.1%) reported a significant reduction in procurement time and 19 (27.9%) a moderate reduction. These figures show positive perceptions, but not the number of days saved: the study did not compare administrative records before and after implementation. Interviewees described faster electronic tender advertisements and bid submissions, while some final approvals remained manual and slow. The findings suggest that digitalisation may speed up selected stages, while manual dependencies can limit improvements across the full cycle. This is consistent with Aboelmaged (2010) and Ngugi and Mugo (2020), who discuss the potential to reduce routine administrative delays.

Respondents also reported improved documentation. A total of 62 (91.2%) indicated better documentation accuracy, while 57 (83.8%) reported fewer errors and less duplication. These results suggest that users experience the system as supporting more consistent record handling. They remain self-reported assessments, however, because the study did not audit procurement files or compare error rates over time. The findings align with the OECD's (2019) discussion of electronic records and audit trails. Whether these perceptions correspond to improved compliance or fewer formal errors requires administrative evidence.

Participants also pointed to improved coordination and access to procurement information through the electronic platform. A central system may simplify information sharing and reduce physical file movement, although continued manual approvals indicate incomplete integration. The study did not measure processing time by stage, transaction costs, supplier participation before and after implementation, or compliance rates. Such indicators are needed to estimate the magnitude of institutional performance change. Overall, respondents perceived benefits in speed, documentation, and coordination, but the data do not provide an objective estimate of e-procurement's overall effect on efficiency.

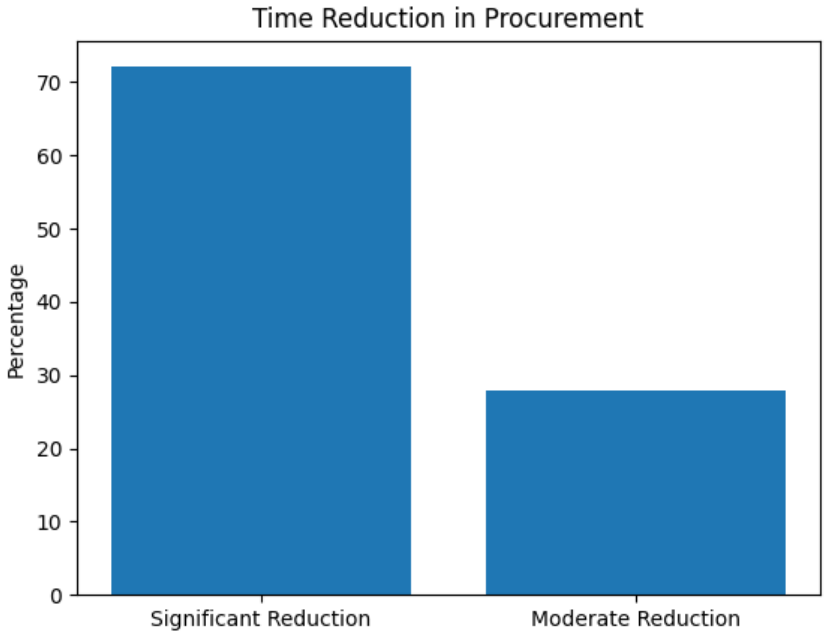


Figure 2: Time Reduction in procurement

Transparency and Accountability

Respondents associated e-procurement with greater traceability and access to procurement information. Electronic records can make tender advertisements, bid submissions, and related decisions easier to track, potentially supporting audit and oversight functions. This interpretation is consistent with the OECD (2019), which highlights the role of recorded procurement information in transparency and monitoring. However, the present study did not independently audit digital records or compare formal transparency and compliance indicators before and after system implementation. The findings therefore reflect participants' views of the system's transparency-related benefits rather than a verified reduction in irregularities.

Some respondents felt that standardised electronic procedures strengthened accountability by making information easier to access and decisions easier to trace. Such perceptions matter, but increased traceability does not prove that non-compliance or manipulation has declined. Verification would require audit findings, complaint records, compliance rates, or documented irregularities over comparable periods. The findings are consistent with Ngugi and Mugo (2020) on the accountability potential of e-procurement, but do not quantify effects at PPDA.

Participants also described improved access to procurement information for users and suppliers. This may reduce information gaps and make procurement procedures easier to follow, although the benefits depend on system reliability, access, and user competence. As Kaira and Banda (2023) note, infrastructure and skills can affect implementation in Malawi. Overall, respondents perceived e-procurement as supporting transparency and accountability, but objective conclusions about compliance or reductions in irregularities would require corroborating institutional records.

Cost Efficiency

The questionnaire and interview data suggest that users see potential for e-procurement to reduce some administrative burdens, particularly paper handling, printing, and physical movement of documents. However, the study did not collect or analyse financial records that would demonstrate a reduction in administrative expenditure or cost per procurement transaction. It also did not compare supplier participation, bid numbers, awarded prices, or value-for-money indicators before and after implementation. Therefore, lower costs, increased competition, and improved value for money cannot be presented as measured outcomes of this study. They remain potential benefits discussed in the literature, including by Aboelmaged (2010) and OECD (2019), and should be assessed at PPDA using transaction-level and financial data.

The implementation of e-procurement also requires expenditure on system development, ICT infrastructure, maintenance, and staff training. Participants' comments about infrastructure and training indicate that these inputs remain relevant to effective use. The study did not quantify implementation costs or compare them with verified savings, so it cannot determine whether long-term financial benefits exceed initial costs at PPDA. A future cost-efficiency assessment should compare the full costs of operating the system with administrative cost per transaction and other procurement performance indicators over a defined period.

Challenges Affecting Implementation

Despite the positive impacts of e-procurement adoption at the Public Procurement and Disposal of Assets Authority (PPDA), the study identified several challenges that continue to affect its effective implementation. One of the most prominent challenges is poor internet connectivity, which disrupts system access and slows down procurement operations. In some cases, system downtime further affects reliability, leading to interruptions in procurement workflows and reduced user confidence in the system. These technical challenges are consistent with Kaira and Banda (2023), who observed that inadequate ICT infrastructure remains a major barrier to effective e-procurement implementation in Malawi.

The study also found that limited ICT skills among employees significantly affect the efficient use of the system. Some users lack the necessary technical competence to fully navigate and utilize the e-procurement platform, resulting in operational errors, delays, and dependence on technical support staff. In addition, resistance to change was observed among some employees who prefer traditional procurement methods due to familiarity and perceived ease of use. This finding aligns with Rogers (2003), who explains that individuals adopt new technologies at different rates, with some resisting change due to uncertainty or lack of confidence in new systems. Similarly, Gunasekaran and Ngai (2008) emphasize that user competence is a critical factor influencing successful adoption of electronic procurement systems.

Furthermore, organizational challenges such as inadequate funding, limited technical support, and insufficient continuous training were reported as key constraints to effective implementation. These challenges limit system maintenance, reduce training opportunities, and hinder the overall sustainability of the e-procurement system. OECD (2019) notes that successful e-procurement implementation requires not only technological investment but also strong institutional support, adequate financing, and continuous capacity building. Overall, the findings suggest that while e-procurement has been successfully introduced at PPDA, its full effectiveness is constrained by both technical and organizational challenges that require sustained attention and investment**.**

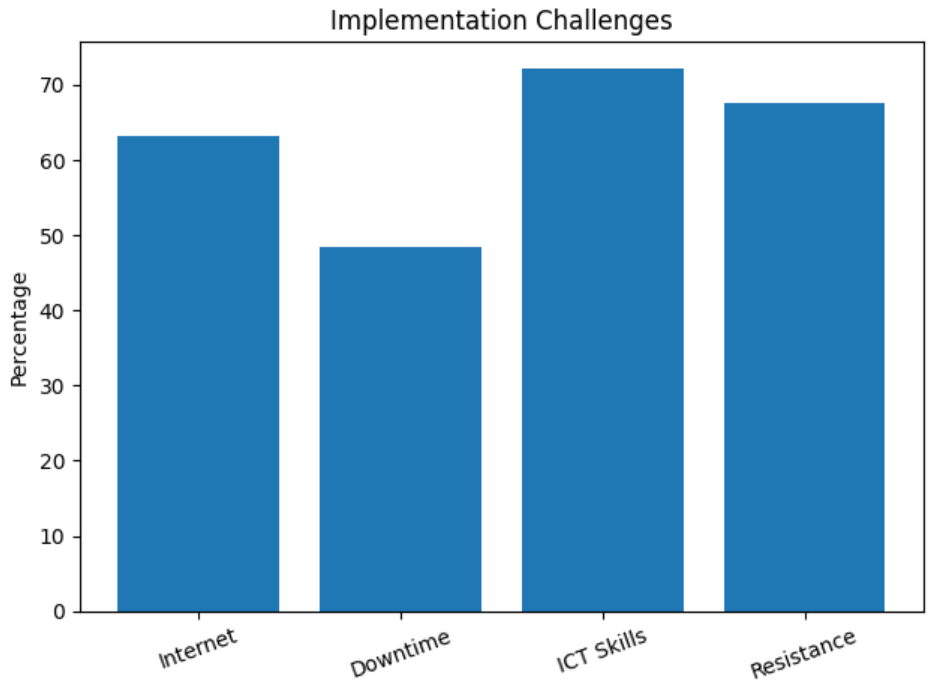


Figure 3: Implementation Challenges

Key Findings Summary

The findings indicate that e-procurement is in use at PPDA, but implementation remains partial. Although respondents reported that the system has replaced many manual activities, some approvals and procedures remain manual. This hybrid arrangement may limit the effect of digitising selected stages on the full procurement cycle.

Respondents generally perceived procurement processing to be faster: 49 (72.1%) reported a significant reduction in time and 19 (27.9%) a moderate reduction. Interviewees also described faster tender advertisements and bid submissions, but noted delays in some final approvals. These findings concern perceived speed; actual cycle-time changes cannot be quantified because procurement records were not analysed.

Respondents reported improved documentation accuracy (62 of 68, or 91.2%) and reduced errors and duplication (57, or 83.8%). These findings reflect perceived improvements in record handling, not independently audited changes in error rates or proof of improved compliance.

The study did not objectively measure cost efficiency or supplier competition. No financial records, transaction costs, supplier participation figures, or tender price comparisons were analysed. Therefore, reduced expenditure, increased competition, and improved value for money cannot be treated as measured outcomes; they require further assessment using financial and transaction-level data.

Participants described better access to procurement information and communication through the centralised e-GP platform. This suggests that the system may support coordination, although benefits may vary with connectivity and system availability. The study did not measure response times or changes in supplier participation.

Technical constraints remain a concern. Participants reported poor internet connectivity and system downtime, which interrupt access and procurement work. Where digital processes are unavailable or incomplete, users may have to rely on manual or hybrid procedures, limiting consistent efficiency gains.

Human and organisational factors also affect system use. Participants identified limited ICT skills, further training needs, resistance to change, and limited technical support. These findings show that effective implementation depends on user competence and institutional support as well as the technology itself.

Overall, respondents perceived benefits in processing speed, documentation accuracy, and record handling, while identifying technical and organisational barriers. Because the study did not analyse baseline and follow-up administrative indicators, it cannot establish the magnitude or causal nature of actual performance changes. The measurable effects on cycle time, costs, errors, supplier participation, and compliance remain to be verified through performance monitoring.

CONCLUSION AND IMPLICATIONS

Conclusion of the Study

This study examined e-procurement adoption and perceived procurement efficiency at PPDA in Malawi. Respondents generally viewed the e-GP system as useful for speeding up selected activities, improving documentation accuracy, reducing errors and duplication, and supporting access to procurement information. In the questionnaire, 49 of 68 respondents (72.1%) reported a significant reduction in procurement time and 19 (27.9%) a moderate reduction. A further 62 (91.2%) reported improved documentation accuracy, while 57 (83.8%) reported reduced errors and duplication. These figures represent users' experiences, not independently verified performance changes.

Interview accounts qualify these results. Participants described electronic tender advertisements and bid submissions as faster, but reported that some final approvals remained manual and slow. This hybrid approach suggests that not all procurement stages have been integrated. The study cannot establish how many days have been saved across the full cycle; this requires comparable records showing total duration and time at each stage before and after implementation.

Respondents perceived benefits for record accuracy, traceability, and access to information. However, the study did not audit records or assess formal compliance rates, irregularities, supplier participation, or procurement expenditure. It therefore cannot verify that e-procurement reduced corruption or costs, increased competition, or improved value for money. These outcomes require evidence from institutional records rather than inference from perceptions.

The reported benefits are constrained by poor internet connectivity, system downtime, limited ICT skills, training needs, and continued manual procedures. Addressing these challenges requires reliable infrastructure, practical ongoing training, responsive technical support, management commitment, and clearer integration of electronic and approval processes.

E-procurement adoption is both a technological and organisational process. The Technology Acceptance Model and Diffusion of Innovations theory help interpret how perceived usefulness, ease of use, readiness, and confidence may influence adoption (Davis, 1989; Rogers, 2003). Given the cross-sectional, self-reported data from one organisation, the findings show perceived benefits and implementation experiences rather than a causal estimate of impact on public sector efficiency.

Policy Implications

The findings have several policy implications. First, investment in reliable ICT infrastructure is important for consistent access to e-procurement. Public institutions should address connectivity, system stability, and technical support so that digital processes are not interrupted by avoidable outages. Infrastructure performance should be monitored through indicators such as system uptime, frequency and duration of downtime, and the number of procurement activities affected.

Second, policymakers and procurement oversight bodies should strengthen guidance and monitoring for the use of e-procurement. Clear procedures should identify which procurement stages must be completed

electronically and how any permitted manual steps should be documented. Compliance should be assessed through system-use records, audit results, and compliance rates rather than assumed from adoption levels alone.

Third, continuous capacity building is needed. Training should include practical exercises, supplier orientation, refresher sessions, and accessible guidance materials. Training effectiveness can be assessed through user competency checks, support requests, and patterns of system use. These measures would help determine whether capacity-building activities improve users' ability to complete procurement tasks accurately and consistently.

Practical Implications for Public Institutions

For PPDA and other public institutions, the findings highlight the need to combine system implementation with organisational support. Institutions should provide practical training and timely technical assistance, especially for users who have limited experience with digital platforms. Staff and suppliers should also have accessible channels for reporting system problems and receiving guidance.

Management support remains important for sustained adoption. Leaders should communicate the purpose of digital procurement, address concerns about changes in work practices, and ensure that responsibilities for electronic and manual steps are clear. Monitoring should focus on actual system use and procurement performance rather than treating the availability of the platform as proof of efficiency gains.

Institutions should establish routine performance monitoring using indicators such as average and median procurement cycle time, duration by stage, administrative cost per transaction, documentation errors, supplier registrations and bids per tender, compliance rates, and system uptime. Where reliable historical data exist, compare equivalent periods before and after implementation while accounting for procurement volume and complexity. These measures would complement user perceptions and provide stronger evidence of actual performance effects.

Theoretical Implications

The study applies technology-adoption perspectives to e-procurement at PPDA. Respondents' accounts suggest that perceived usefulness and ease of use matter to user experience, consistent with the Technology Acceptance Model (Davis, 1989). However, the study did not statistically test the model or establish causal relationships between its constructs and efficiency outcomes. The findings therefore offer contextual interpretation rather than a formal test.

Variation in reported adoption and the challenges described by participants are consistent with Diffusion of Innovations theory, which recognises differences in users' readiness to adopt new practices (Rogers, 2003). Training, infrastructure, and organisational support appear relevant, although larger studies with objective performance data are needed to test these relationships directly.

The study contributes context-specific evidence by documenting how PPDA users assess the e-GP system and the constraints they experience. Its contribution is descriptive and contextual; it does not estimate the magnitude of objectively measured efficiency gains.

Implications for Future Research

Future research should combine administrative records with surveys and interviews. Relevant indicators include procurement cycle time, duration by stage, administrative cost per transaction, documentation errors, supplier participation, compliance rates, and system uptime. Comparisons should use equivalent periods and account for procurement volume and complexity to determine whether reported benefits correspond to measurable changes.

Comparative studies across public institutions or countries could identify how infrastructure, procurement rules, institutional readiness, and user capacity influence outcomes, and whether PPDA findings apply more widely.

Further research could combine measures of perceived usefulness and ease of use with system-use logs and performance records to examine how user attitudes relate to actual outcomes. Emerging technologies should likewise be assessed against defined measures of performance, transparency, security, and cost.

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