Volume 9, Issue 9, September – 2024 International Journal of Innovative Science and Research Technology
ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24SEP344

Factors Affecting the Adoption of Electronic Procurement Systems in Public Institutions in Tanzania: Evidence from Tanzania Prisons in Morogoro Municipal

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Abstract:- The study investigated the factors affecting the adoption of electronic procurement systems in public institutions in Tanzania, evidence from Tanzania Prisons in Morogoro Municipal. A survey research design and mixed research approach were utilized. The target population included procurement employees in Tanzania public institutions represented by Kingolwira Prison, Mkonowa Mara Prison, Kihonda Prison, and Remand Prison in Morogoro Municipal Municipality. The study involved 52 respondents. Purposive sampling technique wase used in selection of respondents where all respondents with knowledge on electronic procurement systems were used. Data was gathered through questionnaires with likert scale statements and analysed using descriptive statistics. In addition to that, data deduction techniques whereby conclusions were made by logically reasoning from general principles or theories to specific instances or outcomes based on the available data. User opinions on e-procurement adoption in Tanzanian public institutions highlight significant concerns about technological infrastructure, including hardware availability, software support, and internet reliability. While many acknowledge benefits such as reduced paperwork and enhanced efficiency, opinions vary on its effectiveness in reducing lead times and corruption. Security remains a critical issue, with mixed views on data accessibility and sharing safety. Overall, addressing infrastructure challenges and security concerns is crucial to ensuring successful implementation and broader user acceptance of e-procurement systems.

Keywords:- *Electronic Procurement and Public Institutions.*

I. INTRODUCTION

Electronic procurement (E-procurement) represents a transformative shift in how procurement tasks are conducted, leveraging the Internet to streamline processes such as need identification, competitive bidding, contract management, and payment. This digital approach aims to enhance transparency, effectiveness, efficiency, and accountability in public procurement (Khong et al., 2020). E-procurement is particularly noteworthy for its potential to reform traditional procurement practices by focusing on distinct components of the process, thus driving significant improvements in openness and operational efficiency (Idah et al., 2020).

In today's rapidly evolving technological landscape, organizations are increasingly seeking strategies to reduce costs while maintaining the quality expected by the public, businesses, and end-users. Advanced technology and innovative public procurement strategies necessitate value-for-money procurement solutions (Mushi &Nsimbila, 2022). The successful implementation of E-procurement systems enables institutions to enhance their operational procedures, tactics, and overall supply chain management, which is essential for cost reduction and maintaining competitiveness (Deus et al., 2020).

Globally, the adoption of information system applications in procurement has become widespread, with users placing orders directly with suppliers and reducing the need for traditional inquiries about delivery dates and terms. The Internet has revolutionized shopping practices, transforming into a multidimensional marketplace that facilitates a broad spectrum of trade interactions. For instance, in Norway, while most firms have strategies for electronic marketplaces, only a small fraction lack any strategic approach (Meshack &Nziku, 2019). The utilization of online marketplaces can significantly lower transaction costs and streamline purchasing processes (Chirchir, 2018).

In Africa, technology is increasingly recognized as a key driver of competitive business practices, enhancing efficiency through paperless transactions, reduced transaction times, and improved transparency (Masudin et al., 2021). The Zambian government's move towards E-procurement, introduced by the Zambia Public Procurement Authority (ZPPA) in 2016, is a step in this direction. However, progress has been slow, with many institutions struggling with implementation (Kademaunga & Phiri, 2019).

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Similarly, in Kenya, the embrace of E-procurement has streamlined business transactions and enhanced tracking services, facilitating better order management and timely deliveries (Mugo & Anaya, 2018). Despite these advancements, challenges remain in adopting E-procurement systems, such as lack of technical expertise, limited resources, and insufficient IT infrastructure (Yona, 2019). Security concerns also pose significant barriers to successful implementation (Evalyne, 2018).

In Tanzania, despite government efforts to enforce E-procurement through legal frameworks like the Public Procurement and Disposal of Public Assets Act No. 11 of 2016, the adoption remains limited. Challenges include resistance to technological change and a lack of confidence among stakeholders, which undermines the effectiveness of E-procurement systems (Yona, 2019; Ongola, 2017).

This study aims to address the gap in understanding the factors influencing the adoption of E-procurement in Tanzanian public entities, focusing on the Tanzania Prisons in Morogoro Municipal. By examining the barriers and enablers of E-procurement implementation, this research seeks to provide insights for policy reform and identify solutions to enhance the utilization of E-procurement systems in public institutions.

II. THEORETICAL UNDERPINNINGS

This study was guided by one theory which is Technology Acceptance Model (TAM). According to Davis (1986), as modified by Barahona and Elizondo (2012), this theory explains that emerging new technology inside the organization cannot be implemented if it is not accepted by users.

According to Deus, et al. (2020), a new technology leads to organizational and behavior changes. Hence attitude and beliefs among employees must be aligned with the new technology imposed. Most of the individuals inside the organization may resist the changes that emerged due to poor technology infrastructure, lack of technology, and lack of data security as main key variables of this study; hence the organization needs to find out the reasons for the users to resist any changes. The theory of Technological acceptance is based on two things, namely perceived usefulness including data security as well as ease of use including technological infrastructure, and employee competence.

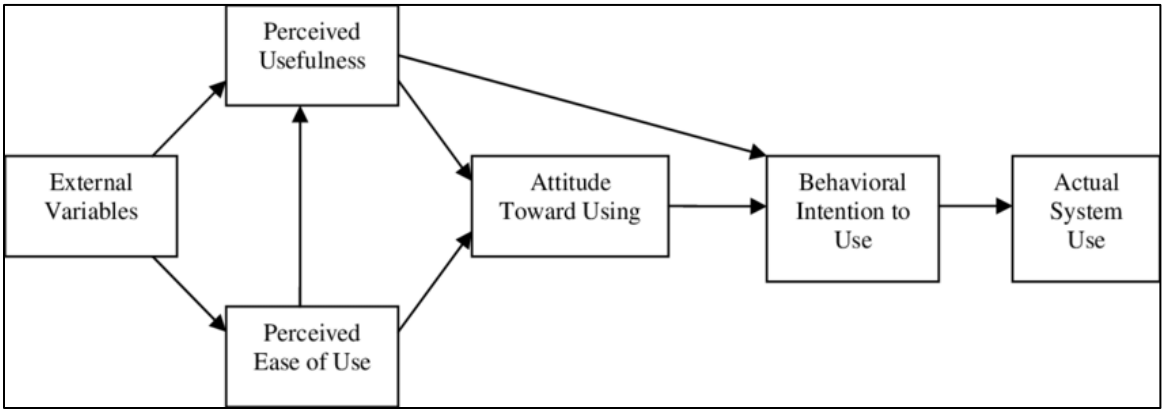

Fig 1 Technology Acceptance Model (TAM)
Source: Devis et al. (2020)

The Technology Acceptance Model (TAM) was relevant to the study on factors affecting the adoption of electronic procurement in public institutions in Tanzania as it provided a framework to understand and predict user acceptance of new technology. TAM's core constructs, perceived usefulness and perceived ease of use, helped in assessing how public institution employees view the benefits and simplicity of electronic procurement systems. By analyzing these perceptions, the study could identify key factors that influence the willingness to adopt and utilize electronic procurement, such as the system's efficiency, user-friendliness, and the overall impact on job performance. This model thus guided the investigation into the motivational factors driving the adoption process.

III. METHODOLOGY

This study was conducted in Morogoro Municipal, focusing specifically on Tanzania Prisons, including Kingolwira Prison, Mkono wa Mara Prison, Kihonda Prison, and Remand Prison. A survey research design was employed. This design facilitates the efficient collection and quantitative analysis of data, capturing a broad range of attitudes and behaviors (Creswell & Plano Clark, 2007; Babbie, 2016). The study utilized a mixed research approach, combining qualitative and quantitative methods to provide a comprehensive understanding of the research problem (Creswell & Plano Clark, 2018). The target population comprised procurement employees from the aforementioned prisons, with a sample size of 52 respondents determined

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24SEP344

using the census method to ensure comprehensive data collection.

Data collection was performed through questionnaires featuring both Likert scale statements and open-ended questions, capturing both quantitative and qualitative data. Quantitative data were analyzed using descriptive statistics, while qualitative data from open-ended questions were examined through data deduction techniques to gain deeper insights into participants' perspectives (Johnson & Onwuegbuzie, 2004; Teddlie & Tashakkori, 2009). Validity was ensured through triangulation, member checking, peer debriefing, and maintaining an audit trail, while reliability was supported by using multiple researchers for data analysis, member checks, and detailed documentation of the research process.

IV. FINDINGS AND DISCUSSION

This section focuses on presenting, analyzing, and discussing the data gathered from the study on the factors affecting the adoption of electronic procurement systems in public institutions in Tanzania, evidence from Tanzania Prisons in Morogoro Municipal. Such factors are categorized into, technological infrastructure, users 'attitude and the security of procurement information.

A. Technological Infrastructure in E-Procurement Adoption

The technological infrastructure is pivotal for the successful adoption and operation of e-procurement systems in public entities. This section reviews user opinions on the availability of hardware materials, software application support, and the reliability of internet connections, highlighting critical factors that affect system effectiveness and user satisfaction, as detailed in Table 1.

Table 1: Technological Infrastructure in E-Procurement Adoption

Statement	Scales						
	Strongly Disagree	Disagree	Sub Total	Uncertain	Agree	Strongly Agree	Sub Total
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Hardware material (i.e. Computers, Printers) abundantly available.	0	38.5	38.5	9.6	48.1	3.8	51.9
Software application available	5.8	36.5	42.3	15.4	38.5	3.8	42.3
Internet connection always available	5.8	23.1	28.9	28.8	34.6	7.7	42.9
Mean	**3.9**	**32.7**	**36.6**	**17.9**	**40.4**	**5.1**	**45.7**

Source: Field Data (2024)

In the Tanzania Prison at Morogoro Municipal Municipality, the success of the e-procurement system relies heavily on the availability of hardware materials like computers and printers. The study reveals that 51.9% of users believe these essential tools are sufficiently available to support the system's smooth functioning. One staff member shared their thoughts, saying, "*The hardware materials like computers and printers are readily available in our institution to support the e-procurement system*." This statement underscores the importance of a solid infrastructure foundation, echoing the findings of Gedion et al. (2020), which highlight how the sufficiency of ICT infrastructure plays a key role in ensuring the readiness for e-procurement.

Alongside hardware, the effectiveness of software applications and technical support is equally crucial for the success of e-procurement. According to the data, 42.3% of users have a positive perception of the software they use. "*The software solutions we have access to are user-friendly and meet our needs in managing the procurement process*," noted one staff member, reflecting satisfaction with the ease of use and functionality of the software. This aligns with Kyara's (2023) observations that software network availability and user-friendliness are essential for the effective adoption of e-procurement systems.

However, no system can function smoothly without reliable internet connectivity, and here the data reveals mixed experiences. While 42.9% of users report consistently stable internet connections, others may still face occasional disruptions. One staff member praised the reliability of the internet in their institution, stating, "*The internet connection is consistently stable, which allows us to access the e-procurement platform without any disruptions*." This reflects Gariba's (2019) recommendation to further enhance ICT infrastructure and internet connectivity to ensure seamless e-procurement operations**.**

B. Users Attitude Efficiency of E-Procurement in Public Institutions

Examining user attitudes towards e-procurement in public institutions is essential for understanding its acceptance and addressing potential implementation challenges. These attitudes can greatly impact the success of e-procurement systems, influencing key factors such as paperwork reduction, lead time, and corruption prevention, as outlined in Table 2.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24SEP344

Table 2:Users Attitude Efficiency of E-Procurement in Public Institutions

Statement	Scales						
	Strongly Disagree	Disagree	Sub Total	Uncertain	Agree	Strongly Agree	Sub Total
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
E-procurement reduces paper work	0	0	0	0	82.7	17.3	100
E-procurement highly reduced lead time	9.6	34.6	44.2	23.1	15.4	17.3	32.7
E-procurement is corruption free	0	13.5	13.5	11.5	53.8	21.2	75
Mean	**3.2**	**16.0**	**19.2**	**11.5**	**50.6**	**18.6**	**69.2**

Source: Field Data (2024)

In the bustling environment of the Tanzania Prison in Morogoro Municipal Municipality, the introduction of e-procurement systems has brought about a wave of change, especially when it comes to paperwork. Every staff member, without exception, agreed that the system had significantly reduced the amount of paperwork they had to deal with. "*The e-procurement system has significantly reduced the amount of paperwork we have to handle, making our procurement processes much more efficient*," one employee commented, their words reflecting the collective relief felt across the department. This observation aligns closely with the Technology Acceptance Model, which emphasizes the perceived usefulness and ease of use of such systems, particularly in streamlining processes and promoting sustainability.

While the reduction in paperwork was universally praised, the impact of e-procurement on lead time painted a more complex picture. Not everyone shared the same experience here. With 44.2% of users disagreeing that it reduced lead time, there were mixed opinions. Some staff members saw improvements, like one who noted, "The e-procurement system has helped us streamline our procurement processes, leading to faster delivery of goods and services." On the other hand, others were more skeptical. "*While the e-procurement system has improved some aspects of our procurement process, we still face challenges in reducing the overall lead time*," another staff member remarked, highlighting that while efficiency had increased, certain bottlenecks remained. This divide echoes Rusohoka's (2020) study on how such systems affect decision-making and cycle times, showing that the benefits can vary based on specific operational contexts.

One area where e-procurement shone brightly, however, was in its role in curbing corruption. An overwhelming 75% of users believed that the system enhanced transparency and accountability, making corrupt practices far more difficult to conceal. "*The e-procurement system has enhanced transparency and accountability in our procurement activities, reducing the risk of corruption*," one staff member said, voicing a sentiment shared by many. Another added, "The digital nature of the e-procurement system has made it more difficult for corrupt practices to take place." These remarks resonate with the findings of Adebayo and Evans (2015), who emphasized the effectiveness of e-procurement in preventing corruption by increasing visibility and accountability in procurement activities.

C. Security of Procurement Information in E-Procurement Usage

The security of procurement information is vital for maintaining the integrity and effectiveness of e-procurement systems in public entities, encompassing ease of data accessibility, accuracy, and secure data sharing. This section evaluates these aspects to ensure that procurement data is efficiently managed and protected, as detailed in Table 3.

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Table 3: Security of Procurement Information in E-Procurement Usage

Statement	Scales						
	Strongly Disagree	Disagree	Sub Total	Uncertain	Agree	Strongly Agree	Sub Total
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Data stored with E- procurement is easily accessibility	15.4	17.3	32.7	7.7	46.2	19.2	65.4
With E-procurement there is less misinterpretation of information	53.8	21.2	75	3.8	48.1	21.2	69.3
There is no leakage risk associated with information sharing	15.4	17.3	32.7	11.5	38.5	3.8	42.3
Mean	**28.2**	**18.6**	**46.8**	**7.7**	**44.3**	**14.7**	**59.0**

Source: Field Data (2024)

In the world of procurement, the introduction of e-procurement systems has been a game-changer for many organizations. For most users, these systems have revolutionized how they access vital data, with an impressive 65.4% agreeing that it has made the process far more accessible. One staff member shared their thoughts on this, stating, "*The e-procurement system has made it much easier for us to access the necessary procurement information."* This sentiment echoed the findings of Siwandeti et al. (2021), who underscored the importance of data quality in such systems, further solidifying the role of e-procurement in streamlining operations.

Beyond accessibility, the system has also significantly reduced the occurrence of misleading information. With 69.3% of users noting fewer errors and inconsistencies, it's clear that e-procurement has brought about a newfound level of accuracy. "*The standardized templates and automated processes have significantly decreased the risk of errors in our data*," remarked another staff member, highlighting the improvements in accuracy and transparency that have followed the system's implementation.

However, when it comes to security, opinions are more divided. While 42.3% of users expressed confidence in the system's protection against data breaches, others remain more cautious. One optimistic staff member shared, "*We have confidence in the security measures of the e-procurement system*," reflecting the trust some users have in the safeguards in place. Yet, despite these assurances, a lingering sense of caution remains, with some staff members wary of the potential risks that could still arise. This reflects the ongoing challenge organizations face in ensuring their data remains both robust and secure in an increasingly digital landscape.

V. CONCLUSION

This study provides a comprehensive analysis of the factors influencing the adoption of e-procurement systems in public institutions in Tanzania, focusing on technological infrastructure, user attitudes, and the security of procurement information. The findings indicate that while technological infrastructure, including hardware availability, software support, and internet connectivity, is largely perceived as adequate, user attitudes show strong approval for e-procurement's impact on reducing paperwork and enhancing corruption prevention. However, the mixed responses on lead time and information security suggest that while e-procurement systems improve efficiency and transparency, challenges remain in fully realizing these benefits. Addressing these issues will be crucial for maximizing the effectiveness and user satisfaction of e-procurement systems in public entities.

VI. PRACTICAL IMPLICATIONS

The practical implications of this study highlight the need for public institutions to address both technological and user-related challenges in e-procurement adoption. Ensuring the availability of adequate hardware, reliable software, and stable internet connectivity is essential for effective system implementation. Additionally, while e-procurement systems are recognized for reducing paperwork and enhancing transparency, institutions should focus on addressing concerns related to lead time and data security to maximize the benefits of digital procurement. By proactively improving these areas, public entities can enhance operational efficiency, reduce administrative burdens, and foster a more secure and effective procurement environment.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24SEP344

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