

Factors Affecting E-Procurement Adoption in Iringa Medical Store Department

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ABSTRACT

The purpose of the study is to assess factors affecting electronic procurement adoption in Medical Store Department in Iringa Municipality. Specific objective of the study was to examine the effect of employee competence, technological features, and management support on electronic procurement adoption. A study employed a quantitative research approach with an explanatory cross-sectional design to explain the causal effect relationships between variables. The target population was 121 and a sample size of 93 employees of the Medical Store Department was contacted. Data were collected using a questionnaire, where respondents were picked using the probability random sampling technique. Data were analyzed using descriptive statistics namely frequencies, percentages and mean, and multiple linear regression analysis to determine the influence of technological features, employee competence, and management support on the adoption of electronic procurement. Results show that regression analysis output confirmed that there is a significant positive relationship between technological features and e-procurement adoption as the p-value is 0.02, which is less than 0.05. Furthermore, the regression analysis output confirmed that there was a significant positive relationship between employee competence and e-procurement adoption as the p-value is 0.013, which is less than 0.05 and there is a significant positive relationship between management support and e-procurement adoption as the p-value is 0.029, which is less than 0.05. The study concludes that, technological features predominantly influence e-procurement adoption followed by employee competence while management support has the least influence. The study recommends that frequent training be offered to all employees who are users of electronic procurement in relevant IT skills, also MSD should enhance s commitment of procurement officers, encourage experience-sharing, enhancement of technological features, provision of sufficient support to employees, and

recruitment of sufficient and well-qualified ICT personnel are central to the adoption of e-procurement.

Keywords: *Management support, Employees competence, Technological features*

1.0 INTRODUCTION

Globally, e-procurement has gained popularity, especially with the advent of technology. In the United States of America for instance, the rapid development of e-procurement was reported in early 2000 just before the recession (Lee, 2017). A four-stage growth model for e-government was developed using local state and federal governments as points of reference. By the end of the same year, it was reported that all state functions were maintaining a web presence in at least some stage of their procurement processes with some participating in online bidding (Reddick, 2019).

E-procurement system mirrors the procurement process through the provision of two distinct, but connected infrastructures, internal processing (intranet) and external communication processing (internet-based platforms). The critical difference is that these systems allow individual employees to order goods directly from their personal computers through the web on real-time. Requests and orders are channelled through various forms of hubs or database. It also allows individual employees to search for items, checks availability, place and track orders and initiate payment of deliveries made. In an effort to achieve seamless communication, Local Governments must be integrated with suppliers'/partnering firms in Supply Chain Management (SCM) through use of information systems. E-procurement enables "just in time" strategy, streamlining of supply chain by removal of inefficient intermediaries, better access to information and transparency in markets and removal of market barriers like time difference and geography (Leonard and Cochran, 2016)

Similarly, Mchopa (2017) who assessed the adoption of e-procurement in Tanzanian found some challenges including legal difficulties as one of the main barriers to e-procurement, such as lack of specific legal regulation, different national approaches and validity, enforceability and evidentiary problems, IT difficulties, the reason might be due to high costs involved in installing the proper IT system to have all the benefits of e-procurement process and lack of security. Makoba, Nyamagere and Eliufoo (2017) also in their study found that the use of electronic procurement in construction companies in Tanzania is associated with various risks. Prominent potential risks include, attacks by computer virus and worms, unreliable internet and electrical power supply, non-compatibility of technology, lack of assurance on confidentiality of information and dishonest attacks in financial transaction.

Most of the African countries have resorted to legal reforms and adoption of e-procurement. Tanzania for instance put into place e-procurement systems to allow e-sharing, e-advertisement, e-submission, e-evaluation, e-contracting, e-payment, e-communication, and e-checking and monitoring to ensure all public procurement activities are conducted online (Mangula, 2015). E-procurement system mirrors the procurement process through the provision of two distinct, but connected infrastructures, internal processing (intranet) and external communication processing (internet-based platforms). The critical difference is that these systems allow individual employees to order goods directly from their personal computers through the web in real-time. Requests and

orders are channelled through various forms of hubs or databases. It also allows individual employees to search for items, check availability, place, and track orders, and initiate payment of deliveries made. To achieve seamless communication, Local Governments must be integrated with suppliers'/partnering firms in Supply Chain Management (SCM) through the use of information systems. E-procurement enables a "just in time" strategy, streamlining of the supply chain by removal of inefficient intermediaries, better access to information and transparency in markets, and removal of market barriers like time difference and geography (Leonard and Cochran, 2016).

In Tanzania, Kasembe (2019) examined the effectiveness of e-procurement in local Government authority in Tanzania: A case of Lindi district council and came up with the conclusion that e-procurement enhances effectiveness in the day-to-day operations and that the effectiveness of e-procurement reduces procurement lead time hence improve the service provision. The current study done by Nziku and Siwandeti (2019) on factors affecting the adoption of e-procurement in private companies in Tanzania indicated that the use of good e-procurement software system is necessary as it helps greatly reduce the time and effort required to complete purchasing transactions by eliminating traditional paper chain of requisitions, approvals, receiving, payment reconciliation and reduces face to face interaction hence the lower risk of corruption. From the above none of them specifically addressed the factors affecting e-procurement adoption in the Medical Store Department in Iringa by considering employees' competence, management support, and technological features.

Furthermore, Similarly, Mchopa (2017) assessed the adoption of e-procurement in Tanzanian found some challenges including legal difficulties as one of the main barriers to e-procurement, such as lack of specific legal regulation, different national approaches and validity, enforceability and evidentiary problems, IT difficulties, the reason might be due to high costs involved in installing the proper IT system to have all the benefits of e-procurement process and lack of security. Makoba, Nyamagere, and Eliufoo (2017) also in their study found that the use of electronic procurement in construction companies in Tanzania is associated with various risks. Prominent potential risks include attacks by computer viruses and worms, unreliable internet and electrical power supply, non-compatibility of technology, lack of assurance on confidentiality of the information, and dishonest attacks in financial transactions, however, all these studies were done either in local government authorities/districts, or construction companies, hence little has been documented in Medical Store department by focusing on employees competence, management support, and technological features. The study assessed factors affecting e-procurement adoption in the Medical Store Department in Tanzanian.

2.1 Theoretical Framework

2.1.1 Diffusion of Innovation Theory

The theory was advanced by Rogers in 1962. It explains how, over time, an idea gains momentum and diffuses through a social system or specific population. The end result of this is that people adopt a new behaviour, product or idea. This means that the person does some tasks differently than what they did previously. When promoting an innovation to a target population, it is important to understand the characteristics of the target population that will help or hinder adoption of the innovation (Rogers, 2003). As e-procurement includes changes in traditional procurement

approaches and new technologies, the need of information systems infrastructure in the use of e-procurement tools and procurement practices are critical to the success of an e-procurement initiative.

2.1.2 Unified Theory of Acceptance and Use of Technology (UTAUT)

This study was guided by the Unified Theory of Acceptance and Use of Technology the main concepts articulated in the theory, which are user resistance, anxiety, and attitude toward the use of technology information systems. The Unified Theory of Acceptance and Use of Technology (UTAUT) authored by Venkatesh *et al.*, (2003) was used in the current study as the theoretical framework for exploring factors affecting e-procurement adoption. The UTAUT, which explains technology acceptance, was developed from eight other technology acceptance theories or models. In particular, the UTAUT draws from the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM), the Motivational Model, the Theory of Planned Behaviour (TPB), the combined TAM and TPB, the model of Personal Computer Utilization, Diffusion of Innovation Theory, and the Social Cognitive Theory (Venkatesh *et al.*, 2003). At the core, the UTAUT provides four predictors of technology use behavior, as modified from the eight technology adoption models.

Unified Theory of Acceptance and Use of Technology explain technology acceptance by human beings. This theory relates to the current study as technological features and management support variables were captured from facilitating conditions and easy and effort expectancy. Facilitating conditions include management support in terms of provision of management support by providing IT infrastructure to support e-procurement adoption, and recruitment of enough procurement officers, and Information Technology experts which enhance the adoption of e-procurement. Effort expectancy has been used to capture technological features variables namely compatibility, ease of use, usefulness, and reliability Matimbwa, Shilingi and Masue (2021). The strength of UTAUT deals with user resistance, anxiety, and attitude toward using information technology was found to have acceptable reliability and internal consistency the weakness of this theory corresponds does not refer to another variable that affects behavioural intention like fear, threat, mood and previous experience, in short, does not tell anything concerning on competence.

2.1.3 Competence-Based Theory

This study is complemented by the Competence Based Theory of required skills, knowledge, and commitment toward the use of technology information systems. Oxford English Dictionary defines competency as the ability to perform some tasks while it refers to competency as synonymous with competence. The origin of the concept of competency in the literature is in the pivotal work of McClelland (1973) while studying the practicality of IQ tests, he argued that these tests can be useful for school admissions where the marks would be subjected to similar kinds of assessment. However, IQ tests cannot be a good predictor of the performance of employees in their future work life. Henceforth the candidates should be tested for competency rather than Intelligence to know their potential to perform well in work life. He defined competency as a personal trait or set of habits that results in more effective or superior job performance.

In other words, an ability that enhances clear economic value to the efforts of a person on the job. The basic problem with many job expertise measures for validity ability tests is that they depend on the credentials that a man brings to the job, the habits, values, accent, interests etc. These make a man acceptable to management and customers since it is also known that social class background is related to getting higher ability test scores as well as having the right personal qualifications. The theory emphasized that for an employee to be able to perform well he or she should be competent enough by having the required skills, knowledge, and commitment, hence about the current study the theory can explain that for a user to be able to adopt e-procurement, he or she should be competent. This theory relates to the current study which explains that employees' competence in terms of skills, knowledge, experience, commitment, and education qualifications facilitate the performance of a certain job. The assumption set is that when MSD employees are skilled, knowledgeable, experienced, committed, and with high education they can be able to adopt electronic procurement. This theory therefore relates with the current study as it enables the researcher to develop employees' competence variable which explains the adoption of e-procurement in the study area.

3.0 METHODS

The study employed a quantitative research approach to test hypotheses on factors affecting e-procurement adoption at Iringa Medical Store Department. Saunders, *et al.*, (2016) advocated that the quantitative approach has the ability to explain causal relationships among variables and hypothesis testing using data collected in statistical characteristics. The study employed a quantitative research approach to test hypotheses on factors affecting e-procurement adoption at Iringa Medical Store Department. This study is an explanatory cross-sectional design because it described the causal effects relationships between variables. In addition, the rationale for using the descriptive design is based on its usefulness in explaining relationships between employee competence, management support, and technological features variables. Since the study encompasses many variables where their influence and relationships are questionable in influencing e-procurement adoption, the use of an explanatory research design is considered appropriate to provide expected findings.

The current study has a target population composed of all employees of the Iringa Medical Store Department which is 121 as of 15 March 2023 as obtained from the Human Resources Manager. The selection of 93 employees among 121 units of the Iringa Medical Store Department is because they are frequent users of electronic procurement, so the researcher is expecting to obtain the required information regarding factors affecting e-procurement adoption. Data were collected using questionnaire and documentary review. Analysis were done through descriptive namely frequencies and percentages as well as multiple linear regression model.

4.0 RESULTS AND DISCUSSION

4.1 Effects of employees' competence on the adoption of e-procurement

Regarding the effects of employees' competence on the adoption of e-procurement in the Iringa Medical Store Department, Results in Table 1 show that electronic procurement knowledge, education qualification, and user commitment have a weighted mean above the neutral point (3) while IT skills and experience in e-procurement have a weighted mean below the neutral point.

These findings suggest that electronic procurement knowledge, education qualification, and user commitment have a positive relationship with the adoption of electronic procurement as educated users can easily learn new things, and electronic procurement can be easily adopted by them. These findings also signify that employees of the Medical Store Department in Iringa have employees with little IT skills to support electronic procurement adoption.

Table 1: Effects of employees' competence on the adoption of e-procurement

One-Sample Test						
Test Value = 0						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
IT Skills	27.464	92	.000	1.440	1.34	1.54
e- procurement knowledge	23.083	92	.000	3.190	3.84	4.54
Experience in electronic procurement	26.071	92	.000	2.150	1.98	2.32
Commitment on e-procurement	27.245	92	.000	4.130	3.82	4.44
Education qualification	22.046	92	.000	3.970	1.78	2.16

Source: Field data (2023)

Similar results were obtained by Aman and Kasimin (2018) in Malaysia who found challenges of e-procurement adoption in Government sectors were not only related to software integration, data management, and roll-out strategy but also to information technology user skills. Findings show the importance of creating an IT facilities center in rural areas and working closely with a third-party vendor for users' training and skills development. The study further revealed that e-procurement readiness factors in Malaysia's public sector determine the extent of e-procurement levels in public institutions. The results indicated that staff skills and procurement policies impacted the adoption of e-procurement in public institutions.

In line with the current study on one side with Competence-Based Theory of required skills, knowledge, and commitment toward the use of technology information systems, and contradicts the same theory in terms of experience. These findings are in line with Innovation theory which postulates that knowledge regarding e-procurement as well as education and experience are the prime determinants of effective implementation of e-procurement. These findings also suggested that inadequate adoption of e-procurement was attributed to limited IT skills among employees. It is important to note that ICT skills play a crucial role in the implementation of e-procurement. Thus, procurement officers with adequate ICT skills are expected to be more competent in using the system than their unskilled counterparts.

4.2 Effect of Management support on the adoption of e-procurement

Regarding the effects of management on the adoption of e-procurement in the Iringa Medical Store Department, the key concerns were on availability of IT infrastructures, the number of staff with IT skills to support e-procurement usage, and the number of staff with knowledge, and top management support on electronic procurement. The researcher posed several questions were respondents jotted down to show the level of agreement or disagreement. Results in Table 2 depicted that all variables scored above neutral point (3.00) as availability of IT infrastructures (4.680), number of staff with IT skills to support e-procurement usage (3.640), number of staff with knowledge (3.760), and top management support on electronic procurement (3.740). These findings imply that the Management of the Medical Store Department is working hard to ensure Information technology infrastructure is available to facilitate the adoption of e-procurement, also MSD management had recruited enough IT experts and procurement officers which enhance the adoption of e-procurement. Similar results were obtained by Also, in line with the current study by Thiga and Makau (2016) who revealed that management support in terms of the provision of enough information technology infrastructure and e-security is the major influence of e-procurement adoption/implementation. The study recommended that top management support among parastatals should set goals, strategies, and baselines that are necessary for the adoption of the e-procurement and follow-up to ensure implementation.

Table 2: Effect of Management support on the adoption of e-procurement

One-Sample Test		Test Value = 0			Mean Difference	95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Lower		Upper	
Availability of IT infrastructure	28.270	92	.000	4.680	3.42	3.94	
The number of IT experts is enough	28.901	92	.000	3.640	3.39	3.89	
The number of procurement officers is enough	30.727	92	.000	3.760	3.52	4.00	
Top management support	30.259	92	.000	3.740	3.49	3.99	

Source: Field data (2023)

These findings also supported by Clever (2020 in Mbarali District Council reported factors namely the size of the firm, budget allocation influence the adoption of e-procurement, management support, employees' competence, and sometimes adopters' readiness and commitment influence the adoption of e-procurement. Yu-hui, (2016) conducted an empirical investigation with the title "Factors that impact the adoption of E-Procurement in Chinese manufacturing enterprises". The author examined the relationships between the technological, organizational, and environmental characteristics and the enterprises' adoption of E-Procurement using logistic regression technique. Through this empirical investigation, the author concluded that the relative advantage, top

management support, external pressure, and external support are major determinant factors for the successful adoption of E-Procurement by Chinese manufacturing enterprises.

4.3 Effects of technological features on the adoption of e-procurement

On the effects of technological features on the adoption of e-procurement, the researcher focused on compatibility, ease of use, reliability, and usefulness. The researcher posed several questions were respondents jotted down to show the level of agreement or disagreement. Results in Table 3 shows that compatibility, ease of use, and usefulness scored above the neutral point (3.00) while reliability had a weighted mean below the neutral mean. These findings imply the adoption of electronic procurement is highly influenced by compatibility, ease of use, and usefulness, but affected by reliability.

Table 3: Means for Effects of technological features on the adoption of e-procurement

One-Sample Test						
Test Value = 0						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Compatibility	29.619	92	.000	3.720	3.47	3.97
Ease of use	23.689	92	.000	3.080	2.82	3.34
Reliability	32.591	92	.067	2.340	2.61	3.07
Usefulness	31.591	92	.000	3.820	3.58	4.06

Source: Field data (2023)

Similar results were obtained by Matimbwa and Masue (2019) revealed that technical implementation enables the transformation of organizational structures and workplace practices, also adoption of e-procurement was found to be influenced by the infrastructure of the organization, and procuring entities have less influence on the effective implementation of e-procurement. Similarly, Shmueli *et al.*, (2010) found that reliable IT infrastructure is necessary because the effective use of any information system as the system mainly depends on the availability and accessibility of computer networks in many organizations. Regarding top managerial support towards e-procurement, the study findings coincide with the current efforts of the government to connect all LGAs to the NICTBB. However, more support is needed from top management in terms of supplying computers, recruiting more IT specialists, and fostering employees' commitment. As Reddic, (2009) argues progress in technology substantially depends on the financial support rendered by an organization to boost the development of e-procurement and manpower. Furthermore, Puspitarini, Handayani, Pinem, and Azzahro (2018) also found that the availability of adequate human resources, technological infrastructure, and organizational commitment influence the successful adoption of electronic procurement and its implementation by providing timely and precise information.

4.4 Regression Analysis of the influence of each Factor on electronic procurement adoption

The regression analysis output confirmed that there is a significant positive relationship between technological features (TEF) and e-procurement adoption (ADOP) as the p-value is 0.02, which is less than 0.05. Saunder et al (2014) suggest that the p-value should be equal to or less than 0.05 to be significant. Furthermore, the regression analysis output confirmed that there is a significant positive relationship between employee competence (EC) and e-procurement adoption as the p-value is 0.013, which is less than 0.05. Moreover, the regression analysis output confirmed that there is a significant positive relationship between management support (MES) and e-procurement adoption (ADOP) as the p-value is 0.029, which is less than 0.05. Findings evidence that technological features predominantly influence e-procurement adoption followed by employee competence while management support has the least influence.

Table 4: Regression Output

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	23.055	3.527		6.538	.000
	TET	0.203	.107	.251	1.895	.002
	EC	0.298	.135	.253	2.205	.013
	MES	0.188	.120	.167	1.565	.029

a. Dependent Variable: ADOP

Source: Field data (2023)

5.0 CONCLUSION AND RECOMMENDATION

Regarding the effects of employees' competence on the adoption of e-procurement in the Iringa Medical Store Department, the study concludes that there is a positive and significant relationship between employee competence on the adoption of electronic procurement. The study also concludes that at MSD Iringa Municipality employees have electronic procurement knowledge, education qualification, and commitment towards electronic procurement adoption, and the challenge is inadequate IT skills and experience in e-procurement which hinders adoption. On the effects of technological features on the adoption of e-procurement, the study concludes that compatibility, ease of use, and usefulness enhance the adoption of electronic procurement while reliability is concluded to be a challenge. Hence adoption of electronic procurement is highly influenced by compatibility, ease of use, and usefulness, but affected by reliability. On the effects of management support on the adoption of e-procurement in the Iringa Medical Store Department, the study concludes that there is a positive and significant relationship between management support on the adoption of electronic procurement. The study also concludes that at MSD the available IT infrastructure is enough. Also, the number of staffs with IT skills to support e-procurement usage and the number of staff with knowledge were enough, and top management support on electronic procurement.

The study recommends frequent training be offered to all employees who are users of electronic procurement in relevant IT skills, also MSD should enhance s commitment of procurement officers, encourage experience-sharing, enhancement of technological features, provision

sufficient support to employees, and recruitment of sufficient and well-qualified ICT personnel are central to the adoption of e-procurement.

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