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DETERMINANTS OF E-PROCUREMENT ADOPTION BY INSTITUTIONS IN KENYA AND TANZANIA DURING COVID-19 ERA

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ABSTRACT

Electronic procurement (E-procurement) is one of the rapidly expanding digital form of procurement in both public and private institutions in Kenya and Tanzania. E-procurement is used by most public and private institutions to strengthen buyer-supplier relationships, cut transaction costs, eliminate maverick purchases, increase organizational coordination, and supply chain performance. It is perceived that most of the business operations were automated during the COVID-19 era to minimize the spread of novel corona virus. Therefore, this study intended to do a thorough empirical literature review on the determinants of E-procurement adoption in Kenyan and Tanzanian institutions during the COVID-19 era.



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I. INTRODUCTION

Information and communication technology (ICT) will inevitably be used in both public and private institutions in the modern, globalized world. One of the most recent technologies used by institutions to expedite their procurement processes is E-procurement. Through the use of e-procurement platforms, numerous nations all over the world has earned competitive edge in their institutional operations [1].

Developed countries such as Japan, United Kingdom (UK) Australia, United States of America (USA) and Singapore have effectively deployed E-procurement systems and are now reaping the benefits. However, E-procurement systems are not fully utilized in many countries since they are seen as intimidating to adopt. The benefits of E-procurement include saving time, less paper work, minimize cost, quick ordering and reduction of maverick [1,2].

In order to reduce corruption and have a substantial economic impact, Sub-Saharan African nations, have indicated interest in adopting E-procurement. Moreover, these confront a number of E-procurement implementation obstacles that, if not resolved, may delay the process and discourage committed leaders from E-procurement implementation in various institutions [2].

Tanzanian government has decided to fully utilize innovation and ICT to execute public operations through deploying

various systems such as Planning and Reporting System (PLANREP), government payment system (MUSE), Government e-Payment Gateway (GePG) and, Tanzania National e-Procurement System [3].

A pilot study of chosen vendors and experts from various public organizations across Tanzania was conducted in support of the adoption of e-procurement. The pilot program aimed to change participants' perceptions on the benefits and performance of TANePS. Surprisingly, just 63.4% of the participants were unable to implement the system, and 60% did not fully understand how it operated. The primary issues with this phenomenon have not been addressed by the available empirical studies [4-7]. Since most transactions were automated during the COVID 19 era, it is still important to understand what determinants led to the adoption of E-procurement in Tanzanian institutions as this era was characterized by automation of most of business transactions

In Kenyan context, public procurement has proven to be a time consuming and challenging process. The public procurement system has shown to be expensive for procuring entities and suppliers, a hub for corruption, and rife with problems that result in substantial losses of public funds. The government has adopted E-procurement to sustain the essential principles of Kenyan good governance, including transparency, accountability, and integrity [8]. Moreover, Kenyan Vision 2030 also acknowledges Small and Medium Enterprises (SME's) as key players in developing a

revolutionary industrializing and high middle-income nation. In essence, SME's can lower Kenya's high unemployment rate and raise the Gross Domestic Product (GDP) of the country. Unfortunately, the failure rate of SME's is high across the globe, including Kenya. This could be caused by a variety of obstacles, such as a lack of adoption of E-procurement technology and an entrepreneurial culture [9].

It is worth noting that the application of technology was inevitable during the COVID-19 era as most of the business activities were negatively impacted and communities were put on lockdown, and businesses were forced to close in the quest of dealing with the spread of the novel corona virus [10-12].

Times for any country avoiding the technological changes being seen around the world have passed. The discovery of novel corona virus only served as a warning to create digital platforms in all institutional undertakings. One of the technologies that makes it possible to complete procurement duties electronically and streamline the entire procurement process is e-procurement. In order to source empirical literature on the determinants of E-procurement adoption in Kenya and Tanzania during the COVID-19 era, this paper used a desktop technique of literature review. As a result, secondary data was recorded and used for data analysis.

The researcher chose the aforementioned countries in East Africa because after a thorough literature review across several databases with the restriction of the COVID -19 period (2019–2022), Kenya and Tanzania had more empirical results than other East African countries namely Burundi, Democratic Republic of Congo, Rwanda, South Sudan and Uganda. Since it is perceived that most of business operations were automated during COVID-19 pandemic, the researcher sought to identify the determinants of E-procurement adoption during that time frame. By understanding these determinants, the researcher hopes to hasten the adoption of E-procurement by Kenyan and Tanzanian institutions that are currently lagging behind.

II. THEORY UNDERPINNING THE STUDY

A number of theories, such as Resource-Based View (RBV), Innovation Diffusion Theory (IDT), Technology Acceptance Model (TAM), Technology Adoption Theory (TAT) Institutional Theory (IT), Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), Stakeholders' Theory (ST), Unified Theory of Acceptance and Use of Technology (UTAUT), Information Systems Success Theory (ISST), Disruptive Innovation Theory (DIT), Theory of Human Service Delivery (THSD), and Technological-Organizational-Environmental (TOE) model have been used to various empirical studies related to E-procurement adoption [13-15]. However, most research have relied on RBV, IDT, and TAM [8-9], [14], [16,17].

Due to potential inconsistencies in one theory or model, it is advised that for clarity and consistency to be achieved researchers ought to use at least two theories in a study to gain a broader knowledge of technology adoption in an institution [18]. The adoption of E-procurement is said to be impacted by organizational, environmental, technological, and personal variables. Since the Technological-Organizational-Environmental (TOE) model explains technology adoption in the context of technology, organizations, and environments, while the Unified Theory of Acceptance and use of Technology (UTAUT) supplements by adding the individual context, this study adopted both models as they were applied by [19].

TOE described the adoption and implementation of technology by a company is influenced by technological,

organizational and environmental context. Technological context includes technological tools, processes, external and internal technologies that are pertinent to the firm. Organizational context refers to the features and assets of an organization, such as managerial structure, human resources, level of slack resources, size, connections between employees, level of formalization and centralization. Size and structure of the industry, organizational competitors, macroeconomic climate, the firm's competitors, and the regulatory environment are part of the environmental context [20].

Furthermore, UTAUT attempts to illuminate user motives to use technology and subsequent usage patterns. Four essential constructs—effort expectancy, social influence, performance expectancy, and facilitating conditions—have an impact on likelihood of adoption of new technology by people. The first three are factors that affect user behavior and usage intention, while the fourth factor affect user behavior. Gender, age, experience, and voluntariness all act as moderators to the impact of the four dimensions on usage intention and user behavior [21].

II.1 E-PROCUREMENT ADOPTION IN VARIOUS INSTITUTIONS

Determinants for the adoption of E-procurement in different institutions have been the subject of numerous researches undertaken worldwide. For instance, [22] found that top management support, supplier readiness, employee knowledge and skills, compatibility, relative advantage, and complexity were the factors that strongly influenced the adoption of E-procurement in Sri Lankan public sector organizations. Similar to this, [23] conducted research on critical success factors for Ghana's adoption of electronic government procurement. The most important success element for the adoption of E-procurement was identified by the results as being quick, reliable and inexpensive internet services. In addition, the study found that organizational support for human factors, infrastructure setup, system features, management and control influence the adoption of E-procurement.

Utilizing Technology Acceptance Theory (TAT), [13] carried research on determinants of electronic procurement system adoption in Tanzania. They discovered that employee skill, education, organizational structure, and collaboration promote adoption of E-procurement in public institutions whereas employee age, education, motivation, and teamwork have the opposite effect in private institutions. In order to explore the factors that influence the adoption of an E-procurement model for green procurement in Tanzania, [4] used the Unified Theory of Acceptance and Use of Technology (UTAUT) and Technological-Organizational-Environmental (TOE) models. Results showed that while attitude has a direct impact on E-procurement adoption, legal framework, relative advantage, and performance expectancy have an indirect effect. Additionally, [24] applied Resource-Based View Theory (RBV) and the Technology Acceptance Model (TAM) to conduct a study on technological factors impacting vendors' involvement in the public electronic procurement system in Ilala, Tanzania. Data security, system integration, data quality and management, information transparency, originality, and innovation were discovered to be technological elements that had an impact on the adoption of e-procurement by vendors.

On other hand, [9] conducted research on influence of technological factors on E-procurement adoption in small and medium size enterprises (SMEs) Kenya's Nyeri county. Findings were supported by the Resource-Based View (RBV) theory showed that, SMEs' adoption of E-procurement is impacted by

technological factors such as the lack of E-procurement software, a lack of technical know-how, a lack of IT infrastructure, and concerns about information security and confidentiality. Similarly, [16] did a study on organizational attributes and adoption of E-procurement in Tororo district in Kenya. The study was anchored on technology acceptance model (TAM) and findings indicated that ICT proficiency, employee competence and managerial decision had a positive correlation with the adoption of e-procurement. On top of that, [25] applied a Resource Based View theory to perform a study on influence of internal organizational factors on e-procurement adoption in small and medium sized enterprises in Kenyan Nyeri county. The results concluded that size of the organization, staff retention, manager's perception, trust on technology, and employee knowledge are internal organizational factors influence adoption of e-procurement to SMEs.

The conclusions on the determinants of E-procurement in various institutions are not comparable based on the empirical literatures examined above although the observed results based on technological, organizational, environmental and individual context. This disparity inspired the researcher to use the TOE model and UTAUT theory which takes into account the technological, organizational, environmental context (TOE), and individual context (UTAUT) to undertake study on the determinants of E-procurement adoption in Kenyan and Tanzanian institutions during the covid 19 era.

III. METHODS

This paper is based on an empirical study of the literature and consolidated key researches on determinants of E-procurement adoption in Kenyan and Tanzanian institutions during COVID19 era. The selection papers were guided by inclusion and exclusion principles. The literatures were chosen based on applicability and relevance of the research topic and quantitative technique was applied whereby descriptive analysis was adopted. Twenty (20) literatures were reviewed from Kenya and Tanzania in order to identify the determinants of E-procurement adoption with highest frequency during the COVID 19 era. The researcher used 20 literatures to source study variable since other researchers like [26] drew conclusions from 20 literatures in African perspective while [27, 28] compiled their findings using 12 literatures.

III.1 SOURCES OF DATA

Published and unpublished literatures were used as the source of data by using different electronic data bases and search engine which include Google, Google Scholar, Emerald, Science Direct, Google Books, Wiley Online, Sage Publications, AJAR Taylor and Francis and many others.

III.2 SEARCH KEYWORD

Keywords used for searching the study topic were; ("E-procurement" OR "Internet procurement" OR "Online procurement" OR "Web procurement" OR "Digital procurement") AND ("Tanzania" OR "Kenya" OR "East Africa" OR "Developing countries") AND ("2019" OR "2020" OR "2021" OR "2022").

III.3 INCLUSION AND EXCLUSION PRINCIPLE

Only English-language research papers were included in the search of the literature. The literatures were confined to Kenyan and Tanzanian institutions that had adopted E-procurement. This study includes E-procurement articles from the COVID 19 era, which ran from 2019 to 2022. This is because numerous studies such as [10-12] have shown digitalization of institutional processes during the latter era.

III.4 STUDY VARIABLES AND SAMPLE SIZE

Due to the fact that some studies, such [26], used 20 sources of information while [27, 28] used 12 sources for the compilation of their conclusions, sample of 20 literatures, of which 10 were collected from Kenya and Tanzania, was deemed sufficient for statistical analysis. However, the condition that the study variable must appear more than once from the reviewed research was applied.

III.5 DATA ANALYSIS

Data from the reviewed literature were analyzed by using descriptive statistics. The determinants that contributed to the adoption of E-procurement were tallied and given frequencies. The percentage was calculated by taking total frequencies of each E-procurement determinant divided by two (the number of countries) and multiplied by 100. The determinants were deemed significant if they had a score of 50% or above [26]. Clustered column charts were then used to summarize the findings.

IV. RESULTS AND DISCUSSIONS

Teamwork, individual age, individual education, staff pressure, staff awareness, staff competency, organizational size, attitude, performance expectancy, legal framework, compatibility, complexity, IT infrastructure, perceived benefits, management support, user involvement, security, capital, supplier capability, system integration, internet connection, staff training, and user acceptance were discovered to be determinants of e-procurement adoption of various institutions in Tanzania and Kenya. The determinants of e-procurement adoption in Tanzania and Kenya are listed in Table 1.

Table 1: Determinants of e-procurement adoption in Tanzania and Kenya (2019-2022).

S/NO	Author	Country	Determinants/Findings
1	[13]	Tanzania	Individual education, individual age, staff competency, organizational structure and team work
2	[4]	Tanzania	Attitude, performance expectancy, relative advantage, legal framework
3	[29]	Tanzania	Compatibility, complexity, technological infrastructures, perceived benefits, organizational size, management attitude, user involvement, coercive pressure, mimetic pressure, normative pressure, value addition
4	[30]	Tanzania	Legal framework, employee competency, technological infrastructure and data security
5	[14]	Tanzania	Stakeholders' awareness, management involvement, financial resource, staff competency
6	[15]	Tanzania	Top management commitment, supplier capacity and technological infrastructure
7	[24]	Tanzania	Information transparency, creativity and innovation, data quality and management, system integration, data security and IT literacy

S/NO	Author	Country	Determinants/Findings
8	[31]	Tanzania	Technological infrastructure, reliable internet service, system compatibility, management support, public procurement regulations, staff training, computer literacy, user acceptance, perceived benefits
9	[32]	Tanzania	Legal framework, Enterprise Resource Planning, supplier compatibility, internet connectivity, management support, infrastructure, funds, security and staff mind set
10	[33]	Tanzania	Perceived benefits, technological infrastructure, complexity, compatibility, organizational size, management support, user involvement, staff competency, performance expectancy
11	[34]	Kenya	E-security, staffing, user acceptance, top management support
12	[35]	Kenya	Stakeholders involvement, technology infrastructure, staff skills, top management support
13	[25]	Kenya	Employee knowledge, size of the organization, staff retention, trust on technology, perceptions of managers
14	[9]	Kenya	Security, confidentiality, IT infrastructure, system integrations, proper needs assessment, IT experts, unavailability of e-procurement software
15	[17]	Kenya	Capital, IT infrastructure, system compatibility, unstable internet connections, staff training, top management support
16	[36]	Kenya	IT infrastructure, staff competence, top management support, management involvement
17	[37]	Kenya	Staff training, staff involvement, supplier adoption, IT experts, Top management support
18	[38]	Kenya	Staff competency, management support, IT infrastructure, security, training, system integration
19	[8]	Kenya	IT infrastructure, staff training, top management support, supplier capability
20	[16]	Kenya	Top management support, procurement planning, capital, IT infrastructure, internet accessibility, internet reliability and affordability, staff competency, staff willingness

Source: Authors, (2022).

The rule that determinants must appear more than once guided the selection of the 18 determinants of E-procurement adoption. Each determinant was then utilized as a header in a table that had been prepared. The findings from two countries were

organized under each heading based on their similarity. As a result, table 2 compiles the determinants of e-procurement adoption based on their similarities.

Table 2: Summary of determinants of e-procurement adoption.

Author	SC	OS	ATT	PE	LF	COMP	COMPL	ITF	PB	MS	UI	SE	CP	SUC	SI	INT S	ST	UA
[13]	x	x																
[4]			X	X	X				X									
[29]		X				X	X	X	X	X	X							
[30]	X				X			X				X						
[14]	X									X			X					
[15]								X		X				X				
[24]	X											X			X			
[31]	X				X	X		X	X	X						X	X	X
[32]			X		X	X		X		X		X	X			X		
[33]	X	X		X		X	X	X	X	X		X						
[34]	X									X		X						X
[35]	X							X		X	X							
[25]	X	X								X		X						
[9]	X							X				X			X	X	X	
[17]						X		X		X			X					
[36]	X							X		X	X							
[37]	X									X		X		X			X	
[38]	X							X		X		X			X		X	
[8]								X		X				X			X	
[16]	X		X					X		X			X			X		

Source: Authors, (2022).

Key: (1) SC – Staff competency (2) OS – Organizational Size (3) ATT – Attitude (4)

PE – Performance Expectancy (5) LF – Legal Framework (6) COMP – Compatibility (7) COMPL –Complexity (8) ITF – IT Infrastructure (9) PB – Perceived Benefits (10) MS – Management

Support (11) UI – User Involvement (12) SE – Security (13) Capital (14) SUC- Supplier Capability (15) SI – System Integration (16) INTC – Internet Connection (17) ST – Staff Training (18) UA – User Acceptance

Additionally, the frequencies of the E-procurement determinants were constructed based on the results of table 2, and the percentage was determined. Three of the 18 determinants were

significant out of the total because they received a score of 50% or above, while the remaining determinants were not. Therefore, throughout the COVID 19 era, management support (75%), staff competency (70%) and IT infrastructure (65%) were the key determinants of E-procurement adoption by institutions in Kenya and Tanzania. Table 3 lists the frequencies and percentages for the determinants of E-procurement adoption.

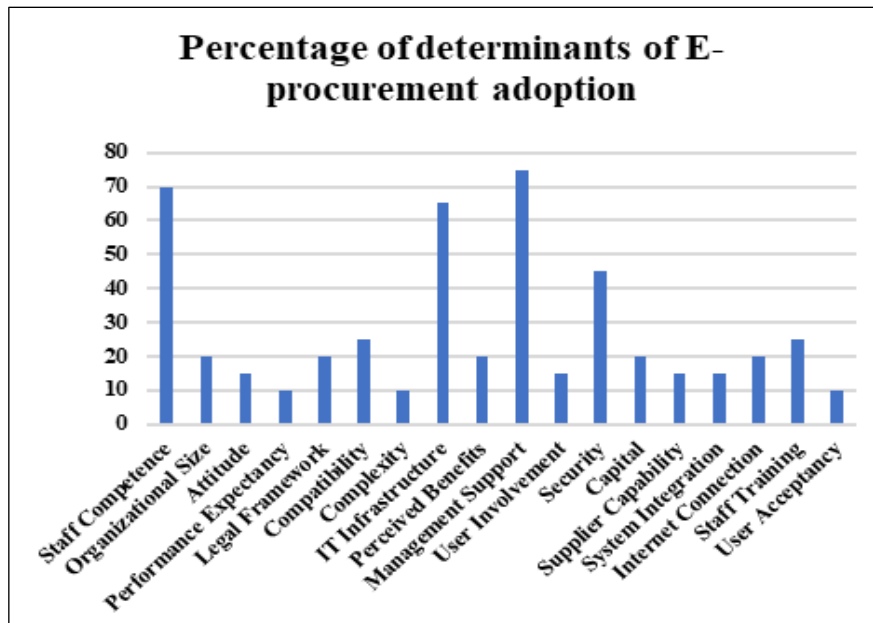


Figure 1: Percentage of determinants of E-procurement Adoption.
Source: Authors, (2022).

The adoption of E-procurement in any institution is easily implemented provided that the staff involved have the right attitude, knowledge, abilities, and competencies in relation to computers, IT, internet, and E-procurement systems. This view is fully supported by [34], they observed that staff competence is an obstacle in e-procurement adoption hence continuous training is necessary to overcome it and ought to be put into practice. Findings are aligned by both TOE model and UTAUT theory. According to TOE framework staff competence is grouped under human resources, which is under organizational variables influencing the adoption of technology while UTAUT theory paved that, adoption of technology is easily attained if individuals will find easy to use the system (effort expectancy) through having enough knowledge, skills and practice of the system.

Furthermore, [39] argued that the adoption of E-procurement at Temeke Regional Referral Hospital in Tanzania depends on staff competence and expertise on E-procurement systems. However, [24] showed that computer and IT skills have a big impact on vendors' participation in public e-procurement systems in Ilala Tanzania. In a similar vein, [25] and [9] discovered that staff knowledge, technological expertise, and competency have influence in E-procurement adoption to SME's in Nyeri County, Kenya.

The adoption of E-procurement has also been observed to be significantly impacted by IT infrastructure. IT infrastructure according to [30], consists of hardware, software, internet connectivity, network security, and system integration. The results have been supported by both TOE model and UTAUT theory. TOE model clarified that an organization's adoption of technology is dependent on the technological context, which includes technological tools, procedures, and relevant internal and external technologies while UTAUT commented that the adoption of

technology by individual is influenced by technical infrastructure supporting the application of the system (facilitating condition). The results are corroborated by those of [33], who found that IT infrastructure is a key for e-procurement adoption to public procuring entities in Tanzania. The results also support those of [36] who found a substantial correlation between the adoption of E-procurement projects by the Kenya Revenue Authority and the availability of information technology infrastructure. Additionally, [15] and [35] identified that IT infrastructures in Tanzania and Kenya, respectively, is a reason for effective implementation of electronic procurement in public institutions.

The use of E-procurement at institutional level is aided by management support provided through the organizational culture, staff training, collective commitment, allocation of resources and responsibilities. Findings are affiliated by both TOE model and UTAUT theory. TOE model clustered management support under connection between employees which is within organizational factors influencing institutional to adopt technology while UTAUT described that individuals will easily adopt technology if management (facilitating condition) will provide support on the use of the technology through in-house and out-off job trainings. This contention is supported by the research conducted by [14], who discovered a significant correlation between senior management support and E-procurement adoption in Tanzania's public institutions. Similarly, [32] found that top management support is one of the biggest obstacles to adoption of E-procurement in Mwanza Urban Water Supply and Sanitation Authority (MWAUWASA) in Tanzania. Additionally, [17] and [8] described that top management support had a positive effect on the implementation of e-procurement in Kenya at Murang'a county and northern eastern region county respectively. Moreover, [31] and [38] identified that senior management support in Tanzania and

Kenya, respectively, is a crucial success factor for the implementation of e-procurement in the ministry of finance.

V. CONCLUSIONS

Technology is increasingly being incorporated into every aspect of modern life in an effort to boost institutional performance and competitiveness. In this situation, it is impossible to dispute the use of technology by organizations around the world. Novel corona virus was just a wakeup call for a creation and embracing of digital platforms in all business undertakings. Thus, in this study the key determinants of E-procurement adoption in Kenyan and Tanzanian institutions during the COVID 19 era were management support (75%); staff competency (70%), and IT infrastructure (65%). The observed determinants were supported by both TOE model and UTAUT theory.

VI. RECOMMENDATION AND IMPLICATIONS

The study suggests that Kenyan and Tanzanian institutional decision-makers, policy-makers, and IT specialists should concentrate on the observed determinants of E-procurement adoption because it is perceived that during the COVID-19 era most of business operations were automated in order to avoid physical contact and minimize the spread of novel corona virus. In that case the observed determinants will speed up the adoption of E-procurement in institutions of Kenya and Tanzania which are lagging behind. The adoption of e-procurement will improve institutional performance, competitiveness, cost reduction, less paperwork, avoid maverick purchases, profit maximization and allow institutions to concentration on strategic procurement.

VI. STUDY LIMITATIONS AND FURTHER STUDIES

This study reviewed literatures during the COVID 19 era (2019 – 2022) to determine the determinants of e-procurement adoption by institutions in Kenya and Tanzania. The study constraint was restricted database to view the empirical literature that might include information pertinent to the study and determination the validity and reliability of data. To provide more robust results, additional study on the adoption of e-procurement by institutions in East Africa and Africa may be carried out by conducting empirical literature studies or collecting primary data.

V. AUTHOR'S CONTRIBUTION

Conceptualization: Enid Kebby Ernest.

Methodology: Enid Kebby Ernest.

Investigation: Enid Kebby Ernest.

Discussion of results: Enid Kebby Ernest.

Writing – Original Draft: Enid Kebby Ernest.

Writing – Review and Editing: Enid Kebby Ernest.

Resources: Enid Kebby Ernest.

Supervision: Enid Kebby Ernest.

Approval of the final text: Enid Kebby Ernest.

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