E-tendering as a pandemic mitigation tool: Lessons from Tanzania's healthcare procurement during COVID-19

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ABSTRACT

This study analyzed e-tendering practices for mitigating pandemic spread using a lesson from the COVID-19 spread in Tanzania as per Sustainable Development Goal 3, which focuses on healthier lives and well-being. This study was guided by Diffusion of Innovation Theory and the Technology Acceptance Model using a quantitative approach by means of a census aided by a structured questionnaire from 150 staff of the Medical Stores Department using a cross-sectional explanatory survey design. Binary logistic regression revealed that receipt of requirements (Exp(B)=5.691, p=0.001), tender preparation (Exp(B)=1.603, p=0.030), submission (Exp(B)=12.655, p=0.041), and opening (Exp(B)=14.744, p=0.001) significantly reduced pandemic spread. However, evaluation (Exp(B)=1.632, p=0.123) showed no significant effect, highlighting the need for improved system integration. Interestingly, this study contributes to the body of knowledge by providing useful insights for the future by using e-tendering to countermeasure the pandemic spread whilst continuing to procure health-related supplies to save lives. The use of e-tendering helps to counteract the spread of pandemics due to reduced physical contact. Furthermore, this study involves multidisciplinary mingling of procurement, information systems, and healthcare. Practically, since the current NEST is incapable of automatically evaluating the tenders online, then a relevant module should be integrated to suffice the gap. However, this study revealed the relationship between e-tendering practices and the spread of the pandemics but did not consider the use of artificial intelligence in tendering to mitigate the spread of the pandemic. Therefore, further studies are required to address this issue. Also, since it has been five years since the outbreak of COVID-19, longitudinally, it is imperative to track how e-tendering has been embraced in reducing pandemic spread.

Keywords: COVID 19, E-Tendering, Health Care, Procurement, Operations Management

I. INTRODUCTION

The outbreak of pandemic always draws global attention with COVID 19 being the most recent catastrophic pandemic (Odoch et al., 2024; Torabi *et al.*, 2023; Mohezar et al., 2023). The outbreak of COVID 19 has been exerting much pressure on the healthcare industry with regard to the availability of resources (Dasgupta, 2022). Procurement is regarded as a driving engine that supports the functioning of the rest of the organization by supplying all requirements (Mushi *et al.*, 2021). Online purchasing platforms was used to overcome challenges hindering ineffective supply during COVID 19 outbreak (Sumi & Ahmed, 2022). The Sustainable Development Goals (SDG) insist on healthier lives; hence, all health requirements should be met (Chiu & Fong, 2023). However, a study by Haque *et al.* (2021) showed that most pharmaceuticals used to treat COVID 19 are leverage. Hence, the best strategy for acquiring these pharmaceuticals is competitive tendering, as suggested by Schotanus and Grandia (2023). Equally important in the event of an outbreak of any pandemic, the relevant drugs used to treat the emerging illness turn into leverage owing to their increased demand and volume of requirements, prompting competitive tendering to serve this purpose (Lyson & Farrington, 2020).

The COVID-19 outbreak has affected supply chains, forcing people to miss work, and placing limits and delays on suppliers' ability to provide services. COVID 19 worldwide pandemic has caused an economic slowdown, harming the world's financial markets, tourism, import and export sectors, global supply networks, and businesses. Furthermore, with the considerable increase in COVID-19 cases, most public organizations have experienced supply chain disruption and have faced several challenges, such as border restrictions and poor market availability, thus creating delays in the execution of current projects. The use of technology for quality healthcare services in different aspects is now a contemporary global agenda (Israel, 2023). E-procurement has largely been described as a measure not only for

improving business efficiency through cost reduction but also for mitigating Covid-19 (Torabi et al., 2023). According to Ibrahim et al. (2023), the benefits of electronic procurement include cost savings and quicker transaction times, owing to fewer personnel displacements, improved openness, and accountability. According to Yousfani et al. (2023), in recent years, an increasing number of African governments have attempted to implement e-procurement solutions such as harmonizing methods for enhancing transparency, spawning financial advances, and promoting public procurement. This observation is reiterated by Schmidt et al. (2020), who observed that for any new technology adaptation to be effective, stakeholders must have a shared knowledge of preparedness.

E-tendering guarantees the health of stakeholders in a communicable disease-working environment (Ismaeel *et al.*, 2023). The COVID-19 pandemic killed many people in Tanzania during the outbreak. Tanzania opted for e-tendering to address the issue in response to the situation, as stated in PPA Act No. 7 of 2011 United Republic of Tanzania [URT] (2011). Furthermore, the growth of e-tendering technology has led to a decrease in the number of fatalities, although not to zero (Shmidt et al., 2020). During the COVID-19 pandemic, procurement performance depended on the timely fulfilment of needs healthily (Schmidt et al., 2020). In Tanzania, given the importance of public procurement in ensuring the acquisition of requirements for public consumption, the government introduced guidelines for e-tendering to reduce physical contact (Mbwasi et al., 2023). MSD, as an organization responsible for the procurement of health requirements, was among the first institutions to utilize guidelines to combat the situation while providing confidence to the public that the pandemic is under control (Mbwasi et al., 2023). MSD are responsible for the quality of health care to the public through the execution of their roles. However, health care is very important for saving people's lives (Mwakyeja & Kimario, 2024). During the COVID-19 pandemic, procurement, as a tool responsible for the physical supply of items, is critical in achieving an organization's goals (Schmidt et al., 2020). Public procurement in Tanzania is responsible for more than 80% of the government expenditure. Large volumes of purchases such as medical supplies are normally made using tendering (URT, 2011). Therefore, based on the fact COVID 19 caused frustrating illness and massive loss of death, it was imperative to conduct this study to reveal the relationship between e-tendering practices and the mitigation of pandemic spread in Tanzania.

The United Nations Sustainable Development Goal (UN SDGs) underscores the need for healthier lives in the community (Chiu & Fong 2023). A large volume of purchases is inevitable to ensure the resilience of the health supply chain system to both COVID 19 and other health concerns. Most platforms encourage alternative online methods. Tanzania was encouraged to use e-tendering to ensure that the procurement of government requirements was not hampered by improvements in citizens' lives (URT, 2011). MSD, the organization responsible for the procurement of pharmaceuticals, was in the upfront of e-tendering use for the efficient availability of health supplies in the entire country of Tanzania, with over 65 million citizens (Mbwasi et al., 2023). E-tendering involves e-receipt of user requirements, e-preparation of documents, e-submission, e-opening, and e-evaluation (URT, 2011). It was very crucial to undertake this study because of the lessons learned from this study for the preparedness for unexpected pandemics, simply because evolving infections are endless (Fauci & Folkers, 2023). Therefore, the main aim of this study was to analyse how e-tendering practices served as a counter measure for COVID 19 spread in Tanzania for learning purposes towards unforeseen pandemics. Using COVID 19 as one of the pandemic lessons that has recently caused frustrating illness and massive loss of death.

1.1 Statement of the Problem

The outbreak of COVID 19 has been exerting much pressure on the healthcare industry with regard to the accessibility of resources (Dasgupta, 2022). SDG insists on healthier lives (Chiu & Fong, 2023). The use of electronic technology for quality healthcare services in different aspects has emerged as a contemporary global agenda (Israel, 2023). Specifically, online purchasing platforms has been introduced to overcome ineffective supply during COVID 19 outbreak (Sumi & Ahmed, 2022). E-procurement has largely been described in other countries other than Tanzania as a measure not only for improving business efficiency through cost reduction but also for mitigating Covid-19 spread (Roangis et al., 2023). Similarly, the government of Tanzania through its Public Procurement Act number 7 (URT, 2011) encouraged MSD to use e-tendering mode to safeguard steady flow of medical drugs and equipment during COVID 19. E-tendering guarantees the health of stakeholders in a communicable disease-working environment by reducing physical contacts (Ismaeel *et al.*, 2023). E-tendering involves e-receipt of user requirements, e-preparation of documents, e-submission, e-opening, and e-evaluation (URT, 2021). Therefore, having varied aspects of e-tendering it was very vital to assume this cause-effect relationship to analyze how each of them mitigates COVID 19 spread. This study is stared imperative given the importance to have a lesson for the preparedness of the future outbreak of similar related pandemics.

1.2 Research Questions

i. Does e-receipt of user requirements during tendering counter measures pandemic spread?
ii. Does e-preparation of documents during tendering counter measures pandemic spread?
iii. Does e-submission during tendering counter measures pandemic spread?
iv. Does e-opening during tendering counter measures pandemic spread
v. Does e-evaluation during tendering counter measures pandemic spread?

II. LITERATURE REVIEW

2.1 Theoretical Review

This section discusses Technology Acceptance Model and diffusion of innovation theory to describe e-tendering practices as follows:

2.1.1 Technology Acceptance Model (TAM)

Mogaji et al. (2024) devised the Technology Acceptance Model (TAM), an information systems theory that explains how users adopt and deploy new technologies based on the Theory of Reasoned Action. This reflects how confident it is that utilizing a given system is simple. The model predicts and explains the acceptance of certain information technologies by examining and evaluating aspects that affect acceptance. According to TAM, perceived utility and perceived ease of use (PU) are two criteria that may influence acceptability attitude. According to TAM, behavioral intention has a significant and positive effect on actual behavior. According to the model, there was a strong and positive relationship between how employees utilized the program and how valuable and useful they considered (Yousfani *et al.*, 2023). According to this theory, without accepting technology, there is no progress in organizational performance. Investment in computer-aided decision making and communication tools, particularly those based on information technology, is crucial for the adoption of innovation (Parthiban & Vaisakhi, 2025; Niranjan *et al.,* 2023). Consequently, systems must be developed to meet the aims and objectives of a company and its stakeholders (Maagi & Mwakalobo, 2023). This theory is related to the subject under examination, because this study focuses on how e-tendering affects the functioning of public organizations. The use of e-tendering is in line with the use of technology to mitigate the spread of the pandemic. Thus, by employing this theory, the researcher was able to achieve the primary purpose of the study, which was to assess how e-tendering influences public-sector efficiency by reducing contamination from the spread of the pandemic.

2.1.2 Diffusion of Innovations Theory;

The diffusion of innovations hypothesis, which Rogers created in 1962, is among the earliest social science explanations of how, why, and how quickly new concepts and technological advancements penetrate cultural barriers and function at personal and business levels. According to Sharp and Miller (2016), an individual's perspective on change, internal organizational structural elements, and external organizational traits are examples of independent drivers. Observations are essential components of organizational arrangements. However, external organizational features are transmitted to system openness (Vargo *et al.*, 2020). Moreover, a company's capacity to embrace relevant technology is determined by the tasks that demand its utilization (Lim *et al.,* 2023). Diffusion of innovation is called upon to resolve organizational challenges while stressing the need to adopt e-technology (Modgil *et al.*, 2022). In this respect, the requirement to reorganize the crucial phases of the procurement process necessitates the use of e-procurement. Pandemic diseases emerge as an external threat that triggers the organization to reform business operations to the usage of technology to reduce physical contact. As this study shielded e-tendering technology during the COVID-19 pandemic, the diffusion of innovation theory was deemed relevant. This theory classifies technology into various categories that explain electrical activity.

2.2 Empirical Review

This study reviewed the findings of other scholars based on the following research questions:

2.2.1 Receipt of e-tender Requirements and Pandemic Spread

The tender process is an outcome of the requirements compiled by user departments (Monczka *et al.*, 2020). These requirements can be collected manually or electronically using ERP or other means (Lyson & Farrington, 2020). This review shows that the government has directed all public entities to communicate electronically through e-offices and government mail (URT, 2021). Therefore, through this forum, all user departments in public entities are obliged to communicate their requirements in the form of specifications, drawings, and bills of quantities (BOQ). However, Mchopa (2020) stated that most people prefer manual systems because of the lack of awareness of information

technology. Therefore, owing to the contradiction between what is insisted on by the government and the preferences of the user, it is worth presupposing the following hypothesis as follows;

Ho_1 *e-receipt is not a countermeasure for pandemic spread*

2.2.2 e-Tender Opening and Pandemic Spread

The tender-opening process can traditionally be conducted through physical gatherings, where tender board members meet bidders or their representatives and each bid is handled physically and witnessed by a few members in front of the gatherings (Torkanfar *et al.*, 2023). The manual process involves many hand touches, which would prompt COVID 19 spread. The manual opening of bids involving eyewitnesses in front of the gathering is preferred by most bidders who lack IT literacy (Mchopa, 2020). However, e-tendering, as used in NEST, allows tenders to be opened automatically once the deadline is reached; hence, there are no physical gatherings. However, lack of IT literacy is a great challenge for businesses responsible for supplying important items, including food products. Abdi and Barasa (2023) revealed that the government's provision of e-procurement support websites is insufficient, which may hamper procurement efficiency. Therefore, based on this debate, it remains imperative to postulate hypothesis Ho_2 to establish the cause-effect relationship of e-tender opening and mitigation of pandemic spread.

Ho_2: *e-tender opening is not a countermeasure for* pandemic *spread*

2.2.3 e-Tender Evaluation and Pandemic Spread

E-tender evaluation has been documented as the key focus of efficiency of a procuring entity (Abdullahi *et al.*, 2022). The use of electronic-based technology to enhance evaluation facilitates cost and time reduction, and minimizes paper use (Sunmola & Shehu, 2020). Through e-tender evaluation, it is the expectation of developed countries that there is no need for an evaluation committee to gather documents physically and scrutinize them individually. Rather, the system should automatically screen bidders and thereafter provide the lowest-evaluated bidder ready for contracting. However, one of the important areas of e-tendering that has not been fully realized is the automation of the tender evaluation process (Abdullahi *et al.*, 2022). Despite Tanzania launching an NEST system, the evaluation was conducted manually. Suppliers are normally applied online, and once the deadline reaches a team of experts, they need to sit together and scrutinize each bid manually and later come up with the decision of who is the lowest evaluated bidder. Based on what is insisted on the purpose of e-tender evaluation and the reality of what is practiced, it was prompted to establish the below hypothesis;

Ho_3: *e-tender evaluation is not a countermeasure for* pandemic *spread*

2.2.4 e-Tender Preparation and Pandemic Spread

The preparation of the tender involves the consolidation of different requirements from the user departments to the procurement management unit (Changalima *et al.*, 2021). Moreover, the procurement management unit is responsible for reorganizing the requirements as stipulated by the PPRA in the required format (URT, 2021). With the advent of electronic technology, tenders have been electronically prepared. Public procurement in Tanzania stipulates that tenders be prepared electronically (URT, 2011). However, the PMU, as a responsible organ for consolidating the requirement, performs its activities using different expertise, such as users, legal officers, and procurement professionals, either independently or they can gather physically and perform it manually with the expectation of uploading their outputs later. Most developing countries are challenged by the slow adoption of electronic technology (Sandanayake et al., 2022) and hence resort to manual mechanisms. Therefore, based on these dynamics, Tanzania, a developing country, was tempted to propose null hypothesis as follows:

Ho_4 *e-tender preparation is not a countermeasure for* pandemic *spread*

2.2.5 e-Tender Submission and COVID 19

Traditionally, tenders are submitted manually or postage to the secretary of the tender board, who is also responsible for handling the envelopes manually and recording the time and date of submission of the tender documents (Torkanfar *et al.*, 2023). However, with the introduction of NEST, submission is performed online using a tender portal (URT, 2021). Most bidders, due to a lack of knowledge of Internet use, have been opting to use alternative manuals that could probably be like using the Internet café or resorting to third-party assistance, which still encourages physical contact (Mchopa, 2020). Therefore, based on this scenario, the study proposed the following hypothesis:

Ho_5: *e-tender submission is not a countermeasure for* pandemic *spread*

III. METHODOLOGY

3.1 Study Location

This study was conducted in MSD, Tanzania. MSD was chosen because it falls under the Ministry of Health and Social Welfare with one of the major responsibilities of procurement of pharmaceuticals in the whole country of Tanzania, which is later distributed from the central warehouse down to the zones and ultimately to the health facilities (URT, 2021). MSD is a lifesaving organization and is, therefore, responsible for the procurement of pharmaceuticals needed for the prevention and treatment of patients during the COVID 19 outbreak. Therefore, despite the outbreak of COVID 19 there would be no stop in the procurement of pharmaceuticals for treating and preventing both COVID 19 patients and other patients. COVID 19 pandemic period featured a high usage of pharmaceuticals to treat and prevent the infection of COVID 19. However, a study by Haque *et al.* (2021) showed that most pharmaceuticals used to treat COVID 19 are leverage; hence, the best strategy is competitive tendering, as suggested by Schotanus and Grandia (2023). Furthermore, owing to the worldwide approach to reducing physical contact, e-tendering is inevitable.

3.2 Research Strategy

This study employed a quantitative strategy to explain how e-tendering has been used as a countermeasure to the spread of COVID 19 spread in Tanzania. To obtain quantifiable facts, a positivist philosophy was used scientifically to test the existing Technology Acceptance Model and diffusion of innovation theory using the postulated hypothesis. Positivism is valued for its ability to find findings that can be generalized to a very wide setting (Irshaidat, 2022). Because there was no need to track temporal changes over time, this study employed a cross-sectional design. Equally important, the study covered the whole country and, hence, geographically employed a survey design for wide generalization (Leavy, 2022). Additionally, this study employed an explanatory design to explain the causal relationship between e-tendering practices as an explanatory variable used as a countermeasure to the spread of the pandemic in Tanzania.

3.3 Sampling and Data Collection Procedure

The entire study population included staff from the MSD. However, purposively, the actors in the tendering process, ranging from the user department to the procurement management unit, were regarded as units of inquiry, whereby only 177 staff members were regarded as targeted units of inquiry on the grounds that they are involved in e-tendering through receipts of tender, tender preparation, tender evaluation, tender submission, tender opening and tender evaluation. Since there were only 177 staff members, the census approach had to be employed by considering all of them as respondents to be inquired information. The rationale behind the choice of census approach is based on the presence of a few respondents (Burakauskaitė & Čiginas, 2023). The survey method was used to collect primary data from the respondents using a structured questionnaire. The use of survey methods using structured questionnaires facilitated the easy collection of data while using minimum resources in terms of time and funding. However, pilot study was conducted by providing questionnaire to about 12 respondents prior to large scale data collection.

3.4 Operationalization of Variables and Data Analysis

Based on the fact that the study employed an explanatory design method, an explanatory variable (e-tendering practices) was used to explain the response variable (counter measure for pandemic spread). E-tendering practices were measured using the following constructs: receipt of user requirements; preparation of tender documents; submission, opening, and evaluation. Both constructs of the independent variables were measured on a five-point Likert scale. Other social science scholars who used five-point Likert scale are Jonathan and Magoma (2024, November), Odilah *et al.*, (2024, November), Magoma et al., (2024). The dependent variable of this causality relationship was a countermeasure to the pandemic, indexed by the reduction in the spread of the pandemic and captured using binary means. The dependent variable was coded as 0 for no reduction of COVID 19 and 1 for reduction of COVID 19. The rationale behind the choice of binary measurement was the absence of standard numeric measure of pandemic reduction and hence the researcher had to opt for perception measure in order to achieve the aim of establishing causality between e-tendering and reduction of pandemic spread. Other scholars who opted for perception measures to capture data that would be captured using attitudinal aspects are Kibona et al. (2024), Mchopa et al. (2023) and Kimario and Mwagike (2021). The usage of binary measurement is commendable as an alternative means of dealing with such kind of inconvenience (Lu & Wang, 2024). Further, the binary logistic regression model is a commendable data analysis technique for regressing explanatory variables with binary response. A binary logistic regression model was used, because the dependent variable (pandemic) was categorically binary.

IV. FINDINGS & DISCUSSION

4.1 Reliability Test

Cronbach alpha approach was used to establish to coefficient of reliability of the explanatory variables of this study as revealed in table I. The results revealed that the coefficients were all above 0.7 and hence reliability of the data employed in this study as ruled out by Forero (2024). The rationale towards the choice of Cronbach alpha approach was due to the means used in gauging data in this study using Likert scale. The use of Cronbach Alpha approach is detailed to have an ability of checking internal consistency of data captured using Likert scale (Sigmundsson & Haga, 2024).

Table I

Reliability Results

Item	Coefficient of reliability
Receipt of the requirements	0.78
Preparation of tender documents	0.72
Tender submission	0.74
Tender opening	0.76
Tender evaluation	0.75

4.2 Diagnostic Test of the Analysis

To deliver impartial and correct statistical judgments, model validity is critical for the creation of statistical models (Takona, 2024). Diagnostic tests for binary logistic regression involve multicollinearity, model fitness, and normality tests as follows: When at least two free variables are too closely related, there is an implication of the absence of multicollinearity. The Variance Inflation Factor (VIF) technique was employed to perform a multicollinearity test. VIF analyzes the extent to which a regression coefficient variance is inflated because of model multicollinearity. Regressing an independent variable in the model yields the VIF. Collinearity arises when the mean VIF exceeds unity or the greatest VIF exceeds ten (Shrestha, 2020). Moreover, the VIF for collinearity statistics was greater than, implying no multicollinearity in the binary logistic regression model used in this study (see Table 2).

Table 2

Multicollinearity Tests

Model	Collinearity Statistics	
	Tolerance	VIF
Receipt of the requirements	0.78	1.9
Preparation of tender documents	0.68	1.8
Tender submission	0.39	4.0
Tender opening	0.71	1.8
Tender evaluation	0.29	3.2

In addition, based on the-2 log-likelihood, the obtained R-square of e-tendering practices can reduce the pandemic spread by 27.2%, and based on Cox and Snell R square, E-tendering can reduce COVID-19 spread by 32.2%. The Nagelkereke value, together with the receipt of requirements from the user, preparation of tender documents, tender submission, tender opening, and tender evaluation, explained 32.2 percent of the variation in the reduction of the pandemic's spread.

Although SPSS produces two outputs, namely Cox, Snell, and Nagelkerke, the latter was chosen in preference to the other because of its ability to reach a maximum theoretical coefficient value of 1. However, the extent of R-squared does not necessarily matter; hence, an R-squared value of 9% and above is reasonable for inferential analysis, as suggested by Itaoka (2012). Equally important, the Jarque-Bera test was used to assess normality, and when the p-value was less than or equal to 0.05, the test rejected the normality hypothesis. The results showed that the data were normally distributed because the p-value for the Jarque-Bera test (test for normality assumption) was larger than 0.05, and there was insufficient evidence to reject the null hypothesis at a significance level of 0.05.

4.3 Inferential Statistical Findings

Based on the binary logistic regression model results for the independent and dependent variables, most e-tendering practices, with the exception of the evaluation process, had statistically positive significance with the pandemic spread, as their p-values were less than 0.05.

Table 3

Binary Logistic Regression Model

Items	β	S.E.	Wald	dF	Sig.	Exp(β)
Receipt of the requirements from the user	0.121	0.641	3.014	1	0.001	5.691
Preparation of tender documents	0.282	0.544	3.124	1	0.030	1.603
Submission	7.316	0.819	11.333	1	0.041	12.655
Opening.	1.283	0.327	9.212	1	0.001	14.744
Evaluation	7.932	0.634	7.024	1	0.123	1.632
Constant	-3.648	10.53	3.142	1	0.004	0.034

Specifically, the findings in table III indicate that the receipt of requirements from users can reduce the spread of the pandemic by 5.691, at a p-value of 0.001; hence, the null hypothesis was rejected. Therefore, receipt of user requirements electronically increases the possibility of mitigation of pandemic spread by 5.691. Many users handle procurement requirements and include those who are engaged in the supply chain, ranging from patients, doctors, nurses, pharmacies, zonal warehouse central warehouse, and ultimately to the central warehouse of the MSD before being communicated to the procurement department for further tendering logistics. Through the use of government mail and e-offices for file movement, as stipulated by the electronic Government Agency, physical contact has been reduced to provide for pandemic reduction (Kashaija, 2023).

In addition, based on table III, the preparation of tender documents can influence the spread of the pandemic by 1.603, at a significance level of 0.030; hence, the null hypothesis was rejected.Therefore, preparation of tender documents electronically increases the possibility of mitigation of pandemic spread by 1.603. What prevails in the developed and developing countries? However, as for the case of Tanzania, tender preparation is normally conducted by different experts who are capable of contributing their inputs. However, with the introduction of an e-office system to enhance file movement from one unit to another, physical contact has been reduced as everyone in the office ranging from the user department to the procurement management unit is working on the e-office system and thereafter unloading the tender document in the NEST and hence reduction of physical contact, which would spread COVID 19. This finding concurs with that of Harpaz and Peled (2023), who conducted their study in developed countries.

The findings in table III also indicate that the electronic submission of tender has a statistically positive significance on the pandemic spread at a p-value of 0.041 and, to an extent, 12.655. Therefore, submission of tenders electronically increases the possibility of mitigation of pandemic spread by 12.655. Hence, the null hypothesis is rejected. These findings support signing those of Porporato and Ruiz (2023), who revealed that the use of transparent methods in the procurement process during the COVID 19 pandemic is vital for the efficiency of the organization as a failure to do so, resulting in consequences such as corruption. To encourage transparency, as for Tanzania, e-tendering has been put in place whereby tender documents are submitted online using Nest while reducing COVID 19 spread because tenders are submitted online as per PPA (URT, 2011). Therefore, it is generally ruled out that the efficiency of using e-tendering as a transparency tool extends from the reduction of corruption to the reduction of the spread of the pandemic. Similarly, the findings in table III indicate that tender openings can be explained by the pandemic spread of 14.744 at a significance level of 0.001; hence, the null hypothesis was rejected. PPA No. 7 (URT, 2011) and its 2013 Regulations stipulate that tender openings should be attended by all tenderers or their representatives until the enablers are placed using electronic means. However, until COVID 19 emerged in Tanzania, TANePs, which have been replaced by NeST, have already been in place and hence automatically phased out physical gatherings.

However, the results in table III reveal that the evaluation process of e-tendering in Tanzania did not influence the reduction in the spread of the pandemic by 1.632, at a significance level of 0.123; hence, the null hypothesis was not rejected. Therefore, the current tendering evaluation practices decreases the possibility of mitigation of pandemic spread by 0.123. Interestingly, despite the PPA (URT, 2011) stipulating that electronic procurement for all public undertakings should be put in place soon after enablers have been put in place, it has been realized that the existing system cannot accommodate online evaluations without physical contact due to low level of integration with supplier's system. The findings contradicts with what is advocated by TAM implying the current NEST system is not in fully implementation because e-evaluation model is not well accommodated within the system. Furthermore, the established committee comprises three members who normally gather and download tender documents online for physical evaluation through verbal discussions (URT, 2011). To aid this process, automatic evaluation and automated supplier selection criteria using an electronic database system are important (Nyokabi et al., 2023).

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

The study concluded that the e-receipt of user requirements, e-preparation of documents, e-submission, and e-opening of tender counters measure the spread of the pandemic. However, e-tendering practices associated with evaluation do not counter the spread of the pandemic, because there are still many physical gatherings with manual analysis of the documents attached by bidders, contrary to the expectations of e-tendering. Having physical gatherings associated with physical touching of documents and physical meetings to discuss who is the lowest-evaluated bidder for health supplies may still be prone to contamination by the pandemic.

5.2 Recommendations

This study contributes to the corpus of knowledge on the use of e-tendering systems in the public sector to address the spread of the pandemic in developing countries, using Tanzania. It is further extended that the use of an e-tendering system serves as a rescue during times of horrific events that shock waves a smooth supply chain system, given the fact that, in most cases, tendering as a competitive method of procurement is associated with a large volume of purchases that involve a large number of stakeholders. Further, e-tendering in MSD was used as a mitigation tool towards the spread of the pandemic and hence multidisciplinary contributions mixing the professional flavors of procurement, Information Technology, and health care. Practically, the government has insisted on ensuring the effective enforcement of e-tendering to reduce unnecessary physical contact, which may ultimately cost lives owing to the spread of the pandemic. In addition, because the evaluation process is not in full execution of electronic-based technology, there should be an integrated machine learning systems such as DocuExprt and Tenderstrike for online screening of suppliers and conducting and auto selection as soon as the tender deadline is achieved without engaging in physical contacts. Also, the findings of this study will contribute to the implementation of SDG 3 for good health and well-being. Additionally, since e-evaluation is not fully embraced within the NEST system then it is highly advised that PPRA should equip more the module of e-evaluation within the NEST system in order to ensure effective and efficient automation of tenders in Tanzania.

Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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