

## INFORMATION AND COMMUNICATION TECHNOLOGIES FOR EFFECTIVE TENDERING PROCESS IN PUBLIC PROCUREMENT OF WORKS: A CASE OF TANROADS AND TARURA IN MBEYA CITY AND MBEYA DISTRICT

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### ABSTRACT

*The study investigated on the adoption of the information and communication technologies for effective tendering process with TANROADs and TARURA procuring agents in Mbeya city and Mbeya district. This study was carried out following the claims over most of contracts awarded to the thought competent contractor but to realize later that the contract is not executed to performance. To uncover the reason behind this dilemma the study employed the quantitative research approach while the descriptive-survey design being applied. 90 respondents being the procuring agents (from TANROADs, TARURA) and contractors won and those other rejected were also involved. The 86 procuring agents from TANROADs and TARURA and contractors awarded tenders was obtained by using simple random sampling technique while the 4 bidders ever used to bid but happened to be rejected were purposively sampled. Questionnaires and documentary review were used to obtain data pertaining innovation and transformative powers of e-tendering. The collected data were processed and analysed descriptively and inferentially. The findings were as follows the information communication technologies (e-tendering systems) were not effectively applied by most of public procurement of works entities exemplified by TANROADs and TARURA. Moreover despite of reluctance in adopting the e-tendering systems, it was revealed that use and adoption of e-tendering systems create innovations over demonstrating pillars of good governance and value for money procurement in tendering process. It is from the innovations brought by e-tendering thus this study recommend that these technologies should be accepted and used by procuring entities to be obtained to a right and competent bidder to execute a contract to its performance.*

**Key words:** ICTs, E-tendering, Public procurement of works, TANROADs, and TARURA.

### 1. INTRODUCTION

E-tendering is one among the common e-procurement practices used by the procuring entities. The other e-procurement platforms includes E-request for Quotations, E- Auctions, E- Catalogues, and E-invoicing (Vaidya, Sajee, & Callender, 2006). According to Roma & McCue (2012) tools such as E- Notice, E-Auction, E-Catalogue, E-Dossier, E-submission and E- Signatures are part and parcel of e-procurement. Garran (2005) indeed pointed out on the effectiveness of adopting e-tendering fostered through the use of online platforms.

Globally, e-procurement has gained popularity with the advent of technology. In the United States of America for instance, rapid developments of e-procurement was reported in early 2000 just before recession. By the end of the same year, it was reported that all state functions were maintaining web presence in at least some stage of the procurement processes with some participating in online bidding (Reddick, 2004). In Malaysia, the government at some point issued a statement calling for all suppliers to use the e-procurement system (Yossuf *et al.*, 2011). Kaliannan *et al* (2009) pointed out that Malaysia public sector are going through a rapid change especially as far as adoption of technology is concerned. Adoption of e-government and particulary e-procurement is inevitable for the government. The review conducted by commonwealth of Australia indicates that the National governments of Italy, New Zealand, Scotland, New South Wales and Western Australia 2005, revealed that these countries were already using e-procurement system for public procurement activities.

In Africa, the concept of e- procurement is just gaining popularity if not at infant stage especially in the public sector and that is why this study has focused on public sector as a study area. Most African countries have resorted to legal reforms and adoption of procurement. In Kenya, the government actively got involved in

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adoption of e-procurement when the Jubilee government came into power (Rotich & Okello, 2015). Since there has been a lot of pressures and reforms to ensure all public procurement functions are conducted online. The Kenyan government made it mandatory for procurement of all public goods, works and services to be procured through online platforms (Akoth, 2017). County governments introduced Integrated Financial Management Information System (IFMIS) that is mandatory for all the 47 counties. IFMIS was introduced to improve governance by providing real time financial information and effective programmes, formulate budgets. It also enhances transparency and accountability and acts as a deterrent to corruption and fraud (USAID, 2008).

Tanzania put into place e-procurement systems to allow e-sharing, e- advertisement, e-submission, e-evaluation, e- contacting, e- checking and monitoring to ensure all public procurement activities are conducted online (Sijaona, 2010). E-tendering is associated with reduced transaction cost, improved process efficiency, increased contract compliance, reduced cycle times, and reduced inventory costs (Aburdeen Group, 2005) and improvement in operational and cost efficiency (Roma & MacCue, 2012). According to Mose, Njiahia & Magutu (2013) e-tendering leads to improved procurement performance. It facilitates electronic documentation of the bidding process, enhancing accountability and transparency.

Adoption and use of information communication technologies called e-procurement systems have shown to transform the traditional procurement systems procuring entities has been using (Kumar & Ganguly, 2020). Despite the disruption shown, e-procurement systems have been innovative towards bringing efficient procurement. The efficient procurement said to be brought by adoption of e-procurement systems is over value for money procurement attained in tendering process what has been the focus of this study. To clearly debenture this, the study under discussion was addressing the use of e-tendering systems (platforms) towards obtaining a lowest evaluated, right and competent bidder and not the whole procurement undertakings. Thus e-tendering explicitly discussed by this study is part of e-procurement systems reported by other studies. Moreover while other studies have focused on the importance of top management support, competent human resource change agent and supporting infrastructures as enhancers towards transformation, this study has discussed importance of adopting e-tendering systems in demonstrating the pillars of good governance.

## **2. LITERATURE REVIEW**

### **2.1 Theoretical Literature Review**

The study was guided by one main theory which was Disruptive Innovation Theory and the other two supporting theories (models) which were Innovation Diffusion Theory and Technology Acceptance Theory reviewed as follows:-Disruptive Innovation Theory (Barahona & Elizondo, 2012)- entails inventions of a new and modern technologies which cater for the discrepancies shown by Traditional Model. Disruptive innovation model entails overachieving customer need than just looking on the product/ services and how to increase sales. That means it is a disruptive system as it modifies if not changing the traditional product-centric system to customer-centric approach. It is with these innovative e-systems in which the value for money or simply performance in procurement is attained.

Though innovation may be revealed to change the normality but this is done due to change in accordance with the change in environment, market and customer preferences, tastes and fashions. E-tendering for instance being a disruptive system, came about following discrepancies shown with traditional-manual tendering system. With traditional model the paper work was obvious, the targeted performance like that of increasing competition among the competing bidders, failed to be achieved. Moreover the procurement cycle time elongate with more resources being used. The bidding period for national competitive tendering (which is 14-21 days) and that of International competitive tendering method (30-45 days) found to be not met leading to late submissions of responsive bids. With traditional model the transparency and fairness was in dilemma and that means even the performance to be awarded a contract was in doubt.

Under traditional tendering system few bidders succeeded to submit their bids on time and the evaluation was done by a special evaluation committee which was supposed to be in the size of odd number system. Thus involving people in a very sensitive issue like that of evaluating the received and opened bids is the same like allowing for errors and biasness which could be accurately avoided through the use of e- procurement systems.

A human being has personal interest in a fact that a preferential treatment is obvious to be committed and thus observing that the bidder to be selected may be a friend, family or relative of one of the evaluation committee members. Involving human being in tendering process is like allowing for corruption of which therefore obtaining to a technical competent contractor is put in dilemma.

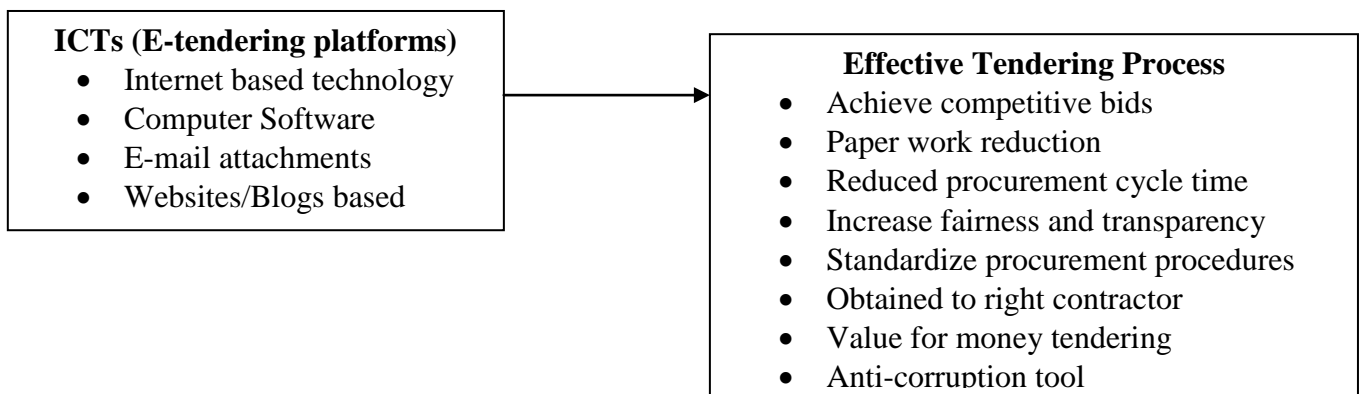
Even the performance of the awarded contract is in dilemma and thus difficult for value for money tendering to be attained. But adoption of disruptive innovative e-tendering has shown to be economical, efficient and effective strategy towards overcoming the above noted discrepancies as revealed over use of traditional systems. Despite of the benefits revealed on the use of e-tendering, the Disruptive Innovation theory failed to notify that mindset transformation (what Innovation Diffusion Theory by Rogers (1962) proposed) is a key issue to be considered for effective adoption of e-tendering. Moreover reluctance in adopting the system has been caused by financial incapability to acquire these technologies. Little researches on the reviewed perceived and indirect benefits of use of ICT in tendering was found to be one among the reasons for reluctance over adopting and using of e-procurement systems. Unfriendly facilitating technological infrastructures such as unsteady telecommunications (used to mobile phones services, applications in tendering process), internet subscription and electricity indeed in Tanzania and specifically to the study area are among other factors on why e-tendering is rarely implemented. The discrepancies are to be resolved by adopting the Diffusion of Innovation Theory and Technology Acceptance Theory (Devis, 1986).

## **2.2 Empirical Literature Review**

E-tendering by UN *et al.*, (2000) revealed that ICT and web-based technology perform the following functions ie by invitation” tendering; electronic bid submissions; virtual plans rooms; award notification; bid receiving and public opening; bid evaluation; award management; management reporting ( Statistical reporting, document checking, Audit trail). The study by UN *et al* (2000) used a case study research design in reviewing the role of technological innovations in tendering process. Different from the study underhand of which it is quantitative in nature and has used descriptive –survey design on reviewing the effectiveness of ICT and Web-based technologies in ensuring competitive tendering. While at the other hand obtained to a technically and financially capable bidder to be awarded a performing contract. Moreover the area for the study was Mbeya City and Mbeya rural district in Tanzania while that of UN *et al* (2000) was conducted in Philippines.

The investigations on e-tendering benefits, challenges and recommendations for practice by NSW government (2002) and Department of Commerce (NSW, Government , 2003 as cited by Kajewski & Weippert (2004) in Wales found that in construction industry, the innovative information and communication technology and web –based communication processes, systems and solutions has proved beneficial in procurement, delivery, and life cycle of projects. Moreover the internet has debatably revolutionized the way in which information is stored, exchanged and viewed, opening new avenues for business, which only a decade ago were deemed almost inconceivable. And also the challenges revealed in uptake of e-tendering were:- certain contractors and consultants see the use of an e-tendering process is “unfair practice” if they are not in position to take advantage of receiving or sending tender documents electronically. Certain consultants perceived e-tendering as being of more use of contractors than themselves in sense that procuring entity send the tender documents in paper forms while requiring the contractor to submit the prepared responsive bid electronically. Different from the current study which has researched on the effectiveness (the perceived benefits) of the use information communication technology and web based systems in tendering process. This therefore shows that the study under examination was a researchable work and not like that of Kajewski et al which was simply not a research paper but consulting work with no methodology and the recommendation for practice made as one of the issue addressed. But the work by Kajewski could be researchable if it could be clearly addressed from the start that is introduction and background to the study the discrepancy or issues researched on and recommendations could be taken as inbuilt not necessarily to be part of the SMART formulated research objectives. Thus from this paper (consulting work) then three main researchable topics might be developed which could be:- benefits; challenges and strategies towards sustainable e-tendering. Indeed the benefits as it could be with challenges again the issues to be addressed could be narrowed down (specifically stated) while leaving many other issues as area for further studies.

Suleiman (2015) revealed that e-procurement involves the use of internet-based (integrated) informational and communication technologies (ICT) to carry out individual or all stages of procurement process including searching, sourcing, negotiation, ordering, receipt and post-purchase review. In analysing the adoption of e-procurement and Value-Addition, Suleiman reviewed three influencing factors for adoption which are technological factors (T), organizational factors (O) and environmental factors (E). In revealing these facts Suleiman applied quantitative research approach. Data were collected from secondary sources and primarily using questionnaires. The unit of inquiry was purposively sampled. The study was conducted in Dar es Salaam, Zanzibar, Morogoro and other regions of Tanzania. The collected and process data were analysed by using SPSS, Windows version 20.0. Different from the study under examination in which the perceived benefits were reviewed and not factors influencing adoption of e-procurement as per the study by Suleiman. Again the study of Suleiman was researching on the factors for adoption of e-procurement (which include e-searching, e-sourcing, e-payment, e-ordering, e-documentation) of goods but the study underhand has researched on the perceived advantages of using ICT in effective tendering process and specifically under public procurement of works. E-tendering or e-searching and e-sourcing are among the processes of procurement. Moreover the paper under examination was more conceptual of which more data sources were secondary and little primary data which were gathered by using questionnaires from a specific target group that is public procuring entity (such as TANROADS) and competing bidders. The study was carried out in Mbeya different from that of Suleiman which was not specific that much by saying the study areas were Dar es Salaam, Morogoro, Zanzibar and other regions of Tanzania (what are those? un-mentioned). Indeed Suleiman has revealed not to be a senior in research by continuing of being not SMART when it comes to the point of tools used in processing and analysing the collected data by saying that he used SPSS, then the question to ask ourselves is that is SPSS tool for data analysis?. Different from the study under examinations in which the specific tools used in processing and analysis was specifically stated in which also SPSS –Windows version 21 such as multivariate analysis, regression analysis test tools. Descriptively the study under examination used mean ( $\bar{X}$ ), standard deviation ( $\delta^2$ ) and simple frequency/percentage distribution tables. By finalizing the Journal (that is European Journal of Business and management), Suleiman used to publish this paper prove to be not credible in that manner to allow pitfalls and indeed in research methodology which is the heart section of any researchable work. The issues, variables and concepts addressed/reviewed by this study under this part were summarized in the conceptual framework as shown in Figure 1.



Source: Barahona & Elizondo (2012)

**Figure 1: The conceptual Model on ICT and effective tendering process in public procurement of works**

### 3. METHODOLOGY

The study employed a quantitative research approach in which a descriptive-survey research design was used. The target group was the public procuring entity from TANROADS and TARURA and contractors in Mbeya City and Mbeya Rural district. The area was chosen exemplifying other public procuring entities of works in Tanzania in which number of cases over non-performance of the contract awarded to the so called incompetent lowest evaluated bidder has been reported caused by non-use and non-adoption of e-tendering platforms.

It is from the sample frame of 1,000 using the confidence level of 90% in which 90 respondents being the members from the Tender Board, PMU and User departments were sampled. Derivation of the sample employed the Cochran formula,  $n = N / (1 + N (\alpha)^2)$  where  $n$  = sample size = 90;  $N$  = total population from TANROADs and TARURA = 1,000 and  $\alpha$  = margin of error = 0.1 (Cochran, 2005). While simple random sampling technique was used for the procuring entities, purposive sampling was used for bidders were used to bid but rejected. Simple random sampling used to coupons written 'YES' and 'NO' from which 86 respondents picked 'NO' were the ones who were involved and the other 4 respondents were the bidders sampled purposively but were ever rejected.

Data from the sample drawn i.e. the public procuring entities/agents were collected primarily by using questionnaire. Desk review of publications was used with the submitted responsive bids for the ever rejected bidders. Moreover secondary review of journals, Wikipedia and books were important towards revealing the reality pertaining the study underhand. The collected facts were analysed descriptively (using mean, standard deviation and mean ranking) and inferentially by using ordinary least square.

## **4. FINDINGS AND DISCUSSIONS**

### **4.1 The electronic platforms and effective tendering process**

With this subtitle the study aimed at disclosing the impacts of information and communication technologies (e-platforms) to be adopted towards transformation in tendering practices. Specifically to this study, the information and communication technologies involved were websites/tender portal, blogs, u-tubes and other computer application programmes. It is through the use of tender portal /website where public procurement notice is loaded to help calls for a reasonable large number of contractors even those from outside the country (indeed if the International tendering method is applied) quote for the advertised tender (Yevu & Yu 2019). It is through the use of internet, websites in which competitiveness increases with an expectation of the potential and competent contractor to be obtained what was also said by Gardenal (2013) but contrarily from research findings presented by '2=used' and not 1=mostly used, the expected results. It is through online submissions of the prepared responsive bids in which a large number of bidders succeed to submit their bids without delay. It is with employment of application software which is used to process or evaluate the submitted responsive bids thus human errors, biases and malpractices are overcome.

The same applies to the client/procuring agent such as TANROADs should use in submitting the tender documents online (using blogs, websites platforms) what contractors should do in which the responsive bids are to be submitted on time to the specific address without delay. Delay in submitting the documents on time and on a specified day, the system close up meaning that it cannot accept any more submissions. Though this was found to be a discrepancy not effectively addressed as the technology was found new not efficiently adopted and accepted for use by both the client and the contractors shown by response of '2= used' and not 'mostly used' which had a score of '1'. The problem was indeed with local contractors whereby most of them were found reluctant in using electronic systems. Indeed while majority of foreigners were used to U-tubes, e-mail attachments in posting their technical and financial proposals that is their profiles, the local contracting firms were found not to be used to most, the results which comprehend with those by Gunasekaran *et al.* (2009) in the study factors hindering adoption of E- Procurement in the South coast SMEs. With manual systems the local and medium contracting firms are used to hardcopies in which easy accessing to their profiles become difficult. This is one of the reasons why many tender opportunities over procurement of works are won by foreign contractors by about 65% (Haule, 2014). The main executors of the contract over procurement of works in Tanzania are Chinese companies with even less than 35% of local contractors. Moreover the study by Katundu (2019) said on the advantage of adopting digital, electronic systems for quick extending of economic activities for achievement of global margins, though this study under discussion is revealing on the advantages of using e-tendering platforms in obtaining credible and competent bidder to execute a contract to performance.

Since public procurement of works is much involving constructions of high end and complex projects such that constructions and demolition of buildings, roads, bridges then this was one of the reason for local

contracting firms to miss these chances even if found to have professional standards class I, II and III. This however was not the focus of this study and thus to be taken as area for further studies. Due to the use of electronic platforms, this therefore eliminates the use of papers, thus effectiveness being attained. Owing to the reduced number of late submissions through the use of electronic systems, efficiency is achieved, the facts which are consistent with those of Eei, Husain & Mustaffa (2012) though the study was conducted in Malaysia and the research approach used was qualitative different from the study under examination which was quantitative and it was conducted in Mbeya -Tanzania. While the study by Mustafa with his fellows was exploring on the benefits and challenges of adopting e-procurement the current study is exploring on effectiveness of ICT in tendering process to be awarded to a right bidder. By not involving human resources in evaluation, then tendering has been more effective due to reduced human errors and biases that sometimes human being could create randomly( by knowing) and sometimes without knowing( systematic errors) ( Oladimeji & Olusegun, 2018).

By using computer software means the potential and competitive bidder deserved is awarded and not the one to be obtained through corruption. That is to say use of ICT in tendering plays a role of being anti-corruption tool, the facts which are consistent with what was reported by USAID (2008). It is through this system in which the bidder who submits the most responsive bid is the one who is selected while others rejected. Different from when manual tendering system was in action in which the issues of transparency and openness was in dilemma as every practice or process was/is closed from the first point when the procurement need is identified and put in form of procurement note until when the lowest evaluated bidder is obtained. The whole tendering process is timely following the acceptance and use of e-systems different from the time when the manual system was used.

**Table 1: Mean ranking**

S/N	Constructs	Mean ranking	Degree
1	Tender portal	2	Used
2	Websites/blogs	2	Used
3	Processing computer software	2	Used
4	U-tubes	2	Used
5	E-mail attachments	2	Used

**Note:** 4= Most used; 3= More used 2= Used 1= Not used

From Table 1 it can be noted that e-tendering is not much propounded and not most used by public procurement units to ensure for effective tendering process. This is a discrepancy what this study has addressed so that if good then infrastructure should be made with public organizations to be adapted to this innovative and transformative ways of procurement. This was also dictated by the Ofori & Fuseini, (2020) in the theory Technology Acceptance and Adoption. With mean ranking = 2 for all five constructs that are tender portals, websites, software, U-tubes and e-mail attachments is a message that these technologies are not adequately diffused and being part of businesses of most of procurement entities in Tanzania and indeed from the specific research area.

It is normal to observe the procurement notice is posted on the notice board at the office of tender board or TANROADs. Indeed the tender documents handled to the bidders who have shown interest to auction price to be quoted by using Posta or more other manual systems. This then is a reason why majority of bidders found to have delayed to submit the responsive bids on the gate of TANROADs, TARURA offices. Moreover it was revealed that while the procuring agent uses manual systems of making their submissions but requiring the bidders to handle their submissions online (using email-attachments), what this study recommend to be not put into practice. Furthermore much emphasize is put for procurement firms adopt e-tendering systems from the innovation explicitly revealed said by Yahya *et al.*, (2018) that, it is by >80% in which the interested bidders succeed to submit their responsive bids without delay.

Rare adoption and uses to these innovative e-tendering systems has a reason behind the scene. Some of the hindrances revealed from the field included absence of facilitating platform towards transformation, management reluctance and conservative behaviour towards change, ineffective change agent, and little

resources/infrastructure to support the change. Moreover miscommunication about the change, fear of losing the jobs, wrong message delivered over the change to take place and the pushing force for change may be not appropriately communicated were other factors for non-adoption and acceptance of e-tendering systems. Use of tender portal, blogs and websites in advertising of tender opportunities with mean ranking of 2 shown in Table 1 is a proof over the fact that e-tendering has helped bidders easily access such information by 99.9% what was also reported by Wimalasena & Gunatilake (2018).

#### 4.2 Use of e-tendering systems and practice of good governance

The pillars or elements of good governance towards value for money tendering were revealed to be achieved with the use of Information Communication Technologies. This was measured through increase in openness, transparency, equity and accountability as shown in Table 2.

**Table 2: Descriptive statistics**

Predictors (N= 90)	Min	Max	Mean , $\bar{X}$	Standard deviation, $\delta^2$
1 Transparency	1.00	5.00	5.01	0.51
2 Equity	1.00	5.00	6.02	0.45
3 Accountability	1.00	5.00	5.91	0.96
4 Openness	1.00	5.00	7.53	0.12

The findings in Table 2 for predictor 1,  $\bar{X} = 5.01$  and  $\delta^2 = 0.51$  show the extent to which transparency to be attained following adoption and use of e-systems. The transparency is from the fact that every process is counted and a feedback is given to the bidder who has submitted the bid. Moreover from the start when a need is identified and posted as procurement notice or advertisement, then the specifications found to be known by every interested bidder through a tender portal. Indeed the tender documents/purchase order requirements are openly accessed  $\bar{X} = 7.53$  and  $\delta^2 = 0.12$  (see predictor 4 from Table 2) known by every bidder and indeed once the submitted bid is received then a response is there given out as feedback to every successful applicant (contractor) that the document has been received. Thus it is through openness brought through the use of electronic platforms thus the open tendering is effectively exercised. Either these facts comprehend with those of Mandela (2007) which dictates on the use of E-procurement to be attained to value creation in the whole tendering process. Moreover the study by Abdullahi, *et al* (2019) reported on increase in openness and transparency over the whole tendering process. The study by Abdullahi, *et al* (2019) revealed increase in transparency due to the feedback sent to the bidders on whether the tender documents/responsive bid has been received and when it is to be subjected to evaluation.

Moreover application of information and communication technology in tendering process was revealed to create a feeling of fair treatment with  $\bar{X} = 6.02$  and  $\delta^2 = 0.45$  which was not there when manual system was in place. This is from the truth that all bids submitted within time are subjected to opening ready for evaluation. Thus every responsive bid submitted are treated with care as others different from as it was before when a human being was used in which because of random errors and personal interest human being has then fair treatment was probable. Because of conflict of interest a human being may have with the tendering process and specifically to either one of the bidder then dishonest practice is without doubt there to be committed to observe that the bidder who was to win the chance is rejected.

Increase in fair treatment over bidders through e-tendering from the field area was also realized with improvement in accountability  $\bar{X} = 5.91$  and  $\delta^2 = 0.96$ . Different from when it was before when manual system was used in which now the selected bidder because accountable to the TANROADS, TARURA or citizen and not to individual person. This is from the fact that the chosen bidder is like has been chosen by the system through the use of draws or a processing computer software. It is with e-tendering in which a bidder who has presented a responsive bid is the one who is chosen and awarded a contract. With the use of processing computer software the technical and financial proposals for the bid submitted are evaluated efficiently to obtain a competent and capable contractor. Non-performance of the contract is the mere first step to the contractor

awarded a contract terminate a contract as this will be taken as a contractor to have breached a contract due to non-performance or performed differently from the client/ beneficiary specifications.

Increase in the level of inclusiveness resulted from improvement in equity  $\bar{X} = 6.02$  lead into increase in number of bidders quoting for the bid by 90%, the fact reported by Ashaari, Suhaida and Chang (2018). The study by Ashaari, *et al* (2018) revealed that since information over the procurement opportunities are available in e-platforms different as it was before where the bidder was required to search these information manually. Though from the field area the accessibility of tender opportunities through e-platforms was revealed insignificant indeed for those bidders not exposed to mobile phones not supported by internet subscription. Thus this means that the >75% increase in participation as it was reported by Kaula (2018) is only for bidders who are in towns or urban areas where internet, telecommunication network and electricity is accessible and not those in remote rural areas where these services are not sustained.

It is because of not involving persons then use of e-tendering is key factor towards curbing corruption in the whole process of tendering towards being obtained to the right and competent bidder. With these facts then e-tendering revealed to be an effective anti-corruption tool. This is consistent with what was reported by Gunasekaran and Ngai (2008) on the study “Adoption of e-procurement in Hong Kong and achievement of sustainable procurement by 95%” following reduction in corruption fraudulent practices.

### 4.3 Adoption of e-tendering systems and demonstration of Value for Money Procurement

In here a study intended to reveal the impacts of e-tendering systems and propoundations of value for money procurement. In here either it is suggested that the contract to be performed should be money worth. Value for Money Procurement as it is with tendering should be economical, competitive, efficient and effective (Al-Yahya & Panuwatwanich, 2018). Time and other resources should be optimally used towards obtaining a valuable and competent lowest bidder. The tendering process should allow for reverse auction while attracting large number of bidders quote for competitive price. This ensures for effective tendering as a bidder electronically evaluated is the one selected and awarded a contract to perform unless otherwise if say the criteria are not attained.

**Table 3: Ordinary Least Square**

Criterion Set (N=90)	1 <sup>st</sup> Canonical loadings	1 <sup>st</sup> Cross loadings	2 <sup>nd</sup> Canonical loadings	2 <sup>nd</sup> Cross loadings
Economy	0.61	0.41	0.31	0.19
Efficiency	0.54	0.38	0.25	0.21
Competiveness	0.72	0.39	0.35	0.20
Effectiveness	0.58	0.40	0.30	0.17

With canonical loadings of 0.61 and 0.31 for 1<sup>st</sup> and 2<sup>nd</sup> cross loadings at a redundancy index of 5% to 1% shows the test and retest reliability of the criterion economy to hold. This is from the fact that e-tendering is paperless and does not involve large number of people thus it is an optimistic approach. The study by Irungu (2018) indicated that adoption of e-tendering play role to reduce the number of human resources from 20-50 who are usually involved in the whole tendering process to 2-5 human resources who function to feed the inputs to be processed by computer systems/software pertaining tendering. Optimism over use of e-tendering conquers with what was said by Malcom (2009) in his study of e-tendering for cost saving and greater efficiencies. Though the study by Malcom did not touch on the reasons why less developed countries and indeed to the field area these innovations are not made as part of their businesses.

With canonical loadings of 0.54 and 0.25 for 1<sup>st</sup> and 2<sup>nd</sup> cross loadings at a redundancy index of 5% to 1% it indicate that use of ICT is innovative towards obtaining a right and competent bidder. E-tendering is free from biasness, human errors and less time consuming and thus the bidder to be chosen deserved to win the opportunity. It is with this then the appeals were found to decrease at a cross loadings of 0.4 to 0.2 at a



redundancy index of 5% to 1%. Moreover use of e-tendering systems found to reduce cost with interested bidders in searching information of their interests (Wimalasena & Gunatilake, 2018).

The same results as those with other criterion over competitiveness with canonical loadings of 0.72 and 0.35 being first and second canonical loadings. Harty (2003) reported the same over increase in competitiveness of tendering process when informational communication technologies are applied. Harty (2003) failed to reveal that if large number of large sized procuring entities would be used to these technological innovations then most of our micro and small businesses would be wasted from the market; a caution to be taken care by the policy makers and other stakeholders over procurement practices in Tanzania. This to say there should be a facilitating market environment to create a fair ground of competition and allow for micro, small and medium local contracting firms to apply and win the opportunities even for those procurement chances to be quoted through international procurement method. Since it involves online submission using websites, blogs, e-mail attachments while the profile of bidders are saved in U-tubes, therefore this cause large number of them to apply for the these procurement opportunities. It is from this reasonable large number of bidders quoted for the price then it creates a reverse auction.

Different from when bidders were required to submit their responsive bids on hand to the office of procuring agent that is TANROADS in which many delays were revealed. But use of e-tendering has transformed the system of tendering which then allows many bidders submit their bids to evaluation. It is with e-tendering in which the same procedures used in manual way are the ones used with these systems. 14-21 days is a grace/bidding period for National competitive tendering method and 30-45 days is for International tendering methods in which beyond that period and stated time the system close-up. The systems close-up with the words says 'no more submissions is allowed'. The effectiveness over use of e-tendering with canonical loadings of 0.58 and 0.30 for 1<sup>st</sup> and 2<sup>nd</sup> cross loadings at a redundancy index of 0.05 to 0.01 reveal the same over the innovations to be obtained. The effectiveness perceived was over the assurance for the contract awarded to perform to clients' expectations.

## **5. CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Conclusion**

E-tendering is the use of electronic means of obtaining a competent and right contractor to be awarded a contract. The e-tendering revealed to be used to tender portal, e-mail attachments, websites, blogs and u-tubes platforms. Though these disruptive technologies found to be not most adopted by public procurement and supply firms but use of them in tendering was revealed innovative due to reduction in late submissions, increase in fair treatment over the submitted responsive bids, reduction in human and random errors, curbing of corruption and less time used in obtaining a right bidder. Moreover e-tendering revealed to be economical as because papers works and large number of human resources are avoided. E-tendering was found to be an effective means towards achievement of transparency and calling for a reasonable large number of bidders. It was moreover revealed that e-tendering is executed towards obtaining a right contractor due to the fact that the bidder who submits a most responsive bid is the one selected and awarded a contract to perform.

### **5.2 Recommendations**

It is from the most innovations over the use of information communication technologies (e-platforms) in tendering process, policy makers should think of promoting enabling environment for these innovations and transformations being fostered. Moreover it is recommended that policy makers should ensure a steady supply of internet subscription, telecommunication network and electricity. Either the procuring and supply firms should plan for these transformations for marginal benefits realization. Furthermore it is suggested that top (senior) management in procurement and supply entities should be supportive towards change. The supportive management entails provision of facilitative infrastructures, resources, e-platforms and software. The transformation as it has been noted above should be a strategic process to start with disclosing the advantages or pressure why a change is to be executed.

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