



Practitioners' Perception of the Effect of E-Procurement Practices on Time Saving in Public Procurement in Tanzania

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Abstract

The traditional procurement practices faced some challenges including delays in the acquisition of goods and services in the organization. Following the adoption of e-procurement technology, a lot of expectations emerged from practitioners and other stakeholders in terms of improving efficiency in procurement. This study aims to examine the effect of e-procurement practices on time-saving in procurement. The study employed an explanatory sequential mixed method which involved both quantitative and qualitative data. Data were collected by using structured questionnaires which collected quantitative data from 290 procurement practitioners and an interview guide for collecting qualitative data from five key informants. The questionnaires had two parts: the first part was scaled to 5-point Likert scale to capture data for independent variable while the second part captured data for dependent variable with Yes and No responses. Quantitative data were analyzed by using descriptive and inferential statistics while qualitative data were analyzed by using content analysis. The results have indicated that the use of e-procurement practices has an influential contribution to saving time in procurement. Therefore, procuring entities have to realize that e-procurement practices are potential resources for improving efficiency in terms of saving time hence the study recommends procuring entities to use it effectively to deliver procurement services to the customers at the right time. This study gives contribution by presenting a first-step examination of practitioners' perception of the effect of e-procurement practices on time-saving in a particular case of developing countries including Tanzania.

Subject Areas

Supply Chain Management

Keywords

Perception, E-Procurement, Practices, Time Saving, Tanzania

1. Introduction

E-procurement is a tool that plays a significant role in the procurement process, it is in this context that many countries in the World have decided to shift from using traditional procurement practices to using e-procurement practices to improve efficiency in the procurement process (Vaidya *et al.*, 2006) [1]. The benefits accrued from the use of e-procurement have been reported from different perspectives such as simplification of preparing annual procurement plans, bidding documents, increased visibility, and cost reduction (OECD, 2019) [2]. In developed countries, a lot has been done on examining the benefits of using e-procurement; for example, a study conducted in the United Kingdom reported that a time saving of 5% to 20% was realized under e-procurement practices due to simplification of procedures (European Commission, 2016) [3]. In addition, the use of e-procurement practices has increased efficiency in terms of high transparency, better risk management, increased participation of bidders, and ensured timeliness in public procurement (Nawi *et al.*, 2017 [4]; TI, 2019 [5]). Despite these many benefits of e-procurement as reported by research studies, in Tanzania, the effect of e-procurement practices on time-saving in public procurement is not known. This follows various reports from research studies conducted in Tanzania; for example, PPRA (2019) [6] reports that 24 Public Entities equivalent to 32% of all public entities that submitted their internal audit reports indicated delays in the completion of projects as well as delays in making payments to contractors. In addition, CAG (2018) [7] reveals that 447 equivalents to 74% of constructed health facility projects in Tanzania were delayed in completion. According to Aberdeen Group (2007) [8] by using e-procurement practices an organization can realize faster and more efficient operational and procurement processes due to the fact that the system enables the buyer (requester) to search for and select products directly in electronic catalogues. Procurement is a process that encompasses several activities such as identification of needs (requisitioning), solicitation of suppliers (sourcing), order placing (ordering), and invoice settlement (payment); these four activities (practices) form the major component of the procurement cycle (Lyson & Farrington, 2016) [9]. In this case, the use of an e-procurement system automates these activities which enable better operations of procurement activities in an efficient manner. In the traditional era, one of the major weaknesses of the traditional manual procurement practices was information asymmetries which resulted in disintegrated institutional processes which led to extra time consumption (NPC, 2018 [10]; Pozin and Nawi, 2016 [11]; Liyanage, 2005 [12]). According to PPA (2016) [13], the objective of introducing e-procurement in Tanzania was to improve efficiency in

public procurement including reduction of the lead time period; however, the information reported from the literature with regard to e-procurement practices appears to differ with the perception of the people in terms of the potential contribution of the system in saving time in procurement. From a practice point of view, it indicates that there is a lack of clear understanding of the contribution of e-procurement practices in terms of saving time in procurement. Worse still, studies are silent on this problem due to the fact that most of the available studies were more interested in addressing the drivers and barriers of adopting an e-procurement system which can't give answers to the existing misconception on time-saving in procurement (Karjalainen *et al.*, 2008) [14]. In this view, the study tries to fill this gap in knowledge by examining practitioners' perceptions of the effect of e-procurement practices on time-saving in procurement.

2. Theoretical Literature Review

2.1. Technology Acceptance Model (TAM)

This model postulates that for any technology to be adopted successfully and meet the desired goals, there are two critical factors for consideration which include: perceived usefulness and perceived ease of using the technology. This model becomes relevant in this study by acting as a lens to address the perceptions of practitioners in the use of e-procurement as one of the technologies.

2.2. The Consequences of Delays in Procurement

There are several consequences that have been caused by late delivery of goods and services in the organization; for example, according to the report of CAG (2018) [7], late delivery of medical supplies in hospitals has caused the death of patients because the medicines that were needed at that particular time were not available. Some of these needed medical supplies are ordered from abroad, this takes time due to complexities in managing the supply chain logistics. Another problem caused by delay in procurement includes stoppage of operations; for example, in the manufacturing sector, a delay in the supply of raw materials may cause the factory to stop production thus leading to a loss of sales (Lyson & Farrington, 2016) [9]. The consequences of delay are also reported by different studies including Ateto *et al.* (2013) [15] who report that late delivery of goods and services affects the timely completion of government projects in Kenya. According to Dello and Yoshida (2017) [16], late delivery of goods and services leads to customer dissatisfaction and then loss of sales in the organization. Furthermore, Mgani (2014) [17] outlines the sources of delay in public procurement such as unresponsive bidders, long bureaucratic procedures, improper evaluation, and late notification of successful bidders. Generally, the procurement process involves several stages that start from planning, requisitioning, preparation of specifications, sourcing, evaluation of the bids, placing the order, delivery of goods or services, and payment of a supplier. Therefore, in order to speed up the processing of activities in the supply chain, these activities need to be stream-

lined and automated.

2.3. E-Procurement Practices

2.3.1. E-Requisitioning

E-requisitioning as one of the e-procurement practices involves an online determination of needs in the organization. This is done through the use of computers whereby the user or requester submits his requirements directly to the procurement department by describing clearly the specifications of the goods or services needed. During the traditional system, this was done by using a hard document known as a requisition note whereby the user listed all the needed items and sent the document physically to the office of the procurement department. Such a practice necessitated the use of paper works that increased transaction costs in procurement. By using e-requisitioning the system links the procurement and user departments thus enabling both parties to communicate the information relating to the requirements of items in the organization. In the first case, the user prepares a schedule of requirements, terms of reference, and specifications of the needed materials; such information is submitted to the procurement department electronically. On the other side, the procurement department after getting information on the needed items they will promptly initiate the logistics of getting suppliers in the market by using online platforms like e-marketplace (Lyson & Farrington, 2016) [9].

2.3.2. E-Sourcing

E-sourcing as a practice in procurement enables purchasers to select goods and services from suppliers. E-sourcing enables purchasers to evaluate potential suppliers for a particular product or service by providing information on what and where to buy. Online selection of suppliers establishes a two-way communication between the buyer on one side and the seller on the other side thus creating a platform that enables the parties to meet in the market and make business. Such a platform enables the buyer to access the product catalogues of the seller and determine the quality and prices of different items sold. Under the traditional system, sourcing procedures was fragmented thus making difficulties in managing the logistics; for example, items that were to be imported from a foreign country necessitated frequent communication between buyer and seller, and due to the use of the traditional method of communication unnecessary time was wasted before getting the ordered item (Florian *et al.*, 2016) [18]. In this context, the automation of sourcing logistics is crucial for the simplification of procedures as well as the establishment of conducive networking with global suppliers. According to Fernandes and Vieira (2015) [19], e-sourcing enables global identification of suppliers in a number of ways as follows: by vertical linkage, the system connects upstream and downstream logistics. The upstream logistics involves large companies or manufacturers where the product originates while the downstream logistics involves the ending customers who receive the products from suppliers. By horizontal linkage, the system connects the organi-

zation with different stakeholders involved in the supply chain. This enables the establishment of a collaborative, standardized, and transparent environment thus increasing efficiency in the procurement process.

2.3.3. E-Ordering

Under e-ordering, the use of online transactions has simplified the whole process of ordering goods and services. One of the major weaknesses of the traditional ordering system is that the system was labor-intensive involving a lot of paper works. This led to increased transaction costs because many documents were prepared and submitted to suppliers. Following the use of e-ordering, paper works were eliminated as the system has the capability to generate a purchase order document that is processed electronically. In this case, the purchaser prepares the document in soft copy which is signed or approved using digital signatures and then submitted to the supplier electronically. The purchase order document once sent to the supplier forms a legal contract between the parties hence enforcing the supplier on delivery of the goods or services to the buyer (Lyson & Farrington, 2016) [9]. Studies have reported benefits associated with the use of e-ordering, for example, Fernandes and Vieira (2015) [19] report that the use of e-ordering has increased security in procurement by creating a mechanism that authenticates the parties. This has helped to prevent fraud and cheating that occurred under using the manual system. The use of e-ordering has also reduced resources in terms of paper works that were used in procurement such as local purchase orders and quotation forms which were frequently prepared in many copies and sent to suppliers by using the post office or sent physically to suppliers (Vaidya *et al.*, 2006) [1]. In this view, it is observed that the traditional ordering system caused many problems in procurement including piling up of documents in offices due to the production of voluminous documents that posed the risk of damage and misplacement. Also, approval of documents was another problem because the procurement personnel consumed a lot of time in sending the documents to other offices for signing. Automation of ordering logistics simplifies the ordering operation by streamlining the procedures and creating a high level of visibility which in totality has helped in the reduction of cycle times, reduction of inventory costs, and an increase in accuracy (Samoei & Ndede, 2018) [20].

2.3.4. E-Payment

E-payment as one of the e-procurement practices has become a potential tool in managing payment transactions worldwide. The system operates by processing invoices online which are subsequently sent electronically to the buyer as a notification to make payment to the supplier after delivering goods and services. Before adopting e-procurement, payment to suppliers was done manually whereby the buyer was obliged to prepare hard documents including payment vouchers and cheques. The use of such a traditional system posed many risks of theft in the fact that the physical contact between the parties made easy passing of some

confidential information to unauthorized people. Another challenge under the manual payment system was time wastage in preparing payments to suppliers due to the existence of many papers (CAG, 2019) [7]. Automating the payment activities enables faster processing of payments to suppliers as compared to the traditional system. World Bank (2017) [21] argued that the use of e-payment enables the integration of financial operations in the organization which finally facilitates the process of making payments to suppliers. Also, the system helps to make certification of various performance activities such as acceptance certificates, quality certificates, the performance of services, or execution of work and other relevant documents which are verified by the buyer electronically before payments are made to the responsible bidder. E-payment has enhanced the security of resources due to the fact that under this system payment is done by using purchasing cards which use encrypted technology that allows only the holder of a secret password to perform the transaction. Therefore, the system establishes a control mechanism that eliminates unnecessary shortfalls that occurred in the manual system (Lemo, 2012) [22]. Following the widespread of the internet, this has made easy management of financial transactions as well as creating a conducive environment for carrying out online payment transactions (Wilson & Mbamba, 2017) [23]. For example, the existence of online financial services such as mobile telephone banking has deployed more on the use of online transactions which forms part of e-payment. The use of e-payment has many benefits in the management of financial transactions in the organization such as improved planning and budgeting, increased visibility in the payment process, ease of auditing as well as improved monitoring and control of organizational resources (Smart, 2010) [24].

2.4. E-Procurement and Its Effect on Time Saving

Studies have reported several effects of e-procurement in relation to time-saving in procurement. For example, Aberdeen (2007) [8] argues that by using e-procurement an organization can perform procurement activities faster as compared to a manual system which demands many procedures to perform the transaction. One of the characteristics of e-procurement is the standardization and automation of activities which helps to shorten the cycle time in the procurement process. Some organizations have established standard processing times under different methods of procurement; in order to determine time-saving it means the time used in ordering goods and services must be shorter than the established standard processing time (McDonald, 2008) [25]. From a customer point of view, the supply of goods and services at the right time is a prerequisite in the procurement process, that is, timely delivery of goods and services to customers is essential to enable them to meet their social-economical needs. This can be achieved by using technology including an e-procurement system which has the ability to speed up various activities in the procurement process (Maagi & Mwakalobo, 2023) [26]. In order to shorten the time used in procurement, or-

organizations must come up with better practices including the use of technology that can eliminate unnecessary wastes that existed under the traditional system. This can be done by streamlining the activities and ensuring the effective integration of all operations in the organization (Harrison *et al.*, 2014) [27]. This is crucial since the increased competition in the market demands the use of technology including e-procurement that can enable the organization to share information with other partners in the supply chain hence improving performance and sustain in the business. Based on this view, the following hypotheses are formulated:

H0: There is no significant effect of e-procurement practices on time-saving in procurement;

Ha: There is a significant effect of e-procurement practices on time-saving in procurement.

3. Methodology

This study has employed an explanatory sequential mixed method which is ideal for ensuring validity and reliability in research studies (Creswell, 2014) [28]. In the first phase, quantitative data were collected by using structured questionnaires and then analyzed to give an interpretation of the effect of e-procurement practices on time-saving. In the second phase after two weeks period, the researcher went again into the field to collect qualitative data from key informants by using the interview method so as to seek supportive information on some important issues that emanated from the quantitative data. The questionnaires were scaled to a 5-point Likert scale (1 strongly disagree; 5 strongly agree) and contained 16 items relating to four different e-procurement practices namely e-requisitioning, e-sourcing, e-ordering, and e-payment as independent variables that were regressed on time-saving (dependent variable) that contained Yes and No responses. The tool was constructed by the researcher based on the reviewed literature relating to e-procurement practices to enable the researcher to capture and analyze information related to issues of efficiency in public procurement. In this case, the self-administered questionnaires were personally delivered to respondents via the drop-off and pick-up method (DOPU).

A sample of 290 respondents were involved including procurement practitioners working in five selected public entities that were recorded as active users of the e-procurement system in Tanzania (PPRA, 2019) [6]. The sample size was computed from the population by using Yamane's formula (1967) [29] because according to scholars the formula has a high degree of precision (Singh & Masuku, 2014) [30]. Based on the population, the sample size used was considered adequate to determine procurement practitioners' perceptions regarding the effect of e-procurement practices on time-saving. Data were analyzed by using descriptive statistics in the form of a mean score whereby the mean value above 2.5 was considered an influential value on time-saving (Ibem *et al.*, 2017) [31]. In addition, inferential statistics using Binary Regression was used to test and iden-

tify whether there is a significant time saving under e-procurement practices or not. After processing the quantitative data then qualitative data were also collected from key informants involving the Head of Procurement Management Units from each selected entity so as to get support information and clarifications on some issues of quantitative data. The Heads of Procurement Management Units were considered appropriate for involvement in the interview because as senior officers they are more informed on issues of procurement. The contact of key informants from each entity was obtained from Human Resource officers and appointments for the day of the interview were sought one week earlier through telephone communication after confirming their availability and the appropriate time for the interview. In order to ensure validity, the tools were pre-tested by circulating them to a few respondents before going into the field which enabled modification of the contents and constructs of the questionnaires and interview guide hence becoming more relevant and clearer to respondents. With regard to reliability, the study used Cronbach's alpha technique to test the internal consistency of data whereby the values ranged from 0.699 to 0.865 which is acceptable as recommended by Lawson (2014) [32]. In the end, both quantitative and qualitative results were interpreted to give a clear understanding of the effect of e-procurement practices on time-saving in procurement.

4. Results

4.1. Descriptive Statistics

The results in **Table 1** describe the effect of e-procurement practices (e-requisitioning, e-sourcing, e-ordering and e-payment); the results indicate that all four variables have a mean score value above 2.5 which means that the respondents have agreed that the use of e-procurement practices are influential for saving time in the procurement process. Such a criterion of taking a mean value of 2.5 as a cut-off point was also used by Ibem *et al.* (2017) [31] to make a decision. By comparing the mean score among the variables, the variable of e-sourcing is the leading variable implying that respondents were more satisfied with the timely solicitation of suppliers under e-procurement. In support of the results, key informants HD and BT had similar views as follows:

Table 1. The effect of e-procurement practices on time saving.

Effect of e-procurement practices	Mean
e-procurement has enhanced time saving in processing requisitions	3.1
e-procurement has enhanced time saving in sourcing suppliers	4.3
e-procurement has enhanced time saving in processing purchase orders	3.7
e-procurement has enhanced time saving in processing payments	3.8
Average	3.7

Sources: Survey data, 2019.

“E-procurement has helped in fast solicitation of bidders across the World as compared to the traditional system which took time due to time consuming correspondences”

Based on the results, it is observed that respondents were in agreement that the use of e-procurement practices has the capability to reduce time and thus improve efficiency in the organization. This shows that by using e-procurement practices an organization can get significant change in improving performance as compared to the traditional system. In addition, respondents were of the opinion that the use of e-procurement practices simplifies the access of suppliers during the procurement process which enhances good performance of the supply chain as well as it is easy to access information when the internet is involved thus shortening the whole procurement cycle time period, this has facilitated fast obtaining of product and price information from different suppliers all over the world thus ensuring customer satisfaction in procurement. The study has revealed that both responses from the questionnaire and interview guide provided the same idea which made it powerful to research to say that this study was meaningful and fit the purpose. Electronic procurement is a technological tool that is influential in operating procurement functions including requisitioning, sourcing, ordering, and payment activities in an efficient and effective manner.

4.2. Binary Logistic Regression Results

Before analyzing the data, assumptions of the Binary Logistics Regression Model were checked by considering outliers, multi-co-linearity, and goodness-of-fit tests.

4.2.1. Testing of Outliers

With regard to outliers, this was tested by using normalized residuals which were performed in the SPSS. In this study, all normalized residuals were less than -3 and 3 hence indicating the fitness of the data in the model.

4.2.2. Test of Multi Co-Linearity

Multi co-linearity was measured by using standard error (SE). The results in **Table 2** indicate that standard error was less than 2.0 which means that there was no multi co-linearity in the data.

4.2.3. Goodness of-fit Test

Furthermore, data were measured to test the goodness-of-fit by using Hosmer and Lemeshow test. The results in **Table 2** show that the p-value is 0.2 (not significant), which suggests a good fit of the data into the model. Pallant (2011) [33], states that a significant value of less than 0.05 indicates a poor fit of the data in the model.

The results indicated in **Table 2** give out responses of respondents with regard

Table 2. Binary logistic regression results on time reduction.

	B	S.E.	Wald	Sig.	Exp (B)
e-payment	3.549	0.541	43.045	0.000*	34.782
e-ordering	-0.048	0.486	0.010	0.921	0.953
e-sourcing	3.269	0.656	24.821	0.000*	26.282
e-requisitioning	3.509	0.573	37.503	0.000*	33.422
Constant	-35.668	5.434	43.081	0.000	0.000
Chi-square	183.087 (p = 000)*				
Hosmer and Lemeshow	481.9 (p = 0.2)				
Cox & Snell R Square	0.468				
Nagelkerke R Square	0.732				
-2 Log likelihood	112.607				

*Denote significant level at 5%; Source: Field data, 2019.

to practitioners' perception of the effect of e-procurement practices on time-saving in procurement. To start with, since the study has adopted a binary regression model, it was considered appropriate to test model fitness so as to ensure the validity and reliability of the results obtained in the study. In testing model fitness, the results show that the model is statistically significant at $p < 0.05$. The study went further to test the strength of the relationships between e-procurement practices and time-saving by using the coefficient of determination also known as R-square. In this case, the result of Cox and Snell is 0.468 which indicates that 46.8% of the total variations in time-saving are explained by the independent variable. In addition, the value of the Nagelkerke R Square is 0.732 which indicates that the total amount of variation in time-saving included in the independent variable is 73.2%. These are described as pseudo-R Square statistics, rather than the true R Square values in the multiple regressions (Pallant, 2011) [33]. After testing model fitness and get ensured on the validity of the results, the second step was to get the interpretation of the results from the binary regression model. First, a comparison among the variables in terms of the magnitude of saving in time is presented whereby the results show that the element of e-requisitioning has a positive beta coefficient of 3.509, significant ($p < 0.05$), and the odd ratio of 33.422 implying that the likelihood of e-requisitioning variable to decrease time spent in public procurement is 33.4 times more likely. With regard to the element of sourcing, the results indicate that the beta coefficient of e-sourcing is positive (3.269) related to time reduction in procurement as well as significant ($p < 0.05$) and with an odd ratio of 26.282 implying that the likelihood of e-sourcing to reduce time spent in procurement is 26.3 times more likely. The results also indicate that the element of e-ordering has a negative beta

coefficient value (-0.048), as well as a higher p-value of 0.921 ($p > 0.05$) and the odd ratio is 0.953 meaning that the likelihood of e-ordering to decrease time spent in procurement is 0.9 times less likely. The results from the table also show that the element of e-payment has a positive beta coefficient value (3.549) as well as a less p-value ($p < 0.05$) and the odd ratio of 34.782 implying that the likelihood of the e-payment variable reducing time spent in public procurement is 35 times more likely.

$$\log_e (p/1-p) = -35.668 + 3.549(\text{e-payment}) - 0.048(\text{e-ordering}) + 3.269(\text{e-sourcing}) + 3.509(\text{e-requisitioning})$$

4.2.4. Hypothesis Testing

For the purpose of making comparisons among the variables, data were tested based on the regression model so as to identify variables having a significant influence on saving time in procurement. In this case, variables were tested at 5% confidence level in the sense that a variable that scored below 0.05 of significance level was regarded as a significant variable in terms of saving time in procurement. From the results obtained in **Table 2**, three variables out of four were found significant hence indicating that the majority of the respondents were of the opinion that the use of e-procurement practices has made a difference in terms of time-saving as compared to the traditional system that was confronted with unnecessary wastage of time in the procurement process. Following the results, an alternative hypothesis was accepted in the view that there is a significant effect of e-procurement practices on time-saving in procurement.

5. Discussion

The results obtained in this study indicate that e-procurement practices have been tested to be significant meaning that the use of e-procurement technology influences performance improvement in procurement. Generally, the results indicate that the average time spent in public procurement is reduced under using e-procurement practices. This implies that the use of e-procurement practices has made significant improvement in terms of time reduction compared to what it was before. The results indicate that by using e-procurement, suppliers are accessed and negotiated directly, and tender advertisement is done fast by using tender alerts programs thus making suppliers respond quickly to the orders given (Vaidya *et al.*, 2006) [1]. The results seem to support that the use of e-procurement practices has made a significant difference as compared to the traditional method which made it difficulties in getting potential suppliers across the world that might have superior goods and services in the market. In order to access such suppliers in the market, the formation of a platform that links the parties and facilitates communication was necessary. The use of e-procurement practices has increased efficiency in procurement by eliminating unnecessary procedures that contributed to the wastage of time (Maagi & Mwakalobo 2023) [26]. A similar view was also supported by key informants HA, TM, and PN as follows:

“...E-procurement practices have enabled fast communication with foreign bidders hence enhancing time saving by shortening the procurement procedures including preparation of annual procurement plans and tender documents...”

The need to shorten the lead period in the procurement process has been supported by several studies including Samoei and Ngede (2018) [20] who argue that organizations have managed to shorten the time used in procurement due to the online sharing of information that enables the buying organization to network with suppliers in the market; this has simplified the procurement procedures because the parties are able to communicate and make decision fast thus meeting customer needs. In a similar view, Singh *et al.* (2013) [34] pointed out that time is money so organizations should take it as an important thing that needs to be properly managed when performing procurement and supply chain activities. The reduction of time in procurement is crucial as this enables customers to get their needs in time hence enabling the achievement of organizational goals. The use of technology including e-procurement has a potential role in improving performance in the organization in the sense that e-procurement can be used as a tool to eliminate maverick buying activities thus enhancing efficiency and effectiveness. From a traditional procurement perspective, the major activities that consumed time included the preparation of annual procurement plans, preparation of tender documents, advertisement, and evaluation of bidders (CAG, 2018) [7]. Under e-procurement, activities are automated which enables operations to be done fast and efficiently as compared to manual practices. This is due to the fact that by automating the procurement activities speed of service delivery increases due to the prevention of movements on the part of practitioners in seeking clarifications and approvals in other offices (Maagi, 2020) [35]. These results concur with Kohli (2012) [36] who establishes that e-procurement practice has tremendously reduced the time taken in identifying suppliers, negotiating, and contract signing between 30% and 75%. This shows that e-procurement as a technology has a potential benefit and can be used as a lever to speed up various operations thus enabling an organization to arrive at superior performance in terms of shortening the procurement cycle. E-procurement can be used as a resource to transform non-value-adding activities into more beneficial activities thus enabling an organization to meet better performance. This is due to the fact that, by using e-procurement practices as indicated in this study, the time spent in the procurement process is dropped significantly after using e-procurement. The issue of saving time in the procurement process is crucial; it is in this context that many governments in the world have struggled to push the use of e-procurement practices as a strategy to speed up the procurement process and improve performance. For example, in Tanzania, the Eighth Schedule of the Public Procurement Act (2016) [13] stipulates the minimum time for performing procurement activities under different procurement methods as follows: under National Competitive Bidding it is 21 days, Interna-

tional Competitive Bidding 30 days, Restricted National Competitive Bidding 21 days, National Shopping 4 days, International Shopping 8 days and for large works contract it is 90 days. In order to ensure responsiveness in service delivery, the procurement personnel should use a number of time-saving techniques and the most effective time-saving technique is to know the number of activities and the time spent in performing each activity (Maureen & Josephat, 2016) [37]. Streamlining and automating these activities helps to monitor the procurement process as well as increase speed in service delivery to clients. The major activities forming the procurement process include requisitioning, sourcing, ordering, and payment; based on the results obtained in this study it is observed that the time spent in each activity can be reduced significantly. For example, under e-sourcing suppliers all over the world can be accessed through the establishment of a tender portal that links buyers and suppliers in the market. On the financial aspect, the use of e-payment simplifies invoice processing by using digital signatures that enable documents to be signed electronically thus enhancing fast approval and authorization of payments to suppliers. From an e-procurement practices point of view, the buyer and the supplier can share real-time information that allows them to exchange information and respond to the order at the right time. The collaborative design of products and information sharing can shorten the life cycle of products by leveraging the ability of shorter time to market. Under the traditional approach, many problems occurred in the procurement process which made performance to be poor. Some of the problems include the existence of many non-value-adding activities and long procedures in procurement which were seen as obstacles in meeting time to supply goods and services to customers and much time being wasted in preparation of bidding documents, approval of tenders, preparation of advertisements; review and preparation of evaluation reports (PPRA, 2019) [6]. By using e-procurement, public entities are able to increase speed in procurement in many aspects such as the preparation of advertisements, tracking of orders from suppliers, preparation of annual procurement plans, and preparation of bidding documents. E-procurement can enhance competitiveness in procurement through the integration of many suppliers who can be accessed using forums such as tenders' portals and e-auctioning. This study highlights the perception of procurement practitioners with regard to the effect of e-procurement practices on time saving in procurement whereby it is observed that e-procurement practices have an influential contribution to time saving as follows:

With regard to e-requisitioning, the results have shown that the use of e-procurement has made significant improvements, particularly in the identification of needs. For example, the use of computers helps to link together between User Department and the Procurement Department, and in doing so information on the schedule of requirements, specifications, and clarification on the required goods and services are made easier and fast. Automating the requisitioning activities enables staff working in user departments to specify their

purchasing requirement accurately and timely using an online mechanism. In this case, the user fills the requisition form by listing all goods needed and after filling it the document is submitted electronically to the procurement department. Under the traditional system, the requisitioning process was tedious involving paper works and many physical interactions between user staff and procurement staff (CAG, 2018) [7]. Such a procedure necessitated staff to move from one office to another to seek clarifications on the specifications hence consuming time, especially for offices that were located far from each other. By using e-requisitioning all activities are done electronically hence ensuring speed in the procurement process. Under e-sourcing the results have indicated that the use of the internet has helped to integrate vendors through the establishment of online forums that connects buyers and suppliers in the market. E-sourcing has facilitated the management of vendor contracts and enabled fast communication between the parties involved in the procurement process. The use of e-sourcing has enabled organizations from developed countries to shorten the delivery time from eight weeks to four weeks (Afshin *et al.*, 2006) [38]. It is therefore advised that developing countries including Tanzania should make more effort to use e-sourcing practices for the purpose of saving time in solicitation of bidders. With regard to e-ordering, the respondents have supported that the use of e-procurement has increased the speed of the ordering process. This has been achieved by preparing soft copy contract documents or purchase order documents that are submitted electronically from the buyer to the seller thus enabling the seller to deliver goods or services to the buyer. During the traditional system, this was done by preparing hardcopy documents that were sent to suppliers through postal mail or sent physically to the supplier thus consuming more time and becoming costly in terms of resources (Maagi, 2020) [35]. With this view, automation of all ordering activities has to be made for the purpose of achieving organizational goals regarding efficiency and effectiveness. This helps to identify the contribution of the procurement function to issues of value addition and internal customer satisfaction (Mugenda & Mugenda, 2006) [39]. Under manual procurement, paperwork processing usually took time and resulted in errors. For example, in preparing hard purchase order document, several copies were produced as follows: an original document was issued to the vendor, a copy of the order was retained in the purchasing department and further copies of the order were distributed to other departments such as production control, accounts, inspection, computer section, expediting section and the department originating the requisition. Such procedures led to excessive documentation and high printing expenses in procurement (Lyson & Farrington, 2016) [9]. It is because of such inefficiencies that many organizations are increasingly adopting new technologies in the procurement process including e-ordering so as to transform the function into value addition activity. With regard to e-payment, the results indicate that the likelihood of the e-payment reducing time spent in public procurement is 35 times more likely. This means that by making pay-

ments electronically the speed is high as the funds can be transferred directly to the account of the supplier instead of making payment in the form of hard materials such as cheques or cash which involve many transactions that consume time in preparation and handling. E-payment has the capability of increasing speed in performing financial transactions whereby the time wasted in the submission of documents such as invoices and cheques to the supplier is avoided. The results are also supported by other studies including a study by Gardenal *et al.* (2011) [40] who reported that the use of e-procurement enabled a reduction in the lead time period by 14% as compared to the traditional procurement system. In a similar view, Aberdeen Group (2007) [8] conducted a study and found that before using e-procurement an average time of 20.4 days was spent but after using e-procurement time was dropped to an average of 3.8 days. According to Samoei and Ndede (2018) [20], e-procurement has the capability to integrate many suppliers globally through the online sharing of information between buyers and suppliers thus leading to the simplification of procedures as well as shortening the lead time period in the procurement process. As observed in the results, e-procurement offers numerous benefits. Therefore, we advise organizations to utilize e-procurement technology as a resource to improve procurement efficiency. The results indicate that e-requisitioning, e-sourcing, e-ordering, and e-payment are factors that influence efficiency improvement including time-saving.

6. Conclusion

This study concludes that the use of e-procurement practices has an influential contribution to saving time in the procurement process as compared to the traditional system. Particularly, e-requisitioning, e-sourcing, and e-payment have been observed as variables with significant contributions to saving time in procurement.

7. Implications

The results obtained in this study gives implications for different groups; first, since e-procurement has been observed to have a significant effect on time-saving, procuring entities are urged to take e-procurement as a technological and strategic tool that will enable them to eliminate unnecessary time-consuming and non-value-adding activities that were sources of customer dissatisfaction in service delivery. Second, supply chain participants, *i.e.*, manufacturers, suppliers, distributors, and buyers should establish customized portals that link them directly to the supply chain. This is crucial because the current global value chain operations are becoming competitive and thus needing an automated system that can speed up business operations and enable an organization to sustain itself in the business.

8. Areas for Further Studies

This study was focused to examine practitioners' perception of the effect of

e-procurement practices on time-saving based on four common practices namely e-requisitioning, e-sourcing, e-ordering, and e-payment. The study was limited to assessing e-procurement in five public procuring entities based on four practices and focusing on time-saving. The emergence of the internet has increased more online functions in the supply chain such as e-auctioning, e-reverse logistics, etc., therefore further studies are suggested to include these emergent digital-oriented functions of the supply chain which should be researched in a wider scope involving many procuring entities.

Conflicts of Interest

The authors declare that no conflict of interest was exercised in conducting this study.

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