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## **Influence of E-Procurement on the Performance of Infrastructural Projects in Devolved Units; a Case of Roads Construction Projects in Mombasa County**

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# Influence of E-Procurement on the Performance of Infrastructural Projects in Devolved Units; a Case of Roads Construction Projects in Mombasa County

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## Abstract

The study was carried out with the aim of examining the influence of e-procurement on the performance of infrastructural projects in devolved units; a case of roads construction projects in Mombasa County. This study was necessitated due to the fact that the latest changes in the procurement system have called for all the counties to allocate tenders to potential contractors by considering the e-procurement concept. The study was guided by four specific objectives that included: to assess the influence of e-sourcing; to establish the influence of e-tendering; to ascertain the influence of e-ordering; and to examine the influence of e-payments on the performance of infrastructural projects in devolved units; a case of roads construction projects in Mombasa County. This study adopted a descriptive research design. The sample size was 122 respondents as guided by the Krejcie and Morgan table of 1970. Data was collected by use of a structured and non-structured questionnaire. Results showed that the respondents were in agreement that e-sourcing indicators influenced implementation of roads projects. Chi-square value of 25.076 indicated that the relationship between e-sourcing and implementation of road projects had a positive and significant correlation. Also, results showed the respondents were in agreement that e-tendering indicators influenced the implementation of roads projects. Chi-square value of 19.038 indicated that the relationship between e-sourcing and implementation of road projects had a positive correlation. Further, Results showed the respondents were in agreement that e-ordering indicators influenced implementation of roads projects. A calculated chi-square value of 32.004 findings indicated that the relationship existed between e-ordering and implementation of road projects had a positive correlation. Finally, results showed that the respondents were in agreement that e-payment indicators influenced implementation of

roads projects. Chi-square value of 35.105 indicated that the relationship existed between e-payment and implementation of road projects had a positive correlation. The study concluded that majority of the infrastructural projects firms in Mombasa have adopted e-procurement practices and are committed to equipping their staff with the necessary competencies and skills to ensure the success of their e-procurement projects thus promoting performance of the infrastructural projects..

**Key words:** *e-ordering; e-payments; e-procurement; e-sourcing; e-tendering*

### 1.1 Background of the Study

Studies across the world have indicated that e-procurement/electronic procurement has taken over the traditional procurement in various government institutions across the globe in the 21st century. Based on such, a number of definitions have been advanced to show what e-procurement is. For example, Corsi (2016) illustrated e-acquisition in light of the fact that the utilization of electronic ways over the web to lead procural capacities: distinguishing proof of interest, offering technique, installment and agreement the executives. The clarification behind e-obtainment is to support intensity and viability and straightforwardness and answerableness publically procural that highlights an immediate impact on improvement comes usage (Hardy and Williams, 2017). E-procurement has increased quality especially with the presence of innovation (Uddin, 2015). Expedient advancement of e-obtainment was reportable in mid 2000 (Ahlström, 2018). By the highest point of a comparable year, it totally was reportable that few open associations were keeping up web nearness in at least some phase of their procural forms with some teaming up in on-line offering; identified with higher comes usage (Reddick, 2017). E-obtainment in a study by Eadie et al (2017) was a quick conservative strategy of discovering and correlating fresh foundations, being a sinewy conduit for communication. A share of your time is pay on red-top billing concerning comprising, recording and conveying correspondence be that as it may though in e-acquisition, workers have adequate time to interface on key issues with procural (Muhammad, 2013). By expansion, e-acquisition contributed in lessening dissident purchasing; bringing about upgraded yield in ventures usage (Uddin, 2015). E-procurement has been a key govt demand among vital government agencies in African country (Taaliu, 2017). Historically, most public procural operations were manual; this was deemed to lack transparency, answerability and truthful competition (Mose, Njihia &Magutu, 2019). The Kenyan Government's procural framework was initially contained inside the gives Manual of 1978, that was enhanced by handouts that were given every once in a while by the treasury (Orina, 2013). The Kenyan government, on board natural procedure partners like the International Trade Center (ITC), the planet Bank and in this manner the African Development Bank featured the significance of e-acquisition in security of the said mishaps through answerability and viability. Among the key elements of e-procurement introduced in African country that are important within the implementation of a variety of development projects within the various sectors of the economy are e-Tendering, e-RFQ, e-Auctions, e-Catalogues, and e-Invoicing that are connected with the performance of development comes altogether the sectors of the economy (Chesang, 2017; Mutunga et al., 2018)

## **1.2 Statement of the Problem**

The procural operations among public procural and comes implementation in Kenya are marred in absence of right heading, poor coordination, slow with loads of desk work, absence of rivalry and straightforwardness, wastages, delay in conveyance, low quality, elevated levels of defilement and instances of evident incompetence in managing the procural operate (Daniel, 2018). An audit report published by the Public Procurement and Oversight Authority (2017) estimated that tendered products and services within the government institutions are inflated by nearly 60%. In the year 2018, about Ksh.510 Billion part of the monies set aside for development projects implementation in the various ministries were lost due to malpractices in the procurement function (Daniel, 2018). Auditor General Report after the audit of various counties between 2013 and 2017 revealed an irregularity in the awarding of a consultancy tender worth KSH 440 Billion p.a (Auditor General Report, 2018). Further, a parliamentary inquisition into the various counties' financial processes and expenditures revealed numerous counties including; Kilifi County, Tana River County, Mombasa County, Nairobi County and many more to be operating in negative working capital that have been marred with massive looting (PIC, 2018). In addition, estimates by the Auditor General showed that the county governments' losses more than Sh 210 billion annually due to fraudulent manipulations in procurement process-money meant for infrastructural projects implementation (Wanyonyi, 2018). As a result, a number of approaches such as tender committees, prequalification's, open tendering, auctions and price indices have been tried with little success. According to Muraya (2016) most of these methods have resulted in increased bureaucracy thereby delaying the procurement process; which is associated with poor projects implementation. This then calls for a strategy with the potential of eliminating delay and enhancing transparency and control. A number of authors have suggested e-procurement as having capacity to provide transparency, efficiency and control thereby increasing procurement performance and better projects implementation (Chesang, 2017). Consequently, a number of public ministries have embraced e-procurement in their operations in effort on attempt to increase performance and development projects implementation (Orina, 2017). However, there has been minimum empirical research to ascertain the contribution of e-procurement on the performance of infrastructural projects in counties in Kenya despite huge investment (Orina, 2018). Based on such shortfalls this study was carried out with the aim of examining the influence of e-procurement on the performance of roads infrastructural projects in Mombasa County, Kenya and was guided by the four objectives outlined below:

## **1.3 Research Objectives**

- i. To assess the influence of e-sourcing on the performance of infrastructural projects in devolved units.
- ii. To establish the influence of e-tendering on the performance of infrastructural projects in devolved units.
- iii. To ascertain the influence of e-ordering on the performance of infrastructural projects in devolved units.
- iv. To examine the influence of e-payments on the performance of infrastructural projects in devolved units.

## **2.0 Literature review**

### **2.1 The Concept of E-Procurement**

Baily (2018) characterizes e-Procurement for the reason that the usage of net based commonly (integrated) facts and correspondence advancements (ICTS) to hold out individual or all stages of the procural approach. while there location unit modified kinds of e-Procurement that accentuation on one or a few levels of the procural approach like e-Tendering, e-market, e-public sale/reverse public sale, and e-Catalog/shopping, e-Procurement will be visible extra exhaustively talking as A start to complete answer that contains and streamlines a few procural forms during the affiliation (Barratt & Rosdahl, 2017). E-procurement will be considered as a stage that connections the government and suppliers in an internet surroundings. E-procurement creates a framework inside which government corporations as benefactors procure products/offerings with the aid of perusing lists publicized by way of providers consequently a one-prevent Portal for open quarter procural. The grounds that pretty sometime in the past run point of the e-procurement initiative is to apply net technologies to bring authorities businesses in the nation and suppliers round the arena alongside right into a virtual trade surroundings (Barua, Kriebel & Mukhopadhyay, 2016). E-procurement is probably a multi-customer, multi-provider digital procural vicinity, that allows authorities organizations to function as freelance seeking out entities underneath one seeking out association (Darin, 2017).

Baily (2018) arranges e-acquirement into the 7 classes: the fundamental is Web-based ERP (Enterprise Resource Planning). These arrangements with making and underwriting buying orders, putting buy arranges and accepting product and administrations by utilizing programming bolstered net innovation. The inferior is E-MRO (Maintenance, Repair and Operations) that manages making and avowing obtaining orders, putting buy arranges and accepting non-thing associated MRO gives. The third kind is E-sourcing. This includes perceiving new providers for a particular class of obtaining needs abuse net innovation. The fourth kind is E-offering that includes making demands for data and costs providers and getting the reactions of providers abuse net innovation. E-turn around selling is another style of e-acquisition. This uses net innovation to scan for product and administrations from assortment of recognized or cloud providers. The sixth kind is E-enlightening that includes assembling and flowing obtaining data each from and to inward and outside gatherings abuse net innovation. The last style of e-obtainment, in accordance with Baily (2018), is E-advertise locales. Here, searching for networks will get to most popular providers' product and administrations, raise looking through trucks, produce demand, secure support, receipt buy requests and technique electronic solicitations with reconciliation to providers' offer chains and purchasers' money related frameworks.

#### **2.1.1 The Influence of E-Sourcing on the Performance of Infrastructural Projects**

Infrastructural expansion projects execution can be determined by the amount of projects that meet the timelines/deadlines, the projects that exceed the expectations, projects that meet the quality specifications, the projects that are delivered within the budgetary allocation and many more (AfDB, 2018). As per the AfDB (2018), for street projects to perform well, the constituent of e-procurement that touches on e-sourcing ought to be well integrated and tediously followed. In his investigation that was carried out in China, Sheng (2018) had outlined e-sourcing internet-enabled applications and call bolster apparatuses that expedite communications amongst

supporters and sellers through the use of on-line parleys, on-line barter, reverse sales and comparable instruments (Evenettand & Hoekman, 2016)). For the point of this investigation e-sourcing is outlined because the getting method wherever net applications area unit wont to execute operations, for example, e-sell off, E-RFX, E-Bidding, E-Tracking, and E-Business and through that supporters area unit ready to prequalify suppliers (Pressuti, 2016).

Lewis (2018) performed a research on requirements of e-Sourcing: a practical guide for handling the RFX technique in partner "E" atmosphere. The investigation observed that e-sourcing may be used as a device to scale back method time, generate sourcing reserve funds and to pressure modern revenues; ensuing in magnified infrastructural comes yield. He greater mentioned that implementation of e-sourcing starts with preference of companion e-device (e-closeout, e-following, e-supplying, e-RFX) to decorate partner shape strengths, accompanied by adjustment management and instructing of the personnel and distinct stakeholders wherever capacity. Once such problems area unit correctly concept of, procurance becomes most economical, faster, and clean and afterward influences the performance of comes definitely.

Also, Vaidyaand and Callender (2016) performed an examination at the sizable variables that influence winning e-procurement practices inside the open region and realized that e-imparting, e-promote off, E-RFX and e-business notably helps an corporation in user uptake, provider reception, machine integration, protection and authentication, re-engineering method, overall performance motion, high control performance, adjustment management application and correspondence structures due to the fact the good sized factors that confirm the success of implementation of e-procurement. More they finished that triumphant implementation of the e-procurement encompasses an indispensable influence on the implementation of infrastructural comes. Further, a concentrate by McManus (2016) assets that e-Sourcing instruments area unit terribly imperative inside the implementation of mega infrastructural comes sin they're wont to manage the progression of different styles of documents for instance by either mechanizing the document creation method or electronically transmission documents to the suppliers. Kamothe (2014) conducted a study in Kenya to examine the role of e-sourcing and procurement performance among the state corporations in Kenya. A sample of 42 state corporations was taken out of this sampling frame. Data was collected through questionnaires. Analysis of the data was done using frequency and percentage tables. Findings indicated that a strong positive relationship between e-sourcing and performance. Further the study concluded that e-sourcing has a significant influence on the implementation of the various development projects carried out by the state corporations.

### **2.1.2 The Influence of E-Tendering on the Performance of Infrastructural Projects**

In a work exhausted in China by Wu dialect and Wang (2015) it's been determined that e-tendering could be a terribly integral half if e-procurement that influences the mega construction comes within the country. First, they need outlined e-tendering as a method of polishing off the complete procural cycle web together with submission of value bid such potency, economy, speed of the net are often controlled. Therefore, e-tendering could be a method of transmission requests electronically by use of web to execute procural operations. During this examination e-offering is taken to incorporate; e-sees, e decision, messaging and e-granting to demand for information (RFI's) and reaction for costs (RFP's) to providers and getting back their input.

An exploration directed by worldwide association in 2016 on e-Tendering: Towards Transparency and power found that e-offering authorized regimes spare more than 6,000,000 greenbacks by re-appropriating the manual duplication and circulation archives. This investigation found out; e-notices, e-selection and e-awarding were key determinant in implementation of e-procurement success within the procural operations and considerably influences the implementation of funded infrastructural comes. The study additionally noted that variety of e-procurement programs required to be increased through improved technology and pro-active leadership to make sure effective comes delivery (UNDP, 2017). Orori (2018) conducted a study on e-tendering and projects performance in public corporations in KRA. The research adopted a descriptive research design where the population of interest was employees of Kenya Revenue Authority. A multivariate regression model was applied to determine the relative importance of e-tendering with respect to projects performance. It was established that e-tendering allows selection of a suitable contractor at a time appropriate to the circumstances and hence enhances the performance of projects.

Kisurkat (2017) studied the impact of tendering on projects performance in the public institutions in Kajiado County. In the study, descriptive research design was adopted. Collection of data was done from three procurement professionals per entity in Kajiado County using questionnaires. Simple random sampling was employed in selection of the study sample. The study concludes that entities that conduct tendering procedures as per the act improves the performance of their projects in their various departments. Barngetuny and Kimutai (2015) examined the impact of e-tendering on performance of supply chain performance of Medical Supplies Agency. The study used descriptive approach research design where 85 respondents were drawn from the Kenya Medical Supply Agency and it targeted executive staff, managerial staff, supervisory staff, operation and other staff. Primary data was gathered with an aim of evaluating effectiveness of e-tendering in Kenya Medical Supply Agency. The study concluded that Kenya Medical Supply Agency has recorded favorable performance in supply chain operations by improving supplier relationships and management practices as well as enhancing productivity. Further, it was noted that due to the adoption of the e-tendering at 78% capacity level, a number of projects implemented by the agency have improved by 45% in a row since 2013 to 2015. The effect of e-tendering in the public institution is seen in the improvement of productivity in supply chain activities; thus the performance of development projects.

### **2.1.3 Influence of E-Ordering on the Performance of Infrastructural Projects**

According to Angeles and Nath (2017) on e-procurement on undefeated business projects implementation in Australia declared that e-ordering is one part that's very vital on the performance of business comes. E-ordering during this study is outlined because the method of making and approving buying requisitions, inserting purchase orders in addition as receiving product and services ordered mistreatment web primarily based platform to execute electronic commands like, e-requisitions, e-cataloguing, e-authorization, e-receipt, and e-inspection. Bakker et al (2018) in a study on the e-commerce and performance of projects asserts that e-procurement concept has also been felt in the projects performance in all sectors of economic development. According to them, the emergence of Web-based e-procurement; e-requisitions, e-cataloguing, e-authorization, e-receipt, and e-inspection is expected to reduce the order fulfillment cycle time,

lower the inventory levels, reduce the administrative cost of procurement, cost of procurement, and enhance the order fulfillment and performance of development projects.

Basheka and Bisangabasaija (2017) in a study on the determinants of unethical public procurement in local government systems of Uganda: a case study. The study adopted a case study research design and a total of 121 sample size was considered from the various departments. Then a regression analysis was undertaken and the results indicated that e-procurement has a significant influence on the performance of various projects implemented by local governments in Uganda. Further, the study indicated that the benefits of e-procurement have been verified by many local governments in the country and e-ordering is a significant tactic in many local governments' e-requisitions, e-cataloguing, e-authorization, e-receipt, and e-inspection strategies; influencing the performance of development projects in the local regional governments. Evans et al (2018) study investigated the electronic order processing influence on performance of various projects run in Kenya by sugar processing firms. Mixed research design was applied and the population target entailed 12 sugar processing firms in Kenya with a target population of 7,584. Stratified random sampling was employed to produce a 367-sample size. Data was gathered by a self-administered drop and pick questionnaire, interviews and observation. The results revealed the relationship that significantly existed amid processing practice of electronic order and performance of various projects implemented by the various sugar firms in the country. The study concludes that electronic order processing practice enhances supply chain performance which is directly linked to projects performance in the sugar processing firms.

Georgiou and Westbrook (2018) study investigated the e-ordering consequences for the environment of communication of the Services of hospital laboratory. Adoption of theoretical techniques of sampling was done to test and develop hypothesis and ideas that are emerging. The research took place during new system implementation amid November 2015 and October 2017. The study concluded that the information processing and communication are major facets of the functioning of the organization. Further, it revealed that there is a strong relationship between the e-ordering concept and the performance of various projects in the hospital laboratories aimed at improving services delivery. Nancy (2017) study investigated e-ordering and e-informing on performance of supply chain in Kenyan state corporations in Nairobi County. Explanatory research design was used in the undertaking of this research. Using 262 officers of procurement from 112 state corporations of Kenya, the findings of the model of multiple regression findings indicated that e-ordering has a significant and positive impact on performance of supply chain. The study makes a conclusion that e-ordering that is the element of the dimensions of procurement raises the performance of supply chain and the various projects in Nairobi County.

#### **2.1.4 The Influence of E-Payments on the Performance of Infrastructural Projects**

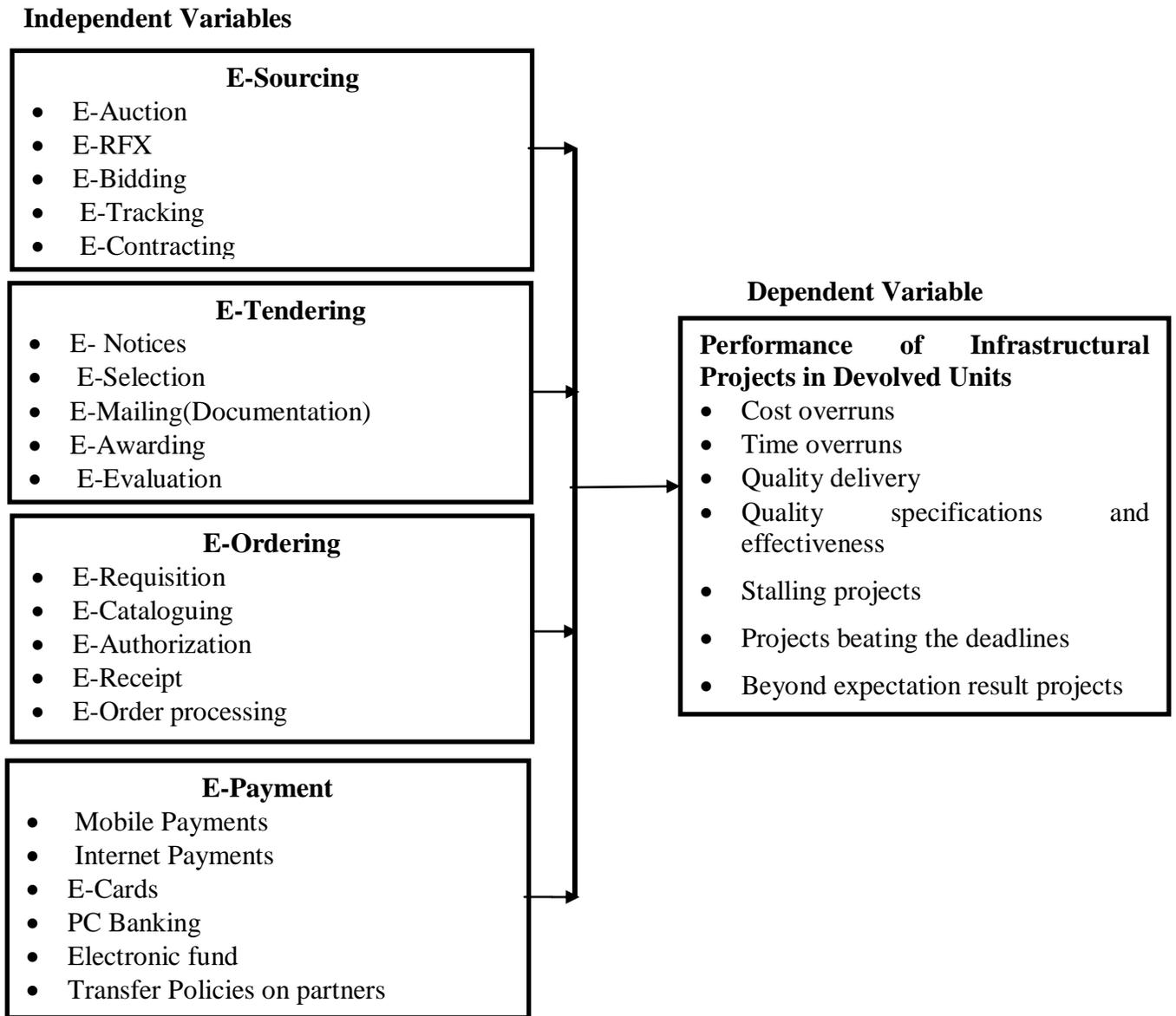
Bello, Osmonbekov and Gilliland (2018) define e-payment system as a form of financial commitment that involves the buyer and the seller facilitated via the use of electronic communications. E-payment is a monetary transaction between the buyer and seller by use of electronic platform to perform transactions including mobile payments, internet payments, e-cards, PC Banking and E-cash in the supply chain. E-cash enables payment over the internet in

much more transparent and efficient manner; therefore there is security and audit trail. According to Boudijilda and Pannetto (2017), consumers, contractors and other project implementers would prefer to use e-payment systems which are more convenient to them, such as e-cash, mobile payment, internet payment, debit cards and e-chequing. Only 50 % of consumers outside the US use credit cards for online purchase. According to the “Banking on the Internet Report”, Australia has a strong platform for e-payment growth, with 37.7 per cent of the population willing to engage in online payment; influencing the performance of various projects and businesses.

According to Brousseau (2017), with the introduction of e-payment system, the world payment system turned out to align with the current trend of cashless transactions among individuals, businesses and governments. As a result of this, the world payments system is gradually changing from coins and paper based money to electronic forms that provide more convenient, fast and secured process of making payments among individual and organizations. E-Payments component of e-procurement, from an economic stand point, enhances efficiency through transaction cost savings and reduced direct procurement costs; leading to increased projects performance (Davila and Gupta, 2012; Henriksen and Mahnke, 2015). Akinyi (2017) in a study on E-Procurement Model for the Public Sector of Kenya School of Computing and Informatics focused on critical factors central to the realization of optimal use of e-payment utilization success in the public sector. Akinyi found out that despite the efforts put by the governments through reforms towards the use of e-procurement, utilization of e-payment still remains a major challenge for many procurement functions; affecting the performance of various government funded projects negatively. Further, Kamau (2017) on e-procurement revealed that e-payment facilitates the bidding process which in turn enhances transparency and accountancy especially in public procurement. The research further revealed that e-payment is associated with improved efficiency and enhanced projects operations.

## **2.2 Conceptual Framework**

Figure 1 presents the conceptual framework that depicts the relationship between the independent variables and dependent variable in a diagrammatical form



**Figure1: Conceptual Framework**

### 3.1 Research Methodology

The study adopted the descriptive research design. Besides, the researcher targeted the entire team of employees who had served in the finance, ICT and procurement in the county government of Mombasa since it was initiated in 2013. Further, the study targeted the 42 contractors who had been involved in the implementation of a number of feeder roads/link roads in the county. The various donor agencies like the World Bank that have funded a number of feeder roads in Nyali Sub County for over 4 years, the AfDB agencies and the national government were picked for the study also. From the available report in the country strategic development plans, the following respondents were relevant to this study: finance department (22), ICT (11), procurement (18), contractors (42), World Bank agents (15), AfDB (15), county government project M&E heads (10) and 5 national government IFMIS heads. This made a total of 138 respondents. However, the total sample size was 122 respondents.

### 4.0 Research Findings and Discussions

#### 4.1 Descriptive Statistics for E-procurement Practices

The study was conducted to find out the level or degree adoption of E-procurement components in Mombasa County. The respondents were asked to rate the extent to which they agreed with statements concerning E-procurement practices engaged in or practiced so as to gauge their level of adoption. The measurement scale consisted of 29 items measured on a five –point likert type scale ranging from 1=very small extent to 5 = very large extent. E-procurement practices were defined by five (4) constructs namely: E-sourcing, E-tendering, E-ordering and E-payment. The aggregate score of E-procurement practices was computed as an average of the mean score for the four constructs. The statements with high mean indicated that the respondents were in agreement (> 3.00) whereas the statements with a low mean is a true indication of respondents' disagreement (< 3.00). Standard Deviation (SD) as a measure of dispersion summarizes how far away from the mean the data values are (Cooper &Schindler, 2006). Small SD (< 1) implies that most of the sample means are closer to the mean and a good estimator of the population mean whereas a large SD (1>) indicates that the sample mean is a poor estimator of the population mean simply because the data values are spread over a large set of values.

#### 4.4.1 Adoption of E-procurement on Implementation of Roads Projects

Table 1 presents the descriptive statistics of e-procurement on implementation

**Table 1: E-procurement on Implementation**

	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
E-Sourcing	115	3.07	1.074
E-Tendering	115	3.15	.920
E-Ordering	115	3.24	1.065
E-Payment	115	3.60	.916
<b>Average</b>	<b>115</b>	<b>3.265</b>	<b>0.994</b>

Based on the analysis findings in table 1, the part of E-payment had the very best mean of 3.60, followed by E-ordering with mean of 3.24. E-tendering had a mean of 3.15 and finally E-sourcing had the littlest mean of 3.07. The respondents thus indicated that E-procurement practices are adopted within the construction of infrastructural comes in urban center County however to a moderate extent. The common mean for the parts were 3.265 and a customary deviation of 0.994.

#### 4.2 Influence of E-procurement on Implementation of Roads Projects

On a rating scale of 1-5 where 1= strongly disagree, 2=disagree, 3=fairly agree, 4= agree and 5 strongly agree, respondents were asked to show how the following indicators of e-procurement have been responsible for roads projects implementation. The results are as indicated in table 2 below:

**Table 2: Degree of E-Procurement Influence on Infrastructural Projects Implementation**

	N	Mean	Std. Deviation
E Sourcing implementation	115	3.63	.985
E Tendering implementation	115	3.86	.736
E Ordering implementation	115	3.53	.994
E payment implementation	115	3.55	.861
<b>Average</b>		<b>3.64</b>	<b>0.893</b>

The results in table 2 above indicate that the variables of e-procurement have influenced the implementation of roads projects in a moderate manner. The average mean of the e-procurement was 3.64 with a standard deviation of 0.893. All the components had mean above 3.5 which implies that there was an agreement among the respondents. E-tendering had the highest mean of 3.86 followed by E-sourcing with 3.63.

#### 4.3 Influence of E-sourcing on Implementation of Road projects

The study sought to ascertain the influence of E-sourcing within the implementation of road comes in Mombasa County and the results are presented in table 3

**Table 3: Extent of Influence of E-sourcing on Implementation of Road projects**

	N	Mean	Std. Deviation
E_Auction	115	3.63	.893
E_RFX	115	3.40	.877
E_Bidding	115	3.66	.712
E_Tracking	115	3.67	.856
E_Contracting	115	3.63	.911
<b>Average</b>		<b>3.598</b>	<b>0.8498</b>

From the research findings in table 3 above, all the constructs of E-sourcing had an average mean score of 3.598 which is a true indication that E-sourcing influences the implementation of roads projects in a moderate way. The construct of E-tracking had the highest mean of 3.67 followed by E-auction and E-contracting with means of 3.63.

#### **4. 4 Influence of E-tendering on Implementation of Roads Projects**

The study sought to establish influence of e-tendering on the implementation of road projects in Mombasa County and the findings are presented in table 4

**Table 4: Extent of Influence of E-Tendering on Projects Implementation**

	N	Mean	Std. Deviation
E_Notices	115	3.57	1.132
E_Selection	115	3.30	.957
E_Mailing	115	3.42	.858
E_Awarding	115	3.44	.786
E_Evaluation	115	3.57	.762
<b>Average</b>		<b>3.46</b>	<b>0.899</b>

Based on the results from table 4 above, all constructs of E-tending obtained an average mean of 3.46 which is a true indication that E- tendering practices has a moderate influence on the implementation of roads projects in Mombasa County. E-evaluation and E-notices had the highest mean of 3.57 followed by E-awarding at 3.44.

#### 4.5 Influence of E-ordering on Implementation of Road projects

The study sought to establish the influence of E-ordering on the implementation of roads projects in Mombasa County and the results are shown in table 5

**Table 5: Extent of E-ordering Influence on Roads Construction Projects Implementation**

	N	Mean	Std. Deviation
E_Tracking	115	3.35	1.076
E_Cataloguing	115	3.53	.809
E_Authorization	115	3.33	.803
E_Receipt	115	3.65	.817
E_Order processing	115	3.58	.816
<b>Average</b>		<b>3.50</b>	<b>0.8642</b>

The research findings in table 5 indicate that E-ordering practices had an average mean of 3.5 which implies that practices have significant influence on implementation of roads projects. The component of E-receipt had the highest mean of 3.65 followed by E-order processing with 3.58. E-cataloguing obtained a mean of 3.53 whereas E-Authorization had the least mean of 3.33.

#### 4.6 Influence of E-payment on Implementation of Road projects

The study sought to establish influence of E-payment on implementation of road projects in devolved units and the results are presented in table 6

**Table 6: Extent of Influence of E-payment on Projects Implementation**

	N	Mean	Std. Deviation
Mobile_Payments	115	3.77	.859
Internet_Payments	115	3.51	.921
E_cards	115	3.52	1.020
PC_Banking	115	3.17	.982
Electronic Fund	115	3.44	.774
<b>Average</b>		<b>3.5</b>	<b>0.911</b>

The results on table 6 above indicates that average mean of E-payment component is 3.5 which implies that this component of E-procurement had a significant effect on the implementation of roads projects in Mombasa County. Mobile payments had the highest mean of 3.77 followed by E-cards with a mean. From the findings, it is evident that E-payment practices enhance the performance implementation of roads county projects in Mombasa.

#### 4.7 Inferential Statistics for Hypothesis Testing

##### 4.7.1 Inferential Statistics on the E-Sourcing

The test of the first hypothesis results as steered by the first objective of the research are outlined in here. To evaluate the stimulus of E-sourcing on performance of infrastructural projects in devolved units of was the first objective. Following below is the hypothesis that was formulated for testing:  $H_0$ : E-sourcing has no significant influence on the performance of infrastructural projects in devolved units.  $H_1$ : E-sourcing has a significant influence on the performance of infrastructural projects in devolved units

**Table 7: Chi square results for E-sourcing on Performance of infrastructural projects**

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	25.076 <sup>a</sup>	4	.007
Likelihood Ratio	27.540	16	.069
Linear-by-Linear Association	.636	1	.025
<b>N of Valid Cases</b>	<b>115</b>		

a. 22 cells (95.3%) have expected count less than 5. The minimum expected count is .16.

The findings in table 7 show that the value of the Chi-square statistic is 25.076 while the P-value in the asymptotic significance column is 0.007. The result is significant if the value is equal to or less than the designated alpha level of 0.05. In this case the P-value is smaller than the standard value and therefore the null hypothesis is rejected. The findings indicate a significant association between e-sourcing and performance of infrastructural projects in Mombasa County.

##### 4.7.2 Inferential Statistics on the E-Tendering

The test of the second hypothesis results as guided by the second objective of the study are outlined in here. To assess the influence of E-Tendering on performance of infrastructural projects in devolved units of was the second objective. Following below is the hypothesis that was formulated for testing:  $H_0$ : E-tendering has no significant influence on the performance of infrastructural projects in devolved units.  $H_1$ : E-tendering has a significant influence on the performance of infrastructural projects in devolved units

**Table 8: Chi Square Results for E-Tendering on Performance of Infrastructural Projects**

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.038 <sup>a</sup>	24	.024
Likelihood Ratio	30.670	24	.031
Linear-by-Linear Association	1.232	1	.267
<b>N of Valid Cases</b>	<b>115</b>		

*a. 31 cells (95.5%) have expected count less than 5. The minimum expected count is .16.*

The findings above in table 8 show that the value of the Chi-square statistic is 19.038 while the P-value in the asymptotic significance column is 0.024. The result is significant because the value is equal to or less than the designated alpha level of 0.05. In this case the P-value is smaller than the standard value and therefore the null hypothesis is rejected. The findings therefore indicate a significant relationship between e-Tendering and performance of infrastructural projects in Mombasa County.

#### **4.7.3 Inferential Statistics on the E-ordering**

The test of the third hypothesis results as guided by the third objective of the study are outlined in here. To assess the influence of E-ordering on performance of infrastructural projects in devolved units of was the third objective. Following below is the hypothesis that was formulated for testing:  $H_0$ : *E-ordering has no significant influence on the performance of infrastructural projects in devolved units.*  $H_1$ : *E-ordering has a significant influence on the performance of infrastructural projects in devolved units*

**Table 9: Chi Square Results for E-Ordering on Performance of Infrastructural Projects**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	32.004 <sup>a</sup>	4	.016
Likelihood Ratio	26.789	16	.314
Linear-by-Linear Association	1.529	1	.0132
<b>N of Valid Cases</b>	<b>115</b>		

*a. 31 cells (95.5%) have expected count less than 5. The minimum expected count is .16.*

The findings in table 9 show that the value of the Chi-square statistic is 32.004 while the P-value in the asymptotic significance column is 0.016. The result is significant because the value is

equal to or less than the designated alpha level of 0.05. In this case the P-value is smaller than the standard value and therefore the null hypothesis is rejected. The findings therefore indicate a significant relationship between e-ordering and performance of infrastructural projects in Mombasa County.

#### 4.7.4 Inferential statistic on the E-Payment

The test of the fourth hypothesis results as guided by the fourth objective of the study are outlined in here. To assess the influence of E-payment on performance of infrastructural projects in devolved units of was the fourth objective. Following below is the hypothesis that was formulated for testing:  $H_0$ : E-payment has no significant influence on the performance of infrastructural projects in devolved units.  $H_1$ : E-payment has a significant influence on the performance of infrastructural projects in devolved units

**Table 10: Chi Square Results for E-payment on Performance of Infrastructural Projects**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	35.105 <sup>a</sup>	4	.010
Likelihood Ratio	48.355	16	.005
Linear-by-Linear Association	.734	1	.392
<b>N of Valid Cases</b>	<b>115</b>		

a. 34 cells (95.0%) have expected count less than 5. The minimum expected count is .16.

The findings in table 10 show that the value of the Chi-square statistic is 35.105 while the P-value in the asymptotic significance column is 0.010. The result is significant because the value is less than the designated alpha level of 0.05. In this case the P-value is smaller than the standard value and therefore the null hypothesis is rejected. The findings therefore indicate a significant relationship between e-payment and performance of infrastructural projects in Mombasa County.

#### 5.1 Conclusions

The study concludes that majority of the infrastructural projects firms in Mombasa have adopted e-procurement practices and are committed to equipping their staff with the necessary competencies and skills to ensure the success of their e-procurement projects thus promoting performance of the infrastructural projects. The research findings indicate that the E-Procurement practices have been adopted by majority of the devolved units in Mombasa County but the practices have not been fully implemented. The findings also indicated that all the components of e-procurement had moderate effect on the performance of the infrastructural roads projects in the county. Therefore, for full implementation of the E-procurement practices, the county government of Mombasa should encourage firms to incorporate E-procurement

practices through embracement of advanced technology and regular training on the implementation of the E-procurement.

### 6.1 Recommendations

The study recommends that best strategies in adoption of e-procurement practices be put in place to enable all firms' efficiency in their operations. Creation of awareness is also recommended on use and impact of e-procurement practices in business operations by government offices, ICT firms, construction firms, procurement offices, finance offices so as to ensure market penetration and business diversification. In order to fully implement E-procurement practices the government should not only impose strict regulations but also should provide funding to enable the firms and devolved units acquire the required equipment with the latest technology. The study also recommends that to have internet policy which will provide guidelines on internet connectivity and also regular upgrade of ICT equipment used in the internet technologies, so as to ensure that the right technologies are used in the adoption of e-procurement practices. The study generally recommends more studies to be conducted with relation to each element of E-procurement as this will maximize the collection of information regarding each element which is not the case of a comprehensive study. Moreover, the study recommends that all the firms should set aside adequate budget for regularly training employees on e-procurement implementation and usage.

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