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E-PROCUREMENT PRACTICES AND PERFORMANCE OF ROADS CONSTRUCTION PROJECTS IN KENYA. A CASE STUDY OF KENYA NATIONAL HIGHWAY AUTHORITY, KAKAMEGA COUNTY

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ABSTRACT

The critical pre-planning stages for road construction projects encompass tasks such as planning, analysis, design, earthwork, paving, implementation, quality control assessment, and task interdependency scheduling. There has been a visible setback in implementation due to timely challenges in completion of road projects construction systems despite reforms in procurement regulations in regard to PPDA of 2005. The primary focus of this study was to investigate the how e-procurement practices has affected the performance of roads construction projects in Kakamega County Government's Western Region with reference to the Kenya National Highways Authority. To do so, the study established the effects of e-procurement practices (e-tendering, e-sourcing, e-valuation, and e-submission) on performance of roads construction projects under KeNHA in Kakamega County. The study was guided by the Resource Based View theory, Dynamic Capability Theory and Unified theory of acceptance. Study findings revealed that e-sourcing had significant influence on performance of road construction projects (t-statistic=19.927, p-value=0.002< 0.05). E-tendering had a significant influence on performance of road construction projects (t statistic=25.674, p-value=0.045< 0.05). Study revealed that e-evaluation had significant influence on performance of road construction projects (t statistic=3.183, p-value=0.006 < 0.05). Lastly, the study revealed that the e-submission had a significant influence on performance of road construction projects (t-statistic=6.117, p-value=0.000 < 0.05). Measures related to the e-procurement system should be improved, and management should take the lead in the implementation of electronic procurement. This will improve the reduction of supply chain risks and make supplier performance more beneficial for KeNHA as well as road construction projects. The results of this study will inform strategic decisions the management may need to make to ensure effective application of e-procurement in KeNHA as well as other organizations.

Keywords: *e-procurement, performance, road, Kenya, KeNHA*

INTRODUCTION

The advent of the internet has made a significant change in performance of modern procurement functions. The role of procurement and the manner in which it is performed has changed considerably due to continuous improvement in Information and Communication Technologies (ICT) and Information Systems (IS) (Armstrong & Fredrick, 2017). With this, the focus has become to strengthen the comparative gain of the internet and related technologies in firm's procurement activities. Thus, electronic procurement or online supplier exchange is an internet platform that was initiated in the evolving and developed countries following the invention of the Internet but which due to the rapid growth of internet and its adaptation in all the parts of the globe including countries that are developing (Stephen & Helen, 2018).

Globally, studies conducted in the developed world countries on e-procurement adoption identified country differences in e-procurement adoption. Findings by Morrison (2020) showed that developed countries such as US, Germany and UK have organizations with a low avoidance of uncertainty which are early adopters of electronic procurement technology, while countries like Spain, Netherlands and France are more reluctant to change with a lower adoption rate. According to (GLUKs report, 2018), the global perspective of e-procurement platform has been global adopted which then indicates that e-procurement has helped most of the developed and semi-developed countries such as Brazil and India in effectively managing their purchasing decisions (Nyamwoya, 2018).

The critical pre-planning stages for road construction projects encompass tasks such as planning, analysis, design, earthwork, paving, implementation, quality control assessment, and task interdependency scheduling (Cheboi, 2016). There has been a visible setback in implementation due to timely challenges in completion of road projects construction systems (MOPW, 2019) despite reforms in procurement regulations in regard to PPDA of 2005. This has led to the introduction of e-procurement procedures to fasten the road construction processes.

STATEMENT OF THE PROBLEM

A key approach for enhancing operational effectiveness and efficiency within the procurement function is the use of e-procurement systems, which reflects the increased global commitment to enhancing the caliber of the administration of public finances in both developed and emerging nations (Hendriks, 2012).Government agencies can exercise control using the management instrument of e-procurement over overall spending and budget deficits. Inadequate procurement practices during the construction and maintenance of roads in Kenya have resulted in over 50% of flagged roads being in pitiable condition, with more than 40% of them remaining incomplete (Amos & Julius, 2009).Even with immense research study, evidently done on construction of roads and affiliates, not so much has been done on the impact of e-procurement on Kenyan road development projects' effectiveness despite its significance in growth of the economy. Therefore, the study attempted to close this gap by examining the impact of e-procurement on the performance of road construction projects funded by KeNHA in Kakamega County.

OBJECTIVES

This study was guided by the following specific objectives;

(i) To determine the effect of e-sourcing on performance of roads construction projects in Kenya

(ii) To establish the effect of e-tendering on performance of roads construction projects in Kenya

(iii) To examine the effect of e-evaluation on performance of roads construction projects in Kenya

(iv) To find out the effect of e-submission performance review on performance of roads construction projects in Kenya.

LITERATURE REVIEW

Empirical Literature Review

The major emphasis on this section is to review the previous studies on how e-procurement (electronic procurement) influence the performance of road construction project.

E-sourcing and performance

Kajewski (2014) studied e-tendering: advantages, disadvantages and recommendations for practicing and exercising in Australia in the public sector. He observed that e-sourcing had a major positive impact on organizational performance by lowering operating costs and providing coordinated services to the community. Also, Morrison (2020) studied e-procurement and performance, and the study results revealed a positive significant effect with organizational performance in that both organizational and sociological effects played a significant role in acquisition of e-sourcing in the sampled organizations.

Vaidya (2016) tried to develop a framework of the Critical Success Factors (CSFs) suitable to slam achievement of e-procurement resourcefulness in the public sector. The study acknowledged end-user preparation, structure integration, system security, performance management, top organization support, change management and supplier adoption as the CSFs that impacted on the accomplishment of e-procurement resourcefulness in the Australian Public Sector. Also, Nyamwoya (2018) sought to investigate how customer service level on e-procurement strategy, procurement cost, inventory optimization on e-procurement strategy and buyer/supplier collaboration impacted performance of procurement process in state Corporations of the Nation. The research study found that customer service level on e-procurement strategy, procurement cost, inventory optimization on e-procurement strategy and buyer/supplier collaborations positively related to the procurement performance of state firms in Kenya.

E-tendering and performance

Adebayo and Jefferson (2006) reviewed that developing countries' adoption of e-procurement technologies from the perspective of the public sector in Nigeria. According to the study's findings, the majority of procurement specialists working for Nigerian public sector companies lacked adequate training in the usage of e-procurement technologies. In another study, Abel and Valentine (2016) evaluated the role of e-procurement on the improvement of organizational operations of Coca Cola Company limited in Ghana. The study's findings showed that the Coca-Cola Company in Ghana was not significantly impacted by e-procurement. Agnes (2015) also aimed to determine the impact of e-

tendering as an electronic procurement method on the operational effectiveness of the Applied Technology Company in Dar es Salaam. The study established a significant positive relationship between use of e-tendering as an e-procurement practice and organizational performance of Applied Technology Company.

E-submission and performance

The e-Submission application enables economic operators to electronically prepare and submit tenders in a structured and secure manner, responding to calls for tenders. E-submission is a component of e-procurement that involves secure tender opening, evaluation, and awarding the contract to the best offer. These activities are facilitated through the e-submission module, which includes features such as electronic evaluation of offers based on predetermined criteria and formulas, as well as the implementation of electronic auctions when allowed by the awarding procedure (Croom & Brandon-Jones, 2007).

The e-submission generation and publication of contract award notices are made possible by the integration of the module with the e-notification module. The examination and awarding of tenders are made more efficient and effective thanks to this connection. E-award performance and procurement performance have a favorable correlation, according to research by Christensen (2018) on e-procurement management in U.S. state governments (Divakar & Subramanian, 2019). According to Moon, downloading of electronically submitted tenders is possible with e-award. in an evaluation-friendly format, eliminating the need for manual data re-entry and saving time. It also promotes standardized tendering practices across the government, fosters overall e-commerce initiatives through environmentally friendly "paperless" processes, and facilitates straightforward comparison of bids due to standardized electronic formats.

E-evaluation and performance

During this step, substantial information about suppliers is gathered to facilitate subsequent assessments and online transactions (Vaidya, 2016). According to Presutti (2003), a company must evaluate and optimize its procurement process to fully harness the

advantages offered by e-procurement solutions. The advent of the World Wide Web has brought about significant transformations in various industries, particularly in government organizations, leading many businesses to establish their own supplier rating systems. It's crucial to construct a supplier evaluation system that aligns with organizational goals and aids suppliers in developing capabilities that benefit society in the long term. In Kenya, Kiiru (2015) conducted a case study in Nyandarua County to assess the factors influencing the adoption of e-procurement platforms. The study revealed a substantial, beneficial, and statistically significant relationship between the proficiency of e-procurement system users and its effectiveness. Additionally, Gul (2017) explored how e-procurement technology impacted the performance of Kenyan horticultural firms. The study found that e-payment systems enhanced performance by preventing potential payments to fictitious suppliers and employees.

RESEARCH DESIGN AND METHODOLOGY

Research design

The study used a descriptive cross-sectional research design in order to establish how well road building projects in Kakamega County performed as a result of e-procurement.

Study area

This study was carried out in Kakamega County. It is 1535 meters above sea level as an average elevation with an aggregate of 3500 km, 1701.7 km of clay face and 1389.3 of the earth face cover. Multiple sub-counties, government agencies, and various stakeholders are actively involved in the regular maintenance and upkeep of roads to ensure they remain in good condition. Some of the sub-counties engaged in this effort include Navakholo, Shinyalu, Mumias East, Matungu, and Lugari, among others. Kakamega County was chosen since its road nework connects all the counties in Western part of Kenya. Additionally, it is wide and has a large road network in construction when compared with other neighboring Counties.

Target population

Kakamega County was the site of the research investigation. According to the Kenya National Highways Authority (KeNHA), there are 15 active government road construction projects in Kakamega County as of 2022. There are presently 15 active road construction projects in the KeNHA. These 15 active road improvements projects in the County served as the study population's subjects. The study focused on 174 respondents, including 59 committee members, 36 project coordinators, 54 contractors, 10 project managers, and 15 officers from the procurement division.

Sampling technique

Census sampling design was used to pick the road projects in Kakamega County. A total of 15 road constructions projects were sampled. Within the road projects, purposive random sampling was then adopted in sampling government civil and structural engineers, mechanical and electrical engineers, road construction engineers, land and quantity surveyors, project managers among others acted as the respondents, hence a census was deemed appropriate for this study.

Sample Size Determination

To calculate the study's sample size, the formula by Yamane's (1996) shown below was utilized.

$$n = \frac{N}{1 + N(e)^2}$$

Where

n is the study sample size

N is the population of the study

e level of precision

$$n = \frac{174}{1 + 174(0.05)^2} = 121$$

The study therefore used a sample size of 121 respondents.

Using Mugenda & Mugenda (2008) sampling technique, 70% of the target population gave the sample size of the study. The summary of the sample distribution is as shown in Table 1.

Table 1: Sample Distribution

Category	Population	Sample
Project managers	10	7
Procurement staff	15	11
Project coordinators	36	25
Committee members	59	40
Contractors	54	38
Total	**174**	**121**

Research Instruments

Primary data was used in the investigation. A questionnaire with both structured and unstructured questions was considered to be the most preferred technique of data collection as it allows one to reach a large group of population and it is also economical. Additionally, questionnaire with high reliability would receive related response if it were repeatedly done over and over or by other researchers (Adebayo & Jefferson, 2006).

Data collection procedure

Collection of data was done by either one-on-one interview, observation method or drops and pick method as well. The research collected both quantitative and qualitative data as the recommended approach in social science research which is used to produce a meaningful data, analysis, design, evaluation, and results. The respondents were also considered to be more fruitful in areas where the research may encounter controversies while in the field.

Data Analysis

The data collected was analysed using descriptive statistics (measures of central tendency and measures of variations) and inferential analysis to achieve the objectives of the study. The process of data analysis involved several stages: the completed questionnaires were edited for completeness and consistency, checked for errors and omissions. Both qualitative and quantitative data was generated from the study. The data was then analyzed using SPSS Version 26 of the Statistical Package for Social Sciences.

Ethical Considerations

The interviewer adhered to these principles by obtaining the necessary permissions from the relevant organizational department before commencing data collection activities. During the research period, research ethical guidelines were put into place to enable the researcher to go ahead and collect data: The dignity and well-being of the respondents has to be protected at all times.

RESULTS AND DISCUSSION

This section presents the research findings and discussions of the study. Data analysis was done based on the objectives.

E-sourcing and performance

To determine whether e-sourcing had significant influence on performance of road construction projects, hypothesis testing is done.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.510[a]	.446	.424	1.68452

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1149.030	1	1149.030	397.067	.002[b]
	Residual	237.291	117	2.028		
	Total	1386.321	118			

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.476	.712		6.285	.000
	E-sourcing	.310	.026	.910	19.927	.002

From the study findings in Table 2, the value of R-square is 0.446. This implies that, 44.6% of variation of performance of road construction projects in Kakamega County was explained by e-sourcing. At 0.05 level of significance the ANOVA test indicated that in this model the independent variable namely; e-sourcing is important in predicting of performance of road construction projects at KeNHA in Kakamega County as indicated by significance value=0.002 which is less than 0.05 level of significance ($p=0.002 < 0.05$). Therefore at 5% level of significance the null hypothesis was rejected, indicating that e-sourcing had significant relationship with performance of road construction projects at KeNHA in Kakamega County. Thus, for every unit increase in e-sourcing there was a corresponding increase on performance of road construction projects at KeNHA in Kakamega County by 0.310. This study finding corresponds to the finding of Kajewski (2014) who observed that, the purpose of supply integration on supply chain performance is to allow organisations and suppliers to focus on more value adding activities such as serving customers rather than on operational issues. If e-sourcing is done very well at the initial stages, the entire procurement process will be successful.

E-tendering and performance of road construction projects

E-tendering has no significant effect on performance of road construction projects at KeNHA in Kakamega County.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.426[a]	.450	.0401	2.612

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1230.940	1	1230.940	659.160	.045[b]
	Residual	153.379	117	1.311		
	Total	1384.319	118			

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.406	.557		7.913	.567
	E-tendering	.628	.024	.943	25.674	.045

From findings in Table 3, the value of R-Square is 0.450. This implies that, 45.0% of variation of performance of road construction projects at KeNHA in Kakamega County was explained by e-tendering. At at 0.05 level of significance the ANOVA test indicated that in this model the independent variable namely; e-tendering is important in predicting of performance of road construction projects at KeNHA in Kakamega County as indicated by significance value=0.045 which is less than 0.05 level of significance ($p=0.045<0.05$). Therefore at 5% level of significance the null hypothesis was rejected, indicating that e-tendering had a positive influence on performance of road construction projects at KeNHA in Kakamega County. Likewise for every unit increase in e-tendering there was a corresponding increase in performance of road construction projects at KeNHA in Kakamega County by 0.628. This study was in tandem to a study done by Agnes (2015), who established a significant positive relationship between use of e-tendering as an e-procurement practice and organizational performance of Applied Technology Company. The study's conclusions showed that staff competency, information technology, and ethics all significantly improved how well these technical training institutes performed their e-procurement functions.

E-evaluation and employee performance

E-evaluation has no significant effect on performance of road construction projects at KeNHA in Kakamega County.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change
1	.265[a]	.402	.432	5.934	.005

Model		**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
1	Regression	608.972	1	608.972	10.128	.006[a]
	Residual	18939.501	117	161.876		
	Total	19548.473	118			

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	32.919	1.334		24.682	.000
	E-evaluation	.175	.055	.176	3.183	.006

a. Predictors: (Constant), e-evaluation
b. Dependent Variable: performance

The value of R-Square is 0.151. This implies that, 15.1% of variation of performance of road construction projects at KeNHA in Kakamega County was explained by e-evaluation. At 0.05 level of significance the ANOVA test indicated that in this model the independent variable namely; e-evaluation is important in predicting of performance of road construction projects at KeNHA in Kakamega County as indicated by significance value=0.006 which is less than 0.05 level of significance (p=0.006 < 0.05).Therefore at 5% level of significance the null hypothesis was rejected, indicating e-evaluation had a positive influence on performance of road construction projects at KeNHA in Kakamega County. Again for every unit increase in e-evaluation there was a corresponding increase in performance of road construction projects at KeNHA in Kakamega County by 0.175. The study results concur with studies done by (Enshassi *et al.*, 2009), who noted that if e-submission procedures are done in an open and transparent way, organization performance will be achieved.

E-submission and performance of road construction projects at KeNHA

E-submission has no significant effect on performance of road construction projects at KeNHA in Kakamega County.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.226[a]	.506	.503	6.441

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2075.817	1	2075.817	37.423	.000[a]
	Residual	17472.656	117	149.334		
	Total	19548.473	118			

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	27.245	1.638		16.637	.000
	E-submission	1.326	.053	.326	6.117	.000

From findings in Table 5, the value of R-Square is 0.506. This implies that, 50.6% of variation of performance of road construction projects at KeNHA in Kakamega County was explained by e-submission. At 0.05 level of significance the ANOVA test indicated that in this model the independent variable namely; e-submission is important in predicting of performance of road construction projects at KeNHA in Kakamega County as indicated by significance value=0.000 which is less than 0.05 level of significance ($p=0.000<0.05$).

Therefore at 5% level of significance the null hypothesis was rejected, indicating that e-submission had a positive influence on performance of road construction projects at KeNHA in Kakamega County. This means for every unit increase in e-submission there was a corresponding increase in performance of road construction projects at KeNHA in Kakamega County by 1.326. According to Vaidya (2006), the success of e-procurement depends on the level and efficiency of communication to the users. The organization adopting an e-procurement system must be able to communicate this information to the users. Distorted communication of information may lead to failure of the system. Therefore e-evaluation should be done at each phase for better results to be achieved.

CONCLUSION

The study concludes that e-procurement is well accepted and used by KeNHA staff and their affiliates as they appreciate its usage due to their views that it impacts positively on their performance. However, due to the major challenges that come with the use of e-procurement including but not limited to poor internet connectivity, high cost of e-procurement software, low level technology and inadequate knowledge and skills in the e-procurement usage, some contractors are not comfortable with its usage because it rather ends up wasting their time and making them inefficient. are the key contributors hindering the uptake of PMTCT interventions in Mombasa County. Finally, the research work also established e-procurement practices as having positive effect on road construction projects in Kakamega County. Based on these results, the study therefore comes to the conclusion that e-procurement practices have a significant impact on organization (KeNHA) performance.

RECOMMENDATIONS

In relation to the study, findings show that the relationship between e-procurement practices and performance of road construction projects is positively correlated, hence measures related to the e-procurement system should be improved, and management should take the lead in the implementation of electronic procurement. This will improve the reduction of supply chain risks and make supplier performance more beneficial for KeNHA as well as road construction projects. Additionally, government as well the directors of KeNHA should help train and educate their staff on adequate skills and knowledge in the use of e-procurement.

REFERENCES

Abel and Valentine, J.K. (2016). *A case of Chloride Exide, Arusha.* Unpublished MPM Thesis, Open University of Tanzania. *e-procurement and organizational learning and performance among Field Service Engineers.* Unpublished MSc Thesis, University of Nairobi.

Adebayo, V., & Jefferson, W. (2006). Implementation of ERP systems in West African

Countries: A South African Public Sector. *Journal of Public Procurement, 2(1), 15-28.*

Agnes, G. (2015). Contract Management system and performance of Service Industry in Uganda. An *American Journal of Business Management, 3(11), 12-35.*

Amos & Julius (2009). Evaluation of e-procurement and its effects on enhancement of project performance among privatization sector industry in Tanzania*: European Management Journal.* 1:11-23.

Armstrong & Fredrick (2017). *A guideline of Procurement and Supply chain Management practices*. London: United Kingdom Publishers.

Bundi, L. (2020). *Challenges in the Management of Procurement Services within Kenya Rural Roads Authority*. Unpublished MBA project. University of Nairobi. April 26, 2012 (May 6, 2012)

Cheboi, A. (2016). Factors affecting effective implementation of E-Procurement Systems in Kenyan Counties. *International Journal of electronic management systems, e-commerce and Economics, 4(3), 59-68.*

Chepng'etich, C. (2017). Influence of *Knowledge Creation, Knowledge sharing, Knowledge use and re-use and the ICTs in Kenyan Public Sector: Ministry of Transport and Road Infrastructure. Annual Review of Knowledge Management, Science & Technology:* 5(4), 55-56.

Chipiro, D. (2014). The Benefits of training to public sector in Zimbabwe. *Unpublished MBL Thesis, University of South Africa.*

Chirchir, P. (2016). Communities of Practice and Knowledge Management " *Virginia Tech. Archived from the first on 20th November 2010 and Retrieved 22nd May 2017".*

Christensen, B. D. (2018). *Needs assessment, analysis and evaluation.* Workplace Performance. Retrieved September 19, 2019.

Christopher, D. (2004). *E-business and e-commerce management: strategy, implementation and practice*. 2nd edition. Financial Times Prentice Hall.

Croom, S.; Brandon-Jones, (2007). A. Impact of e-procurement: Experiences from implementation in the UK public sector. *J. Purch. Supply Manag.* **2007**, *13*, 294–303.

Divakar, K., & Subramanian, K. (2019). Critical success factors in the real-time monitoring of construction projects. *Research Journal of Applied Sciences, Engineering and Technology*, 1(2), 35-39. Economy watch (2010).

Enshassi, A., Mohamed, S. & Abushaban, S. (2009). Factors affecting the Performance of Construction Projects in the Gaza Strip, *Journal of Civil engineering and Management*, 15(3): 269-280.

Gabula, Z. H. (2019). *Factors influencing the construction project success rates of Reconstruction Development Programme (RDP) housing projects in the Eastern Cape: a quality perspective: a census study* (Doctoral dissertation).

GoK. (2017). *Economic Survey* 2017. Nairobi: Government Printer.

Gul, H. (2017). Modernizing public procurement and creating an independent public Procurement regulatory authority. Law transition online.

Kajewski (2014). E-procurement, the golden key to optimizing the supply chains system. World Academy of Science, Engineering and Technology, *International Science Index*. 2010; 4(6):449–456.

Karanja . K. K. (2015) Factors Influencing E-Procurement Practices in Construction Industry in Kenya. *African Journal of Business Management*, 4(17); 3655- 3665.

Kartika, D. (2020). *The Impact of E-Procurement Implementation On Public Procurement's Corruption Cases*– Evidences From Indonesia And India. Jurnal Kajian Wilayah, Vol. 11 No.2, 193 - 212.

Kiiru, H. W. (2015). *Public Procurement System and its Influence on the Building Contract Performance during Project Implementation: The Case of Nairobi County* (Doctoral dissertation): The University of Nairobi.

Kirui., A & Kipruto, S. (2016). Conducting training on need analysis and Assessment in Elgeyo-Marakwet County. *A Publication Journal of Supply Chain Management, 16(6), 502-150.*

Hendricks (2012). Adoption of electronic commerce tools in business procurement: enhanced buying center structure and processes. Journal of Business and Industrial Marketing, 17 (2/3), 151–166.

HR Manual Guidelines. (m.f.d). *Training and development on user Need analysis*. HR Manual Guide. Retrieved November 16, 2021.

Makokha, P. O. (2021) Effects of Selected Corporate Governance Characteristics on Firm Performance: Empirical Evidence from Kenya. *International Journal of Economics and Financial Issues, 1*(3), 99-122.

Morrison K. (2020). *What Benefits of training needs planning, analysis and development to employees in organization.* Electronic Learning. Revised July 25, 2022.

Mugenda, O. M., & Mugenda, A.G. (2013). Research Methods: Quantitative and Qualitative approaches, Nairobi: African center of technology studies.

Nyamwoya, E. (2018). *Factors Affecting Implementation of projects: A case study of Ministry of Roads*. Retrieved from Jomo Kenyatta University of Agriculture and Technology, Department of Entrepreneurships and Procurement.

Ofori A & Fuseini M. (2020). Electronic Government Procurement Adoption in Ghana: Critical Success Factors, *Advances in Research* 21(3): 18-34, 2020; Article no.AIR.55510.

Prasad, K. (2018). Analysis of causes of delay in Indian construction projects and mitigation measures. *Journal of Financial Management of Property and Construction.*

Presutti, W. (2003). Supply management and e-procurement: creating value added in the supply chain. *Industrial Marketing Management*, 33(2), 219–226.

Smart A. (2010). *The role of e-Procurement in purchasing management*. Cranfield University.

Vaidya, K. (2016) Critical Factors That Influence E-Procurement Implementation Success in the Public Sector. *Journal of Public Procurement*, 6, 70-99.

Wafula, B. (2014). The procurement practices affecting effective public projects implementation in Kenya in Kenya Civil Aviation Authority, *European Journal of Business and Management* ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online) Vol.6, No.6, 2014.

Wanjau, M., & Omwenga, K. (2015). The procurement practices affecting implementation of projects by international Non-Governmental Organizations in Kenya, International *Journal of Novel Research in Marketing Management and Economics*, vol. 2, Issue 2, pp: (45-62), Month: May -August 2015.

Yamane T. (1967). *Statistics, an Introductory Analysis*, 2nd Edition, Harper and Row., New York.