

# Journal of Entrepreneurship & Project Management

ISSN Online: 2616-8464



## **Determinants of the Implementation of E-Procurement Programs in Parastatals; A Case of Kenya Ports Authority**

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**ISSN: 2616-8464**

# Determinants of the Implementation of E-Procurement Programs in Parastatals; A Case of Kenya Ports Authority

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**How to cite this article:** Mariam, N.,R. & Kisimbii, J. (2020). Determinants of the Implementation of E-Procurement Programs in Parastatals; A Case of Kenya Ports Authority. *Journal of Entrepreneurship & Project Management*, 4(1), 17-27.

## Abstract

The purpose of this study was to examine the determinants of the Implementation of E-Procurement Programs in Government Parastatals: A Case of Kenya Ports Authority. The study was guided by the following objective; to assess how stakeholder's involvement influence implementation of E-procurement Programs, to determine how Technology Infrastructure influence the implementation of E-procurement Programs, to establish how staff skills in technology influence the implementation of E-procurement Programs and to investigate how top management support influence implementation of E-procurement Programs in Government Parastatals. This study adopted a descriptive study design with target population of 300 from KPA where a sample of 38 key staffs was randomly and purpose sampled. The study used structured self administered questionnaires as the primary data collection instrument. Data analysis was done through use of descriptive method. Further data analysis, was done through Statistical Package for Social Sciences (SPSS). The findings showed that all the study variables showed a significant influence on implementation of E-procurement programs at Kenya Ports Authority. Therefore, recommendations of the study was that, KPA should consider a whole inclusiveness of all other stakeholders. This was focused to only staff and suppliers they did not consider community that surround them, let the computer department at KPA find out the deficiencies involved on acquisition of suitable hardware, continuous improvement and training to all support staff and who are key implementer of e-procurements projects. Suggested for other studies to be done to all key other government parastatal with focus to the same objectives and a replicated of the same to be done at All KPA regional offices such as Lamu, Nairobi and Kisumu.

**Keywords:** *Stakeholder's involvement, implementation, E-procurement Programs, Government Corporate Agencies, Technology Infrastructure, staff skills in technology, top management support*

## **1.1 Introduction**

Historically, E-procurement begun during the 1980s' with the electronic information interchange's development. Electronic Information Interchange (EDI) made it possible for customers and suppliers to execute operating procurement networks and eventually email use. Therefore, this led to the birth of E-procurement that can be defined by way of the progression through which items and enterprises required for an affiliation's operation are obtained electronically (Pani and Agrahari, 2017). Bailey, Farmer, Crocker, Jessop, and Jones (2018), observed that E-procurement can be carried out using a software application characterized by supplier management as well as complex closeouts.

As noted by Gunasekaran & Ngai (2018), in developed countries, E-procurement has been overwhelmingly received well while in the less developed countries it has not. According to a study by Thai (2017), among the key reasons as to why E-procurement has been adopted is due to the fact that it has been effective in the reduction of procurement costs. Additional advantages include; elevated dealer competition, time-saving, shortened procurement cycle, looking after compliance, quicker assessment and manageability advancement, real-time following of order status, electronic directing that eliminates the trouble of misplaced files and the requirement for guide following, reduced employer charges and programmed repayments to suppliers. According to a report by EU (2017), for an organization to achieve its deliverables effectively and efficiently, the concept of electronic procurement must be embraced. E-procurement in this essence has been associated with reduced procurement procedures, time delays, errors in the procurement process, and the delink between the procurement process and project delivery.

Chege (2017), noted that the most ordinary types of digital commerce in the Kenyan market are E-procurement, E-banking, and Mobile Banking. Christiansen, Turkina and Williams (2017), found out that of the three, the internet-based purchasing gadget has generated a remarkable deal of diversion due to it's attainable to enhance effectivity and accountability besides the transparency it brings in the procurement process, thus reducing the operation costs. Cattaneo, et ac. in spite of the benefits of advanced procurement as recognized with the resource of managers (that include higher harmonization with contractors, faster substitute times, greater tractability, greater dealer incorporation, and decrease in prices), very few county governments specially the ones marginalized areas have been able to place into effect the e-procurement.

## **1.2 Research objectives**

- i. To assess how stakeholder's involvement influences the implementation of E-procurement Programs in Government parastatals.
- ii. To determine how technology infrastructure, influence the implementation of E-procurement Programs in Government parastatals.
- iii. To establish how staff skills in technology influence the implementation of E-procurement Programs in Government parastatals.
- iv. To examine how top management support influence implementation of E-procurement Programs in Government parastatals.

### 3.1 Research Methodology

The study adopted a descriptive survey design. Descriptive design was best suited due to its significant in looking into the characteristics of a given situation (Kothari, 2003). The reason for this methodology was because it helped in finding solution for the problems for either small and large sample items or objects by using both qualitative and quantitative data analysis as per (Creswell & Clark, 2007).

### 4.0 Research Findings and Discussion

#### 4.1 Stakeholder's Involvement and Implementation of E-Procurement Programs in Government Parastatals

##### 4.1.1 Descriptive statistics for stakeholders Involvement

The study sought to establish that if indeed there was stakeholders' involvement in government parastatals. To confirm this study developed descriptive statistics out of the responses given on the independent variable. The findings were presented in Table 1

**Table 1: Descriptive Statistics for Stakeholders involvement**

Statement	No.	Mean	Std Deviation
a) Suppliers Engagement are factors that influence the implementation of E-Procurement in government parastatals.	38	3.98	0.331
b) Decision Making are factors that influence the implementation of E-Procurement in government parastatals	38	4.34	0.471
c) Public Participation are factors that influence the implementation of E-Procurement in government parastatals	38	3.78	0.376
<b>Composite Mean and Std Deviation</b>	<b>38</b>	<b>4.76</b>	<b>0.393</b>

The findings in Table 1 demonstrate that the majority part of the respondents agreed with the statements (a) to (c) all with means of approximately 4 which is "agree" on the Likert scale. The finding was further affirmed by a composite mean of 4.76 and a standard deviation of 0.393 which is less than 1 along these lines inferring that a large portion of the respondents' responses was clustered around the mean.

##### 4.1.2 Inferential Statistics on the Influence of Stakeholders' Involvement on Implementation of E-Procurement Programs

The researcher used a chi-square test to determine if there was a relationship between stakeholders' involvement and the implementation of E-procurement programs in government parastatals in Kenya. The test was used to measure alternative hypothesis 1 which was stated as;  $H_1$ : There is a significant relationship between stakeholder involvement and implementation of E-procurement Programs in Government Corporate Agencies: A Case of Kenya Ports Authority Mombasa-Kenya. The findings were presented in Table 2.

**Table 2: Chi-Square Tests for Stakeholder Influence on Implementation of E-procurement Programs**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.692 <sup>a</sup>	15	.010
Likelihood Ratio	26.735	15	.031
Linear-by-Linear Association	15.272	1	.000
<b>N of Valid Cases</b>	<b>38</b>		

a. 22 cells (91.7%) have expected count less than 5. The minimum expected count is .05.

From the findings in Table 2 the results of the chi-square test measurement were 30.692 and the p-Value of the asymptotic significance was 0.01, which is less than the alpha level of significance of 0.05. Therefore, there is a measurably huge relationship between Stakeholder influences and the Implementation of E-procurement Programs. The results accept the alternative hypothesis that there is a basic relationship between stakeholder involvement influence and implementation of E-procurement Programs in Government Corporate Agencies: A Case of Kenya Ports Authority Mombasa-Kenya.

#### **4.2 Technology Infrastructure and Implementation of E-procurement Programs in Government Parastatals**

The study tried to establish the effect of technology infrastructure on the implementation of E-procurement programs. The researcher used descriptive insights and chi-square tests to establish the levels of technology infrastructure influence on the Implementation of E-Procurement Programs in Government parastatals. The respondents utilizing a Likert scale made responses against statements on stakeholders' involvement.

##### **4.2.1 Descriptive Statistics for Technology Infrastructure**

The study sought to establish how the technology infrastructure influences the implementation of E-procurement programs in government parastatals. To do this there was a need to direct descriptive measurements, for example, the mean and standard deviation to make decisions about the variables. Findings were presented in Table 3

**Table 3: Descriptive Statistics for Technology Infrastructure**

Statement	No.	Mean	Std Deviation
Hardware Availability is a factor that influences the implementation of E-Procurement in government parastatals.	38	4.35	0.298
Software Availability is a factor that influences the implementation of E-Procurement in government parastatals.	38	4.712	0.387
Network Availability are factors that influence the implementation of E-Procurement in government parastatals	38	4.78	0.326
<b>Composite Mean and Std Deviation</b>	<b>38</b>	<b>4.61</b>	<b>0.337</b>

Findings from Table 3 show that the vast majority of the respondents emphatically agree that technology infrastructure is key in the implementation of E-procurement programs this showed by a composite mean of 4.61 and a standard deviation of 0.337.

#### 4.2.2 Inferential Statistics on the influence of Technology Infrastructure on Implementation of E-Procurement Programs

The study used chi-square test to determine if there was a relationship between technology infrastructure and implementation of E-Procurement Programs. The inference was done to test the second hypothesis which was as follows;

H<sub>1</sub>: There is significant relationship between technology infrastructure and implementation of E-procurement Programs in Government Corporate Agencies. Findings were presented in table 4.

**Table 4: Chi-Square Tests for Technology Infrastructure on Implementation of E Procurement Programs**

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.368 <sup>a</sup>	12	.002
Likelihood Ratio	29.740	12	.003
Linear-by-Linear Association	13.325	1	.000
<b>N of Valid Cases</b>	<b>38</b>		

*a. 18 cells (90.0%) have expected count less than 5. The minimum expected count is .11.* From Table 4, the results of the chi-square test measurement were 30.368 and the p-Value of the asymptotic significance was 0.002, which is less than the alpha level of significance of 0.05. Therefore, there is statistically significant association between technology infrastructure and implementation of E-procurement Programs in Government Corporate Agencies. The findings indicate that the alternative hypothesis is accepted.

#### 4.3 Staff Skills on Technology and Implementation of E-procurement Programs in Government Parastatals

The study sought to establish the effect of staff skills on technology and implementation of E-procurement programs. This was done using descriptive statistics and chi-square tests.

##### 4.3.1 Descriptive statistics for Staff Skills on Technology

The researcher sought to determine the descriptive statics of staff skills on technology as a factor that influences the implementation of E-procurement programs. The data were analyzed using mean and standard deviation to determine the reliability of the responses on testing the hypothesis. The findings were presented in Table 5

**Table 5: Descriptive Statistics for Staff Skills on Technology Factor**

Statement	No.	Mean	Std Deviation
Availability competent staff is a factor that influences the implementation of E-Procurement in government parastatals	38	4.66	0.428
Technology skills are factors that influence the implementation of E-Procurement in government parastatals	38	4.34	0.392
Training and Development are factors that influence the implementation of E-Procurement in government parastatals	38	4.47	0.467
<b>Composite Mean and Std Deviation</b>	<b>38</b>	<b>4.49</b>	<b>0.429</b>

The results in Table 5 show that the majority of the responses were clustered around strongly agree to responses that staff aptitudes on technology are needed for the successful implementation of E-procurement programs. The decision is supported by a composite mean of 4.49 and a standard deviation of less than 1 which was 0.429.

#### 4.3.2 Inferential Statistics on the influence of Staff Skills on Implementation of E-Procurement Programs

This section using chi-square test presented the results of the test of the third hypotheses of the study. The hypothesis formulated for testing was:  $H_1$ : There is significant relationship between Staff Skills and implementation of E-procurement Programs in Government Corporate Agencies.

**Table 6: Chi-Square Tests for Staff Skills On Technology**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	35.583 <sup>a</sup>	20	.000
Likelihood Ratio	29.330	20	.000
Linear-by-Linear Association	19.358	1	.000
N of Valid Cases	38		

*a. 29 cells (96.7%) have expected count less than 5. The minimum expected count is .03.*

The results from Table 6 show that the value of the Chi-square statistic as 35.583 while the P-value in the asymptotic significance column is 0.000. 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 less than the standard alpha value and therefore the alternative hypothesis ( $H_1$ ) accepted. Thus, the conclusion that, there exists a significant relationship between staff skills on technology and implementation of E-procurement Programs in Government Corporate Agencies is upheld.

#### 4.4 Top Management Support and Implementation of E-Procurement Programs in Government Parastatals

The fourth objective was to determine whether the involvement of top management played a significant role in the implementation of E-procurement programs in government parastatals. The analysis was carried out using Descriptive statistics and chi-square tests.

##### 4.4.1 Descriptive Statistics for Top Management Support

The researcher made sub variables against the independent variable (top management support) and the respondents made their views using the Likert scale. The data was first analyzed using descriptive statistics. The findings were presented in the table 7

**Table 7: Descriptive Statistics for Top Management Support**

Statement	No.	Mean	SD
Resource Allocation are factors that influence the implementation of E-Procurement in government parastatals	38	4.68	0.277
Capacity Development are factors that influence the implementation of E-Procurement in government parastatals	38	4.36	0.256
Continuous Improvement are factors that influence the implementation of E-Procurement in government parastatals	38	4.56	0.451
<b>Composite Mean and Std Deviation</b>	<b>38</b>	<b>4.53</b>	<b>0.328</b>

The results in Table 7 shows that the respondents unequivocally agree that top management bolsters must be the association practice for the implementation of E-procurement projects to be successful. The premise is supported by a composite mean of 4.53 and a standard deviation of 0.328 suggesting that most responses made were clustered around the agree and strongly agree on responses on the Likert scale.

#### **4.4.2 Inferential Statistics on the influence of Top Management Support on Implementation of E-Procurement Programs**

This section utilizing the chi-square test presented the results of the test of the fourth hypotheses of the examination. The hypothesis formulated for testing was:

H<sub>1</sub>: There is a significant relationship between Top Management Support and implementation of E-procurement Programs in Government Corporate Agencies.

**Table 8: Chi-Square Tests for Top Management Support and Implementation of E-Procurement Programs**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	37.318 <sup>a</sup>	25	.000
Likelihood Ratio	20.779	25	.002
Linear-by-Linear Association	16.356	1	.000
<b>N of Valid Cases</b>	<b>38</b>		

*34 cells (94.4%) have expected count less than 5. The minimum expected count is .03.*

The results from table 8 show that the value of the Chi-square measurement is 37.318 while the P-value in the asymptotic significance section is 0.000. The result is considered huge if the significance value is equal to or less than the designated alpha level of 0.05. Subsequently from the findings, the investigation concludes that there is a huge relationship between top management backing and implementation of E-procurement programs. The discoveries accept the fourth hypothesis.

#### **4.5 Regression Analysis on Factors Influencing Implementation of E-Procurement Programs in parastatals.**

The researcher sought to establish the extent to which all the four variables/ factors influence the Implementation of E-Procurement Programs in Government parastatals. The analysis was done using multiple regression analysis techniques. The findings were presented in tables 9, 10 and 11



**Table 9: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change in R Square	F Change	df1	df2	Sig. Change
1	.913 <sup>a</sup>	.834	.814	.11266	.834	41.379	4	33	.000

*a. Predictors: (Constant), Top Management Support, Staff Skills, Technology Infrastructure, Stakeholder Involvement*

The findings in the model summary in Table 9 indicates that the adjusted  $R^2$  is 0.814 which means that 81.4% of the implementation E-procurement programs can be explained by the factors considered by the study namely;  $X_1$ = Stakeholders involvement,  $X_2$ = Technology infrastructure,  $X_3$ = Staff Skills, and  $X_4$ = Top management support. The level of significance was at 0.000 which is less than 0.05 implying that there is a statistically significant relationship between the dependent variable and all the independent variables in the study.

**Table 10: Analysis of Variance (ANOVA)**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.101	4	.525	41.379	.000b
	Residual	.419	33	.013		

*a. Dependent Variable: implementation of E-procurement programs.*

*b. Predictors: (Constant), Top Management Support, Staff Skills, Technology Infrastructure, Stakeholder Involvement*

From the Analysis of variance (ANOVA), Table 10 findings were used to deduce if there were significant differences between the study variable means, the findings show that  $F(4, 33) = 41.379$ ;  $P$ -value = 0.000, the  $F$  value was above 2 and  $P$  value less than 0.05, therefore, the conclusion that there is a significant relationship between the variables under study.

**Table 11: Regression Coefficients**

Model		Unstandardized Coefficients		Std. Error	Beta	Standardized Coefficients
1	(Constant)	.353	.334		1.056	.0229
	Stakeholder Involvement	.147	.151	.151	.971	.003
	Technology Infrastructure	.550	.165	.156	.907	.001
	Staff Skills	.771	.133	.584	4.144	.000
	Top Management Support	.150	.194	.076	.397	.000

*a Dependent Variable: Implementation of E-procurement Programs*

Table 11 represents the regression coefficients likewise shows the beta coefficients of develops which was made of four independent variables that predict the dependent

variable implementation of E-procurement programs. The regression model equation derived was;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

$$Y = 0.353 + 0.147(X_1) + 0.550(X_2) + 0.771(X_3) + 0.150(X_4)$$

The equation shows that all factors have a positive significant influence on the implementation of E-procurement programs in government parastatals. The regression equation shows a unit increase in stakeholder involvement would lead to an improvement in implementation of E-procurement programs of 0.147 while a unit increase in technology infrastructure would lead to improved implementation of E-procurement by 0.550. Top management support when increased would lead to improvement of implementation of E-procurement by 0.150 and lastly a unit increase in staff skills on technology would lead to improved implementation of E-procurement programs by 0.771. The regression equation further established that in the absence of the four factors there would be implementation of e-procurement programs of 0.353, meaning that there are other factors affecting implementation of e-procurement programs not considered in the model.

### **5.1 Conclusion**

The research was drawn from all the four objectives of the research that were summarized through the regression equation. The end results were that all components had a positive significant influence on the implementation of E-procurement programs in government parastatals in Kenya. The summary of this study indicated that; a unit increase in stakeholder involvement would lead to an improvement in the implementation of E-procurement programs of 0.147 while a unit increase in technology infrastructure would lead to improved implementation of E-procurement by 0.550. Top management bolster when increased would lead to improvement of the implementation of E-procurement by 0.150 and in conclusion, a unit increase in staff abilities on technology would lead to improved implementation of E-procurement programs by 0.771. The regression equation further established that in the absence of the four factors there would be the implementation of e-procurement projects of 0.353, meaning that there are other elements affecting the implementation of e-procurement programs not considered in the model.

### **6.1 Recommendation**

The fact that stakeholders were paramount to the implementation of e-procurement in government parastatals, let the management of KPA consider the whole inclusiveness of all other stakeholders. Basically this study was focused on only staff and suppliers and indeed didn't consider the community that surrounds them and other key factors such as government agencies and key development partners. Therefore, at all costs the government needs to bring on board all the development partners for effective implementation of e-procurement in government parastatals. On technology infrastructure, hardware availability are factors that influence the implementation of e-procurement in government parastatals. Despite the fact that this statement was rated lower than other statements in the variable, let the computer department at KPA find out the deficiencies involved in the acquisition of suitable hardware. On staff skills in technology, it was noted that skills knowledge in e-procurement is very significant. Therefore, KPA needs to invest in IT skills as recommended by the 21<sup>st</sup> century performance desires. Top

management statements were ranked high other than capacity development factors. This research recommends a further improvement to capacity development to all support staff and who are key implementers of e-procurements projects.

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