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FACTORS AFFECTING EFFICIENCY IN TENDERING PROCESS IN THE ENERGY SECTOR IN KENYA.

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Abstract

Purpose: The purpose of the study was to determine the factors that affect efficiency in tendering process in the energy sector with an aim of making recommendations.

Methodology: The study employed a descriptive research design. The study preferred this method because it allowed an in-depth study of the subject. Data was collected using self-administered questionnaires. The study employed stratified random sampling technique in coming up with a sample size of 154 respondents from a total of 253 target population in the energy sector in Kenya. Pilot study was carried out to establish the validity and reliability of the research instruments. The instruments were designed appropriately according to the study objectives. The data collected was analyzed by use of descriptive and inferential statistics. The study used multiple regression and correlation analysis to show the relationship between the dependent variable and the independent variables. The data generated was keyed in and analyzed by use of Statistical Package of Social Sciences (SPSS) version 24 to generate information which was presented using charts, frequencies and percentages.

Results: The results of regression analysis revealed that there was a significant positive relationship between dependent variable and independent variable at ($\beta = 0.634$), $p=0.000 <0.05$). The findings of the study indicated that information technology integration, regulatory framework, records management and supplier relationship management have a positive relationship with efficiency in tendering process in public procurement project.

Unique Contribution to Policy and Practice: The study recommended that companies in the energy sector should embrace efficiency in tendering process and further researches should to be carried out in other institutions to find out if the same results can be obtained.

Keywords: *information technology integration, regulatory framework, records management, supplier relationship management*

1.0 INTRODUCTION

1.1 Background of the Study

Worldwide, tendering is recognized as a process of bidding, offering or proposal or expression of interest in response to an invitation or a bid request. Organizations look for other companies to respond to a particular need, such as the supply of goods and services, and select an offer or offer that meets their needs and offers the best quality / price ratio (Wogube, 2011).

Tender is any offer or proposal made for acceptance; as, an offer of a loan, a service or a friendship; an offer bid for a contract. An offer, either of money to pay a debt, or of the service to be performed, to save a fine or confiscation, in which it would be incurred for non-payment or non-compliance; as, the rental offer due, or the amount of a note, with interest (CIPS, 2015). Public organizations are usually legally obliged to publish tenders for works and services.

Globally, Liker and Choi, (2004) noted that Honda tells its suppliers what kind of product it intends to introduce and what type of market it plans to cultivate into in the coming years for suppliers to be aligned with the enterprise. It is also important to make sure they understand the economic framework that the solution train is working under, it also equally important for the purchaser to know the framework of the supplier so that win-win situation can be built.

Ndhlovu and Twala, (2013), the South African electricity supply industry has undergone a series of radical reforms over the last twenty years. The South African case consists essentially of two reforms: the transformation of a planned system into a state monopoly in the early 1990s, followed by a restructuring of the monopoly, together with the liberalization of the market, in 2003-2011. The liberalization of electricity prices began in 2007 with increasing intensity of annual price liberalization. Full liberalization was planned in 2011, but this has not been achieved. The degree of liberalization is uncertain due to intense price regulation and a highly concentrated market.

Procurement tendering process in Kenya has evolved from a crude system with no regulations to an orderly legally regulated procurement system (Rotich, 2011). The Government's procurement system was originally contained in the Supplies Manual of 1978, which was supplemented by circulars that were issued from time to time by the Treasury. The director of government supply services was responsible for ensuring the proper observance of the provisions of the Manual (PPOA, 2007).

1.2 Problem Statement

As the clock ticks, so does demand for better quality, faster delivery, and better overall value increase; leading to a few visionary leaders to start to consciously differentiate between the things that create value and those that do not and thus leading to adoption of efficiency in the tendering process that seek to help companies in the energy sector to have a competitive advantage over rivals and position themselves for future success (KPMG, 2012).

Despite the increase in awareness in the tendering processes in public bodies in accordance with the Public Procurement Act and the provisions (2005), very little has been done to analyze the factors influencing tendering in the public sector (World Bank, 2013). Although in 2003 the Government of Kenya started to implement reforms to address inefficiency in the use of public resources and weak state institutions (PPOA, 2014). The reforms included the development of anti-corruption strategies to facilitate the fight against corruption and the enactment of the Law on

Ethics of Public Officials of 2003, the Law against Corruption and Economic Crime, the Law on Financial Management of 2004 and the Public Procurement and Disposal Act 2005.

An effective public tendering system allows suppliers to provide quality, service and satisfactory prices within a timely delivery program (Transparency International, 2015). The basic principle of public procurement is simple: acquire the right item at the right time and at the right price to support government actions (KIPPRA, 2015). Although the formula is simple, it involves issues of responsibility, integrity and value with effects that go far beyond the actual buyer-seller transactions in your center. A serious and sustained review of these decisions is needed to properly manage the public offering function (Kipchilat, 2012)

A number of studies have been conducted on efficiency in tendering process globally. For instance, Cousins (2015) conducted a survey on 174 energy firms in the UK and found out that though 92% claimed efficiency in tendering process seemed to have reduced transaction costs. The studies found that the investigated energy firms looked at negotiating tendering savings instead of focusing on streamlining the inter-organizational processes. This study was however, conducted in a developed country and not in Kenya.

Several studies have been done locally; Kioko and Were (2014) did a study on factors affecting efficiency of the procurement function at the public institutions in Kenya, while EACC (2012) accused Kenya Power of procurement fraud over handing a contract to a Chinese firm that had been in existence for only 11 months and thus not meeting the requirement of having audited reports for the last 18 months, raising suspicion about the transaction. These studies however, did not look at factors affecting efficiency in tendering process. It is against this back drop that this study seeks to examine the factors affecting efficiency in tendering process in the energy sector in Kenya.

1.3 Objectives of the Study

i. To assess the effect of information technology integration on efficiency in tendering process in the energy sector in Kenya.
ii. To establish the effect of regulatory framework on efficiency in tendering process in the energy sector in Kenya.
iii. To determine the effect of records management on efficiency in tendering process in the energy sector in Kenya.
iv. To evaluate the effect of supplier relationship management on efficiency in tendering process in the energy sector in Kenya.

2.0 LITERATURE REVIEW

2.1 Information Technology Integration and Efficiency in Tendering Process

According to Alex (2013), IT is transforming the way the business is conducted. Computers prepare invoices, issue checks, track inventory movements and store staff and payroll data. Personal computers are changing models of office work, and the spread of information technology is affecting the efficiency and competitiveness of companies, the structure of the workforce and the general growth of economic production.

2.2 Regulatory Framework and Efficiency in Tendering Process

Organizations that face high pressure in terms of regulatory compliance tend to better implement the policies and regulations put in place (Zhu & Sarkis, 2010). However, government regulations are not very significant in sustainable procurement process (Carter & Jennings, 2014). Therefore, coercive isomorphism enables parastatals in adopting procurement regulations for efficient procurement process and to support performance of an organization. In a way it urges parastatals to make their regulations that intertwine with government's policies without necessarily relying on government's regulations (Arjaan & Van, 2010).

2.3 Records Management and Efficiency in Tendering Process

In any contemporary industry, data and reports that demonstrate compliance with regulatory requirements must be robust and must come from a reliable source. Many developing countries do not have a systematic approach to record management. It is argued that accurate and easily accessible recordings of judicial decisions reduce the potential for illicit manipulation resulting from delays, corruption and inaccuracies. The dysfunctional management of registers undermines legal and judicial reform, creating an area for corruption or collusion between judicial officials and lawyers (Thurston, 2015).

2.4 Supplier Relationship Management and Efficiency in Tendering Process

Jarvelin and Marie (2011) define a relationship as a "connection". Further, relationship applies when individuals, organizations and groups within and external to an enterprise interact. Apart from the field of Industrial Sociology, concerned with the study of group interaction within a workplace, environment, the application of the study of business relationships began with the concept of relationships marketing. This relationship describes a long-term marketing strategy in which emphasis is on building and maintaining long-term relationships with customers rather than 'on a sale at a time.

2.5 Theoretical review

2.5.1 E-Technology Perspective Theory

This theory was developed by Wagner it mainly explains how information technology based procurement will increase efficiency in a firm. In this theory information technology based procurement enables customers and suppliers to increase networking channel through the internet in terms of production planning, demand management and inventory management, (Lee, 2013). Information technology based procurement facilitates frictionless procurement paradigm (Brousseau, 2010).

The research by Min and Galle (2012) recognizes the extensive nature of information technology based procurement which refers to procurement as a business-to-business (B2B) purchasing practice that utilizes electronic procurement to identify potential sources of supply to purchase goods and services, interact with suppliers and transfer payment.

The internet has been widely adopted by companies with the aim of improving organizational performances both in internal processes and in external processes (Barratt & Rosdahl, 2012). Despite the fact that business-to-business (B2B) trade has enjoyed a longer existence online than business-to-consumer (B2C) the benefits of information technology based procurement in a B2B setting are significant (Min & Galle, 2012).

Previous studies have claimed that information technology based procurement has become the catalyst that allows companies to integrate their supply chains from end-to-end from supplier to the end user with shared performance, availability and pricing data that allows buyers and suppliers to work to optimum and mutually beneficial schedules and prices (Morris, 2010).

2.6 Conceptual Framework

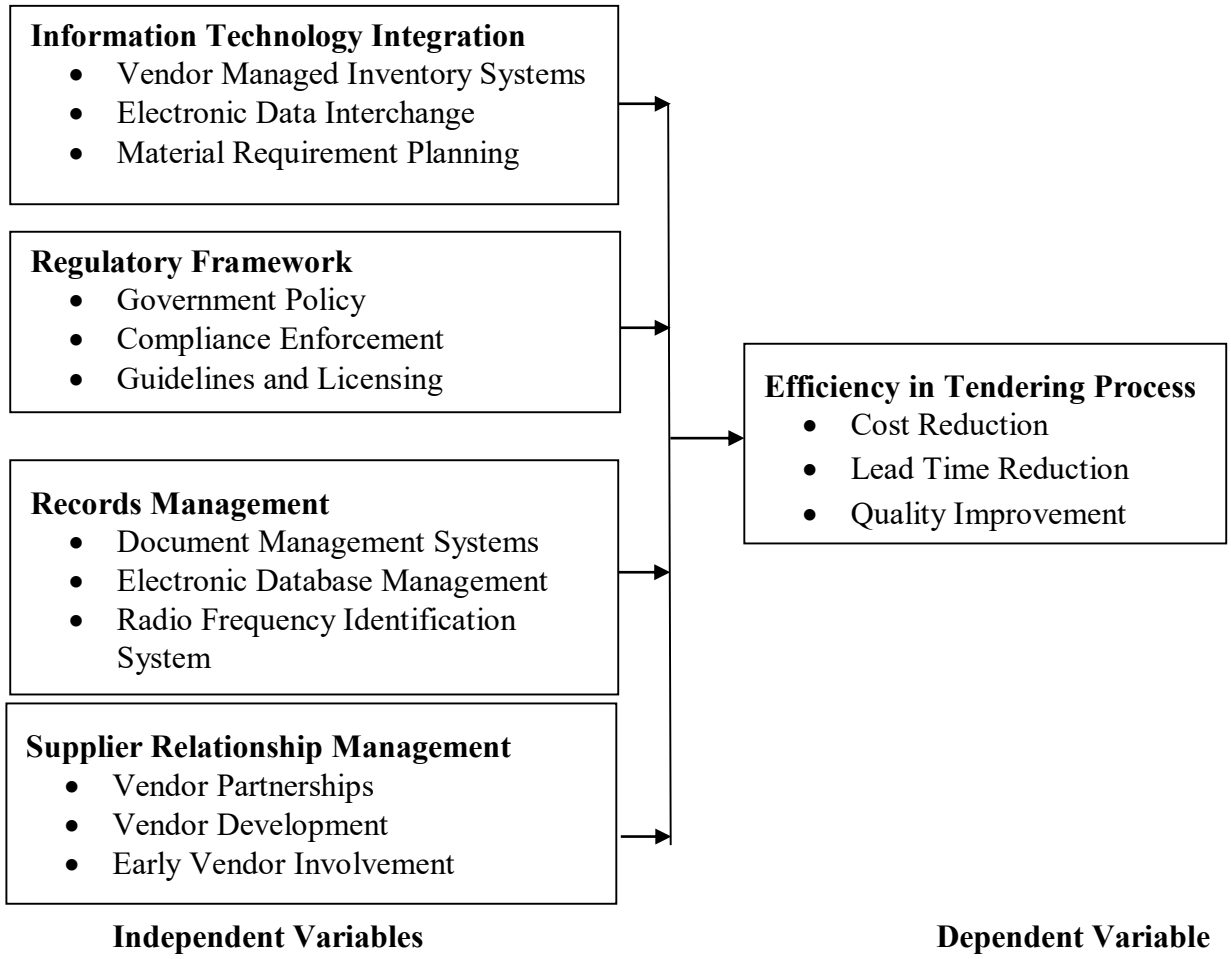

Figure 1: Conceptual framework

3.0 METHODOLOGY

The study employed a descriptive research design. The study preferred this method because it allowed an in-depth study of the subject. Data was collected using self-administered questionnaires. The study employed stratified random sampling technique in coming up with a sample size of 154 respondents from a total of 253 target population in the energy sector in Kenya. Pilot study was carried out to establish the validity and reliability of the research instruments. The instruments were designed appropriately according to the study objectives. The data collected was analyzed by use of descriptive and inferential statistics. The study used multiple regression and correlation analysis to show the relationship between the dependent variable and the independent variables. The data generated was keyed in and analyzed by use of Statistical Package of Social

Sciences (SPSS) version 24 to generate information which was presented using charts, frequencies and percentages.

4. 0 RESULTS FINDINGS

4.1 Information Technology Integration

The first objective of the study was to examine the effect of information technology integration on efficiency in tendering process in public procurement project in the energy sector in Kenya. The respondents were asked to indicate to what extent information technology integration affected efficiency in tendering process in public procurement projects in the energy sector in Kenya. Results indicated that majority of the respondents 35% agreed that it was moderate extent, 34% said that it was great extent, 26% said it was very great extent, little extent was at 4% and none at all at 1%.

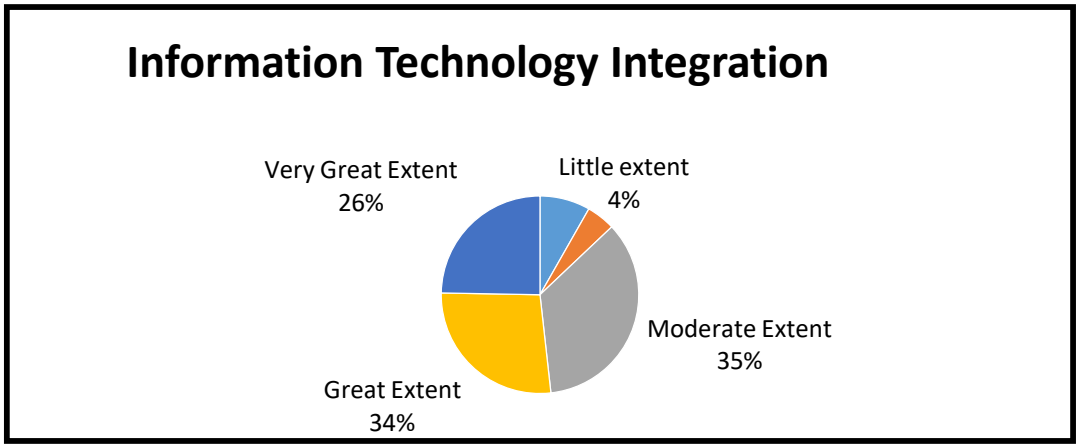

Figure 2: Information Technology Integration

The respondents were also asked to comment on statements regarding information technology integration effect on efficiency in tendering process in public procurement projects in the energy sector in Kenya. The responses were rated on a likert scale and the results presented in Table 4.3 below. It was rated on a 5 point Likert scale ranging from; 1 = strongly disagree to 5 = strongly agree. The scores of ' strongly disagree' and 'disagree' have been taken to represent a statement not agreed upon, equivalent to mean score of 0 to 2.5. The score of 'neutral' has been taken to represent a statement agreed upon, equivalent to a mean score of 2.6 to 3.4. The score of 'agree' and 'strongly agree' have been taken to represent a statement highly agreed upon equivalent to a mean score of 3.5 to 5.

The respondents were asked to indicate the descriptive for information technology integration. The result in table 1 revealed that majority of the respondent with a mean of (3.86) agreed with the statement that Vendor managed inventory systems plays a significant role in cost reductions. The measure of dispersion around the mean of the statements was 0.928 indicating the responses were varied. The result revealed that majority of the respondent as indicated by a mean of (3.85) agreed with the statement that Electronic data interchange plays a significant role in cost reductions. The standard deviation for the statement was 0.883 showing a variation. The result revealed that majority of the respondent (3.83) agreed with the statement that Material requirement planning plays a significant role in cost reductions. The results were varied as shown by a standard deviation of 0.906.

The result revealed that majority of the respondents as shown by a mean of (4.47) indicated that they agreed with the statement that Vendor managed inventory systems plays a significant role in reducing lead time. The responses were varied as measured by standard deviation of 0.501. The result revealed that majority of the respondents with a mean of (4.44) indicated that they agreed with the statement that Electronic data interchange plays a significant role in reducing lead time. The responses were varied as measured by standard deviation of 0.656. The result revealed that majority of the respondents (4.47) indicated that they agreed with the statement that Material requirement planning plays a significant role in reducing lead time. The responses were varied as measured by standard deviation of 0.544.

The result revealed that majority of the respondents (4.44) indicated that they agreed with the statement that Vendor managed inventory systems plays a significant role in quality improvement. The responses were varied as measured by standard deviation of 0.752. The result showed that majority of the respondents (4.02) indicated that they agreed with the statement that Electronic data interchange plays a significant role in quality improvement. The responses were varied as measured by standard deviation of 0.826. Further, the results indicated that a majority of the respondents (4.4) agreed with the statement that Material requirement planning plays a significant role in quality improvement. There was a standard deviation of 0.717 indicating a variation of responses. The average response for the statements on information technology integration was 4.19. The findings agree with Kusljic and Marenjak (2013) that a good information technology integration is necessary for the efficiency in tendering process.

Table 1: Information technology integration

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. D
Vendor managed inventory systems plays a significant role in cost reductions	1.50%	1.50%	36.80%	29.30%	30.80%	3.86	0.928
Electronic data interchange plays a significant role in cost reductions	0.80%	2.30%	36.10%	33.10%	27.80%	3.85	0.883
Material requirement planning plays a significant role in cost reductions	1.50%	1.50%	36.80%	32.30%	27.80%	3.83	0.906
Vendor managed inventory systems plays a significant role in reducing lead time	0.00%	0.00%	0.00%	52.60%	47.40%	4.47	0.501
Electronic data interchange plays a significant role in reducing lead time	1.50%	0.00%	0.00%	49.60%	48.90%	4.44	0.656
Material requirement planning plays a significant role in reducing lead time	0.00%	0.80%	0.00%	51.10%	48.10%	4.47	0.544
Vendor managed inventory systems plays a significant role in quality improvement	2.30%	0.80%	0.00%	45.10%	51.90%	4.44	0.752
Electronic data interchange plays a significant role in quality improvement	0.00%	0.00%	33.10%	32.30%	34.60%	4.02	0.826
Material requirement planning plays a significant role in quality improvement	1.50%	1.50%	0.00%	49.60%	47.40%	4.4	0.717
Average						**4.19**	**0.745**

4.2 Regulatory Framework

The second objective of the study was to determine the effect of regulatory framework on efficiency in tendering process procurement project in the energy sector in Kenya. The respondents

were asked to indicate to what extent did regulatory framework affected efficiency in tendering process in public procurement projects in the energy sector in Kenya. Results indicated that majority of the respondents 34% agreed that it was great extent, 33% said that it was moderate extent, 27% said it was very great extent, while little extent was at 5% and non at all at was at 1%.

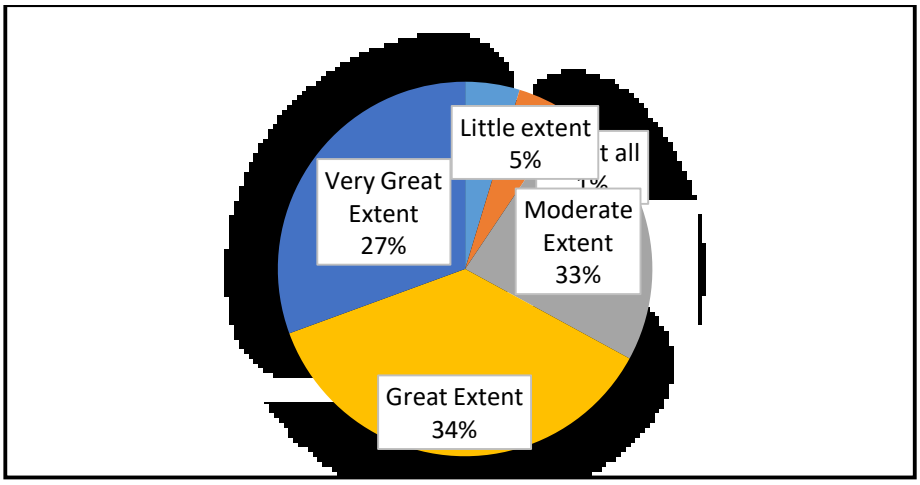

Figure 3: Regulatory Framework

The respondents were also asked to comment on statements regarding regulatory framework effect on performance of efficiency in tendering process in public procurement projects in the energy sector in Kenya. The respondents were asked to indicate descriptive responses for regulatory framework. The result in table 2 revealed that majority of the respondents as indicated by a mean of (3.98) indicated that they agreed with the statement that Government policy plays a significant role in cost reductions. The responses were varied as measured by standard deviation of 0.83. The result revealed that majority of the respondents as shown by a mean of (3.9) indicated that they agreed with the statement that Compliance enforcement plays a significant role in cost reductions. The responses were varied as measured by standard deviation of 0.815. The result revealed that majority of the respondents with a mean of (4.05) indicated that they agreed with the statement that Guidelines and licensing plays a significant role in cost reductions. The responses were varied as measured by standard deviation of 0.847.

The result revealed that majority of the respondents (4.46) indicated that they agreed with the statement that Government policy plays a significant role in reducing lead time. The responses were varied as measured by standard deviation of 0.5. The result revealed that majority of the respondents (4.58) indicated that they agreed with the statement that Compliance enforcement plays a significant role in reducing lead time. The responses were varied as measured by standard deviation of 0.496. The result showed that majority of the respondents (2.99) indicated that they agreed with the statement that Guidelines and licensing plays a significant role in reducing lead time. The responses were varied as measured by standard deviation of 1.459.

The result revealed that majority of the respondents as shown by a mean of (2.96) indicated that they agreed with the statement that Government policy plays a significant role in quality improvement. The responses were varied as measured by standard deviation of 1.489. The result revealed that majority of the respondents with a mean of (3.56) indicated that they agreed with the statement that Compliance enforcement plays a significant role in quality improvement. The responses were varied as measured by standard deviation of 1.117. The result revealed that

majority of the respondents (3.71) indicated that they agreed with the statement that Guidelines and licensing plays a significant role in quality improvement. The responses were varied as measured by standard deviation of 1.07. The average response for the statements on regulatory framework was 3.79. The findings agree with Jin and Doloi (2008) that exemplary regulatory framework is necessary for the efficiency in tendering process.

Table 2: Regulatory Framework

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. D
Government policy plays a significant role in cost reductions	0.00%	0.00%	35.30%	31.60%	33.10%	3.98	0.83
Compliance enforcement plays a significant role in cost reductions	0.00%	0.00%	38.30%	33.10%	28.60%	3.9	0.815
Guidelines and licensing plays a significant role in cost reductions	0.00%	0.00%	33.10%	28.60%	38.30%	4.05	0.847
Government policy plays a significant role in reducing lead time	0.00%	0.00%	0.00%	54.10%	45.90%	4.46	0.5
Compliance enforcement plays a significant role in reducing lead time	0.00%	0.00%	0.00%	42.10%	57.90%	4.58	0.496
Guidelines and licensing plays a significant role in reducing lead time	21.80%	20.30%	15.00%	22.60%	20.30%	2.99	1.459
Government policy plays a significant role in quality improvement	24.10%	17.30%	19.50%	16.50%	22.60%	2.96	1.489
Compliance enforcement plays a significant role in quality improvement	0.00%	24.10%	21.10%	29.30%	25.60%	3.56	1.117
Guidelines and licensing plays a significant role in quality improvement	0.00%	18.00%	21.10%	32.30%	28.60%	3.71	1.07
Average						**3.79**	**0.958**

4.3 Records Management

There was also need to assess the effect of records management on efficiency in tendering process of projects in the energy sector in Kenya as the third objective. The respondents were asked to comment on extent of records management effect on performance of efficiency in tendering process in public procurement projects in the energy sector in Kenya. Results indicated that majority of the respondents 22% agreed that it was great extent, 21% said that it was both moderate and very great extent, 28% said it was little extent and none at all at 8%.

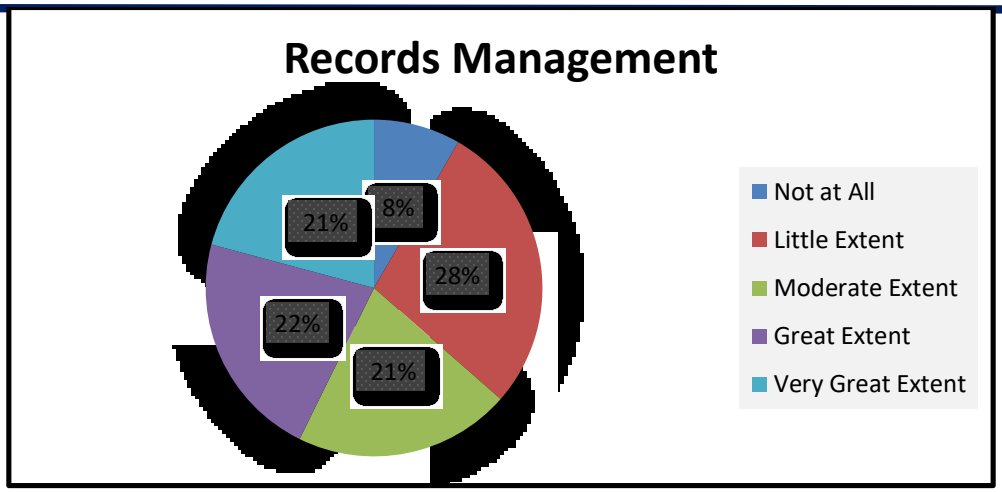

Figure 4: Records Management

The respondents were asked to indicate their levels of agreement on statements regarding records management. The results in table 3 revealed that majority of the respondent (4.14) agreed with the statement that Document management systems plays a significant role in cost reductions. The responses were varied as shown by the standard deviation of 0.818. The result revealed that majority of the respondent (3.87) agreed with the statement that Electronic database management plays a significant role in cost reductions. The measures of dispersion around the mean were 0.783. The result revealed that majority of the respondent (3.86) agreed with the statement that Radio frequency identification system plays a significant role in cost reductions. The measures of dispersion around the mean were 0.955.

The result revealed that majority of the respondent (3.98) agreed with the statement that Document management systems plays a significant role in reducing lead time. The measures of dispersion around the mean were 0.802. The result revealed that majority of the respondent (3.82) agreed with the statement that Electronic database management plays a significant role in reducing lead time. The measures of dispersion around the mean were 1.029. The result revealed that majority of the respondents as shown by a mean of (4) indicated that they agreed with the statement that Radio frequency identification system plays a significant role in reducing lead time. The responses were varied as measured by standard deviation of 0.816.

The result revealed that majority of the respondents with a mean of (2.86) indicated that they agreed with the statement that Document management systems plays a significant role in quality improvement. The responses were varied as measured by standard deviation of 1.476. The result revealed that majority of the respondents (4.44) indicated that they agreed with the statement that Electronic database management plays a significant role in quality improvement. The responses were varied as measured by standard deviation of 0.498. The result revealed that majority of the respondents (4.53) indicated that they agreed with the statement that Radio frequency identification system plays a significant role in quality improvement. The responses were varied as measured by standard deviation of 0.501. The average response for the statements on records management was 3.94. The findings agree with Hui (2010) that observing if each activity has records management is necessary for the efficiency in tendering process.

Table 3: Records Management

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. D
Document management systems plays a significant role in cost reductions	0.00%	0.00%	27.10%	31.60%	41.40%	4.14	0.818
Electronic database management plays a significant role in cost reductions	0.00%	0.00%	37.60%	37.60%	24.80%	3.87	0.783
Radio frequency identification system plays a significant role in cost reductions	0.00%	6.80%	33.10%	27.80%	32.30%	3.86	0.955
Document management systems plays a significant role in reducing lead time	0.00%	0.00%	33.10%	36.10%	30.80%	3.98	0.802
Electronic database management plays a significant role in reducing lead time	3.80%	3.80%	29.30%	33.10%	30.10%	3.82	1.029
Radio frequency identification system plays a significant role in reducing lead time	0.00%	0.00%	33.10%	33.80%	33.10%	4	0.816
Document management systems plays a significant role in quality improvement	26.30%	18.80%	15.00%	21.80%	18.00%	2.86	1.476
Electronic database management plays a significant role in quality improvement	0.00%	0.00%	0.00%	56.40%	43.60%	4.44	0.498
Radio frequency identification system plays a significant role in quality improvement	0.00%	0.00%	0.00%	46.60%	53.40%	4.53	0.501
Average						**3.94**	**0.853**

4.4 Supplier Relationship Management

There was also need to examine the effect of supplier relationship management on efficiency in tendering process in public procurement projects in the energy sector in Kenya. The respondents were also asked to comment on statements regarding supplier relationship management affected efficiency in tendering process in public procurement projects in the energy sector in Kenya. Results showed that 37% of respondents indicated it was moderate extent, 27% that it was little extent, 12% great extent while 21% none at all and 3% to very great **extent.**

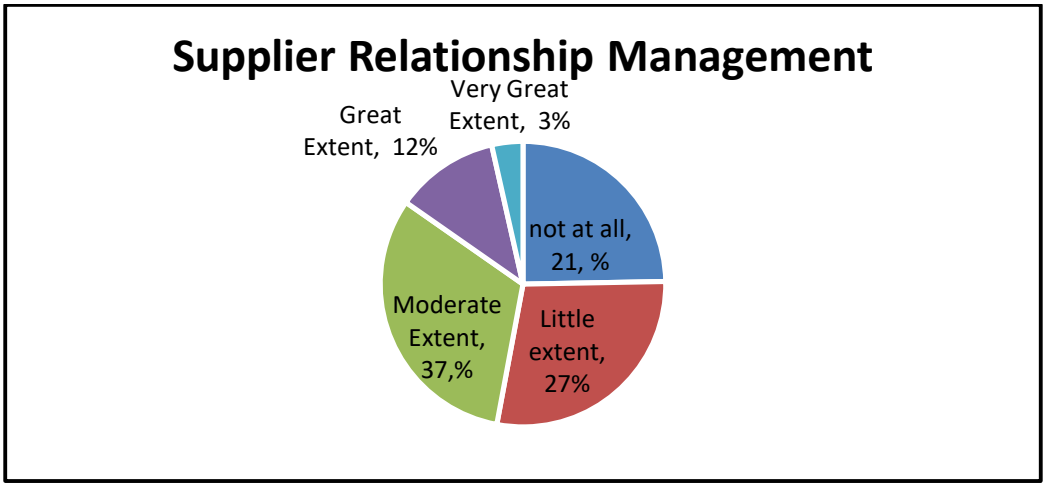

Figure 5: Supplier Relationship Management

The respondents were asked to indicate the descriptive for supplier relationship management. The result in table 4. revealed that majority of the respondent (4.56) agreed with the statement that

Vendor partnerships play a significant role in cost reductions. The responses were varied as shown by a standard deviation of 0.499. The result revealed that majority of the respondent (4.48) agreed with the statement that Vendor development plays a significant role in cost reductions. The responses were varied as shown by a standard deviation of 0.502. The result revealed that majority of the respondent (4.39) agreed with the statement that Early vendor involvement plays a significant role in cost reductions. The responses were varied as shown by a standard deviation of 0.672.

The result further revealed that majority of the respondent (4.44) agreed with the statement that Vendor partnerships play a significant role in reducing lead time. The responses were varied as shown by a standard deviation of 0.742. The result further revealed that majority of the respondent (4.51) agreed with the statement that Vendor development plays a significant role in reducing lead time. Responses were varied as shown by a standard deviation of 0.502. The result further revealed that majority of the respondent (4.47) agreed with the statement that Early vendor involvement plays a significant role in reducing lead time. Responses were varied as shown by a standard deviation of 0.501.

Table 4: Supplier Relationship Management

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. D
Vendor partnerships play a significant role in cost reductions	0.00%	0.00%	0.00%	44.40%	55.60%	4.56	0.499
Vendor development plays a significant role in cost reductions	0.00%	0.00%	0.00%	51.90%	48.10%	4.48	0.502
Early vendor involvement plays a significant role in cost reductions	0.00%	2.30%	3.80%	46.60%	47.40%	4.39	0.672
Vendor partnerships play a significant role in reducing lead time	1.50%	1.50%	1.50%	42.90%	52.60%	4.44	0.742
Vendor development plays a significant role in reducing lead time	0.00%	0.00%	0.00%	48.90%	51.10%	4.51	0.502
Early vendor involvement plays a significant role in reducing lead time	0.00%	0.00%	0.00%	52.60%	47.40%	4.47	0.501
Vendor partnerships play a significant role in quality improvement	0.80%	1.50%	3.00%	49.60%	45.10%	4.37	0.691
Vendor development plays a significant role in quality improvement	0.00%	0.00%	0.00%	49.60%	50.40%	4.5	0.502
Early vendor involvement plays a significant role in quality improvement	0.00%	0.00%	0.00%	48.90%	51.10%	4.51	0.502
Average						**4.47**	**0.568**

The result revealed that majority of the respondent (4.37) agreed with the statement that Vendor partnerships play a significant role in quality improvement. The responses were varied as shown by a standard deviation of 0.691. The result revealed that majority of the respondent (4.5) agreed

with the statement that Vendor development plays a significant role in quality improvement. The responses were varied as shown by a standard deviation of 0.502. The result revealed that majority of the respondent (4.51) agreed with the statement that Early vendor involvement plays a significant role in quality improvement. The responses were varied as shown by a standard deviation of 0.502. The average response for the statements on supplier relationship management was 4.47. The findings agree with Freeman *et al.,* (2010) that supplier relationship management is necessary for the efficiency in tendering process.

4.5 Correlation Analysis

Correlation analysis was used to determine both the significance and degree of association of the variables and also predict the level of variation in the dependent variable caused by the independent variables. The results of the correlation analysis are summarized in Table **5**

Table 5: Summary of Pearson's Correlations

Correlations		Information Technology Integration	Regulatory Framework	Records Management	Supplier Relationship Management	Efficiency in Tendering Process
Information Technology Integration	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	133				
Regulatory Framework	Pearson Correlation	.558**	1			
	Sig. (2-tailed)					
	N	133	133			
Records Management	Pearson Correlation	.532**	.546**	1		
	Sig. (2-tailed)					
	N	133	133	133		
Supplier Relationship Management	Pearson Correlation	.570**	.845**	.613**	1	
	Sig. (2-tailed)					
	N	133	133	133	133	
Efficiency in Tendering Process	Pearson Correlation	.714**	.728**	.714**	.737**	1
	Sig. (2-tailed)	0	0	0	0	
	N	133	133	133	133	133

**** Correlation is significant at the 0.05 level (2-tailed).**

The correlation summary shown in Table 5 indicated that the associations between each of the independent variables and the dependent variable were all significant at the 95% confidence level.

The correlation analysis to determine the association between information technology integration and efficiency in tendering process in public procurement projects in the energy sector in Kenya, Pearson correlation coefficient computed and tested at 5% significance level. The results indicate that there was a positive relationship (r=0.714) between information technology integration and efficiency in tendering process in public procurement projects in the energy sector in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05).

The correlation analysis to determine the relationship between regulatory framework and efficiency in tendering process in public procurement projects in the energy sector in Kenya, Pearson correlation coefficient computed and tested at 5% significance level. The results indicated that there was a positive relationship (r=0.728) between regulatory framework and efficiency in tendering process in public procurement projects in the energy sector in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05).

The correlation analysis to determine the relationship between records management and efficiency in tendering process in public procurement projects in the energy sector in Kenya, Pearson correlation coefficient computed and tested at 5% significance level. The results indicate that there was a positive relationship (r=0.714) between records management and efficiency in tendering process in public procurement projects in the energy sector in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05).

The correlation analysis to determine the relationship between supplier relationship management and efficiency in tendering process in public procurement projects in the energy sector in Kenya, Pearson correlation coefficient computed and tested at 5% significance level. The results indicate that there was a positive relationship (r= 0.737) between supplier relationship management and efficiency in tendering process in public procurement projects in the energy sector in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05).

4.6 Regression Analysis

In this study multivariate regression analysis was used to determine the significance of the relationship between the dependent variable and all the independent variables pooled together. Regression analysis was conducted to find the proportion in the dependent variable (efficiency in tendering process) which can be predicted from the independent variables (information technology integration, regulatory framework, records management, supplier relationship management). Table 6 presented the regression coefficient of independent variables against dependent variable.

Table 6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.796[a]	0.634	0.622	0.203452

a) Predictors: (Constant), Information Technology Integration, Regulatory Framework, Records Management and Supplier Relationship Management
b) Dependent Variable: Efficiency in Tendering Process

The results of regression analysis revealed there was a significant positive relationship between dependent variable and the independent variable. The independent variables reported R value of

0.796 indicating that there was perfect relationship between dependent variable and independent variables. R-Square is a commonly used statistic to evaluate model fit. R^2 is 1 minus the ratio of residual variability. The coefficient of determination also called the R^2 was 0.634. R^2 value of 0.634 means that 63.4% of the corresponding variation in efficiency in tendering process can be explained or predicted by (information technology integration, regulatory framework, records management, supplier relationship management) which indicated that the model fitted the study data. The results of regression analysis revealed that there was a significant positive relationship between dependent variable and independent variable at ($\beta = 0.634$), $p=0.000 <0.05$).

Table 7 presented the ANOVA results of the regression model.

Table 7: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.167	4	2.292	55.366	.000[b]
	Residual	5.298	128	0.041		
	Total	14.465	132			

a) Predictors: (Constant), Information Technology Integration, Regulatory Framework, Records Management and Supplier Relationship Management
b) Dependent Variable: Efficiency in Tendering Process

The significance value is 0.000 which is less than 0.05 thus the model is statistically significance in predicting how information technology integration, regulatory framework, records management, supplier relationship management affect efficiency in tendering process in public procurement projects in the energy sector in Kenya. The F critical at 5% level of significance was 35.65. Since F calculated which can be noted from the ANOVA table above is 55.366 which is greater than the F critical (value =35.65), this shows that the overall model was significant. The study therefore establishes that; information technology integration, regulatory framework, records management, supplier relationship management affect efficiency in tendering process. These results agree with Burger and Hawkesworth (2011) results which indicated a positive and significant effect of information technology integration, regulatory framework, records management, supplier relationship management on efficiency in tendering process in public procurement projects.

Table 8 presented the coefficients of determination and their respective p-values indicated as Sig.

Table 8: Coefficients of Determination

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.967	0.218		9.022	0.000
Supplier relationship management	0.358	0.049	0.568	7.327	0.000
Information technology integration	0.132	0.056	0.152	2.364	0.000
Records management	0.121	0.032	0.27	3.835	0.020
Regulatory framework	0.05	0.05	0.074	0.998	0.030

a) Predictors: (Constant), Information Technology Integration, Regulatory Framework, Records Management and Supplier Relationship Management
b) Dependent Variable: Efficiency in Tendering Process

The regression equation is;

$$Y=1.967+ 0.358X_1 + 0.132X_2 + 0.121X_3 + 0.05X_4$$

The regression equation above has established that taking all factors into account (information technology integration, regulatory framework, records management, supplier relationship management) constant at zero, efficiency in tendering process will be an index of 1.967.

The study found that a unit increase in supplier relationship management will lead to a 0.358 increase in the efficiency in tendering process in public procurement projects in the energy sector in Kenya. The P-value was 0.000 and hence the relationship was significant since the p-value was lower than 0.05. The findings presented also shows that taking all other independent variables at zero, a unit increase in information technology integration will lead to a 0.132 increase in efficiency in tendering process in public procurement projects in the energy sector in Kenya .The P-value was 0.000 which is less 0.05 and thus the relationship was significant.

In addition, the study found that a unit increase in records management will lead to a 0.121 increase in the efficiency in tendering process in public procurement projects in the energy sector in Kenya. The P-value was 0.02 and thus the relationship was significant. The study also found that a unit increase in regulatory framework will lead to a 0.05 increase in efficiency in tendering process in public procurement projects in the energy sector in Kenya. The P-value was 0.03 and thus the relationship was significant.

5. 0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The study sought to examine the factors affecting efficiency in tendering process in the energy sector in Kenya. The study targeted procurement staff of companies in the energy sector. A total of 133 employees participated.

Based on the study findings, the study concludes that efficiency in tendering process in public procurement projects can be improved by information technology integration, regulatory framework, records management and supplier relationship management.

Finally, the study recommended that companies in the energy sector should embrace efficiency in tendering process and further researches should to be carried out in other institutions to find out if the same results can be obtained.

5.2 Recommendations

The study is a milestone for further research in the field of efficiency in tendering process in Africa and particularly in Kenya. The findings demonstrated the important drivers of efficiency in tendering process in public procurement projects to include; information technology integration, regulatory framework, records management and supplier relationship management. The current study obtained an R^2 of 63.4% and should therefore be expanded further in future in order to include other drivers of efficiency in tendering process that may as well have a positive significance to efficiency in tendering process in public procurement projects. Existing literature indicates that as a future avenue of research, there is need to undertake similar research in other

institutions in Kenya and other countries in order to establish whether the explored drivers of efficiency in tendering process herein can be generalized to effect efficiency in tendering process in public procurement projects in other institutions.

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