

An Analysis of the Influence of Information Technology and Procurement Process on Performance of NHIF, In Western Kenya

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Abstract: Some organizations have implemented e-procurement technologies and succeed whereas others have failed to adopt the system after implementation with devastating consequences. E-procurement refers to use of internet-based systems to carry out procurement processes including research, sourcing, negotiations, ordering, receipts and post purchase reviews. Therefore, this study sought to establish the influence of information technology and procurement process on performance of National Hospital Insurance Fund (NHIF). The study targeted 154 employees and a sample size of 57 employees filled the questionnaires. The study area was three counties in western Kenya. Exploratory research design was used. Multiple regression was used to analyze results. Results revealed that information technology has positive and significant influence on performance ($\beta = 0.529$; $p < .05$). The study provides valuable information to the management of National Hospital Insurance Fund who shall be able to develop interventions on information and communication technology Management will also be able to facilitate the integration of the procurement system in various department of the organization.

I. INTRODUCTION

Background of the Study

Information Technologies have changed the way organizations and governments operate. As noted by Nelson (2008), Governments spend most of their revenue on purchasing and very little on development. To decrease the total cost of expenditure on purchasing process, the need to implement e-Procurement systems has become popular. Although e-procurement is an innovative idea, both private and public sector are still cautious as far as the advancement of electronic technologies is concerned. But as with any new technological innovation in workplace, e-Procurement system's effectiveness depends, ultimately, on its implementation and regular use by employees. Challenges abound and since e-Procurement system is a self-service tool, end users may resist its implementation and use

(Zakari, 2013) established that the use of information technology in leads to better performance of an organization. The study was conducted in selected service organizations in Uganda; researchers used survey design on 202 employees and found that there is a significant relationship between E-procurement and performance of the organizations. This

proposition comes as a result of penetration of IT in all aspects of life to the effect that today everything tends to rotate around use of technology. The researcher thus recommend that the government should support service organizations in regards to regulating cyber related vices; other organizations, other than service organization, should invest wisely in IT to reap its potential profitability; and that the whole procurement process should involve as many people as possible as a potential means to human resource planning in an effort to overcome future embarrassments of retrench and labour turn over.

(Barngetuny, 2015) avers that the use of technology in procurement impacts the performance of organizations, owing to the huge capacity deficit of; efficiency, quick processing of documents, payment of suppliers, quick award of tenders and skills among staff. The Government is in the processes of fully adopting and internalizing its e-government initiative for effective administration and service delivery. The system though in operation has not been reliable and can sometimes frustrate those who need to find government tenders. It would be prudent to address the inherent factors that cause this predicament for the benefit of e-procurement uptake in the public sector.

Statement of the Problem

Government institutions and department have adopted e-procurement system with an aim of cutting costs. According to (Barngetuny, 2015) in Kenya, the e-procurement uptake rate is painstakingly slow owing to the huge capacity deficit of efficiency, quick processing of documents, payment of suppliers, quick award of tenders and skills among staff. There are various organizational, technical and policy issues that prevent the full integration and implementation of e-procurement in the public sector. Some organizations have implemented e-procurement technologies and succeed whereas others have failed to adopt the system after implementation with devastating consequences, (Auditor General Report, (2014). It would be prudent to address the inherent factors that cause this predicament.

The adoption and internalization of e-procurement has been accompanied by intermittent technological deficiencies. The public is yet to understand why such a system can fail to

deliver expected outcomes. For any e-procurement uptake to be successful, there are several factors that an organization must critically consider. They include user acceptance of new information technology, a government policy framework, trust, risk perception, adequate finance, employee competence, management commitment and others like continuous measurement of the key metrics, re-designing affected business processes and actual selection of e-procurement solution (Auditor General Report, (2014).

Objective of the Study

To determine the influence of information technology as applied in procurement processes on NHIF performance.

Significance of the Study

The study provides valuable information to the management of National Hospital Insurance Fund who would be able to re-design ICT policy to facilitate implementation of e-procurement in the organization thus ensuring proper administration and appreciation. The management would also be able to facilitate the integration of e-procurement systems in the various departments of the organization. The study sheds more light on factors affecting the uptake of electronic procurement. It helps the researcher identify the gaps that still need to be addressed. The study now provides added literature for knowledge advancement and scholarly discourse. It in addition, provides a background for further studies.

Scope of the Study

The study was conducted at the NHIF offices in Busia county, Kakamega County and Bungoma County. The study population was drawn from the managers in finance ICT, procurement and previous collective departments.

II. LITERATURE REVIEW

Theoretical Review

Resource-based theory

According to Lambert (2005), resource base theory states that a competitive advantage for a firm can be coined on its resource base. The resources of the organization go beyond finances and materials to encompass methods and processes. The internal capacity of an organization matters a lot. When an organization has requisite resources, it has capacity to innovate and deal creatively with arising challenges in the market.

The search for Information Technology is crucial in supply chain management and procurement (Pressutti, 2003). In areas of Information Technology, RBT has been identified as new set up that can analyze the sources and sustainability of Information Technology (Baily, Farmer, Crocker, Jessop, & Jonnes, 2008). Fearon (2006), View Information Technology as sustainable because the resources upon which IT is based are scarce, valuable, cannot be imitated, and are non-substitutable. Further, Percy and Guinipero (2008) reiterate

that RBT is based on the concept that the resources controlled by firms are different and relatively immobile. 9

In this study, e-procurement was viewed as an approach that optimizes use of available resources to enhance efficiency and effectiveness in procurement and hence deliver a competitive advantage. The competitive advantage in this case manifests in terms of improved lead times, cost efficiency and customer satisfaction. E-procurement leads to better coordination and use of procurement resources towards seamless procurement operations that enhance Organizational performance.

Information Technology and Performance

Boakye (2013) assessed procurement practices in public sector in Ghana, to find out if the public sector e- procurement process helps to achieve the desired operations performance. The study adopted the survey and descriptive design. The results indicated the institutions followed prescribed procurement process which helps them in operation. The same application should be adopted by NHIF to realize faster and easier to process in acquiring material.

Kinoti (2013) assessed the suppliers' attitudes; capacity, transparent and integrity in Kenya affect their propensity to adopt, to achieve this objective the study used data obtained from the suppliers to government parastatals in Kenya. A sample of 78 suppliers was selected but 62 responded. The research concluded that the attitude of suppliers can lead to embracing of e-procurement. Thus, there is need to apply the same to NHIF.

Aketo, Ondieke and Okibo (2013) assessed the effects of E-procurement practices in effectiveness in public Hospital in Kenya, they reach found out that the challenges faced when using e-market was inadequate in finding organization inability to handle change management and lack of e-procurement application, however the application should be tasted in NHIF.

Muide and Shale (2014) assessed the role of e-procurement strategy in enhancing procurement performance of savings and credit cooperatives in Kenya using descriptive research in design with a target population of 1000 staff working for Kitui teachers SACCO Ltd. The researcher found out that majority of the employees from procurement departments in SACCO's in Kenya possess adequate skills and competence to conduct e-procurement for innovations. The researcher recommends that SACCOS can employ effective customer service level on e- procurement for long terms SACCO services; however, there is need to be replicated in NHIF.

Sita (2014) assessed the potential electronics procurement in public sector in Accra metropolises in Ghana. Using a survey research design with a target population of 50 respondents the researcher found out that the based/manual procurement is suffering challenges. From all four themes presented, the researcher further found out that the procurement had technological challenges. The researcher contributes by recommending legal and regulatory procurement of 2003 be

reviewed. However, there is need to look at other factors that influence e-procurement for example government policy on the implementation of e-procurement and can also be tested in NHIF.

Macharia, Iraso and Ondabo (2015) conducted a study on the effect of information technology on performance of logistics firms in Nairobi. They urged that despite the fact that Logistic firms are made much profit, they still suffer from inefficiency and insecurity. The objective of the study was to determine the significant impact of information technology on the operations of Logistics firms in order to guarantee their profitability and growth. The target population was logistic firms within Nairobi County. Data was collected from 10 firms in the logistic industry suppliers in Nairobi. The data was analyzed using SPSS and result presented in form of tables and charts. The researcher find that (50%) of the firms are not using IT in their departments and service delivering indicating low level of IT usage among logistic firms in Nairobi County.

Rotich (2015) analyzed the use of e-procurement functions of county government in Kenya. Using a correlation research design with 120 employees working in procurement, finance accounts and IT departments of Kericho County, Kenya. The researcher found out that e-procurement is positively related with performance of supply chain functions of county government in Kenya. The researcher contributes by recommending that the government come up with policies on the embracement of e-procurement practices and provide critical resources and leadership in implementation of e-procurement. However, there is need to look at the factors that influence e-procurement for example government policies and also should be tested in NHIF.

Namusonge (2016) carried out a study to assess the information technology practices in procurement that influence organizational performance in Jomo Kenyatta University of Agriculture and Technology (JKUAT). The study used a descriptive survey design that targeted a population of 41 procurement officers and managers of all 8 campuses of JKUAT. Primary data was collected using structured questionnaires that were administered to 36 procurement officers in JKUAT at Jujacampus. Questionnaires were administered through drop-and-pick-later method to give respondents ample time to respond to the questions. Face-to-face interviews were conducted with the key informants using interview guide. Descriptive statistics and inferential statistics were used to analyze quantitative data. Information technology in procurement was established. The researcher concluded that information technology in procurement is a significant contributor to organizational performance in improving service delivery, efficiency, effectiveness, continuous Quality improvement, reduction in purchase price and transparency.

Sang (2016) conducted a study on the effect of E-supply chain process on organizational performance of non-governmental

organizations in Kericho County Kenya. The study utilized descriptive research design with the sample size of 78 respondents from the target population. Collected data was analyzed through SPSS. It was revealed that E-purchasing process enhances efficiency through reduction of procurement costs. It was further revealed that e-inventory management greatly affect organizational performance through the use of enterprise resource planning system that enables the organization to have and maintain adequate and efficient inventory management plants. It was concluded that general organization efficiency had greatly improved as a result of e-supply chain process.

Cheptora, Osoro and Musau carried out a study on the Impact of Information and Communication Technology on Procurement Performance in Manufacturing Firms in Kenya, a case of Nzoia sugar company Ltd. The study sought to establish whether all the four independent variables that include, Managerial style, Information communication technology, employee competency and procurement policy had significance to the procurement performance. The study adopted descriptive research design which targeted a population of 526 respondents, and a sample size of 220 from Procurement, Finance, Human Resource, General administration and information communication technology departments. Data was collected through questionnaires and analyzed using SPSS version 24. From the study, findings revealed that Nzoia Sugar Company Ltd lacks a good ICT infrastructure, leans more towards autocratic leadership and hardly adheres to procurement policy. The study concluded that managerial style remains central to procurement performance and thus employee involvement is paramount and has direct impact on procurement performance of manufacturing firms. The study recommended that there is need to adopt a participatory managerial style that can encourage quick and efficient accomplishment of procurement role and adoption of EDI to streamline the procurement process.

Wawuda and Mwangangi (2018) carried out a study on the influence of Information and Communication Technology on performance of procurement. This study used a descriptive research design approach to target heads of procurement and ICT in parastatals. A total of 187 was used. The study preferred this method because it allowed an in-depth study of the subject. Collected data was analyzed using descriptive and inferential statistics. Quantitative data was analyzed using multiple regression analysis while qualitative data was analyzed by use of Statistical Package of Social Sciences (SPSS) version 22. From the study, findings revealed that inventory management systems, electronic vendor evaluation, electronic payments and electronic sourcing have a positive relationship with procurement performance among parastatals in Kenya. The study concluded that performance of procurement among parastatals can be improved by inventory management systems, electronic vendor evaluation, electronic payments and electronic sourcing. The study also

recommended that public institutions should embrace information communication technology so as to improve performance and further researches should to be carried out in other public institutions to find out if the same results can be obtained.

Information Technology and procurement on performance of NHIF

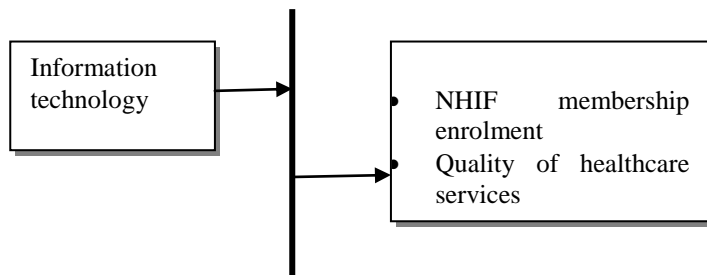
Conceptual Framework

Independent Variables

Electronic Procurement

Dependent Variable

NHIF Performance



III. RESEARCH DESIGN AND METHODOLOGY

Research Design

The Study adopted exploratory research design. According to (Kothari, 2004), exploratory research design has a major purpose of formulating the problem for more precise investigations concerning the hypothesis.

Target Population

Creswell (2003) described population as all the elements that meet the criteria for inclusion in a study. The target population was 154 which included all the staff from management, finance, ICT, Procurement and revenue collection departments of National Hospital Insurance Fund in Busia County, Bungoma County and Kakamega County as indicated in table 3.1

Table 3.1 Target Population

Department	Busia	Bungoma	Kakamega	Frequency
Management	4	3	4	11
Finance	13	16	17	46
Procurement	6	8	4	18
ICT	4	9	10	23
Revenue Collection	16	21	19	56
Total				154

Source: Researcher, (2020)

Sampling Design

Zikmund (2009) referred to sampling as a process of selecting a group of people, events or behavior with which to conduct a study. In this study a stratified random sampling technique will be employed. (Kothari, 2004) described stratified random sampling as a method that involves the division of a population into smaller groups known as strata which are formed based on members' shared attributes or characteristics. A random sample from each stratum is taken in a number proportional to the stratum's size when compared to the population. These subsets of the strata are then pooled to form a random sample. The rationale for choosing this technique is that subgroups in the population are likely to differ substantially in their responses or behavior.

Singh (2006) suggested a statistical criterion for determining the size of the sample. Other things being equal, the larger the sample, the greater the precision and accuracy of the data it provides. It is a common belief that the precision of data is determined primarily by the size of the sample, rather than by the percentage of the population represented in the sample. The term 'large sample' is vague; it varies with nature of study. The exact procedure by which to determine the sample size required varies with the nature of the variable and its sampling distribution, but the basic procedure can be illustrated in connection with the mean of random samples based on normal probability distribution. The chances are 95 to 5 that a sample in separated sampling will fall within the interval $M \pm 1.96 \text{ SEM}$. The next question is the degree of accuracy required. Generally, 95 to 99 per cent confidence intervals are acceptable i.e. 5 to 1 per cent error. If the variable of the study is the intelligence and the sampling errors were kept within 5 per cent at the 95 per cent confidence level. The investigator can use the formula for the standard error of the mean to provide the required size of sample.

$$1.96 \text{ SE}_M = 5,$$

$$1.96 \frac{\sigma}{\sqrt{n}} = 5$$

Where

σ = Standard Deviation of the population

n = Size of the sample

5 is percent of sampling error

$$\sqrt{n} = 1.96 \times \frac{19.25357}{5} = 7.5474$$

$$n = 56.96$$

$$n \approx 57$$

Proportionate sampling refers to the selection from each sampling unit of a sample that is; $p < .05$ proportionate to the size of the unit population. Advantages of this procedure include representativeness with respect to variables used as

the basis of classifying categories and increased chances of being able to make comparisons between strata (Singh, 2006).

Table 3.2 Sample Size

Department	Target Population	Sample Size
Management	11	4
Finance	46	17
Procurement	18	6
ICT	23	8
Revenue Collection	56	22
Total	154	57

Source: Researcher, (2017)

Data Collection Method

A research instrument is a tool used to collect data (Cooper & Schindler, 2006). Semi-structured questionnaires were used to collect data. The rationale for choosing this instrument was that it ensures a high response rate as they are distributed to respondents to complete.

Data Analysis Methods

According to (Neuman, 2005), data collected can only be meaningful if it is analyzed in a way that it is easily understood by the common person. This includes an analysis of data to summarize the essential features and relationships of data to generalize and determine patterns of behavior and outcomes. Before processing the responses, the completed questionnaires were checked for completeness and consistency. The researcher used both qualitative and quantitative techniques in analyzing the data.

Content analysis was used to analyze the qualitative data while descriptive analysis such as mean, frequencies and percentages were used to analyze the quantitative data. Regression analysis was employed for the analyses. Statistical software; statistical package for social sciences (SPSS) version 21 was used. According to Kothari 2004, multiple regression analysis is adapted when the researcher has one dependent variable, which is presumed to be a function of two or more independent variables.

The major objective of multiple regression analysis is to make a prediction about the dependent variable based on its covariance with all the concerned independent variables.

According to Kothari (2004), Regression analysis is used to determine the influence of independent variable on dependent variable.

In this study, it will help bring out the relation between electronic procurement and performance of the public sector (NHIF).

The following regression model was adopted.

$$y = a + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + e$$

IV. RESULTS AND DISCUSSIONS

Qualitative Analysis

Influence of advancement in IT on NHIF performance

The popular responses revolved about increased work speed, ease in document filing and retrieval, easier supervision, efficient quality management systems, reduced operational costs and improved flow of information between staff, NHIF Branch offices and even clients as well as health facilities.

Since it is costly to tender the maintenance and repair of office machines, it was suggested that skilled staff be permanently employed to do this job. Regular servicing of machines was also noted as a suggestion. To improve the efficiency of the use of modernized technology, it was also suggested that existing staff be offered additional training to catch up with the dynamic development in Information Technology.

Regression Analysis.

Advancement in Information Technology and Performance

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		
	B	Std. Error	Beta			Lower Bound	Upper Bound	
1	(Constant)	.510	.249		2.048	.047	.007	1.012
	Extent of Advancement of IT	.059	.015	.529	4.044	.000	.030	.089

a. Dependent Variable: Performance

Results in Table 4.1 above indicates that advancement in information technology has a positive influence on performance ($\beta = 0.529$; $p < .05$). This influence is significant as shown by the t value of 4.044 and the p-value of 0.03 which is less than 0.05.

Electronic procurement has resulted in quick rejection of goods and services if not preferred by the organisation. System and controls as enabled the buying organisation to advise customers of the quality goods and services that fit the standards of NHIF in terms of the quality of procured material, such as cards used to print NHIF member cards.

Electronic procurement has also enabled the provision of quality services to customers through automation of contributions payment. It has also enabled faster service through serving clients pre-authorisations in hospitals.

The study has revealed that electronic procurement has resulted in faster communication through emails as compared to traditional methods. It has also resulted in increased transaction speed, both time-saving and efficient, as handling of goods and eases process and transaction speed. This

enhances cost reduction, processes efficiency, spending controls, red paper based, saves money, improvement of supply line, reduction in inventory, less errors in order transmission, increased quality and availability of information.

V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter covers the summary of the major findings from the research, conclusions, recommendations, and suggestions for future research.

5.1 Summary

Qualitative Analysis

Advancement in Information technology was noted to ease operational processes both financially and in terms of costs incurred while enhancing efficiency. Respondents suggested employment of skilled staff and regular servicing of machines as means of utilizing this advantage fully.

Financial health literally translated to the organization's life, giving the capacity to provide for all fund expenses. Responses in this area recommended proper control over all financial factors for improved performance.

Quantitative analysis

Regression analysis of the variable under the study revealed that the variable of advancement in information technology has positive and significant influence on performance of NHIF.

5.2 Conclusions

The outcome of this study provides important information for procurement decision making and estimates the probability of rising of performance following successful implementation of e-procurement systems. The findings of this research show that the performance of NHIF is affected by the level of success in the implementation of advanced technology on procurement in a given NHIF Branch office.

It was concluded that advancement in information technology positively influence performance in NHIF.

5.3 Recommendations

Having observed that advancement in Information Technology positively influences performance, early implementation of e-procurement through putting in place of websites for all procurement activities and comprehensive follow-up to ensure computer systems efficiency should be taken up to improve the overall performance in NHIF.

Improved technology is an integral part of raising performance index. This can be done by having technical education communication systems incorporated in the training of staff by the NHIF Resource and Training Management Department. Carrying out regular systems monitoring sessions

and staff mobilization activities among other channels can be used also used to create proficiency with high technology sectors within NHIF offices. This will encourage staff members to learn and increase their conversancy with advancement in Information Technology, therefore increasing individual performance and NHIF performance at large.

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