INFLUENCE OF ELECTRONIC DATA INTERCHANGE RELATED INSTITUTIONAL POLICIES ON INVENTORY MANAGEMENT IN KENYAN JUDICIARY

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ABSTRACT

The study aimed at assessing the influence of Electronic Data interchange (EDI) related institutional policies on inventory management in the Kenyan judiciary. The study adopted a descriptive research design with a target population of 450 respondents. Proportionate stratified random sampling method was used to obtain the sample size. The study sample size therefore incorporated 225 respondents who included 10 top level management personnel representing a percentage of 5%, 25 middle level management personnel representing 11% and 190 lower level management personnel representing 84%. The study collected data by use of questionnaires which were administered. The researcher then analyzed the data by use of qualitative and quantitative statistics. The quantitative data was analyzed using descriptive and inferential methods. Inferential statistics was used through multiple regression analysis which was conducted using the Statistical Package for Social Sciences (SPSS). Results of quantitative analysis were presented through figures and tables. From the descriptive analysis, it was found out that institutional policies influenced inventory management in the Kenyan judiciary to great or moderate extent since a unit increase in institutional policies will lead to a 0.679 increase in the inventory management in the Kenyan Judiciary with a p value of 0.000. From the ANOVA results the significance value was found to be 0.000 which is less than $p=0.05$. Therefore the model was found to be statistically significant in predicting how EDI related institutional policies influence inventory management in the Kenya Judiciary.

Key Words: *electronic data interchange, institutional policies, inventory management, Kenyan judiciary*

INTRODUCTION

Organizations are streamlining inventory management through deployment of information technology (IT) in order to achieve success in today's global market place. Advances in information communications technology (ICT) have made the availability of Electronic Data Interchange (EDI) easier as well as improving on decision making process and performance in service delivery. Effective use of EDI tools in organizations help in integrating their trading partners and enabling them to be able to quickly respond to changes in market dynamics (Dawei, 2011).

According to Pound, Bell and Spearman (2014) inventory management is the coordination of purchases, storage and warehousing of stocks so as to achieve adequate supply of the right quantity and right quality of such stocks at the right place and at the right time. Inventory is the supplies or materials that are stored or warehoused to meet customer demands. Inventory management is therefore basically concerned asset management, carrying and holding costs of inventory, inventory lead times, inventory demand forecasting, storage and warehousing, inventory quality management, and customer demand forecasting.

Changing technologies have posed a challenge to many companies and institutions not only in Kenya but worldwide. The use of computer has created numerous opportunities for improving performance in the supply chain particularly in procurement process in the present world. Electronic data interchange advancement is widely rated as causing remarkable change in inventory management as it results in bringing down considerably an organizations operating costs. (Harrison & Hoek, 2011).

Many of the organizations have gained an upper hand in reducing cost, faster market penetration and procurement procedures through implementing the use of computer technology in the procurement process. However, in Kenya, the use of doing business electronically otherwise known as e-business is slowly gaining shape. The concept of EDI in supply chains in Kenyan business is currently practiced by global and international supply and freight companies such as Direct Handlers limited (DHL). (Collins, 2011)

The Kenyan Judiciary supply chain management department still conducts business with stakeholders through traditional documentation processes which normally take long lead times before deliverables are realized. These processes are mainly done on paperwork and exchanged via carriers and couriers. Only in few instances is communication done via e-mails and or computer networks. According to the Judiciary Transformation Framework (JTF) Handbook, there is need to harness technology in the judiciary so as to enhance service delivery in all sectors of the justice system. Hence there is need to embrace technology such as EDI in inventory and supply chain management in the Kenya Judiciary. (JTF, 2015)

STATEMENT OF THE PROBLEM

For decades, many organizations have faced several challenges in the inventory sector such as slow supplier performance, communication flow, poor work processes and bureaucratic institutional policies. Inventory management has been a huge headache without automation. In order to be competitive in servicing the customer base, some organizations have made significant investments in technology to boost on their performance. Institutions that adopted organizational information system (IOS) technologies such as Electronic Data Interchange are reaping benefits including reduced lead times, reduced order and data storage costs, as well as reduced errors therefore improving performance (Hamid & Krishnapillai, 2010). Kenyan Judiciary for the past ten years has lowered down its operational activities thus creating a downward resultant trend in its performance. Reports aimed at restoring the public confidence in the Kenyan Judiciary identified a myriad of problems facing the Judiciary one of which was a weak procurement system evidenced with irregular procurement procedures ineffective communication flows, and bureaucratic policies. The Judiciary Transformation Framework (2015) made recommendations to restore the credibility of the judiciary through harnessing technology in delivery of justice. This cannot be viewed in isolation but must be integrated in all the judiciary functions including the procurement process, hence the need to embrace technologies such as Electronic Data Interchange (EDI) in the supply and inventory management. Therefore, there is need to further assess effect of EDI related institutional policies on inventory management in the Kenyan Judiciary.

GENERAL OBJECTIVE

The general objective of the study was to assess the influence of electronic data interchange related institutional policies on inventory management in the Kenyan judiciary.

THEORETICAL LITERATURE REVIEW

Technology Acceptance Model

Technology Acceptance Model (TAM) was proposed by Davis (1989). TAM provides a valid and reliable measure that predicts the acceptance or adoption of new technologies by end-users. The model was further proponed by Baggozi and Davis (1992).

According to Davis (1989) the original TAM assumes that the end users will accept the technology on basis of how they think the technology will be useful and how it will be easy to apply for a specific work environment. Davis applied the model to work settings, and defined perceived use as the degree to which people believe that using a particular system would enhance work performance. According to Davis and Baggozi (1992), technology usefulness is the degree to which the technology is assumed to enhance work performance; while ease of use is degree to which application of a technology is believed to be free from effort.

According to Holden and Karsh (2010), the Technology Acceptance Model traces how users come to accept and use a technology. TAM suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it. In inventory management therefore it can be assumed that the application of EDI technology will enhance supplier performance by ensuring less lead times. Equally, this will enable trading partners to achieve enhanced and better work process besides ensuring total quality management of products/inventory.

Diffusion of Innovations Theory

The Diffusion of Innovation theory was proposed by Rogers (2003). It was further proposed by Medlin (2001) who suggested that diffusion of innovations theory is the most appropriate for investigating the adoption of technology in institutions and businesses. According to Rogers (2003), a technology is a design for instrumental action that reduces the uncertainty in the cause-effect relationships involved in achieving a desired outcome.

Rogers defines diffusion as the process in which an innovation is communicated thorough certain channels over time among the members of a social system such as institutions. The theory comprises four main elements that influence the spread of a new idea: the innovation itself, communication channels, time, and a social system. The innovation must be widely adopted in order to self-sustain.

It can therefore be deduced that the diffusion of innovations theory supports the applicability of EDI system in inventory management; more so as communication flow and timeliness/ lead times are anchored therein. Inventory management will no doubt require an innovative approach in order to self-sustain. Applying EDI in inventory management will equally enhance buyer- supplier relationship in the Kenyan Judiciary.

The Balanced Score Card model

The Balanced score card was developed by Kaplan and Norton (1992). According to another proponent Vliet (2010), the Balanced Scorecard is a strategic work performance measurement model. The starting point of the balanced scorecard is the vision and the strategy that are viewed from four perspectives: the financial perspective, the customer perspective, the internal work process, learning and growth.

According to Kaplan and Norton (1992), the model's proposition is to translate an organization's mission and vision into actual operational actions in strategic planning. In addition, it can help provide information on the chosen strategy, manage communication feed forward and feedback in work process. The model's indicators include management support and total quality management initiatives as well as institutional policies set out to support the work process.

In inventory management customer perspective is assumed to relate directly to supplier performance, while business processes are directly related to work process (Vliet, 2011). According to Kaplan and Norton (1992), each organization serves a specific need in the market. The application of EDI in inventory management will assumedly impact positively on quality and timely deliverables from suppliers thereby enhancing their performance. From the perspective of internal process, EDI will enhance internal processes thereby adding value within the trading partners and ultimately enhancing supplier flexibility and acceptability of the processes.

EMPIRICAL LITERATURE REVIEW

Today, there is no doubt that the environment in which businesses operate is highly turbulent and competitive. Therefore, organizations must align their operations in order to achieve and maintain effectiveness and efficiency through economies of scale, and not diseconomies of scale. Some organizations attempt to procure and hold inventory for purposes of meeting customer demand. Nevertheless, holding the inventories so that the organizations can achieve their goals may pose some demerits and challenges. These challenges include stock obsolescence, high insurance cover, damages and pilferage. To mitigate against these challenges associated with stock holding, organizations have therefore turned to using modern technology to overcome such challenges (Kitheka, 2012).

With the increasing focus in enhancing supply management chain through use of the rapid development of Information and Communication Technology, businesses are seeking to develop and organize strategic, efficient and world-wide inventory control system for its use.

In order to promote such global inventory control system, which are also compatible with sustainability objectives, organizations need to develop and implement effective systems both individually and collectively. This has resulted to Modern inventory control as a result of improved technology being one of the most strategic initiative embraced by organization in partnering initiatives for encouraging collaboration and information sharing among trading partners (Angulo, 2007).

Nzuza (2015) attempted to identify factors affecting the success of inventory control and to assess strategies used by the Stores Division of the Thekwini Municipality in Durban to control inventory. The findings of the study revealed that employees lack proper training and education and that there is poor inventory control planning, lack of staff communication and lack of procurement time management when processing inventory orders. Respondents also indicated that there are no common strategies in place to control inventories. The study recommends that the Stores Division should consider the levels of staff qualifications, provide more staff training, and improve inventory control planning; communication; time management, and instigate innovative strategies in order to eradicate growing costs of inventory stocks. Moreover, the internal control processes need to be mapped according to the various roles identified.

According to a study conducted by Chattered institute of purchasing and supplies (CIPS) in 2012, institutional policies are guidelines that govern the conduct of business within and without an organization. They guide staff and other stakeholders in their undertakings and dealings in the course of business transactions. According to the study, the beginning of e-procurement was around the year 1980 which saw the development of electronic data interchange (EDI). EDI started enabling trading partners especially in retail industry involving fast moving consumer good (FMCG) to transact business through applications such as secure store and call forward networks. These EDI systems enabled businesses to transact and integrate data files on their inventories, their prices, specifications and information about each company location and their trading policies.

Another study conducted by Zhang (2010), observes that maintaining trading partnerships and interpersonal relationships within the EDI roles will assume increasing importance. Alliances involving inter-organizational policies are moving farther away from transactional exchanges premised on short-term deals towards long-term relationships based on trust and mutual understanding. According to the case study, the inception of electronic data interchange technology occasioned a paradigm shift in the way of transacting business between all the partners. Small and medium enterprises were able to choose their terms of doing business with the bigger trading partners since in EDI relationships there must be mutual agreement between the partners. EDI therefore allows small and medium enterprises to integrate with bigger organizations by mutual agreements so that each business gets their appropriate market share from the alliance.

George (2010) asserts that the degree of consistency with procurement regulations largely affects the efficacy of the procurement guidelines in public sector institutions. The study

found that application of poor sourcing tactics played a key role in causing impediment to actualization of efficient procurement performance in many government institutions in Kenya. The study contends that use of information communications technology in procurement is also very critical in determining the performance of procurement in state corporations.

RESEARCH METHODOLOGY

Research Design

According to Noum (2007), research design is the plan, detail or tactic employed by the researcher to bring out answers to research problems. The aim of the researcher is to collect data at a specified place in particular time and use it to depict the state of existing conditions. This research used a descriptive research design to assess the effect of Electronic Data Interchange (EDI) related institutional policies on inventory management in the Kenyan Judiciary. According to Kombo and Tromp (2011) a descriptive design is a description of the state of affairs as it exists. Kothari (2008) points out that descriptive studies are not just supposed to find facts but rather may result in the deduction of vital tenets of knowledge and solution to a significant problem. Descriptive research provides clearly defined information and its findings are conclusive. It also determines the frequency at which the variables are conveyed. Therefore it is suitable for obtaining systematically factual information for decision making, identifying the current practices, conditions, opinions and relationships among variables hence was appropriate for investigating the effect of institutional policies and EDI on inventory management in the Kenyan Judiciary.

Target Population

According to Mugenda and Mugenda (2008), target population is defined as the totality of cases of people, organization, or institutions which pose certain commonalities that are relevant to the study. The population of interest was the employees of the Kenyan Judiciary stationed at the headquarters in Nairobi. The target population was 450 people including top level management, middle level management, and lower level personnel. This is the total number of employees in judiciary headquarters, Nairobi.

Sampling Procedure and Sample Size

Proportionate stratified random sampling technique was used to sample data on the basis of management levels to determine the sample size to be drawn from each category in the research study. Kombo and Tromp (2011) points out that it involves dividing the population into homogeneous sub groups and then taking a simple random sample from each group. The stratified random sampling method was the best suited for the study because the population consisted of different levels of employees working for the Kenyan Judiciary in Nairobi. This method was deemed appropriate because it was able to represent or extrapolate not only the overall population but also the key sub groups of the entire population. It also minimized

biasness or subjectivity. Kothari (2008) argues that random sampling ensures the law of statistical regularity which guarantees representativeness of the characteristics of the universe. According to Mugenda and Mugenda (2009), a sample size representing 10% of the target population is adequate. However, such a sample should have a minimum of 30 elements is recommended. In this case, the researcher decided to take 50% of the target population for the research sample which was deemed to be within the thresholds recommended according to Mugenda and Mugenda (2009) and Kothari (2008). The study sample size was therefore taken at 225 people. Each person had however a calculable and non-zero probability of being selected. A sample of 225 respondents distributed proportionately across all management levels was to be selected from the target population. Top level management with the smallest population made the least contribution of 5%. However, lower level personnel however resulted in the largest contribution of 84%.

Data Source and Collection Instruments

The researcher chose to use primary data and secondary data. The study used questionnaires that were to be used to collect crucial primary information from the three levels of management personnel in Kenyan Judiciary headquarters in Nairobi. Kothari (2008) argues that the questionnaire method of data collection is quite popular, particularly in case of extensive enquiries. Closed-ended questions were used to provide more structured responses that were deemed appropriate for quantitative analysis and drawing of conclusion. Open-ended questions were tailored to provide additional information that may not be captured by the closed-ended questions. The questionnaires were then dropped to the respondents and picked later to seek for detailed information. Data there from was later tabulated and subjected to a statistical manipulation under the study. Secondary data for this study was collected through document review from Kenya Judiciary records. These records included but not limited to The Judiciary Transformation Framework handbook and the Judiciary Strategic plan 2013-2018. The secondary data was used to verify and validate the primary data obtained from the respondents.

Data Analysis Methods

The collected data was sorted and edited to remove errors and spot any inconsistencies resulting from the use of the questionnaire. Editing was to make coding more objective. There were codes assigned to the questionnaires which allowed the researcher to minimize errors during data entry and processing as well as provide easy interpretations of results. After coding, the data was then carefully keyed in according to the assigned codes and a final check done on the data file for accuracy, erroneous data, completeness and inconsistencies. Both descriptive and factor statistical techniques were then used. Quantitative data was analyzed using descriptive and inferential statistics. Descriptive statistics included percentage, frequency, mean, and standard deviation while inferential statistics involved regression. According to Noum (2007) the use of descriptive statistics is fundamental in organizing research data as it serves to summarize data on the questionnaires. The study was thus guided by multiple regression models presented below.

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Where: Y = Inventory management; X_1= EDI related Institutional Policies; β_1 = Beta coefficient; ε = Error term

Multiple regression analysis was then conducted using SPSS. Analysis of variance was used to test whether the overall model was statistically significant by indicating whether or not R^2 could have occurred by chance alone. The F-ratio generated in the ANOVA table was then used to measure the probability of chance departure from a straight line. In case the p value of the F-ratio generated is less than .05 the model is usually considered statistically significant at 95% confidence level. For the individual variables, *p* values of their coefficients generated in the regression analysis must be less than .05 for their relationship to be concluded significant at 95% confidence level. Qualitative data from open ended questions was then analyzed on the basis of common themes and presented in a narrative form.

RESEARCH RESULTS

The study used multiple regression analysis to determine relationship between Electronic Data Interchange (EDI) related institutional policies and inventory management in the Kenyan Judiciary. The findings are represented in table 1.

Table 1: Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.967[a]	.935	.933	.59504

a. Predictors: (Constant), EDI related Institutional Policies

The findings of the multiple regression, presents the model summary of the effect of EDI related institutional policies on inventory management in the Kenyan Judiciary. The analysis gives an R value of 0.967and an R square value of 0.935. This means that the institutional policies in EDI account for 93.5% in the variability in the inventory management in the Kenyan Judiciary. 6.5% in variability for the inventory management in the Kenyan Judiciary can be attributed to other factors.

ANOVA (Analysis Of Variance) was used to test the claim that there is no significant relationship between the independent variable (EDI related institutional policies) and the dependent variable (inventory management). The ANOVA results are presented in table 2.

Table 2: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	810.161	4	202.540	572.039	.000[b]
	Residual	56.651	160	.354		
	Total	866.812	164			

a. Dependent Variable: Inventory Management
b. Predictors: (Constant), EDI related Institutional Policies

The significance value is 0.000 which is less than $p=0.05$ thus the model is statistically significant in predicting how EDI related institutional policies influence inventory management in the Kenyan Judiciary. The F critical at 5% level of significance was 3.23. Since F calculated is greater than the F critical (value = 9.475), this shows that the overall model was significant in predicting how EDI related institutional policies influence inventory management in the Kenyan Judiciary. The study also analyzed the regression coefficients which is represented in table 3 below.

Table 3: Regression Coefficients

Coefficients [a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.036	.293		-.124	.901
EDI related Institutional Policies	.679	.078	.616	8.724	.000

Table above presents the results of the coefficients analysis of EDI related institutional policies for inventory management in a combined regression analysis. From the findings in table 3 we can extract the regression equation as:

$$Y = -0.36 + 0.679 \text{ EDI related Institutional Policies}$$

From the above regression model, a unit increase in institutional policies will lead to a 0.679 increase in the inventory management in the Kenyan judiciary with a p value of 0.000.

The study also found out that institutional policies based on procurement guidelines influenced electronic data interchange on inventory management in the Kenyan Judiciary to a great extent. However, institutional policies as indicated by communication channels, and supplier relationships respectively influenced electronic data interchange on inventory management in the Kenyan judiciary in a moderate extent. Majority of the respondents agreed that application of electronic data interchange would have an influence on inventory management in the Kenyan Judiciary. This is in concurrence with Nzusa (2015) whose study recommended that firms should instigate innovative strategies such as EDI in order to eradicate escalating costs of inventory.

CONCLUSION

The study drew its conclusions from the information collected from the respondents and also based on the major findings of the research study. The study concludes that institutional policies as measured by procurement guidelines, communication channels, and supplier relationships affect inventory management in the Kenyan judiciary. Majority of the respondents agreed that application of electronic data interchange technology will greatly influence institutional policies and enhance inventory management in the Kenyan judiciary.

RECOMMENDATIONS

The study recommends that EDI tools will help achieve streamlined and efficient and effective institutional policies in the Kenyan Judiciary based on the study findings. The findings indicate that use of Electronic Data Interchange in inventory management will streamline procurement guidelines, communication channels, and better supplier relationships. Equally, the application of electronic data interchange technology will be recommendable for attaining integration of institutional policies in inventory management set up in the Kenyan Judiciary. The study thus recommends that the application of EDI technology will aid in concurrence with literature reviewed, with better procurement guidelines, better communication channels and enhanced supplier relationships.

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