EFFECT OF INVENTORY MANAGEMENT ON CUSTOMER SATISFACTION IN PUBLIC INSTITUTIONS OF HIGHER LEARNING IN KENYA

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ABSTRACT

Inventory management is one of the greatest factors in a company's success or failure. Due to the fact that some of the most important inventory control areas had not been well The purpose of this research study was to examine effect of inventory management on customer satisfaction in public institutions of higher learning in Kenya. The study was guided by the following specific objectives; to determine the impact of inventory control system on customer satisfaction; to establish the effect of variable demand (re-order) on customer satisfaction; to examine the effect of economic order quantity on customer satisfaction and to examine the effect of ABC analysis on customer satisfaction. The study was guided by Expectancy Disconfirmation theory, Inventory theory, Lean theory and Constraint theory. This study was carried out within Moi University Main Campus. The study was limited to inventory control system, variable demand, economic order quantity and ABC analysis and their effect on customer satisfaction. The study employed use of survey research design. A questionnaire was used to collect primary data. A good response rate of 85% was witnessed. A pilot study was done at the University of Eldoret to ascertain the reliability of the instruments before the study was done. University of Eldoret has similar characteristics as the area of study. To ascertain the reliability of the research instrument, the results from the pilot study was subjected to Cronbach Coefficient Alpha. The study adopted the lowest alpha value as 0.5 upward and the results for all the variables were above 0.7 threshold with overall mean value of 0.856. The target population was the procurement unit staff of Moi University; heads of schools, heads of departments and registered suppliers of Moi University. The sample size of 232 was used. Data was analyzed using Quantitative analysis with both descriptive and inferential statistics. The finding was presented in tabular, graphs, pie charts and percentages. Data was analyzed using descriptive statistics and statistical package for social studies (SPSS). Correlation analysis was used to find the correlation between the variables and this revealed there was a positive and significant correlation between all independent variables and dependent variable; inventory control system($r=0.493$, $p=0.000$),variable demand ($r=0.575$, $p=0.000$), Economic Order Quantity ($r=0.679$, $p=0.000$) and ABC analysis ($r=0.576$, $p=0.000$). Multiple regression analysis with ANOVA technique was used to determine the effect of independent variables on the dependent variable. The findings showed that 84.4 % of the customer satisfaction is explained by the four variables that are inventory control system, variable demand, economic order quantity and ABC analysis and the remaining 15.6 % can be accounted by the standard error.

Key Words: *inventory management, inventory control system, variable demand, economic order quantity, ABC analysis, customer satisfaction*

INTRODUCTION

Inventory refers to stocks which represent a large portion of the business investment and must be well managed in order to maximize profits (Shafi, 2014). It is the total amount of goods and/ or materials contained in a store or factory at any given time. Inventory consists of all goods owned and held for customer satisfaction. Accordingly, Small Business Resource (2013) defined inventory management as the process whereby the investment in the materials and parts carried in stock is regulated with predetermined limits set in accordance with the inventory policy established by the management. Inventory control can also be defined as keeping the overall costs associated with having inventory as low as possible without creating problems and it is also sometimes called stock control.

In global point of view, stock administration frames the way to each part of associations. Silver, Pyke and Peterson (2016) contend that profitability improvement has been sought after by diminishing the measure of direct assembling work spent per yield unit in the U.S. also, other Western Countries. This was a substantial technique in many fabricated items because of high work content. Regardless of this, as of late, the extent of unit work costs has been relentlessly diminishing. The proportion of bought materials to deals (in dollars) for US firms in 2015 really achieved 60 percent. This suggests stock administration of crude materials is a territory that is profoundly encouraging for improving efficiency. Because of their striking execution in quality and stock administration, Japanese firms got much-merited consideration in the mid-to-late 1980s. The incredible enthusiasm for Just-in-Time fabricating shows that work-in-advance stock administration is additionally a zone ready for development Kolias et al, (2011). Similarly, as with numerous other western nations, there have been a relative decrease in execution of ventures in Australia and subsequently, it’s Gross Domestic Product is not exactly 50% of the normal. This was credited by poor stock administration prompting expanded expenses of generation.

Additionally, in provincial viewpoint, execution of associations has been poor in the most recent decades. For instance, there has been a decrease of exhibition in assembling firms in Nigeria from 9.6% in 2006 to 5.0% in 2013. This was credited by the mind-boggling expense of generation particularly in the oil and gas division and improper interest in hardware and apparatus because of poor key stock administration, Nigerian Enterprise Survey, (2013). Vikram et al (2012) directed an examination on stock administration frameworks and inventory network joint effort that expect supply side. The scientist's finding reasoned that stock administration offices were additionally eager to have seller overseen stock framework to keep up reliable supply and coordinated effort among partners. A related report by Adeyemi et al (2010) concentrated on stock administration streamlining device in Coca-Cola Bottling industry in Nigeria. The analyst inferred that correct amount, quality and timing of inventory is accomplished by utilization of fitting stock administration frameworks.

As indicated by Donald (2017), all associations hold stocks and the measure of stock changes hugely yet ordinary firms hold stocks and the measure of stock fluctuates colossally yet run of the mill firm holds about 20% of its yearly turnover. This is a noteworthy venture which directors need to arrange as proficiently as would be prudent. Donald contended that there is no perfect way if sorting out stocks and best alternatives rely upon kind of tasks imperatives, destinations and a wide scope of emotional elements, in spite of this, there is clear pattern towards lower stocks. New techniques enable associations to move products rapidly through the store network, working with less stock to accomplish similar dimensions of client administration (Donald, 2017).

In Kenyan associations, issues of fluctuating inventories, poor estimating and absence of responsiveness to client needs have been for quite some time experienced. This was affirmed by Mburu (2012), in the Kenya Cooperative Creameries which confronted whimsical conveyances, diminished customer request and surprising expense of creation because of poor vital stock administration prompting declined execution. Kagira (2012) likewise noticed that the Kenya Tea Development Agency oversaw plants confronted issues of fluctuating stock dimensions, poor demand management and absence of stock control frameworks prompting poor execution. Ondiek (2014) confirmed that Kenyan assembling businesses face rivalry with the current contending markets and along these lines need to come up with stock administration systems which can check the issue.

PROBLEM STATEMENT

In Moi University there is an issue in deferral to gaining stock; having moderate moving stock on the racks and coming up short on basic stock things that are sought after at essential occasions, in this way prompting client disappointment. There has been a great deal of grievances from clients not getting stock on time when ordered. This investigation will help fill the hole of distinguishing the basics to have appropriate stock administration so as to keep clients fulfilled, along these lines, help improve inventories which diminishes stock and lower expenses to expand client administrations and upgrade consumer loyalty and furthermore recognize different components from clients that should be done so as to meet clients' fulfillment. Concentrates done here just centered on assembling firms, there is no particular investigation which concentrated on consumer loyalty in learning organizations. For example, Nsikan, Etim and Ime (2015) analyzed stock administration rehearses and operational execution of flour processing firms in Lagos, Nigeria. The discoveries showed that the vast majority of the medium-sized flour processing firms embraced distinctive stock administration methodologies from the logical models except for the substantial assembling organizations. The stock administration procedures and approaches embraced by the flour processing firms depended on components, for example, winning industry works on, changing dimension of client request, conjecture gauges and surmises, and accessible creation limit. Adeyemi and Salami (2010) recognized a few stock administration best practices including: just in time, merchant oversaw stock, collaborative

planning, forecasting and replacement, programmed recharging, nimble framework, and material prerequisite arranging. Mukopi and Iravo (2015) led an examination of the impacts of stock administration on the execution of sugar fabricating organizations' acquirement capacity in the Sugar Belt Western Kenya. The discoveries demonstrate a solid connection between the four factors; lean stock frameworks, vital provider associations, data innovation, legitimate strategies, and execution working impact on Sugar Belt Western Kenya obtainment from stock administration. Therefore, the study aimed to assess effect of inventory management on customer satisfaction in Kenya's higher learning public institutions against this issue and gap.

OBJECTIVES OF THE STUDY

The general objective of this study was to establish the effect of inventory management on customer satisfaction in public institution of higher learning.

SPECIFIC OBJECTIVES

1. To determine the impact of inventory control system on customer satisfaction
2. To establish the effect of variable demand (re-order) on customer satisfaction
3. To examine the effect of economic order quantity on customer satisfaction
4. To examine the effect of ABC analysis on customer satisfaction

THEORETICAL FRAMEWORK

Lean Theory

Lean theory is linked to Economic Order Quantity objective in that they both work towards minimizing of inventory, minimize stock carrying costs, avoids stock outs, minimizes operating costs and order Just In Time. Lean theory focuses on expulsion of waste, which is characterized as anything not important to create the item or administration. Lean creation disposes of waste and prompts different parts of good stock administration. Lean is a Japanese expression muda which implies squander. As per Toni and Tonchia (1996), Lean creation kills waste and prompts different parts of good stock administration including; an in the nick of time (JIT) pull framework in which nothing is moved until task process is finished; zero imperfection and if a provider does not meet the quality and dependability prerequisite endeavors to learn the causes are arranged and part of business is exchanged to another provider; participation among firms and merchants; dealings among firms and providers to concur on a cost-decrease bend over a time of item. Key highlights in the basics of Lean supply incorporates; relationship as a Quasi Firm, cost straightforwardness (benefit sharing), hunt and choice of new condition and merchant rating (Lamming, 1999). Lean theory is linked to the Economic Order Quantity. This is because it advocates the elimination of waste as stock is ordered when required; avoids stock outs by

increase closer supplier relationship; remove or limits the absolute carrying costs and increase consumer loyalty.

Expectancy Disconfirmation Theory

Expectancy disconfirmation theory is linked to variable demand objective in that both are based on customer, holding of safety stock, close vender relationships, time to order is essential and planning for obtainment. Expectancy disconfirmation theory is most encouraging structure for evaluating consumer loyalty in that it is expand on client desire by building a solid client relationship so as to meet their desire for acquiring products and ventures with assumptions regarding the foreseen execution. Oliver (1980). This theory according to Oliver (1977) propose that when desires and the real item execution do not fit, the client will feel some level of strain and so as to dispose of this pressure, the buyer will endeavor to make changes either in desires or in the view of the real item execution or administration. Oliver demonstrated his theory on the supposition that one buys products and enterprises with the pre-buy assumption regarding the foreseen execution. The desire level at that point turns into the standard against which the item is judged. When the item or administration has been utilized, the results are looked at against desires. In the event that the result matches desire affirmation happens and when there is a distinction among desire and result disconfirmation happens. Buyers can likewise lessen the pressure coming about because of error among desires and item execution either by misshaping desires, so they agree with apparent item execution or by raising the dimension of fulfillment by limiting the general significance of the disconfirmation experienced. Olson and Dover, (1979). Expectancy disconfirmation theory is linked to variable demand because it works towards customer fulfillment and increase consumer loyalty.

Inventory Control Theory

Inventory control theory is linked with inventory control system objective in that both increases firm’s productivity, enables ABC grouping, screen item accessibility, enhances buying strategies, minimizes operational expenses, remove out of date stock, and enables stock spending plan. Stock administration is a framework that coordinates data, transport, obtaining, review, material taking care of, warehousing, bundling and supply control, and guarantees stock security, as per Silver, David and Rein, (2012). Stock administration goes for finding and keeping up ideal dimensions of interest in a wide range of inventories and boosting the stream of merchandise, data and other related assets like individuals and vitality from the purpose of starting point to the point of conclusive utilization (Peter, 2010). Stock administration theory expects to enhance stock, streamline capacity, limit costs, expand benefit, lessen harm/deterioration and improve association's money related execution. Zappone (2014) expressed that dealing with a wide range of assets in an association can be seen as a stock management issue. They utilize an assortment of stock control speculations and scientific equations for the expansive firms to enable them to modify the creation and capacity of different a great many units of items and to enable them to

limit costs. In the meantime, the entrepreneurs can utilize thoughts from a few stock control techniques to deal with their generation and capacity dependent on their cost-regulation and client administration needs.

Any stock manager's objective inside an association is to limit cost and maximize benefit while fulfilling client's requests. An excess of stock devours physical space makes a budgetary weight, and improves the probability of harm, deterioration and misfortune. Zappone, (2014) further clarifies that messy and wasteful administration, poor forecasting, heedless planning, and deficient procedure and strategies frequently makes up for by exorbitant stock. Too little stock frequently disturbs producing activities, and improves the probability of poor client administration. Inventory Control Theory is linked to inventory control system because it is critical in improving firms request estimation to empower the minimization of operational expenses, lessen deterioration of stock, limit procurement costs by ordering when required and improve firm's cash related executions and that stock is conveyed on time and the right quantity which improves consumer loyalty.

Theory of Constraints

Theory of constraints is linked to ABC Analysis objective in that both focusses on profit maximization, limit operational expenses, use of staff time efficiently, limiting procurement costs and enables ABC grouping. The theory of constraints (TOC) had been widely known as a management theory coined by (Goldratt, 1984). (Cyplik, Hadaś, & Domański, 2009) that aimed to initiate and implement breakthrough improvement through focusing on a constraint that prevented a system from achieving a higher level of performance. The TOC paradigm essentially stated that every firm should have at least one constraint (Simatupang, Wright, & Sridharan, 2004). As pointed by Simatupang, et al. (2004), collaborating firms shared responsibilities and benefits with their upstream and downstream partners in order to create competitive advantage. When all the supply chain‘s (SC‘s) partners were integrated and act as a homogenous entity, profit and performance was enhanced throughout the (SC), as a combination of supply and demand (Santos, Marins, Alves and Moellmann, 2010). Flores & Primo (2008) affirmed that, with the crescent requirement of the market, the logistic process became more and more complex and with much higher levels of demands, especially when related to achieving a competitive advantage (Santos, et al., 2010).

By then, the competition was not among companies but among the SCs, which belonged to (Santos, et al., 2010). The main goal of the SCM was therefore to reach a solution with optimized profit for all SC‘s partners; this could only be realized with the help of logistics management since there was often a great disparity between potential benefits and the practice (Santos, et al., 2010). In this study, Theory of Constraints (TOC) used to help firms in inventory management. Every system must have had at least one constraint, and this was explained by the fact that if there were nothing to limit the system‘s performance, it would have been infinite

(Santos, et al., 2010). (Cyplik, et al., 2009) also recognized that the TOC approach could be used to guide a single firm to concentrate on exploiting resources based on different inventory management costs along the supply chain. TOC will therefore be useful in measuring the influence of ABC analysis on customer satisfaction

EMPIRICAL REVIEW

Inventory Control System and Customer Satisfaction

Stock control frameworks expands consumer loyalty by satisfying client needs on time. There are different stock administration frameworks that are utilized and it relies upon whether it is a multi-period stock framework or single period stock framework. In multi-period stock frameworks, we take a gander at a constant (fixed-request amount) framework where the request amount is fixed. A persistent record of stock dimension is kept up for everything and a consistent amount of fixed arranged when stock drops to a foreordained dimension (Anthony, 1990). Likewise, there is intermittent (fixed timespan) framework where the stock close by is tallied at explicit time interims and after a fixed section of time a request is set for a variable sum. Stock administration frameworks are intended to screen item accessibility, decide acquiring calendars and hover out of date or unsold items. The accessibility of an item is only one manner by which a stock administration framework endeavors to make consumer loyalty. A far-reaching comprehension of the effect of stock administration on consumer loyalty makes a powerful stock administration framework (Mehfooz and Muhammad, 2012).

Variable Demand and Customer Satisfaction

According to Gary (2015) demand variability can cause a “bullwhip effect” a situation where demand is altered and orders increased to build up safety stocks and protect supply. This is due to the fact that demand is allowed to vary hence the possibility of stock outs exist and safety stock is used in cases of variable demand. An economic order quantity can be used but in variable demand the reorder point will have to include safety stock. The level of safety stock used will depend on desired service level. If a higher service level is required, say 90% it would result in fewer stock outs but higher safe stock. There must be a balance between inventory cost and customer service hence the need to protect against demand variability. Gary (2015) analyzed variable demand and emphasized that to manage it the following areas must be focused on optimizing service delivery and efficiency; forecasting, design for procurement (procurement plan), stocking programs and production throughput.

Concentrate by Burton businesses in Michigan U.S.A took a gander at clients with high factor request. They concentrated on advancing to help fluctuation effectiveness by determining, making arrangements for acquirement, having stocking programs lastly generation throughput (Gary, (2015). Wellbeing stocks are held or hazard potential loss of offers income because of

stock out and with this extra expense of exchange off, stock doing costs sections stock expenses. The vulnerability related with interest and lead time cause make numerous administrators focus on when to arrange rather that what amount to arrange. The time when to arrange is essential determinant of things to come capacity of fill request while hanging tight for renewal stock (James and Douglas, 2001).

The fixed interim model required just an intermittent survey (physical examination) of stock dimensions only preceding submitting a request to decide what amount is required. Fixed request interim model contrasts current stock and figure request and puts in a request for the essential amount at a normal indicated time. The interim between requests is fixed. The requests are activated by time. The two models are touchy to request experience only preceding reordering, however fairly unique ways (James and Douglas, 2001). Request estimate in the fixed interim model is dictated by the accompanying calculation James and Douglas, (2001). Sum to arrange is equivalent to expected interest amid insurance interim in addition to security stock less sum nearby amid reorder time. Proportions of variable interest incorporate the accompanying; arranging (planning) for obtainment; anticipating request; close provider relationship; speed at which orders are handled and receipt of products in focal stores.

Economic Order Quantity and Customer Satisfaction

EOQ show was created in 1915 by F.H.Harris of General Electric to help Storekeepers in deciding the amount to arrange. Bachetti, Plebani, Saccani and Syntetos (2010) claims that it is required to arrange stock administration in a consistent way with the goal that the association can realize when to request and the amount to arrange. This must be accomplished by figuring the nature of financial Order -EOQ- (Schonberger, (2014). As associations attempt to propel stock administration, the Economic Order Quantity (EOQ) and Re-request Point (ROP) are noteworthy instruments that associations can use to guarantee that stock supply does not hit a stock-out, as cleared up by Gonzalez and Gonzalez (2010). After some time, associations have kept their stock indiscriminately, requiring an adjustment in the manner in which associations carry on their business. As per James and Douglas (2000), EOQ is the best requesting approach which can be controlled by limiting the absolute conveying cost and requesting costs utilizing the monetary request amount display. The EOQ display is especially valuable for entrepreneurs and stockroom director who need to survey their stock frameworks so as to lessen costs and augment benefit. EOQ is the most financial stock renewal request estimate which limits the total of stock requesting expenses and stock holding costs (Kenneth & Brian, 2006).

ABC Analysis and Customer Satisfaction

ABC/Pareto Law was created by an Italian Sociologist and financial specialist Vilfredo Pareto in 1907. ABC examination is a strategy for layered stock valuation technique that partitions stock into classes dependent on unit cost and amount in stock after some time. It is one of the general

stock administration techniques. It enables distinctive administration strategies to be connected to the diverse classifications so as to build income and diminishing expenses (Narain and Subramanian, 2008). This aides in assets and staff assignment in regard to obtainment faculty, using faculty and their time adequately, amplifying administration conveyance and unwavering quality, limiting procurement costs, limiting backhanded expenses related with stock and at last limiting stock venture as stock is blocked working capital of an association in type of materials (Narain and Subramanian, 2008).

As indicated by Flores and Clay (2012), A-items dependably have the most astounding estimation of utilization every year, while B-items have the medium estimation of utilization yearly and the C items are, despite what might be expected with least yearly utilization esteem. In connection to consumer loyalty, Ballou (2014) includes that another incessant utilization of the 80-20 idea and an ABC arrangement is to aggregate the items in a distribution center, or other stocking point, in a set number of classifications where they are then dealt with various dimensions of stock accessibility. Chesaro (2016) utilized ABC investigation in her examination and found that store network the executive's practices, all things considered, upgraded administration conveyance, improved basic leadership, upgraded generally speaking cost decrease and continuous conveyance of merchandise and enterprises. Wafula (2016) decided relationship between ABC examination practice and activity execution in the oil advertising organizations in Kenya which uncovered that in the 75 oil promoting organizations, ABC showed positive increment on task execution. In this way, ABC examination helps in deciding stock esteem present in the stock, Kumar and Soni, (2017). ABC investigation figures out which items to be organized in the administration of company's stock, Ramanathan (2006). ABC examination plainly recommends that inventories are not of equivalent qualities, Lun, Lai and Cheng (2010). The administration can adjust the ABC investigation shorts to characterize stock. This will help decrease of obtainment expenses or increment income by having the correct things accessible for client use; re-arranging supply contracts; combining merchants; having intermittent audit done to stay away from stock outs and finally to actualize e-acquirement which may convey critical sparing.

RESEARCH METHODOLOGY

In this study a descriptive survey design was used. Descriptive survey design is chosen because it enables the researcher to generalize the findings to a larger population. In addition this design enabled the researcher describe the characteristics of the population being studied as they exist at present hence minimizing biases and maximizing the reliability of the evidence collected. Finally this design was chosen because it also provides a relatively complete picture of what is occurring at a given time and allows the development of questions for further study. The study involved the procurement staff of Moi University; heads of schools, heads of departments and registered suppliers of Moi University. A total sample size of 232 respondents was taken with the aid of Slovin's formula: $n=N/\ 1(1+e^2)$. A questionnaire was utilized to gather essential information.

The questionnaire was shut with the goal that respondents can without much of a stretch comprehend them and react properly. It incorporated the Likert scale that is in sharp contradiction, difference, uncertainly, understanding, and firmly assertion. The quantitative and qualitative data collected was checked for accuracy and then analyzed using statistical descriptive statistics such as percentages and frequencies with the help of SPSS. The raw primary data collected was coded prior to being input into SPSS statistical analysis software. The data was then cleaned to ensure accuracy and completeness of the information obtained. Both descriptive and inferential statistics were utilized. Tables were used to summarize responses for further analysis and facilitate comparison.

FINDINGS AND DISCUSSIONS

Inventory Control System

The research revealed that they agreed that institution uses inventory management systems to make buy decisions, institution uses the inventory management system to enhance demand forecasting, institution uses inventory management systems and is able to meet users demand on time. This study reveals that the institution uses the current methods of inventory control systems which enables order to be tracked through the entire recoupment process and help get the right supplies at the right time. According to the regression equation established, inventory control system is statistically related to the customer satisfaction.

Variable Demand

The study established that institution inventory manager understands that good forecasting demand means low stock, institution inventory manager understands that optimization of forecasting planning is required for variable demand, institution inventory manager understands variable demand requires safety stock to protect the uncertainty, institution inventory manager understands that variable demand requires closer supplier relationship, institution inventory manager understands that variable demand requires efficient recoupment of inventory. This study tends to agree with this concept since the firms which have formally introduced variable demand techniques carry their operations more efficiently. According to the regression equation established, variable demand is statistically related to customer satisfaction.

Economic Order Quantity

The study found that Economic order quantity determines the optimal level that minimizes carrying and ordering costs, institution goods are received exactly on time to meet customer demand as expected, institution uses Economic Order Quantity when replenishing stock to eliminate stock outs, institution uses EOQ policy in ordering in order to have stock levels at

optimum. According to the regression equation established, Economic order quantity is statistically being correlated to customer satisfaction.

ABC Analysis

The results revealed that institution uses ABC analysis in inventory management as it leads to optimization of inventory, institution uses ABC which helps reduction in inventory management costs. ABC analysis reduces procurement costs and increases cash flow by the right items being available for use, our institution the inventory manager uses the ABC categorization for inventory managing. This study tends to agree with this concept since the institutions which have formally ABC analysis carry their operations more efficiently. According to the regression equation established, ABC analysis is statistically related to the customer satisfaction.

INFERENTIAL ANALYSIS

The study conducted inferential analysis to determine the effect of inventory management on customer satisfaction in public institution of higher learning in Kenya. This included correlation analysis, regression analysis, the model, analysis of variance and coefficient of determination.

Table 1: Correlation Analysis

		Inventory control system	Variable demand	Economic Order quantity	ABC Analysis	Customer satisfaction
Inventory control system	Pearson correlation	1				
Variable demand	Sig Pearson correlation	.538** 0.000	1			
Economic Order quantity	Sig Pearson correlation	.535** 0.003	.613** 0.000	1		
ABC Analysis	Sig Pearson correlation	.154** 0.014	.373** 0.000	.477** 0.001	1	
Customer satisfaction	Sig Pearson correlation	.493** 0.000	.575** 0.000	.679** 0.000	.576** 0.000	1

The findings obtained show that there was a positive and significant correlation between all the independent variables and the dependent variables: inventory control system (r=0.493); variable demand (r=0.575); Economic order quantity (r=0.679) and ABC analysis (0.576). This shows that the independent variables under investigation affected the dependent variable in various ways.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.919[a]	.844	.838	.52097

a. Predictors: (Constant), Inventory control system, variable demand, Economic order quantity and ABC analysis.

The regression model adopted by this study can explain 84.4% of the variability in the data. This is indicated by the R Square value of 0.844 which shows that the data closely lies around the fitted regression line. The Adjusted R Squared Value of 0.838, which is less than the R-Squared Value, shows how well the model generalizes the relationship between the variables. In this study it can be deduced that only 83.8% of variation in the data is explained by the independent variables that actually affect the dependent variable.

Table 3: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	165.670	4	41.417	311.875	.000[a]
	Residual	30.669	231	.1328		

a. Predictors: (Constant), Inventory control system, variability in demand, Economic order quantity and ABC analysis.

b. Dependent Variable: Customer satisfaction.

As shown in Table 3 on Analysis of Variance (ANOVA), an F-test Value of 311.875 P<0.05 was obtained. F critical value of 2.4107 was obtained. This shows that the overall model is fit. The P value of less than 0.05, shows that there was overall significant relationship between all the independent variables and the dependent variable of the study.

Table 4: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients		
	Beta	Std. Error	Beta	T	Sig.
1 (Constant)	1.787	.845		2.116	.037
Inventory control system	1.418	.062	1.036	22.803	.000
Variable demand	1.041	.448	.261	2.325	.022
Economic Order quantity.	.197	.481	.046	.409	.027
ABC Analysis	.098	.440	.027	.224	.002

a. Dependent Variable: Customer satisfaction

Based on the study findings, the hypothesis equation model becomes:

$$\textbf{Customer satisfaction} = 1.787 + 1.418\,X_1 + 1.041\,X_2 + 0.197\,X_3 + 0.098\,X_4$$

From the findings in Table 4, the study found that holding inventory control system, variable demand, Economic order quantity, ABC analysis, at zero performance is 1.787. It was established that a unit increase in inventory control system, while holding other factors (variable demand, economic order quantity, ABC analysis) constant, led to an increase in customer satisfaction in institutions of higher learning by 1.418 (p = 0.000). Further, a unit increase invariability in demand, while holding other factors (inventory control system, ABC analysis and Economic order quantity) constant, led to an increase in customer satisfaction in institutions of higher learning by 1.041(p = 0.022). A unit increase in Economic order quantity, while holding other factors (inventory control system, variable in demand and ABC analysis) constant, led to an increase in customer satisfaction in institutions of higher learning by 0.197(p = 0.027).

Moreover, a unit increase in ABC analysis, while holding other factors (inventory control system, variability in demand and Economic order quantity constant, led to an increase in customer satisfaction in institutions of higher learning by 0.098(p = 0.002). This infers that inventory management practices contribute most to customer satisfaction in institutions of higher learning. At 5% level of significance and 95% level of confidence, inventory control system, and variability in demand, Economic order quantity and ABC analysis is significant in customer satisfaction in institutions of higher learning.

The regression coefficients obtained show significant t-test values ($P<0.05$) for each of the independent variables (inventory control system =22.803, $P<0.05$ thus this being the most significant Variable ($t=22.803$); variability in demand $t=2.325$, $P<0.05$; Economic order quantity, $t=0.409$, $P<0.05$ and; ABC analysis, $t=0.224$, $P<0.05$). This shows that all the variables have significantly relationship with the dependent variable (customer satisfaction in institutions of higher learning). The significant positive relation between inventory control system and customer satisfaction in institutions of higher learning.

There is significant positive relationship between variable demand and customer satisfaction in institutions of higher learning agrees with Muraleetharan (2013), who argues that (VMI) saves an organization immense finance and time since the supplier was able to monitor its customer's inventory levels and make a point of replenishing them. As the customer and supplier interact, the communication channel needs to be clear and fast so that they may avoid instances of stock outs. Where the customer anticipates having an abnormal order levels, they should notify the supplier so that they can adjust their production to cater for the demand.

The significant positive relationship between Economic order quantity and customer satisfaction in institutions of higher learning agrees with a study that was undertaken between 1981 and 2000 in the US to analyze inventory management and was found out that organizations that kept too much inventory in their warehouse operated an inefficient supply chain, while those that kept very few inventories in their warehouse were very efficient because of economic order quantity.

The results implied that unit increase in ABC analysis would results to an increase in customer satisfaction. This finding conforms to those of Weele (2010) who found out that there is a strong relationship between ABC analysis in an organization and customer satisfaction.

CONCLUSIONS

From the results obtained, inventory control system had impact on the customer satisfaction in public institution of higher learning in Kenya. The extent of user involvement and consultation in development of inventory system, value analysis, review and management of inventory improves the customer satisfaction in public institution of higher learning in Kenya. This is because inventory control system provides basis for effective management of stock and inventories in the organization.

The study found that effectiveness of inventory management system contributes to ability to maintain optimum stocks. Dependability of demand forecasting, planning for production requirement and reduced lead times also contributes to optimal stock levels which ultimately improves the performance of the firm. This is because of the ability to forecast the demand of raw materials and the consumables while minimizing the inventories held within the firm.

From the study, variable demand assists in the control of materials coming into a firm affects the customer satisfaction in public institution of higher learning in Kenya. The proximity of the receiving facility contributed to the effectiveness of the receiving process. Frequency of inspections would result to quality assurance. Through application of variable demand techniques, inventory is well managed in the institution.

RECOMMENDATIONS

The researcher recommends that public institution of higher learning in Kenya should embrace expertise in formulation of documentation at early stages of materials design. User departments should always be involved and consulted in development of inventory systems. The inventory systems should always be reviewed to meet requirements for use and purpose. This will improve the performance of firm as it was able to meet the requirements of users and also reduce disputes with customers.

The study also recommends public institution of higher learning in Kenya to practice long-term relationship with suppliers and develop strategies to develop them so that they can be able to deliver the quality required without errors and defects. Reliable communication practices should be adopted among the suppliers and the buying organization so as to curb costs from quantity and product deviations through the use of Economic Order quantity. Firms should us services from expertise firms so as to minimize damages and delays in materials in transport. These activities improve the performance of the firm as they reduce or prevent costs from deviations in delivery.

From the study, public institution of higher learning in Kenya should adopt the inventory systems of tracking the inventories and tracing its path. These should be done by having a definite automated inventory control system that will improving the production scheduling, makes flexible inventory processes and fast and effective recognition of goods in the stores. This

will aid in improving customer satisfaction as much inventory can be traced easily and the location is identified through the codes.

The study recommends the receiving process of materials coming into the firms to be effectively and efficiently controlled through inventory management techniques and ensuring that the receiving bay or section is at most proximal location. Inventory techniques of handling materials should be used for handling outlined materials correctly while putting the consideration that extra handling does not add value. Quantity and quality inspection should always be done and ensuring that there is no traffic of materials in the receiving section. These activities enhance the performance of the firm as they ensure the right quality is received, extra costs are not incurred and production is not delayed.

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