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EFFECT OF INVENTORY OPTIMIZATION ON PERFORMANCE OF STATE CORPORATIONS IN KENYA

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Abstract

Purpose: the general objective of was to determine role of inventory optimization on performance of state corporations in Kenya.

Methodology: This research study adopted a descriptive research design approach targeting heads of procurement at the 187 state corporations. This method was preferred because it allowed an in-depth study of the subject. The study preferred this method because it allowed an in-depth study of the subject. To gather data, structured questionnaire will be used to collect data from 187 respondents. The research focused on primary data that was collected from questionnaires distributed to the target groups. This study collected both qualitative and quantitative data. After data collection the data was edited and coded in readiness for analysis by the researcher. The qualitative data collected was subjected to content analysis. On the other hand, the study used descriptive and inferential statistics to analyze the quantitative data. This study utilized the SPSS version 23 software to perform correlation and regression analysis on the collected data. The analyzed data was presented using statistical and graphical techniques

Results: R square value of 0.768 means that 76.8% of the corresponding variation in performance of state corporations in Kenya can be explained or predicted by (safety stock management, inventory control techniques, information technology integration and demand and supply forecasting) which indicated that the model fitted the study data. The results of regression analysis revealed that there was a significant positive relationship between dependent variable and independent variable at ($\beta = 0.761$), $p=0.000 <0.05$).

Conclusion: The findings of the study indicated that; safety stock management, inventory control techniques, information technology integration and demand and supply forecasting have a positive relationship with performance of state corporations

Policy recommendation: The study recommended that public institutions should embrace inventory optimization practices so as to improve their performance.

Key words: *safety stock management, inventory control techniques, information technology integration, demand and supply forecasting*

1.0 INTRODUCTION

1.1 Background of the Study

Inventory optimization is a huge determinant for the prosperity or downfall of a business (Shafi, 2014). Optimization of inventory strategies to enhance customer service, reduce lead times and costs and meet market demand are some of the design goals of inventory optimization as indicated by Pauly (2018). Consequently Mittal (2014) define inventory optimization refers to supply chain applications which aids in the enhancement of inventory control and its management across an extended supply network, which organizes the latest techniques and technologies.

Inventory optimization practices are models used by organizations in order to manage and control their stocks. According to Stevenson (2010), inventory optimization practices involves the systems that are implemented with a purpose to ensure optimal level of stocks are kept in the organization and it involves activities such as recording and monitoring the levels of stocks in the organization, forecasting the demand of the materials and products and making the decisions of how much to order, how to order and when to order. Inventory optimization involves all the activities that guarantee the customers access to a particular products and services upon demand (Miller, 2012).

Inventory optimization practices are essential in the operation of the organization, as it affects the efficiency and effectiveness of the organization, which ultimately affects the performance of the organization. In UK, Dabholkar and Overby, (2012) indicated that inventory is the most crucial asset in the organization for it affects the functions that directly affect the customers in the organization. The Inventory optimization practices are designed and implemented in order to meet and exceed the customer demands and expectations. The Inventory optimization practices in the organization affects the organizational performance, as it directly concerned with the products and services being demanded by the customers.

In Thailand, according to Tumuhairwe (2012), the effective inventory optimization practices in the organization enhances the inventory levels by ensuring an optimal level of the inventory in the organization which will results to minimal inventory costs and increase customer service levels. The inventory optimization practices are designed to achieve the balance between the inventory costs and the customer satisfaction levels. In Canada, the variability of the inventory that does not match the customers demand arises due to the inability of the organization in applying the inventory control system in accordance to the organization baseline principles.

Toffel (2008) In Nigeria, An effective inventory optimization practices should ensure that, the customers demand is met and the stock-out are avoided without experiencing higher inventory costs (Ogbo & Onekanma, 2011). Organizations are striving to avoid storing too little or too much in the organization as it has an effect in the overall performance of the organization (Cachon & Olivares, 2010). An effective inventory optimization practices should logically indicate how much to order, when to order and how to order putting into consideration the customers' demands and expectation, as organizational performance disparities occurs due to the variability between the inventory levels and the customers' demands and expectations (Nzuza, 2015).

Kwadwo (2016) investigated effect of efficient management of inventory on profitability of manufacturing firms. The study revealed that a significantly and positive correlation between raw materials Inventory optimization and profitability of manufacturing firms in Ghana. Eneje, Nweze, and Udeh (2012) studied the effect of raw materials inventory optimization on profitability of brewery companies in Nigeria established that efficient management of the raw material inventory significantly affects the profitability of the brewery firms in Nigeria.

In Kenya, Githui (2012) reported that inventory optimization practices are to minimize the inventory investments and maximize organizational performance. The major objective of the Inventory optimization is to maximize the customer service levels through maintaining an optimal level of the inventory with the minimum cost as possible which eventually affects the performance of the firm.

Thogori and Gathenya (2014) examined the role of inventory optimization on the customer satisfaction and established that most firms in Kenya have poor management of inventory systems, which negatively affects the firm's ability to satisfy their customers. Sitienei and Memba (2015) also explored the effects of Inventory optimization on the profitability of the Cement manufacturing firms and established a negative relation between inventory turnover, conversion period of inventory and storage cost with firm's profitability.

1.2 Problem Statement

Public inventory constitutes the most significant part of current assets at commercial state corporations. Because of the relative largeness of inventories maintained by this department, a considerable sum of about 68% of the organization's fund is being committed to them. It thus becomes absolutely imperative to manage inventories effectively so as to avoid unnecessary cost and ensure high level of customer service (Ondiek, 2006). Inventory management, production planning and scheduling has become the obvious strategic benefit (Chen, 2015).

Dobler and Burt, (2006) argue that inventory alone account for as much as 30% of the organization invested capital. It's for this reason that the Government of Kenya through its supplies manual, (2007) have instituted procedures and techniques for the purpose of proper inventory control. Without effective inventory management firms perform poorly in the procurement function. According to the supply chain digest (Gilmore, 2007), the data analysis on inventory show continued upward pressure on inventory levels, with average inventories across all industry sectors up by 2.5% in 2014.

In addition to the above inventory plays a big part in service firms as it accounts for about 56% of the annual turnover (Ondiek, 2006). It is a paradox to note that commercial state corporations. As a department is complaining of the non-availability of some items to meet their requirement and finance department is facing the problem of increasing locked up capital in assorted inventory.

There are several local studies that have been conducted on inventory management, for instance Kamau and Kagiri (2015) carried as study on the effect of inventory management practices on organization's competitiveness in Safaricom. The study concluded that inventory management practices affect profit maximization; customer satisfaction and market share growth of a firm and hence affects its competitiveness. Naliaka and Namusonge (2015) explored inventory management and its role on competitive advantage of manufacturing firms.

The study also identified IT, inventory control systems and inventory management practices as key factors impacting manufacturing firm's competitiveness. However, while the above studies have touched on inventory management this did not look at the role of inventory management on performance in state corporations in Kenya. On the other hand, the above studies were not carried out in Kenya and more specifically commercial state corporation. Therefore, this justifies the current study which seeks to find out the role of inventory optimization on performance of commercial state corporations in Kenya.

1.3 Objectives of the Study

i. To assess the effect of safety stock management on performance of state corporations in Kenya.
ii. To establish the effect of inventory control techniques on performance of state corporations in Kenya.
iii. To determine the effect of information technology integration on performance of state corporations in Kenya.
iv. To evaluate the effect of demand and supply forecasting on performance of state corporations in Kenya.

2.0 LITERATURE REVIEW

2.1 Empirical Review

Safety Stock Management and Performance of State Corporations

Past accountability has emerged as a central concept for both public and private organizations over the last two decades (Garsten & Montoya 2008). This is true in general, but also in relation to sustainability, where accountability is presented as highly desirable (Augustine, 2012). Corporate accountability in relation to sustainability can manifest itself in, for example, sustainability reports (Hahn & Kühnen, 2013), sustainability certifications (Bartley, 2012), and product declarations (Schau & Fet, 2008).

With stakeholders' sustainability focus increasingly emphasizing sustainability issues in opaque inventory's (Zyglidopoulos & Fleming, 2011), safety stock level has also gained prominence (Mol, 2014). Safety stock level, though frequently discussed in the scholarly literature, is often inconsistently defined (Egels-Zandén *et al.*, 2014). Still, two main dimensions of safety stock level are outlined in existing literature. First, some scholars equate safety stock level with traceability, i.e., the ability to track a product's flow throughout the production process and inventory.

Inventory Control Techniques and Performance of State Corporations

Lyson (2016) argues that inventory control techniques have to be managed well to achieve the performance goals. A noticeable trend in inventory management research is the increasing application of mathematical models or computer technology, raising awareness on the economic benefits of robust inventory management, but significant research directed at comprehensively characterizing inventory management techniques (IMTs) has been rather sparse, despite its importance for sustainable financial management.

Information Technology Integration and Performance of State Corporations

The potential of information technology in enhancing performance has already been proven in a number of studies (Chen *et al.*, 2015). According to these studies, inventory management practices specifically adoption of information technology enables companies to decentralize operational processes and centralize strategic processes as a result of the transparency provided by the systems. The implementation of IT to enhance the management of inventory is no longer something new. The implementation of IT technologies such as electronic data interchange (EDI) has evolved to the current web technologies such as business to business technologies and collaborative commerce technologies (Berg, 2009).

Demand and Supply Forecasting and Performance of State Corporations

According to Chang (2016) demand and supply management is an emerging topic in supply chain management. It is focused on a fast and adequate integration of supplier needs in order to balance and strategically align demand with operational capability in the supply chain. Lack of accurate information is among some of the progressive demand alignment problems in a supply chain, which leads to inefficient customer service, poor stock rotation, and high obsolescence rate aggravated by the wide diversity of products.

2.2 Theoretical Review

Stochastic Inventory Model

The Stochastic inventory model was proposed by Harris and Marschak (1951), stochastic Inventory theory deals with the management of stock levels of goods, with the intent of effectively meeting demands for those goods. Ordering frequency is usually reduced by a larger amount of quantity ordered, hence reduced ordering cost but increases storage costs and requires a larger space for storage too. Some costs declines with holding inventory, while others holding costs increases and that the total inventory-associated cost curve has a minimum point (Lwikiet al, 2013).

Kalpakam and Sapna (2015) dealt with a base stock policy, where the lead time is stochastic and correlated with the possibility of lost demand. Products are taken out of the system due to failure or demand. A stochastic process is said to be state dependent if the probability of being in a future state is dependent on the present state in which the state is found. This principle is exploited in Markov processes. A stochastic process is said to have serial dependence if some parameters of the system depend not directly on the previous state of the system, but somehow on the previous state and the prediction at that time.

It is a useful mechanism in time series analysis. Such dependencies could be on the location parameter, as in most such models, or on the spread parameter as in heteroscedastic models. A stochastic process is said to be strictly stationary if sequences of consecutive responses of equal length in time have identical distributions. This means the values of the statistical parameters of the process are assumed constant with respect to time.

The stochastic inventory model method is used in determining an optimal order quantity which will minimize total inventory cost. The stochastic inventory theory is very useful tool for stock safety level and it can be applied to finished goods inventories, work-in-progress inventories and raw material inventories. It regulate the purchase and storage of inventory in a way to ensure that an even production flow at the same time restricting excess investment on inventories (Kumar, 2016). Stochastic inventory model is based on the premise that the order of inventory has a significant effect on quality of inventories. This model therefore will be relevant in establishing the effects of stock safety level on performance of state corporation.

2.3 Conceptual Framework

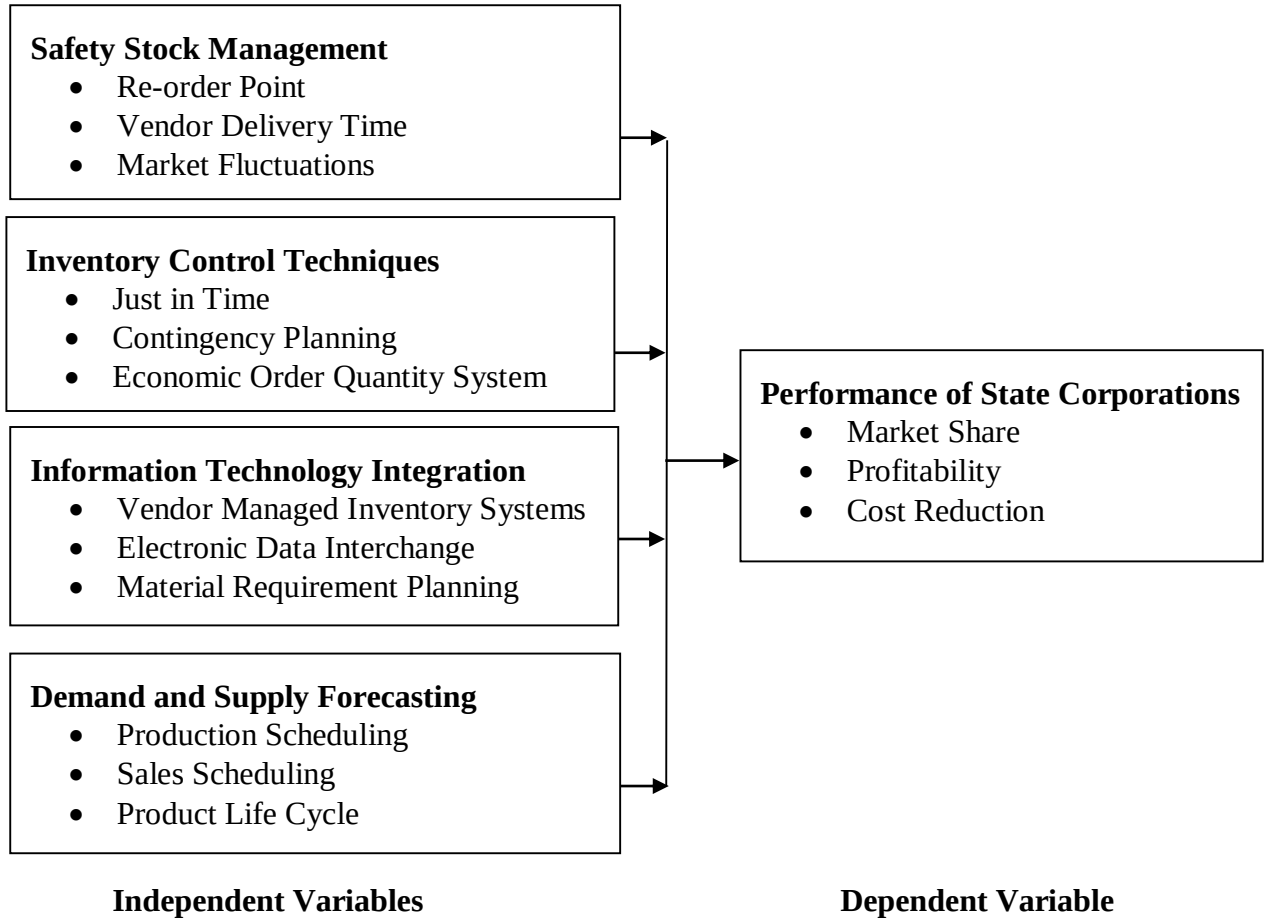

Figure 1: Conceptual Framework

3.0 METHODOLOGY

This research study adopted a descriptive research design approach targeting heads of procurement at the 187 state corporations. This method was preferred because it allowed an in-depth study of the subject. The study preferred this method because it allowed an in-depth study of the subject. To gather data, structured questionnaire will be used to collect data from 187 respondents. The research focused on primary data that was collected from questionnaires distributed to the target groups. This study collected both qualitative and quantitative data. After data collection the data was edited and coded in readiness for analysis by the researcher. The qualitative data collected was subjected to content analysis. On the other hand, the study used descriptive and inferential statistics to analyze the quantitative data. This study utilized the SPSS version 23 software to perform correlation and regression analysis on the collected data. The analyzed data was presented using statistical and graphical techniques

4. 0 RESULTS AND FINDINGS

4.1 Descriptive Analysis

Safety Stock Management

The first objective of the study was to assess the effect of safety stock management on performance of state corporations in Kenya. The respondents were asked to indicate to what extent did safety stock management affect had on performance of state corporations in Kenya. Results indicated that majority of the respondents 25% agreed that it was to a very great extent, 27% said that it was to a great extent, 35% said it was moderate, while little extent and not all were at 5 and 8% respectively.

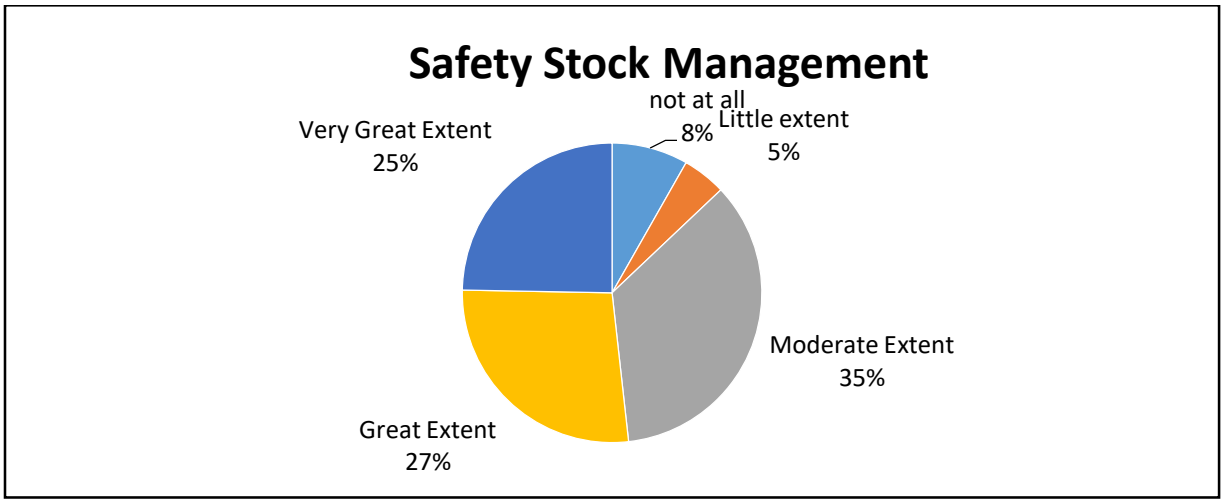

Figure 2: Safety Stock Management

The respondents were also asked to comment on statements regarding safety stock management on performance of state corporations in Kenya. The responses were rated on a likert scale and the results presented in Table 4.6 below. It was rated on a 5 point Likert scale ranging from; 1 = strongly disagree to 5 = strongly agree. The scores of ' strongly disagree' and 'disagree' have been taken to represent a statement not agreed upon. The score of 'neutral' has been taken to represent a statement agreed upon. The score of 'agree' and 'strongly agree' have been taken to represent a statement highly agreed upon.

The respondents were asked to indicate the descriptive for safety stock. The result revealed that majority of the respondent (62%) agreed with the statement that re-order point plays a great role in expanding market share. The result revealed that majority of the respondent (72.7%) agreed with the statement that vendor delivery time plays a great role in expanding market share. The result also revealed that majority of the respondent (64.7%) agreed with the statement that market fluctuations play a great role in expanding market share.

Further, the results revealed that majority of the respondent (100%) agreed with the statement that Re-order point plays a great role in improving profitability. Results also revealed that majority of the respondent (98.7%) agreed with the statement that vendor delivery time plays a great role in improving profitability. The result revealed that majority of the respondent (99.3%) agreed with the statement that market fluctuations play a great role in improving profitability.

Results further indicated that majority of the respondent (97.3%) agreed with the statement that re-order point plays a great role in cost reduction. Results revealed that majority of the respondent (62.6%) agreed with the statement that vendor delivery time plays a great role in cost reduction. Finally, the results revealed that majority of the respondent (97.3%) agreed with the statement that market fluctuations plays a great role in cost reduction.

The average for the statements on safety stock management was 4.25. The results imply that an organization benefits greatly when safety stock management are embraced to reduce costs and work with the organization to streamline performance (Mackie, 2008).

Table 1 : Safety Stock Management

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Deviation
Re-order point plays a great role in expanding market share	1.30%	1.30%	35.30%	29.30%	32.70%	3.91	0.92
Vendor delivery time plays a great role in expanding market share	0.70%	2.00%	24.70%	36.00%	36.70%	4.06	0.87
Market fluctuations play a great role in expanding market share	1.30%	1.30%	32.70%	28.00%	36.70%	3.97	0.93
Re-order point plays a great role in improving profitability	0.00%	0.00%	0.00%	53.30%	46.70%	4.47	0.50
Vendor delivery time plays a great role in improving profitability	1.30%	0.00%	0.00%	48.70%	50.00%	4.46	0.64
Market fluctuations play a great role in improving profitability	0.00%	0.70%	0.00%	51.30%	48.00%	4.47	0.54
Re-order point plays a great role in cost reduction	2.00%	0.70%	0.00%	43.30%	54.00%	4.47	0.73
Vendor delivery time plays a great role in cost reduction	0.00%	0.00%	37.30%	29.30%	33.30%	3.96	0.84
Market fluctuations plays a great role in cost reduction	1.30%	1.30%	0.00%	45.30%	52.00%	4.45	0.70
Average						**4.25**	**0.74**

Inventory Control Techniques

The second objective of the study was to establish the effect of inventory control techniques on performance of state corporations in Kenya. The respondents were asked to indicate to what extent inventory control techniques affected performance of state corporations in Kenya. Results indicated that majority of the respondents 31% agreed that it was to a very great extent, 36% said that it was to a great extent, 23% said it was moderate, while little extent and not all tied at 5%.

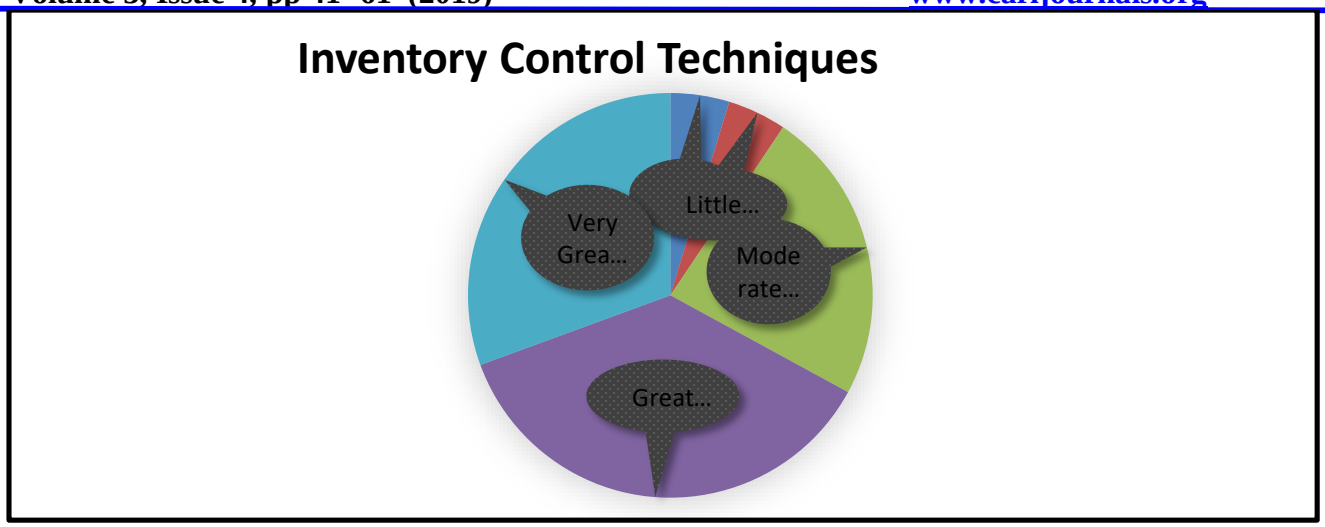

Figure 3: Inventory Control Techniques

The respondents were also asked to comment on statements regarding inventory control techniques effect on performance of state corporations in Kenya. The respondents were asked to indicate descriptive responses for inventory control techniques. The result revealed that majority of the respondents (56.6%) indicated that they agreed with the statement that Just in time plays a great role in expanding market share. The result further revealed that majority of the respondents (73.3%) indicated that they agreed with the statement that contingency planning plays a great role in expanding market share. The result revealed that majority of the respondents (69.3%) indicated that they agreed with the statement that economic order quantity system play a great role in expanding market share.

The result further revealed that majority of the respondents (100%) indicated that they agreed with the statement that just in time plays a great role in improving profitability. The result revealed that majority of the respondents (100%) indicated that they agreed with the statement that contingency planning plays a great role in improving profitability. The result further revealed that majority of the respondents (40.7%) indicated that they agreed with the statement that economic order quantity system play a great role in improving profitability.

The result revealed that majority of the respondents (46.6%) indicated that they agreed with the statement that just in time plays a great role in cost reduction. The result further revealed that majority of the respondents (48.7%) indicated that they agreed with the statement that contingency planning plays a great role in cost reduction. The result revealed that majority of the respondents (52.6%) indicated that they agreed with the statement that economic order quantity system plays a great role in cost reduction.

The average for the statements on inventory control techniques was 3.8. The results imply that an organization benefits greatly when inventory control techniques is embraced to reduce costs, introduce systems designed to address the organization's needs, and work with the organization to streamline performance (Lazear, 2010).

Table 2: Inventory Control Techniques

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Dev
Just in time plays a great role in expanding market share	0.0%	0.0%	43.3%	21.3%	35.3%	3.9	0.9
Contingency planning plays a great role in expanding market share	0.0%	0.0%	26.7%	36.0%	37.3%	4.1	0.8
Economic order quantity system play a great role in expanding market share	0.0%	0.0%	30.7%	37.3%	32.0%	4.0	0.8
Just in time plays a great role in improving profitability	0.0%	0.0%	0.0%	45.3%	54.7%	4.6	0.5
Contingency planning plays a great role in improving profitability	0.0%	0.0%	0.0%	50.0%	50.0%	4.5	0.5
Economic order quantity system play a great role in improving profitability	22.7%	18.0%	21.3%	18.7%	19.3%	2.9	1.4
Just in time plays a great role in cost reduction	15.3%	18.0%	20.0%	21.3%	25.3%	3.2	1.4
Contingency planning plays a great role in cost reduction	0.0%	22.0%	29.3%	28.7%	20.0%	3.5	1.0
Economic order quantity system plays a great role in cost reduction	0.0%	26.0%	21.3%	21.3%	31.3%	3.6	1.2
Average						**3.8**	**0.9**

Information Technology Integration

There was also need to establish effect of information technology integration on performance of state corporations in Kenya as the third objective. The respondents were asked to comment on extent of information technology integration on performance of state corporations in Kenya as the third objective. Results indicated that majority of the respondents 47% agreed that it was to a very great extent, 45% said that it was to a great extent, 2% said it was moderate; little extent was 2% and not all at 4%.

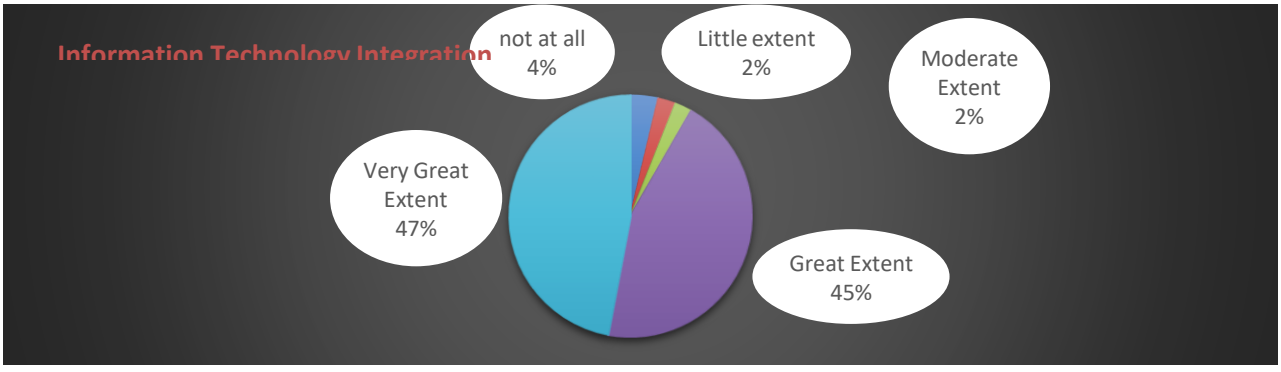

Figure 4: Information Technology Integration

Table 3: Information Technology Integration

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Dev
Vendor managed inventory systems plays a great role in expanding market share	0.00%	0.00%	37.30%	30.70%	32.00%	4.11	0.796
Electronic data interchange plays a great role in expanding market share	0.00%	0.00%	28.70%	34.70%	36.70%	4.01	0.794
Material requirement planning play a great role in expanding market share	0.00%	0.00%	38.00%	33.30%	28.70%	4.55	0.499
Vendor managed inventory systems plays a great role in improving profitability	0.00%	0.00%	36.70%	36.70%	26.70%	4.5	0.502
Electronic data interchange plays a great role in improving profitability	0.00%	0.00%	30.00%	42.00%	28.00%	2.94	1.434
Material requirement planning play a great role in improving profitability	0.00%	0.00%	30.70%	38.70%	30.70%	3.23	1.407
Vendor managed inventory systems plays a great role in cost reduction	20.70%	22.70%	21.30%	20.00%	15.30%	3.47	1.047
Electronic data interchange plays a great role in cost reduction	0.00%	0.00%	0.00%	48.00%	52.00%	3.58	1.183
Material requirement planning plays a great role in cost reduction	0.00%	0.00%	0.00%	50.00%	50.00%		
Average						**3.79**	**0.95775**

The respondents were asked to indicate their levels of agreement on statements regarding information technology integration. The result revealed that majority of the respondent (62.7%) agreed with the statement that vendor managed inventory systems plays a great role in expanding market share. The result further revealed that majority of the respondent (71.4%) agreed with the statement that electronic data interchange plays a great role in expanding market share. The result revealed that majority of the respondent (62%) agreed with the statement that material requirement planning play a great role in expanding market share.

The result further revealed that majority of the respondent (63.4%) agreed with the statement that vendor managed inventory systems plays a great role in improving profitability. The result revealed that majority of the respondent (70%) agreed with the statement that electronic data interchange plays a great role in improving profitability. The result further revealed that majority

of the respondent (69.4%) agreed with the statement that material requirement planning play a great role in improving profitability.

The result revealed that majority of the respondent (43.4%) disagreed with the statement that vendor managed inventory systems plays a great role in cost reduction. The result further revealed that majority of the respondent (100%) agreed with the statement that electronic data interchange plays a great role in cost reduction. The result revealed that majority of the respondent (100%) agreed with the statement that material requirement planning plays a great role in cost reduction. The average for the statements on information technology integration was 3.79. The results imply that an organization benefits greatly when information technology integration is embraced to reduce costs, introduce measurement of procurement ROI's systems designed to address the organization's needs, and work with the organization to streamline performance (Larry, 2013).

Demand and Supply Forecasting

There was also need to establish the effect of demand and supply forecasting on performance of state corporations in Kenya. The respondents were also asked to comment on statements regarding demand and supply forecasting on performance of state corporations in Kenya. Results also showed that 3% of respondents indicated to very great extent, great extent was at 12%, moderate extent was 3%, while little extent was at 27% and not at all was at 21%.

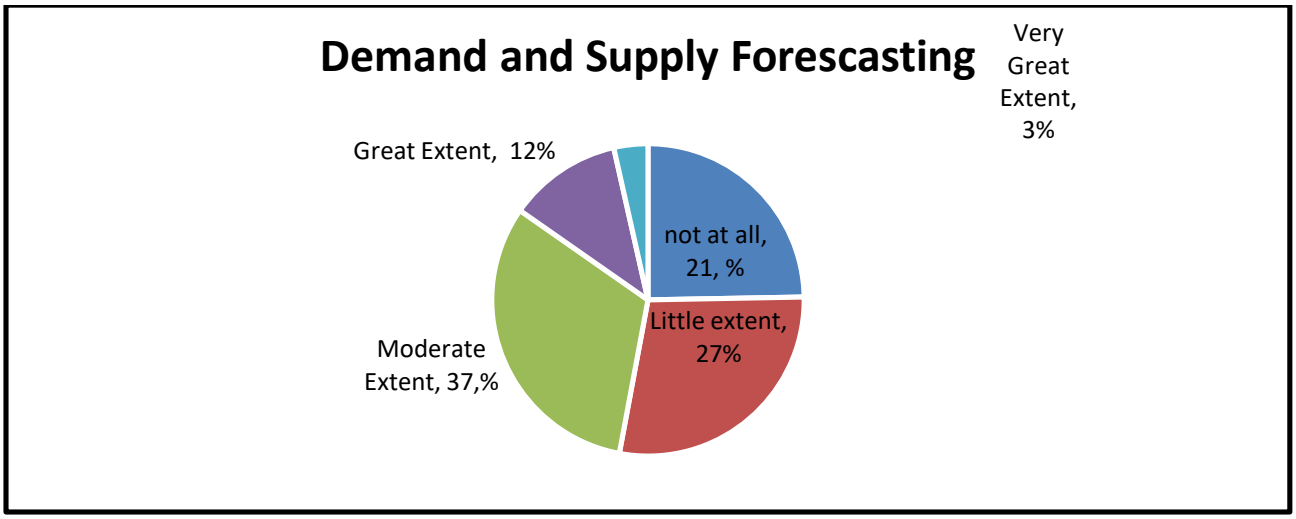

Figure 5: Demand and Supply Forecasting

The respondents were asked to indicate the descriptive for demand and supply forecasting. The result revealed that majority of the respondent (100%) agreed with the statement that production scheduling plays a great role in expanding market share. The result further revealed that majority of the respondent (100%) agreed with the statement that sales scheduling plays a great role in expanding market share. The result revealed that majority of the respondent (95.4%) agreed with the statement that product life cycle play a great role in expanding market share.

The result further revealed that majority of the respondent (96%) agreed with the statement that production scheduling plays a great role in improving profitability. The result revealed that majority of the respondent (100%) agreed with the statement that sales scheduling plays a great role in improving profitability. The result further revealed that majority of the respondent (100%) agreed with the statement that product life cycle play a great role in improving profitability.

The result further revealed that majority of the respondent (95.3%) agreed with the statement that production scheduling plays a great role in cost reduction. The result further revealed that majority of the respondent (100%) agreed with the statement that sales scheduling plays a great role in cost reduction. The result further revealed that majority of the respondent (100%) agreed with the statement that product life cycle plays a great role in cost reduction.

The average for the statements on demand and supply forecasting was 3.79. The results imply that an organization benefits greatly when reliable demand and supply forecasting are embraced to reduce costs, introduce systems designed to address the organization's needs, and work with the organization to streamline performance (Jolley, 2013).

Table 4: Demand and Supply Forecasting

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Dev
Production scheduling plays a great role in expanding market share	0.00%	0.00%	0.00%	54.00%	46.00%	4.11	0.796
Sales scheduling plays a great role in expanding market share	0.00%	0.00%	0.00%	48.70%	51.30%	4.01	0.794
Product life cycle play a great role in expanding market share	0.00%	1.30%	3.30%	40.70%	54.70%	4.55	0.499
Production scheduling plays a great role in improving profitability	1.30%	1.30%	1.30%	56.70%	39.30%	4.5	0.502
Sales scheduling plays a great role in improving profitability	0.00%	0.00%	0.00%	47.30%	52.70%	2.94	1.434
Product life cycle play a great role in improving profitability	0.00%	0.00%	0.00%	50.00%	50.00%	3.23	1.407
Production scheduling plays a great role in cost reduction	0.70%	1.30%	2.70%	44.00%	51.30%	3.47	1.047
Sales scheduling plays a great role in cost reduction	0.00%	0.00%	0.00%	52.70%	47.30%	3.58	1.183
Product life cycle plays a great role in cost reduction	0.00%	0.00%	0.00%	50.70%	49.30%		
Average						**3.79**	**0.957**

4.2 Inferential Statistics

Correlation Analysis

Correlation analysis was used to determine both the significance and degree of association of the variables and also predict the level of variation in the dependent variable caused by the independent variables.

Table 5: Summary of Pearson's Correlations

Correlations		Safety Stock Management	Inventory Control Techniques	Information Technology Integration	Demand and Supply Forecasting	Performance of State Corporations
Safety Stock Management	Pearson Correlation	1				
	Sig. (2-tailed)					
Inventory Control Techniques	Pearson Correlation	.598**	1			
	Sig. (2-tailed)	0				
Information Technology Integration	Pearson Correlation	.589**	.469**	1		
	Sig. (2-tailed)	0	0			
Demand and Supply Forecasting	Pearson Correlation	.588**	.780**	.532**	1	
	Sig. (2-tailed)	0	0	0		
Performance of State Corporations	Pearson Correlation	.806**	.684**	.680**	.696**	1
	Sig. (2-tailed)	0	0	0	0	

***** Correlation is significant at the 0.05 Level (2-Tailed).***

The correlation summary shown in Table 5 indicates that the associations between each of the independent variables and the dependent variable were all significant at the 95% confidence level. The correlation analysis to determine the relationship between safety stock management and performance of state corporations in Kenya, Pearson correlation coefficient computed and tested at 5% significance level. The results indicate that there is a positive relationship (r=0.806) between safety stock management and performance of state corporations in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05).

The correlation analysis to determine the relationship between inventory control techniques and performance of state corporations in Kenya, Pearson correlation coefficient computed and tested at 5% significance level. The results indicate that there is a positive relationship (r=0.684) between inventory control techniques and performance of state corporations in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05).

The correlation analysis to determine the relationship between of information technology integration on performance of state corporations in Kenya, Pearson correlation coefficient computed and tested at 5% significance level. The results indicate that there is a positive relationship (r=0.680) between of information technology integration and performance of state corporations in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05).

The correlation analysis to determine the relationship between demand and supply forecasting and performance of state corporations in Kenya, Pearson correlation coefficient computed and tested at 5% significance level. The results indicate that there is a negative relationship (r=0.696) between demand and supply forecasting and performance of state corporations in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05). Hence, it is evident that all the independent variables could explain the changes in the performance of state corporations in Kenya, on the basis of the correlation analysis.

Regression Analysis

In this study multivariate regression analysis was used to determine the significance of the relationship between the dependent variable and all the independent variables pooled together. Regression analysis was conducted to find the proportion in the dependent variable (performance of state corporations in Kenya) which can be predicted from the independent variables (safety stock management, inventory control techniques, information technology integration and demand and supply forecasting).

Table 6 presents the regression coefficient of independent variables against dependent variable. The results of regression analysis revealed there is a significant positive relationship between dependent variable and the independent variable. The independent variables reported R value of 0.876 indicating that there is perfect relationship between dependent variable and independent variables. R square value of 0.768 means that 76.8% of the corresponding variation in performance of state corporations in Kenya can be explained or predicted by (safety stock management, inventory control techniques, information technology integration and demand and supply forecasting) which indicated that the model fitted the study data. The results of regression analysis revealed that there was a significant positive relationship between dependent variable and independent variable at ($\beta = 0.761$), p=0.000 <0.05).

Table 6: Model Summary

Model	RR	R SquaredR Square	AAdjusted R Squareddjusted R Square	StdStd. Error of the Estimate. Error of the Estimate
1	**.876[a]**	**.768**	**.761**	**.1148**

a) **Predictors: (***constant), Safety Stock Management, Inventory Control Techniques, Information Technology Integration, Demand and Supply Forecasting.*

b) **Dependent Variable:** *Performance of State Corporations*

Table 7 : Coefficients of Determination

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.817	.229		3.576	.000
	Safety Stock Management	.537	.064	.472	8.439	.000
	Inventory Control Techniques	.097	.041	.159	2.391	.002
	Demand and Supply Forecasting	.080	.032	.168	2.49	.001
	Information Technology Integration	.067	.015	.237	4.597	.000

a) **Predictors:** *(constant), Safety Stock Management, Inventory Control Techniques, Information Technology Integration, Demand and Supply Forecasting.*

b) **Dependent Variable:** *Performance of State Corporations*

The regression equation will be;

Y=0.817+ 0.537X1 + 0.097X2 + 0.067X3 +0.08X4

The regression equation above has established that taking all factors into account (safety stock management, inventory control techniques, information technology integration and demand and supply forecasting) constant at zero, performance of state corporations in Kenya will be an index of 0.817. The findings presented also shows that taking all other independent variables at zero, a unit increase in safety stock management will lead to a 0.537 increase in performance of state corporations in Kenya. The P-value was 0.000 which is less 0.05 and thus the relationship was significant.

The study also found that a unit increase in inventory control techniques will lead to a 0.097 increase in performance of state corporations in Kenya. The P-value was 0.002 and thus the relationship was significant. In addition, the study found that a unit increase in information technology integration will lead to a 0.067 increase in the performance of state corporations in Kenya. The P-value was 0.000 and thus the relationship was significant.

Lastly, the study found that a unit increase in demand and supply forecasting will lead to a 0.08 increase in the performance of state corporations in Kenya. The P-value was 0.001 and hence the relationship was significant since the p-value was lower than 0.05. The findings of the study show that, safety stock management contributed most to the performance of state corporations in Kenya.

Table 8: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.329	4	1.582	119.907	.000[b]
	Residual	1.913	145	0.013		
	Total	8.243	149			

a) **Predictors:** *(constant), Safety Stock Management, Inventory Control Techniques, Information Technology Integration, Demand and Supply Forecasting.*
b) **Dependent Variable:** *Performance of State Corporations*

The significance value is 0.000 which is less that 0.05 thus the model is statistically significance in predicting how safety stock management, inventory control techniques, information technology integration and demand and supply forecasting affect performance of state corporations in Kenya. The F critical at 5% level of significance was 86.80. Since F calculated which can be noted from the ANOVA table above is 119.907 which is greater than the F critical (value=86.80), this shows that the overall model was significant. The study therefore establishes that; safety stock management, inventory control techniques, information technology integration and demand and supply forecasting affect performance of state corporations in Kenya. These results agree with Gianakis (2012) results which indicated a positive and significant effect of inventory management on performance of state corporations.

5. 0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The findings of the study indicated that; safety stock management, inventory control techniques, information technology integration and demand and supply forecasting have a positive relationship with performance of state corporations

5.2 Recommendations

The study recommended that public institutions should embrace inventory optimization practices so as to improve their performance.

Existing literature indicates that as a future avenue of research, there is need to undertake similar research in other institutions and private organizations in Kenya and other countries in order to establish whether the explored practices herein can be generalized to affect supply chain performance in other institutions.

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