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## **INVENTORY MANAGEMENT PRACTICES AND FINANCIAL PERFORMANCE OF LARGE MANUFACTURING FIRMS IN KENYA (A CASE STUDY OF BATA SHOE KENYA PLC)**

### **PRAKTYKI ZARZĄDZANIA ZAPASAMI ORAZ WYNIKI FINANSOWE DUŻYCH FIRM PRODUKCYJNYCH W KENII (STUDIUM PRZYPADKU BATA SHOE KENYA PLC)**

#### **Abstract**

*The study was purposed to determine the effect of Inventory management practices and financial performance in large manufacturing firms in Kenya. The research was conducted with the following four aims: To examine the degree at which inventory management systems influence financial performance; to establish the degree at which inventory planning influences financial performance in large manufacturing firms and to assess the degree at which inventory modeling influences financial performance in large manufacturing firms. Also, the research was directed by Economic Order Quantity, Collaborative Planning, Forecasting and Replenishment Model, Deming Cycle Model, transaction of cost economics (TCE). The findings of the study show that all firms need to adopt inventory management practices so as to enjoy the advantages. Thus, the existence of inventory management practices is one of the ways for attaining improvements in their financial performance.*

**Keywords:** *Inventory Management, Just-In-Time, ABC Analysis, Economic Order Quantity, Vendor Managed Inventory, Organizational Productivity*

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### Streszczenie

Badanie przedstawione w niniejszym artykule miało na celu określenie wpływu praktyk zarządzania zapasami i wyników finansowych w dużych firmach produkcyjnych w Kenii. Badanie przeprowadzono w następujących czterech celach: zbadanie, w jakim stopniu systemy zarządzania zapasami wpływają na wyniki finansowe; określenie stopnia, w jakim planowanie zapasów wpływa na wyniki finansowe dużych firm produkcyjnych oraz ocena stopnia, w jakim modelowanie zapasów wpływa na wyniki finansowe dużych firm produkcyjnych. Ponadto badaniami kierowały: wielkość zamówienia gospodarczego, planowanie współpracy, model prognozowania i uzupełniania, model cyklu Deminga, transakcja ekonomiki kosztów (TCE). Wyniki badania pokazują, że wszystkie firmy muszą stosować praktyki zarządzania zapasami, aby czerpać korzyści, istnienie praktyk zarządzania zapasami jest jednym ze sposobów osiągnięcia poprawy ich wyników finansowych.

**Słowa kluczowe:** zarządzanie zapasami, just-in-time, analiza ABC, ilość zamówień ekonomicznych, zapasy zarządzane przez dostawcę, wydajność organizacyjna

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### Statement of the problem in general outlook and its connection with important scientific and practical tasks.

The underlying goal of every organisation is ensuring that their performance meets expectations, and this performance is under constant review for improvement. Having established the significant contribution inventory management systems have on supply chain performance, it then expected that most if not all organisations should realise tremendous improvement in general performance in the company.

However, this is not always the case, largely due to the poor implementation or adoption process. Due to the failure of effective implementation, organisations incur high losses and costs, high risk of losing strategic business secrets as well as fear of losing their business. To illustrate this, in 2000 Nike lost \$200 million in an attempt to upgrade its supply chain systems. Owing to this disastrous move Nike lost over \$100 million sales, a 20% stock dip and a number of class-action

lawsuits. Furthermore, in 1999 Hershey, a Fortune 500 was almost brought to a grinding halt when it failed to integrate its inventory system with its other supply chain applications. As a result, Hershey lost close to \$100 million and a fall in its share market value by 8%.

All these shortcomings could easily have been overcome if only these organisations paid serious attention to the implementation phase of their systems. If only top management support and involvement was available, would the entire organisation be united in implementation, additionally, if only proper training was provided would the staff quickly adapt to the system, apart from this if end-users and other stakeholders were given a chance to provide their views would the system become a success? Nevertheless, systems and procedures need to be established for future reference as with the rapid

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advancement in technology, organisations cannot avoid implementing new systems in order to realize greater benefits from these systems. This study, therefore, will seek to

investigate inventory management practices and how these affect the financial performance in the manufacturing sector in Kenya focusing on the Bata Shoe company.

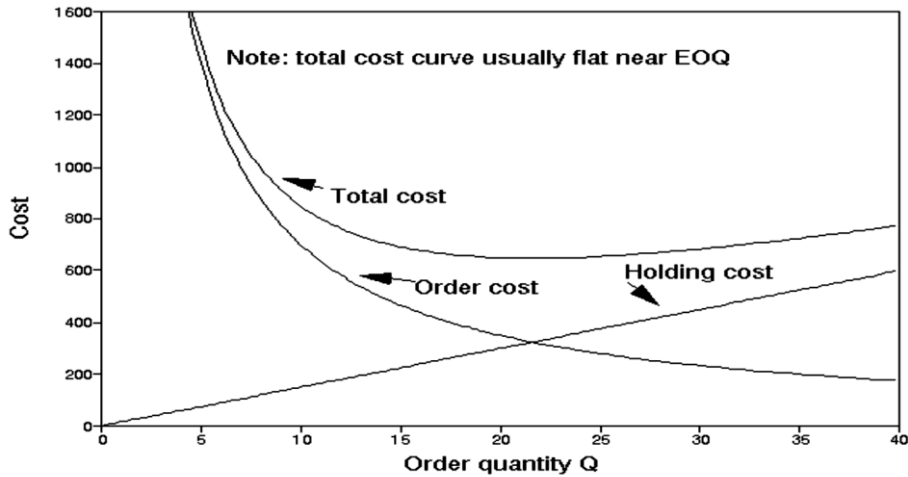
### **Analysis of latest research where the solution of the problem was initiated.**

#### **Economic Order Quantity (Wilson EOQ Model)**

Economic order quantity is the order quantity that minimizes total inventory holding costs and ordering costs. The most common inventory situation faced by manufacturers, retailers, and wholesalers is that stock levels are depleted over time and then are replenished by the arrival of a batch of new units. A simple model representing this situation is the following economic order quantity model or, for short, the EOQ model (Edward, 2010). It sometimes is also referred to as the economic lot-size model. Units of the product under consideration are assumed to be withdrawn from inventory continuously at a known constant rate, denoted by  $a$ ; that is, the demand is a unit per unit time. It is further assumed that inventory is replenished when needed by ordering (through either purchasing or producing) a batch of fixed size ( $Q$  units), where all  $Q$  units arrive simultaneously at the desired time. For the basic EOQ model to be presented first, the only costs to be considered are ( $K$ ) setup cost for ordering one batch, ( $c$ ) unit cost for producing or

purchasing each unit, ( $h$ ) holding cost per unit of time held in inventory (Onawumi, Oluleye, & Adebisi, 2011). The objective is to determine when and by how much to replenish inventory so as to minimize the sum of these costs per unit time. It's assumed that continuous review is used so that inventory is replenished whenever the inventory level drops sufficiently low. First, shortages are not allowed. With the fixed demand rate, shortages can be avoided by replenishing inventory each time the inventory level drops to zero, and this also will minimize the holding cost (Edward, 2010). To summarize, in addition to the costs specified above, the basic EOQ model makes the following assumptions: (1) A known constant demand rate of  $a$  units per unit time, (2) The order quantity ( $Q$ ) to replenish inventory arrives all at once just when desired, namely, when the inventory level drops to 0, (3) Planned shortages are not allowed, (4) No backlogging, (5) The holding costs are constant per unit per year, (6) The variable ordering costs are constant per item ordered, and (7) The ordering costs are constant per delivery.

Figure 1. EOQ Model.



Source: OECD (2007)

From the EOQ model the following formulas are derived; Holding cost per cycle =  $\frac{hQ^2}{2a}$ , therefore, Total cost per cycle =  $K + Cq + \frac{hQ^2}{2a}$  so that EOQ formula

$(Q) = \frac{\sqrt{2aK}}{h}$ . The study used this model to evaluate the role of inventory management systems on financial performance in Bata Shoe Company Limited in Kenya.

### Collaborative Planning, Forecasting and Replenishment Model

This is an organizational technique that holistically provides a technique of handling supply chain issues as a combination of several traders both in customer fulfillment and planning through the use of a polite metrics, dialect and organization covenants to enhance the proficiency of all players. The theory provides the linkage of marketing strategies such as implementation techniques, supply chain operations, and category

management and sales with the aim of increasing obtainability while decreasing supply chain-related costs. It also offers a rudimentary technique for easy sharing of information about products. The core player of this model is a customer, followed by a buyer and the outer player is the supplier. The role of the core player is to determine the demand for products while the middle player is responsible for the provision of the products. The role of the supplier is to ensure the demand of the customer is met by-products available in the middle player's store.

**Figure 2. CPFR Model.**



Source: Voluntary Inter industry Commerce Standards 2008

Strategy and Planning set the founding guidelines for the cooperative associations which include assigning responsibilities and roles, the scope of the relationship, and firms' objectives. Demand and Supply Management entails transit lead times, inventory situations, order arrangement/prediction, and sales prediction. Execution entails fulfilling an order through transporting and delivering goods and services to customers as well as generating an order that is predicting organization's demand. Analysis refers to actions including evaluation of performance and management of the exception. Performance evaluation comprises assessing the attainment of a

firm's objectives with the aim of developing other guidelines. On the other hand, exception control means is a system that involves checking and supervising business activities for the existence of uncontrollable scenarios.

The study used this model to establish the role of inventory planning on financial performance in Bata Shoe Company Limited in Kenya.

### **Deming Cycle Model**

Deming is best known as a pioneer of the quality management approach and for introducing statistical process control techniques for manufacturing to the Japanese, who used them with great success. Deming (1982) believed that a key

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source of production quality lay in having clearly defined, repeatable processes. And so the PDCA Cycle as an approach to change and problem-solving is very much at the heart of Deming's quality-driven philosophy. The four phases in the Plan-Do-Check-Act Cycle involve Plan: Identifying and analyzing the problem. This can be done by using quality management tools like Cause and Effect Diagrams so the root cause is identified. Do: Developing and testing a potential solution. This phase involves several activities: 1) Generate possible solutions. 2) Select the best of these solutions, perhaps using techniques like Impact Analysis to scrutinize 3) Implement a pilot proposal on a small scale basis, with a small group, or in a limited geographical area, or using some other trial design appropriate to the nature of your problem, product or initiative. The phrase Plan Do Check Act or PDCA is easy to remember where do means to try or to test. Check: Measuring how effective the test solution was, and analyzing whether it could be improved in any way. Depending on the success of the pilot, the number of areas for improvement that has been identified, and the scope of the whole initiative, the cycle should be repeated incorporating the additional improvements. Act: Implementing the improved solution fully. However, the use of the PDCA Cycle doesn't necessarily stop there. The PDCA or Deming Wheel should be continuously repeated from the Plan Phase (Step 1) so as to identify further areas for improvement as part of a continuous improvement initiative (Evans & James, 2007). The study used this theory to determine the role of inventory modeling on financial performance in Bata Shoe Company Limited in Kenya.

### **Transaction Cost Economics Theory**


In the transaction of cost economics (TCE), the focus of the firm is to minimize the sum

of transaction costs and production costs (Williamson,1979). Transaction costs affect the firms' decisions on how they organize their activities, whether to move towards vertical integration (hierarchy) or to prefer market exchange. Thus, according to TCE, the decision of whether to collaborate or not should be based on the efficiency of governance. Transaction cost economics theory identifies and explains the conditions suitable for a firm to manage an economic exchange internally, and the conditions under which it should manage an economic exchange externally. Heide and John (1990) argue that transaction cost analysis is useful in studies of relationships because it provides insights into the circumstances that cause the development of a closer relationship between the buyers and suppliers. Heide and John (1990) base their theoretical argument on Williamson's (1979) studies stating that the establishment of a closer relationship corresponds to a shift away from market-based exchange toward bilateral governance.

Resource-based view(RBV) and transaction cost economics (TCE) are important to the study of supplier management, as superior performance achieved in supply chain activities relative to competitors, would explain how these activities can be supported by suppliers and how supplier selection/evaluation/development can contribute to the supply chain core competencies (Blomqvist, Kyläheiko, & Virolainen, 2002). Applying TCE underlies the aspects of efficiency and cost focus. Especially, it defines the boundaries of a firm. RBV refers to the firm's internal value creation through its resources and capabilities. Value can be created from supplier relationship management through learning mechanisms, routines and experience. RBV applies the aspects of

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external and internal social relations, power distribution and the level of dependency on external counterparts. It aims at the optimization of the continuity of the business and the autonomy of a firm. As a summary, it can be said that these theories support the purpose of supplier management, diffusion of supplier information between business units, minimization of transaction costs, value creation through internal capabilities and resources, and reducing the risks of supply dependence and availability. In this study, TCE and RBV theories were used to explain financial performance in Bata Shoe Company Limited in Kenya.

### **Inventory management System**

To successfully implement an Inventory Management System, it is necessary to integrate it within the everyday functions performed by company personnel. That is, when a user wants to order equipment or software, they would call up the Inventory Management System screen associated with Acquisition. The same types of processes should be available for Redeployment and Termination of assets. Should a user request the acquisition of a specific type of asset then it would be possible for the inventory system to determine if the asset is already in surplus, or if it should be purchased under an existing Volume Purchase Agreement with a vendor.


The utilization of Inventory Management Systems to control the purchase and installation of assets can aid in the control of the business environment while assisting in the assignment of personnel to perform asset related work functions. This methodology will result in a workflow and asset management system that is optimized to the enterprise.

### **Inventory Planning**

Womack et al., (2003) introduced the lean production principle which was associated with reduced inventories. Their argument was that as a way of reducing storage fees, handling and waste, profit improvement was realized due to interest savings and inventory reduction as the main reason for that. Brigham &Gapenski, (2010) have estimated by 12 pieces of literature, these savings to be in the range of 20 -30 percent (%) of profit realized. Additionally, they noted that in this competitive environment, Inventory planning and Management were gaining more and more attention and awareness. The inventory planning system supporters argue that surplus inventory will adversely interrupt the net cash flow in affirm. The main costs incurred in holding inventory, are the capital costs (interest or opportunity) and the physical cost (storage, insurance and spoilage). Several inventory management systems have been discovered so as to tackle the problem of excess inventory. These inventory planning systems include Just-In-Time (JIT) and Materials Requirements Planning systems (MRP). Just-In-Time is a combination of various exercises to both reduce and eradicate waste. It was first implemented by Ford Company then later embraced by Toyota Motor Corporation (Japan) in the 1950s. JIT is applied in the entire supply chain operation. The major components of JIT include but not limited to sharing with suppliers and customers the product design, set- up times of machines reduction, having suppliers nearby as single sources and maintaining a comprehensive precautionary system. Being that it is an inventory strategy, its impact in a firm should be mainly on the return on investment which should go high because of the inventory reduction and any other cost correlated to that. JIT also has a huge

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impact on the quality of the product and the organization/order in which the product is produced. Its main principle is; products should only be produced when an order of the item is received by a firm. JIT process ensures that there is also warehouse space and cost which is kept at a minimal. Lyons & Gillingham, (2003) defined MRP as a product-oriented computerized technology that works by inventory reduction and delivery schedules sustenance. MRP system works by identifying the need for an item being dependent on the need for an inventory item. This is to mean that with the use of the marketing/sales forecast, they should be a link between an end product and the time period used to attain this product.

### **Inventory Modelling.**

The problem of inventory control is one of the most important in organizational management. As a rule, there is no standard solution to the conditions at which each company or firm is unique and includes many different features and limitations. An

occurring task of the mathematical models' development and determining the optimal inventory control strategy is related with this problem. Features of inventory management models are that the resulting optimal solutions can be implemented in a fast-changing situation where, for example, the conditions are changed daily. There is a need for new and effective methods for modeling systems associated with inventory management, in the face of uncertainty. Uncertainty exists regarding the control object, as the process of obtaining the necessary information about the object is not always possible. The solution to such complex tasks requires the use of systems analysis, development of a systematic approach to the problem of management in general. Inventory models are distinguished by the assumptions made about the key variables: demand, the cost structure, physical characteristics of the system. These assumptions may not suit to the real environment. There is a great deal of uncertainty and variability

### **Aims of paper. Methods**

The main objective of this study is to analyze the inventory management practices and how these affect the supply chain performance in the manufacturing sector in Kenya.

#### **Specific objectives**

To determine the effect of the Inventory Management system and financial performance in Bata Shoe Company, Kenya.

To assess the effect of inventory Planning and financial performance in Bata Shoe Company, Kenya.

To determine the effect of Inventory modeling and financial performance in Bata Shoe Company, Kenya.

#### **Research Questions**

How does Inventory management systems affect financial performance in Bata Shoe Company, Kenya?

How does inventory Planning affect financial performance in Bata Shoe company, Kenya?

How does Inventory modeling affect financial performance in Bata Shoe Company, Kenya?



**Exposition of main material of research with complete substantiation of obtained scientific results. Discussion.**

**Research Design**

A descriptive research design was used. According to Mugenda and Mugenda (2004), descriptive research determines and reports the way things are and attempts to describe things as possible behavior, attitudes, values and characteristics. Kothari (2003), descriptive research is concerned with finding out who, what, where, when, or how much with clearly structured and stated investigative questions. The method assisted the researcher to establish the relationship between the inventory management practices and the financial performance of large manufacturing firms.

**Target Population**

According to Kombo and Tromp (2009) a

population is a well-defined set of people, services, elements, and events, groups of things or households that are being investigated to generalize the results. (Lumley,2004, Cooper and Schindler,2006) defines a population as a larger collection of all subjects from where a sample is drawn. It refers to an entire group of individuals, events or objects having common observable characteristics. The target population in statistics is the specific population about which information is desired (Gupta, 2012). The target population of this study will consist of Bata Shoe Company Kenya the world's largest marketer and manufacturer of footwear with operations worldwide

**Table 1. Target Population.**

Population category	Target Population	Percentage (%)
Production	340	65
Marketing/Finance	80	15
Warehouse	100	20
Total	520	100

Source: HR Bata 2019

**Sample and Sampling Procedure**


The study used stratified random sampling. In this technique, a population was stratified first, and then random sampling is done. Stratification is done when members of a target population are divided into homogeneous groups before sampling. After the members have been put into homogenous groups, they are randomly picked using simple random sampling. This process is preferred because no element of the population is left out. The strata are

collectively exhaustive. Sampling error is reduced if the procedure is used (Mugenda, 2003).

In the sampling procedure, the manufacturing firm was stratified into three sections. They included the warehouse department, the marketing, and the finance department and the production department. In the population, the warehouse department had 100 employees, the marketing and finance department 80 employees while the manufacturing

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department 340 employees. Table 3.2 shows these figures. A list of the population was drawn from each sector. Simple random sampling was then carried out in each sector. Mugenda (2003) recommends

that a sample representing 10% of the population is adequate for representation. 10% of the population from each stratum was picked. The information is shown in Table

**Table 2. Sampling Design**

Population category	Frequency	Sample Percentage (%)	Sample
Production	340	10	34
Marketing/Finance	80	10	8
Warehouse	100	10	10
Total	520	10%	52

Source: Researchers (2019)

### **Instrumentation**

The Researcher involved the use of research tools in the collection of data. This study used primary and secondary methods to get the required data about the study at hand. In terms of the secondary methods, it involved the acquisition of audited financial statements provided for by Bata Shoe Company Kenya (both from their offices and their website as well) brochures, textbooks and magazines while the questionnaires were used as a primary method to obtain information. All these were used to address the objectives of the study.

### **Data Collection**

Data collection involves contacting the respondents in the sample in order to collect the required information about the study (Cooper & Schindler, 2003). Data collection involved a self-administered questionnaire. The main instrument for data collection was a structured questionnaire that allowed uniformity of responses to questions.

The questionnaire is a fast way of obtaining data as compared to other instruments (Mugenda & Mugenda, 2008). Questionnaires give the researcher


comprehensive data on a wide range of factors. Questionnaires allow greater uniformity in the way questions are asked, ensuring greater compatibility in the responses. In developing the questionnaire two broad categories of questions were considered. According to Field (2005), structured questions are usually accompanied by a list of all possible alternatives from which respondents select the answer that best describes their position. Questions were constructed so as to address specific objectives and provide a variety of possible responses.

### **Data Analysis & Presentation**

The researcher sorted, edited, coded and analyzed primary data that he collected to ensure that errors and points of contradiction were eliminated. The purpose of coding was to classify the answers to different questions into meaningful categories to bring out their essential patterns. Quantitative data was collected using closed-ended questions in the questionnaires, they were chronologically arranged with respect to the questionnaire to ensure that the correct code is entered for the correct variable. Data cleaning was done and presented in frequency tables,

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charts and graphs. The study used descriptive statistics to analyze the characteristics of the respondents. SPSS Version 21.0 was used as it helped in data analysis and interpretation. The presentation of the data was in the form of tables used in respondents' findings while inferential statistics on the major research questions.

**Multiple Regression Analysis**

Financial Performance was regressed against three variables of inventory management practices.

A regression was used because the procedure uses two or more independent variables to predict a dependent variable. Since there are three independent variables in this study the regression model generally assumed the following equation:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \epsilon$$

Where; Y= Financial Performance;  $\beta_0$ =Constant;  $\beta_1$ ,  $\beta_2$ , and  $\beta_3$  = regression coefficients; X1= Inventory management system; X2= Inventory planning; X3= Inventory modeling;  $\epsilon$ =Error Term

**Research Findings and Discussion**

**Reliability Analysis**

Cronbach alpha coefficients were used to test the internal consistency of items on a scale and the variables were considered reliable if the results showed that their Cronbach Alpha was above 0.70 thresholds as recommended by Malhotra (2008) who asserted that Cronbach Alpha's should be in excess of 0.70 for the measurement intervals. The results of the reliability analysis are presented in the Table 5 below.

**Table 3. Reliability of Measurement Scales**

	<b>Cronbach's Alpha</b>	<b>Decision</b>
<b>Inventory Management System</b>	.818	Reliable
<b>Inventory Planning</b>	.772	Reliable
<b>Inventory Modelling</b>	.862	Reliable

Source: Researchers (2019)

From the table it was found that inventory modeling (Cronbach's Alpha =.862) was the most reliable followed by Inventory Management System (Cronbach's Alpha=.818) then Inventory planning (Cronbach's Alpha = .772) was the least.

**Response rate**

According to Mugenda and Mugenda (2003), the response rate is the percentage of the sample that returns the questionnaires

completed during data collection. In this case, out of the 52 questionnaires issued to the respondents by the researcher, 44 of them were received fully completed recording a response rate of 85% as indicated in the Table below. According to Mugenda and Mugenda (2003), a response rate that is 50 percent is adequate to be used in research, 60 percent is good and above 70 percent is very good.

**Table 4. Response Rate.**

<b>Respondents</b>	<b>Frequency</b>	<b>Percentage</b>
Responded	44	85%
Did not Respond	8	15%
Sample size	52	100%

Source: Researcher (2019)

### **Descriptive Statistics**

Descriptive statistics are used to describe the basic features of the data in a study by providing summaries about the sample and the measures. Together with simple graphical analysis, they form the basis of virtually every quantitative analysis of data (Kothari, 2004). The study used descriptive statistics to present the frequency and the percentages of the gathered data on the role of inventory management practices on organization performance in Bata Shoe Company.

### **Demographic Characteristics**

This section presents the personal information of the respondents who participated in the research study.

#### **Distribution of the respondents by age bracket**

The number of years that an individual has been in the organization and his or her age determines the level of dealing with challenges in the management of inventories. The respondents were asked to indicate their age bracket. The study findings are illustrated in the Table below.

**Table 5. Age of respondents**

<b>Age bracket(Years)</b>	<b>Frequency</b>	<b>Percentage</b>
10-20	6	11
20-30	15	28
30-40	21	40
Over 40	11	21
<b>Total</b>	<b>52</b>	<b>100</b>

Source: Field Data

From the findings, the majority of the respondents (40 %) were between 30-40 years old while 28% were 20-30 years old, 21% were above 40 years old while 11% were between the ages of 10-20. The findings, therefore, indicate that the majority of the employees interviewed in Bata Shoe plc were aged 30-40 years and could, therefore, make management decisions owing to the financial performance of an organization.

### **Education Level of the Respondents**

It was important to establish the education level held by the study respondents in order to ascertain if they were equipped with relevant knowledge and skills on inventory management functions. The findings indicated that the majority (52.9%) had a bachelor's education level, 29.4% had diploma education level and 17.6% had master's education level (See Table 4.2). These findings implied that most of the respondents were qualified to understand the nature of the study problem. This

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concurr with Joppe (2000) that during the research process, respondents with technical knowledge on the study problem assist in gathering reliable and accurate data on the problem under investigation. This demonstrated that most of the organization employees were qualified professionals

with technical knowledge and skills on the study problem and thus provided the study with reliable information on the role of inventory management practices on organization performance in Bata Shoe Company.

**Table 6. Education Level of the Respondents.**

Education Level	Frequency	Percent
Certificate	0	0
Diploma	15	29.4
Bachelor's Degree	28	52.9
Master's Degree	9	17.6
Doctorate	0	0
Total	52	100.0

Source: Researcher (2019)

**Working Experience of the Respondents**

The study determined the working experience held by the respondents in order to ascertain the extent to which their responses could be relied upon to make conclusions on the study problem using their working experience. From the findings, 17.6% of the respondents indicated they had a working experience of less than a year, 29.4% had a working experience of 1-3 years, 41.2 % had a working experience of 3-5 years, 5.9 % had a working experience of 5-10 years and 5.9% had a working experience of over 10

years (See Table 4.4). These findings were in line with Baxter (2008) that respondents with a high working experience assist in providing reliable data on the study problem since they have technical experience on the problem being investigated by the study. This indicates that 50% of the respondents had worked in Bata Shoe Company for a significant time and thus understood technical issues on the role of inventory management practices on organization performance in Bata Shoe Company.

**Table 7. Working Experience of the Respondents.**

Working Experience	Frequency	Percent
Less than a year	9	17.6
1-3 years	15	29.4
3-5 years	21	41.2
5-10	3	5.9
Over 10 years	3	5.9
Total	52	100.0

Source: Researcher (2019)

**Multiple Regression Analysis**

In addition, the researcher conducted a multiple regression analysis so as to test the relationship among variables (independent) on influence of inventory management practices and financial performance of Bata

Shoe Kenya PLC. The researcher applied the statistical package for social sciences (SPSS Version 21.0) to code, enter and compute the measurements of the multiple regressions for the study.

**Table 8. Model Summary.**

Model	R	R Square	Adjusted R Square	Adjusted Square
1	0.834	0.696	0.687	0.989

Source: Researchers (2019)

The adjusted R<sup>2</sup> was found to be 0.687 inferring that variations on the influence of inventory management practices on financial performance at Bata Shoe Kenya PLC which are explained by inventory Management System, inventory planning and inventory modeling were 68.7%. These findings conform to Fellows and Rottger

(2015) who claim that ABC Analysis is an inventory categorization technique that divides the inventory into categories where it suggests that inventories of an organization are not of equal value. Thus, the inventory is grouped into three categories in order of their estimated importance.

**Table 9. ANOVA results.**

Model		Sum of Squares	df	Mean Square	f	sig
1	Regression	302.34	3	75.585	75.516	3.55E-33
	Residual	132.12	132	1.001		
	Total	434.46	136			

Source: Researchers (2019)

In predicting the effects of inventory Management System, inventory planning and inventory modeling on the financial performance of Bata Shoe Kenya PLC, the regression model test were found to be significant since the p-value was less than 0.005 and The F cal (75.516) was larger

than the Fcrit (2.345). This is similar to Hutchins (1999) who argued that the prime goal of the just-in-time technique is the accomplishment of zero catalogs, not just within the confines of a single firm but ultimately on the whole other manufacturing firms as well.

**Table 10. Regression Coefficients.**

Model	Unstandardized Coefficients		Standardized coefficients		
	B	Std .Error	Beta	t	sig
(Constant)	0.904	0.223		0.054	8.56E-05
Inventory Management System	0.864	0.302	0.606	2.323	2.17E-02
Inventory Planning	0.684	0.116	0.445	5.897	2.94E-08
Inventory Modelling	0.754	0.236	0.531	3.195	1.75E-03

The established model for the study was:

$$Y = 0.904 + 0.864X_1 + 0.684X_2 + 0.754X_3 + e$$

Source: Researchers (2019)

### **Inventory Managements Systems**

The results reveal that the financial performance of Bata Shoe Kenya PLC will be 0.904 if all other factors are held constant. The study results also show that an increase in inventory Management System will lead to a 0.864 increase in the financial performance of Bata shoe Kenya PLC if all other factors are held constant.

### **Inventory Planning**

The results reveal that the financial performance of Bata Shoe Kenya PLC will be 0.904 if all other factors are held constant. As shown by  $r=0.684$ , the study reveals that an increase in inventory planning would lead to an increase in the financial performance of Bata Shoe Kenya PLC if all other factors are held constant.

### **Inventory Modelling**

The results reveal that the financial performance of Bata Shoe Kenya PLC will be 0.904 if all other factors are held constant. The study showed that if there was a unit change in an inventory model, a 0.754 increase in the financial performance of Bata Shoe Kenya PLC would be realized if all other factors are held constant.

### **Summary**

These conform to Disney and Towill (2008) who noted that in USA and Canada retail outlets such as Walmart, Safeways, Foodex

among others complained of facing 12% additional inventory management costs that resulted to over 13% decline in profit margin due to challenges associated with the implementation of Inventory management practices.

In summary, all variables were significant since p-values were less than 0.005 with inventory Management Systems having the greatest effect and Inventory planning having the least effect on the financial performance of Bata Shoe Kenya PLC.

### **Discussions of Findings**

#### **Inventory Management Systems**

The study sought to determine the influence of inventory management systems and the financial performance of Bata Shoe Kenya PLC. From the findings, the study revealed that ABC Analysis which entails inventory management system technique is adopted, to a significant level of 0.864 which is above the recommended 50%. These findings conform to Fellows and Rottger (2015) who claim that ABC Analysis is an inventory categorization technique that divides the inventory into categories where it suggests that inventories of an organization are not of equal value. Thus, the inventory is grouped into three categories in order of their estimated importance.

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The study also found that FSN Analysis involves the separation of Fast Moving, Slow-moving and Non Moving Items and that the firm uses SOS Analysis which separates seasonal items from Off Seasonal Items. This is in line with Shapiro (2009) who argues that the primary focus of inventory controllers is to maintain optimum inventory levels and determine order/replenishment schedules and quantities.

### **Inventory Planning**

The study further sought to evaluate the influence of inventory planning on the financial performance of Bata Shoe Kenya PLC. These correspond to Donald (2006) who argues that the less you spend to store and carry catalog, the less inventory disuse you have to write off, and the better you can enhance your carriage and logistics. The study found that the firm practices Just in Time planning, that organization uses Periodic Ordering to manage inventory. The study also revealed that continuous Ordering as a tool for planning is used in the firm to a significant level of 0.684. These findings are similar to Wolcott (2011) who noted that inventory management systems and inventory control processes provide information to efficiently manage the flow of materials, effectively utilize people and equipment, coordinate internal activities and communicate with customers.

### **Conclusion**

The study concluded that each of the independent variables is individually significant in the model with their significant levels being above 50% at Bata Shoe Kenya. The study revealed that ABC Analysis which entails the inventory Management systems technique is adopted. The study also found that FSN Analysis

### **Inventory Modeling**

The study further sought to assess the influence of inventory modeling on the financial performance of Bata Shoe Kenya PLC. The study found that Deterministic Model is greatly used in the firm to a significant level of 0.754. This corresponds to Mazanai (2012) who noted that stock shortages are a headache for most organizations and it leads to customer's dissatisfaction which eventually leads to low performance of a firm. This study concurs with Economic Order Quantity (EOQ) Model as it helps to find out the effect of inventory modeling a management Practices on the financial Performance of Bata Shoe Kenya PLC through optimal inventory levels that should be kept by the organization.

The study further revealed that Economic Production Lot Size has been adopted in the firm and that their firm fairly uses a probabilistic model to manage inventories. This was not regressed in this study, therefore, leaving the gap for future research. This finding concurs with Wild (2012) who notes that the economic quantity is the level for inventory which minimizes the total inventory costs. It is the optimal level of inventories which satisfies the demand constraints and cost constraints.

involves the separation of Fast Moving, slow-moving and Non-Moving Items. The study also concluded that inventory planning influences the financial performance of Bata Shoe Kenya PLC significantly. The study found that the firm practices Just in Time planning, that organization uses Periodic Ordering to



manage inventory. The researcher concluded that inventory modeling influences the financial performance of Bata Shoe Kenya PLC. The researcher found that Deterministic Model is used in the firm and that Economic Production Lot Size has been adopted in the firm. The researcher concludes that the findings assist in the formulation of policies and regulations that can help improve efficiencies and effectiveness in the sector and an improved manufacturing sector could increase national GDP and by extension increase job creation. Improved inventory management possibly would boast flow of trade and reduction of cost in exports creating export incentives, improved prices of goods and services which boosts the Kenyan economy.

### **Recommendations**

The study recommends that manufacturing firms should automate their inventory management systems so as to improve their customer delivery levels. This is because inventory management automation whether full or partial will help the retail outlets improve on their lead times and responsiveness to customer needs. This definitely will lead to customer satisfaction hence customer loyalty.

The study also recommends that the retail outlets should make use of automation so as to reduce their operational costs. The number of staff needed to operate an automated inventory management system will be lower than that of a manual system, there will be fewer errors committed by the staff, and fewer lost sales (reduced opportunity costs) as well as effective and cheaper communication with the suppliers and the customers. A decentralized management structure should be adopted since it will encourage faster decision making by the lower-level manager and they will also own the decisions that they


make. To encourage quality decision making, the manufacturing firms' Stop-level managers should also incorporate the lower-level managers in planning and decision making because this will also reduce resistance to change.

It was also noted that the specialization of labor increases the quality of output and the quality of services rendered. It is therefore recommended that the manufacturing firms should employ people with relevant educational qualifications and with some level of experience as far as inventory management is concerned. It is highly recommended that the manufacturing firms invest technology that is most useful to their operations so as to avoid wasting a lot of capital on technology that will never be used. Comprehensive research is therefore very necessary to identify any recent developments in inventory management automation.

There is a need for management to emphasize the importance of inventory management. Inventory management should not be the preserve of only the staff of the warehouse, stores or logistics department. Each department in manufacturing firms must appreciate the importance of inventory control and adhere to related processes, including documenting inventory movements and storing items where they belong not just where there is open space. Dedicating one individual to full-time inventory management provides continual attention to that function while rotating various oversight responsibilities among other individuals broadens their understanding of inventory control processes. Such practices also promote accountability and ownership. It is therefore recommended that management has to ensure that industry-specific requirements of some of the inventory management systems (as for the

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case of JIT) and the obtaining situation are considered before the adoption of the technology. Further, organizations should ensure that the practitioners have to assess the situation at hand prior to the choice of the system or approach. Before adopting any inventory management system, practitioners should assess it for suitability to the industry, for appropriateness and reliability.

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