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Assessing the Role of Safety Stock Practice in Achieving Organizational Efficiency in a Computerized Era in Aluminium Manufacturing Firms in South East Nigeria

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ABSTRACT

The study assessed the role of safety stock practice in achieving organizational efficiency in a computerized era in aluminum manufacturing firms in South East, Nigeria. Determining inventory level is one of the most challenging tasks faced by entrepreneurs and operations managers. The objectives of the study were to: ascertain the effect of safety stock on product availability, determine customer satisfaction and find the relationship between safety stock and sales volume. Survey design was adopted for the study. Questionnaire was used to obtain data which were presented in tables. The data were tested using F- distribution. The result of the study showed that safety stock practice enhanced the availability of products in the aluminum manufacturing firms in South East, Nigeria ($r = .738$; $F = 310.967$; $p < .000$); safety stock practice promoted customer satisfaction in the aluminum manufacturing firms in South East, Nigeria ($r = .899$; $F = 1099.647$; $p < .000$) and safety stock practice increased sales volume in the aluminum manufacturing firms in South East, Nigeria ($r = .789$; $p = .000 < 0.05$). It was concluded that the adoption of safety stock practice had significant effect on the organizations' operations, particularly in ability to satisfy its customers, create higher sales volume and increased efficiency. It was therefore recommended that management of such firms should ensure adequate maintenance of safety stock of raw materials and finished products to assure uninterrupted productions and steady supply of the products to customers.

Keywords: Safety, stock, organizational, computerized era, aluminum.

INTRODUCTION

The determination of what to order, when to order, how much to order and how much to stock so that costs associated with ordering and holding are optimal without interrupting production or sales, have been one of the major challenges facing business organizations in the world [1]. In today's dynamic and global economy, with highly fluctuating demand for products, inventory management has become even more challenging. Though many companies regard stocks as being an element of cost, there are some companies which regard them as active components that contribute to the leading of a specific market share through a high level of service offering and availability of products in the quantities that are needed. Determining inventory level is one of the most challenging tasks faced by entrepreneurs and operations managers. Organizations selling numerous products and buying raw materials to make those products often time face the challenge of inventory management [2].

An important aspect of inventory management is when and how much to order as there are costs of holding inventory during low demand and there are costs of stock-out. One is measured by carrying charges and the other is measured by lost sales, lost profit, lost customers and lost market share [3]. Inventory management experts have calculated a fixed economic order quantity (EOQ) that minimizes the cost of ordering and keeping stock. Some organizations use fixed maximum and minimum order quantity which ranges around economic order quantity (EOQ) for stocking various parts. These quantities are ordered at a specific stock level called the reorder point. The reorder point is calculated as the stock level required in meeting the demand for finished product and raw material, taking into account the lead time.

The reorder point works well when a manufacturer knows beforehand the exact demand and lead time for procuring a product. Whenever actual lead time exceeds the predicted one, there is every possibility that stocks reserved for consumption during the lead time would not be enough resulting in stock-outs which in turn result in the loss of revenue [4]. However, knowing them with precision would be equivalent to solving all the problems within the supply chain. Demand can remain constant, variable or determinable, but in most situations demand is uncertain. [5], asserts the effectiveness of inventory management and control is generally measured by how well a company is able to reduce its investment in inventory, achieve maximum throughput and at the same time meeting its customer service goals while containing its operational costs. Safety stock arises as a result of the error in forecasting demand and predicting lead time. Relying on reorder point calculations could lead to inventory stock-out and inability to meet customer demand. This can have an adverse effect on customer loyalty. Recently, companies guard against this uncertainty by adoption of computerized safety stock management.

Computerised safety stock management is about ensuring that a company sustains its operations and protects its market share. Computerised safety stock is required to be maintained to provide safety against the “stock outs” in case actual demand is more than what was forecast during the lead time or should actual lead time exceed estimated lead time. Safety stock management has always been a challenge for supply chain professionals. It is sometimes referred to as a necessary evil, as higher safety stock than required tie-up capital and increase operational costs, while low or no safety stock can lead to lost sales and customer dissatisfaction [2]. When adopting computerized safety stock management, the goal is to satisfy product demand while maintaining an efficient stock supply. Too much stock incurs extra holding and capital cost (money tied up in inventory that cannot be used for anything else); on the other hand, not having enough inventory impedes the ability to provide customers with product [6]. The study assessed the role of safety stock practice in achieving organizational efficiency in a computerized era in aluminum manufacturing firms in South East, Nigeria.

Statement of the problem

Safety stock is kept to provide safety against stock outs. This occurs when actual demand is more than forecast demand during the lead time or in where actual lead time is more than the estimated lead time. Maintenance of safety stock is expected to enhance the chances of the organization to adequately manage its stock, create customer satisfaction and increase sales volume.

In a computerized era, relying on reorder point calculations could lead to inventory stock-out and inability to meet customer demand. Organizations adopting safety stock practices have shown signs of failure in their ability to meet the demand of customers which may be due to unavailability of stock as at the time of demand. The challenge could be caused by inadequate know-how on application of computer. This holds the tendencies of creating dissatisfied customers. This can have an adverse effect on customer loyalty. Hence the study sought to assess the role of safety stock practice in achieving organizational efficiency in a computerized era in aluminum manufacturing firms in South East, Nigeria.

Objectives of the Study

The broad objective of the study was to assess the role of safety stock practice in achieving organizational efficiency in computerized era in aluminum manufacturing firms in South East Nigeria. The specific objectives were to:

1. Ascertain the effect of safety stock on product availability in Aluminum Manufacturing Firms in South East Nigeria
2. Determine the effect of safety stock on customer satisfaction in the Aluminum Manufacturing Firms in South East Nigeria
3. Find out the nature of the relationship between safety stock and sales volume in Aluminum Manufacturing Firms in South East Nigeria

Research Questions

The study provided answers to the following questions:

1. What is the effect of safety stock on product availability in the Aluminum Manufacturing Firms in South East Nigeria?
2. To what extent does safety stock affect customer satisfaction in the Aluminum Manufacturing Firms in South East Nigeria?
3. What is the relationship between safety stock practices and sales volume in the Aluminum Manufacturing Firms in South East Nigeria?

Research Hypotheses

The following research hypotheses formulated guided the study.

1. Safety stock has positive effect on product availability in the Aluminum Manufacturing Firms in South East Nigeria
2. Safety stock to a large extent positively affects customer satisfaction in Aluminum Manufacturing Firms in South East Nigeria
3. There is positive relationship between safety stock and sales volume in Aluminum Manufacturing Firms in South East Nigeria

Safety stock Management

Safety stock as defined by [4], is a stock used to compensate for demand and/or lead time variability. Other uncertainties exist such as supply variability, quality problems, and inventory accuracy problem. Robinson [6], defines safety stock as an extra inventory beyond expected demand. Similarly, [4], sees it as an inventory that is carried to prevent stock outs. Also [7], maintained that safety stock inventory (also called buffer stock) is a term used by inventory and logistics managers to describe a level of extra stock that is maintained to mitigate risk of stock-outs (shortfall in raw material) due to the uncertainties in supply and demand. Fritsch further stated that safety stock is an addition to normal or basic inventory which serves as a buffer against variability in the supply chain.

Safety stock management relates to the tracking and management of commodities which includes the monitoring of commodities moved into and out of stockroom locations and the reconciling of the inventory balances. In computerized era, software such as enterprise resourcing planning are been utilized. [2], explain that Enterprise Resource Planning (ERP) is a system that includes the core accounting functions of accounts payable, accounts receivable, and general ledger, coupled with logistics functions, to manage the organization. [5], defined Enterprise Resource Planning (ERP) as a business management system that, supported by multi-module application software, integrates all the departments or functions of an enterprise.

[3] further explain that Enterprise Resource Planning (ERP) is the latest and possibly the most significant development of material requirement planning (MRPI) and manufacturing resource planning (MRP II). ERP is applicable to all organizations and allows managers from all functions or departments to have a consolidated view of what is, or is not taking place throughout the enterprise.

Importance of Maintaining Safety Stock

[3], maintains that proper safety stock levels maintenance means the company is able to improve its customer service by mitigating the company's lost sales cost of inventory. In essence, if the company is able to reduce the number of times their customers must go to their competitors for product, then they have successfully reduced the cost of lost sales and

have improved their customer service performance. Therefore, if they are properly maintaining their safety stock, then they should be able to increase their ability to meet customer requested ship dates, thereby reducing the impact of lost sales cost of inventory. Below is a summary of the importance of proper management of firms' safety stock levels [2].

Meeting customer requested ship dates: In today's business environment, the customers are trying to mitigate costs wherever they can. This often means they will try and reduce their inventory holding costs by reducing how much inventory they retain. When the company is able to provide them with what they want, when they want it, then the company has successfully serviced that customer. A greater portion of customer service excellence begins with properly managing customer expectations.

Reducing lost sales cost of inventory: [2], opined that most companies are surprised to hear that one of their biggest inventory holding costs includes the impact of losing sales and customers because of a lack of inventory. However, when a sale is lost due to stock outs, and the company is in the middle of replenishing their inventory, the expected inventory when it arrives will have to stay in the company's inventory for longer periods. After all, not only has the company lost a sale, but it has possibly lost a customer. When a customer tries to place an order during a stock out - which is in-between having no inventory available and replenishing the company's safety stock - then it has no choice but to go elsewhere. Winning back such business may be very difficult

There are a number of companies that run a variation of strategies and still require a safety stock level in order to deal with cyclical and seasonal customer demand patterns. When companies think of their safety stock, they should also think of how it leads to customer service excellence. In addition, that safety stock helps to protect against the lost sales as a result of stock-outs and a lack of available inventory. When companies protect the safety stock, they have ensured that their customers return time and again. Also, making products readily available ensures that the company never encounters the high costs of low inventory counts.

Safety Stock and its Impact on Inventory Holding Costs

[3], informs that when it comes to retaining safety stock, a number of companies are concerned about its impact on their inventory holding costs. Unfortunately, some companies believe that retaining emergency stock is too expensive and doesn't justify holding inventory to capture opportunistic sales. However, having safety stock is not about capturing opportunistic sales, rather about ensuring the company meets its obligations, provides better services to its customer base, and protect its market share. Most companies immediately equate safety stock with minimum/maximum inventory. However, maintaining an emergency stock is a mechanism that can be used across multiple inventory strategies, whether they are

minimum or maximum, JIT (Just in Time) or push pull. In fact, it is such a vital part of a company's supply chain that not having a safety stock on products with high inventory turnover rates is just bad business.

A number of companies are unaware that a lost sale is a direct cost of inventory. It is a direct cost of managing inventory, one that can be measured by lost sales, lost gross profit, lost customers and lost market share. In addition, companies that ignore these costs often make emergency purchases to meet demand when encountered with an inventory stock-out. Once that happens, the company's inventory costs increase due to overtime and expedited freight.

Product Availability and Safety Stock Practice

This can be defined as any product or service that is available as at the time of demand. [8], argues that the key objective of inventory control or safety stock practices is reflected in attaining the preferred level of product availability as a significant aspect of customer service. Similarly, [9], believe that customer service for retail consumers is manifested by product availability as the fundamental performance indicator of the entire supply chain. Securing the adequate availability level also raises the service quality level. [10], found that an inventory decrease or poor safe stock practices for one brand can, first, result in a decrease of demand for the brand and, second, in an increase of demand for a competing brand.

Customer Service and Safety Stock Practice

Customer service is the provision of service to customers before, during and after a purchase. Proper management of safety stock ensures that the organization is not only excelling in customer service, but that they are ultimately improving customer retention [3], If a company's marketing and sales are promoting products with a relatively quick turn times, and the company is not able to deliver what it promised, then it is a failure of the company's customer service. In that case, it's important to define the company's customer service from the mindset of these three aforementioned players: marketing, sales customer service [3]. A study conducted by [11], showed that maintaining safety stock or good inventory management positively affected customer satisfaction. This leads to customer retention or brand loyalty.

Sales Volume and Safety Stock Practices

Sales volume is the quantity or number of products sold or services provided by a company in a particular period of time. Higher product variety and inventory levels at retail stores are associated with higher sales. Having more products at a store increases the probability that customers will find what they want [12]. Also, having more inventory of a particular product

increases sales,[13].Also[14], in a study found a positive relationship between inventory, sales and service in a retail chain store operation.

Theoretical Framework of The Study

The study was based on two theoretical constructs namely; Lean Theory and Theory of Constraints.

Lean Theory

Lean theory is an organizational change method that is implemented with the objective of increasing profit; lean thinking originated in Japan. The lineage of lean manufacturing and just-in-time (JIT) production goes back to Eli Whitney and the concept of interchangeable parts in 1799. Lean production is a method of organizing production using half the effort, space, inventory, and product development time compared with mass production. It also achieves fewer defects, and larger product variety. These improvements result in increased sales, which are the key to re-deploying freed-up resources [15].Lean thinking as codified and expanded upon the Toyota Production System includes non-manufacturing organizations, as well as product development efforts. The objective of lean thinking is to increase profit. This is achieved by focusing on reducing costs using the following simple equation:

$$\text{Profit} = \text{Selling Price} - \text{Cost}$$

Toyota realized that selling price is dictated by the market and cannot be increased. Therefore, the only way to increase profit is to decrease cost. Although [16], attempts to move away from cost reduction by focusing on throughput improvement, the net effect is the same: profit increases because cost decreases. Lean thinking achieves the objective of cost reduction by employing a system-view of an organization that is centered on the notion of customer-defined value. Lean efforts are aimed at eliminating all the steps in the production of a good or service that do not add value to the final customer.

[17], advice that lean theory is an extension of ideas of just-in-time. [3], elaborate just-in-time as a pull-based system designed to align the production and business processes throughout the supply chain. [7], assessed the impact of lean theory on financial performance. They maintained that the theory may eliminate buffer stock and minimize waste in production process. [18], found that leanness positively affected profitability of a business firm. They argue that inventory leanness is the best inventory control tool. The theory elaborates on how manufacturers gain flexibility in their ordering decisions, reduce the stocks of inventory held on site and eliminate inventory carrying costs. Scholarly studies indicate that companies successfully optimize inventory through lean supply chain practices and systems to achieve higher levels of asset utilization and customer satisfaction leading to improved

organizational growth, profitability and market share,[19]. Criticisms leveled against the theory is that it can only be applicable when there is a close and long-term collaboration and sharing of information between a firm and its trading partners [2].

Theory of Constraints

A constraint is anything that prevents the system from achieving its goal. There are many ways that constraints can show up. The theory of constraints is a methodology for identifying the most important limiting factor (i.e. constraint) that stands in the way of achieving a goal and then systematically improving that constraint until it is no longer the limiting factor. In manufacturing, the constraint is often referred to as a bottleneck [7].

The theory of constraints takes a scientific approach to improvement. It hypothesizes that every complex system, including manufacturing processes, consists of multiple linked activities, one of which acts as a constraint upon the entire system (i.e. the constraint activity is the “weakest link in the chain” [7].

The theory of constraints (TOC) was introduced by Eliyahu M. Goldratt in his 1984 book titled *The Goal*, which is geared to help organizations continually achieve their goal [20]. The Theory of Constraint Institute (2016) posits that TOC systematically focuses efforts, energy and attention on the "system constraint". This constraint, or bottleneck, restricts the output of the entire system and at the same time represents the primary leverage point for improving it. Simply put, TOC means identifying constraints and managing them, resulting in:

On-Time In-Full (OTIF) delivery to customers, elimination of stock-outs across the supply chain, better control over operations and far less firefighting, reduced cycle times and therefore inventories, rapid response culture and fewer chronic conflicts between team members, exposing additional production capacity without any investment and higher net profit, ROCE and free cash flow.

The underlying premise of the theory of constraints is that organizations can be measured and controlled by variations on three measures: throughput, operational expense, and inventory. Inventory is all the money that the system has invested in purchasing things which it intends to sell. Operational expense is all the money the system spends in order to turn inventory into throughput. Throughput is the rate at which the system generates money through sales [8].

The difficulties in the theory of constraints are: very long lead times, large number of unfulfilled orders or they are executed with much extra effort (overtimes), high level of unnecessary inventories or lack of relevant inventories, wrong materials order, large number of emergency orders and expedition levels, high levels of devolution, lack of key customers

engagement, frequent changes or absence of control related to priority orders, which implies on schedule conflicts of the resources [6]. The theory focuses on effectively managing the capacity and capability of these constraints in order to improve the organizational competitiveness of their organization [2]. This can be achieved by Aluminum manufacturing firms in the South East, Nigeria applying efficient safety stock practices. The theory of constraints, therefore, guided the study.

Empirical Review

In a study by [21], on 'stock management effectiveness in manufacturing industries: insurance perspective (a case study of metal furniture Nigeria limited in Lagos, Nigeria), they adopted a simple random sampling technique for the study. The major tool that was employed in the collection of primary data for the study was questionnaire. The result revealed that a reduction in the holding costs led to proportionate increase in the profitability of the company. Therefore, effective inventory management through safety stock practice has positive influence on the profitability of manufacturing industries. The study is useful to manufacturing companies in determining the minimum and maximum amount of stock to hold at every point in time.

[14], carried out an investigation on the role of inventory management on customer satisfaction among the manufacturing firms in Kenya. The research was carried out at Delmonte Kenya. A census was carried out on all the 50 employees at Delomonte Kenya who were involved in the supply chain management activities. A questionnaire, interview guide and observation guide were used to collect the data. Response rate of 100 percent was obtained. The result revealed that all the respondents (100 percent) indicated that the company experienced shortages in inventory. They therefore concluded that manufacturing firms had poor inventory management systems and that greatly impacted their ability to satisfy their customers.

Another study suggesting a positive relationship between inventory management or safety stock practice and performance was that of [18], in which their study focused on US manufacturing firms covering the period of 2003 -2008. They found that leanness positively affected profit margins. [18], maintain that firms that are leaner than the industry average generally witness positive returns to leanness. They used empirical leanness indicator as a measurement for inventory management. Their study focused on assessing the relationship between inventory performance and overall firm performance.

[22], in their study on 'the effect of product variety and inventory levels on retail store sales: a longitudinal study', examined the effects of product variety and safety stock inventory levels on store sales. Using four- year data from stores of a large retailer, they showed that increase in product variety and safety stock inventory levels were both associated with higher

sales. They also showed that increasing product variety and inventory levels had an indirect negative effect on store sales through their impact on phantom products-products that are physically present at the store, but only in storage areas where customers cannot find or purchase them.

In a study conducted by [4], on the “relationships between inventory, sales and service in a retail chain store operation” the researchers adopted a survey of 101 chain store units, out of which seventy-five percent of the store owners/managers responded to the mail survey. The result revealed that a positive significant relationship existed between inventory or safety stock, service and sales. The study concluded that effective inventory management or safety stock practice was critical to retailing success.

[7] in his study on ‘store inventory can affect demand: empirical evidence from magazine retailing’ he found that an inventory decrease or poor safety stock practice for one brand can, first, result in a decrease of demand for the brand and, second, in an increase of demand for competing brand.

Summary of Empirical Review

The study reviewed extant literature on safety stock practices. Safety stock is seen as an extra inventory beyond expected demand in order to prevent stock -out. It is used to compensate for uncertainties in supply and demand or lead time variability. Factors that could affect lead time variability include: supply variability, quality problems, inventory accuracy problems (physical stock not matching with computerized inventory records). Safety stock practice is vital to product availability, customer satisfaction and a robust sales turnover in organizations. Determination of appropriate inventory level is one of the major challenges confronting organizations’ managers especially those selling numerous products and buying raw materials to make products. Different companies have developed different methods of calculating their stock. These methods were classified under fixed safety stock, time-based calculation and statistical calculation. Fixed safety stock refers to the fixed number of inventory level the companies’ inventory will attain before replenishment. Time-based safety stock level is used to calculate the stock required over a fixed period. The statistical method of calculation uses the normal curve or bell curve. It assumes that the error between the forecast demand and the actual demand follows a normal probability distribution. Previous studies examined showed the impact of safety stock on organization, meanwhile, there have continued to be paucity of study on safety stock management in aluminum firms in South East, Nigeria.

METHODOLOGY

The study adopted cross sectional descriptive research design. The method was adopted because of the relatively large population of the study from which the information was collected. The population of the study comprised accountants, management and stock controllers of selected aluminum companies operational in South East Nigeria. The companies included Alo Aluminum, Standard Aluminum and East Chase Aluminum, ND Fortunate Resources Limited, Delendu Aluminum Manufacturing Company Limited, Nwagor Aluminum Manufacturing Company Limited, God First Aluminum Company, Evarmoore and Partners, Talita Aluminum Company Limited. The total population was two hundred and thirty one (231).

Due to the nature of the study and the population of the organizations under study, the study adopted the entire population of the study. Structured questionnaire was used as the primary instrument for obtaining data used for the study. The questionnaire covered both safety stock and organizational efficiency in aluminum firms in the South East Nigeria. The study adopted face and content validity for the instrument. Also to determine the reliability of the instrument, the study engaged in a test-retest administration. That involved the administration of the 83 copies of the questionnaire to a pilot group from the population at different intervals. The reliability coefficient of .813 was obtained using Cronbach’s alpha. The data collected for the study were presented in tables, while the hypotheses were tested using student normal distribution at 5% level of significant. All analyses were done with the aid of statistical package for social sciences (IBM, SPSS version 23) software.

Presentation of Data

Table 1: Distribution and return rate of data collection instrument

Categories	No	No	No of	percentage of
	Distributed	returned and Valid	Questionnaire not returned or invalid	Returned Questionnaire
Alo Aluminum Company	82	82	-	41
Standard Aluminum Coy.	54	54	-	27
Eastchase Aluminum Coy.	64	64	-	32
Total	200	200	-	100

Source: Field survey, 2016

Table 1 indicates that out of the total number of two hundred (231) copies of the questionnaire administered to the respondents, two hundred (200) of them were validly returned, giving a percentage of 86.6 percent.

Table 2: Distribution of Responses on Effect of Safety Stock on Product Availability

Options	SA	A	U	D	SD	Mean	Std
	Freq(%)	Freq(%)	Freq(%)	Freq(%)	Freq(%)		
Maintaining a buffer stock ensures availability of product	100(50.0%)	78(39.0%)	11(5.5%)	6(3.0%)	5(2.5%)	4.31	0.89
Maintaining a safety stock, ensures the organization meets the demand of its customers	102(51.0%)	65(32.5%)	8(4.0%)	10(5.0%)	15(7.5%)	4.14	1.18
Maintaining a safety stock, ensures the organization doesn't run out of stock	107(53.5%)	65(32.5%)	11(5.5%)	9(4.5%)	8(4.0%)	4.27	1.03
Safety stock practices helps firms to keep different varieties of products	118(59.0%)	53(26.5%)	6(3.0%)	14(7.0%)	9(4.5%)	4.28	1.11

Source: Field survey, 2016

Table 2, shows the participants responses towards ascertaining the effect of safe stock on product availability. The result revealed that 100(50.0%) of the participants strongly agree that maintaining a buffer stock ensures availability of product. 78(39.0%) agreed while 11(5.5%) are undecided. However, 6(3.0%) disagreed and also 5(2.5%) strongly disagree. The inference that maintaining a buffer stock ensures availability of product is therefore accepted with a mean and standard deviation 4.31 ± 0.89 . Also 102(51.0%) strongly agreed that maintaining a safe stock, ensures the organization meets the demand of its customers and 65(32.5%) agreed meanwhile 8(4.0%) of the participants are undecided. 10(5.0%) disagreed while 15(7.5%) of the respondents strongly disagreed. Maintaining a safe stock, ensures the organization doesn't run out of stock is accepted with a mean standard deviation score of 4.14 ± 1.18 . Similarly, 107(53.5%) of the participants and 65(32.5%) strongly agreed and agreed respectively that maintaining a safety stock, ensures the organization don't run out of stock, while only 11(5.5%) were undecided. 9(4.5%) and 8(4.0%) of the respondents disagreed and strongly disagreed that the maintaining a safe stock, ensures the organization don't run

out of stock. With a mean and standard deviation score of 4.27 ± 1.03 the assertion that maintaining a safety stock ensures the organization doesn't run out of stock is accepted. In addition, 118(59.0%) strongly agreed and 53(26.5%) agreed that safety stock practices help firms to keep different varieties of products. However, 6(3.0%) were undecided, 14(7.0%) and 9(4.5%) disagreed and strongly disagreed respectively. With a mean and standard deviation of 4.28 ± 1.11 it infers that safety stock practices help firms to keep different varieties of products.

Table 3: Distribution of Responses on Effect of Safety Stock on Customer Satisfaction

Options	SA Freq(%)	A Freq(%)	U Freq(%)	D Freq(%)	SD Freq(%)	Mean	Std
Customers are happy when the right product is always available	92(46.0%)	87(43.5%)	5(2.5%)	8(4.0%)	8(4.0%)	4.23	0.97
Customers tends to come back, when their demand is always available	107(53.5%)	67(33.5%)	8(4.0%)	12(6.0%)	6(3.0%)	4.28	1.00
Customers tends to refer their associable to patronize organizations who ensures product availability	88(44.0%)	75(37.5%)	9(4.5%)	17(8.5%)	11(5.5%)	4.06	1.15
Maintaining a safety stock practice prevents waste of customers' time	108(54.0%)	74(37.0%)	4(2.0%)	8(4.0%)	6(3.0%)	4.35	0.93

Source: Field survey, 2016

Table 3 shows the respondents responses towards determining the effect of safe stock on customer satisfaction. Above average 92(46.0%) and 87(43.5%) of the respondents strongly agreed and agreed that the customers are happy when the right product is always available. However, 5(2.5%) are undecided and 8(4.0%) of the respondents disagreed while 8(4.0%) strongly disagreed. The result of the study shows that the customers are happy when the right product is always available with a mean score of 4.23 ± 0.97 . The study also shows that 107(53.5%) and 67(33.5%) strongly agreed and agreed that the customers tends to come back, when their demand is always available. While 8(4.0%) are undecided. On the contrary, 12(6.0%) and 6(3.0%) of the respondents disagreed as well as strongly disagreed respectively. This result indicates that the customer tends to come back, when their demand is always available with a mean standard deviation 4.28 ± 1.00 . In addition, the result of the study identified that 88(44.0%) strongly agreed and 75(37.5%) agree that the customers tends to refer their associable to patronize organizations who ensures product availability. Only 9(4.5%) of the

respondents are undecided meanwhile 17(8.5%) and 11(5.5%) disagreed as well as strongly disagreed. With the mean and standard deviation score of 4.06 ± 1.15 , it implies that the customers tend to refer their associate to patronize organizations who ensures product availability. Also, 108(54.0%) agreed that maintaining a safety stock practice prevents waste of customers' time. 74(37.0%) agreed, while 4(2.0%) were undecided. 8(4.0%) and 6(3.0%) however disagreed and strongly disagreed to the assertion that maintaining a safety stock practice prevents waste of customers' time. With the mean and standard deviation of score of 4.35 ± 1.13 , it implies that maintaining a safety stock practice prevents waste of customers' time.

Table 4: Distribution of Responses on the Relationship between Safety Stock and Sales Volume

Options	SA	A	U	D	SD	Mean	Std
	Freq(%)	Freq(%)	Freq(%)	Freq(%)	Freq(%)		
When a safe stock is maintained, the organization makes more sales.	87(43.5%)	90(45.0%)	8(4.0%)	10(5.0%)	5(2.5%)	4.22	0.92
When safety stock is maintained, the organization's witnesses an increase gross profit.	100(50.0%)	66(33.0%)	12(6.0%)	7(3.5%)	15(7.5%)	4.14	1.16
When a buffer stock is maintained, the organization witnesses an increase in net profit.	98(49.0%)	75(37.5%)	8(4.0%)	6(3.0%)	13(6.5%)	4.19	1.09
Maintaining a safety stock decreases a product sales cycle duration	117(58.5%)	59(29.5%)	10(5.0%)	7(3.5%)	7(3.5%)	4.36	0.98

Source: Field survey, 2016

Table 4 shows the participants responses towards the assessment of the relationship between safe stock and sales volume. About 87(43.5%) of the participants strongly agreed that when a safe stock is maintained, the organizations makes more sales while 90(45.0%) agreed and 8(4.0%) are undecided. Meanwhile 10(5.0%) disagreed and only 5(2.5%) strongly disagreed. This finding implies that when a safe stock is maintained, the organization makes more sales with the mean and standard deviation of (4.22 ± 0.92) . Similarly, the result shows that 100(50.0%) strongly agreed that when safe stock is maintained, the organization's witnesses an increase gross profit while 66(33.0%) agreed while 12(6.0%) of the participants are

undecided with 7(3.5%) and 15(7.5%) disagreeing and strongly disagreeing. Going by the findings, when safe stock is maintained, the organization’s witnesses an increase gross profit with the mean and standard deviation of (4.14 ± 1.16). In addition, the study revealed that 98(49.0%) of the respondents strongly agreed that When a buffer stock is maintained, the organization witnesses an increase in net profit. Also 75(37.5%) agreed and 8(4.0%) are undecided. The result also identified that 6(3.0%) of the participants disagreed and 13(6.5%) strongly disagreed. With a mean and standard deviation of 4.19 +1.09, it therefore implies that when a buffer stock is maintained, the organization witnesses an increase in net profit. In addition, 117(58.5%) strongly agreed and 59(29.5%) agreed that maintaining a safety stock decreases a product sales cycle duration. 10(5.0%) are undecided, 7(3.5%) and 7(3.5%) disagree and strongly disagree that maintaining a safety stock decreases a product sales cycle duration. This is inferred with a mean and standard deviation of 4.36 + 0.98.

Test of Hypotheses

The three hypotheses postulated were tested with various test statistics aided by computer through the application of Statistical Package for Social Sciences (SPSS 23 version) of Microsoft environment. Data for hypotheses one and two were analyzed using linear regression analysis while data for hypothesis three was analyzed with Pearson correlation.

Hypothesis one

H₁: Maintaining safety stock positively affects product availability

RESULTS

Model Summary ^b						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson	
1	.738 ^a	.545	.543	.65755	.546	
a. Predictors: (Constant), safety stock						
b. Dependent Variable: product availability						
ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	134.454	1	134.454	310.967	.000 ^b
	Residual	112.417	260	.432		
	Total	246.870	261			
a. Dependent Variable: product availability						

b. Predictors: (Constant), safe stock						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.002	.109		.015	.988
	safe stock	.531	.030	.738	17.634	.000

a. Dependent Variable: product availability

Result Summary

R = .738, R² = .545, F = 310.967, t = 17.634, DW = .546

Interpretation of the Result

A linear regression analysis conducted to ascertain the effect of safety stock on product availability shows that there is strong positive relationship between safety stock and product availability (R- coefficient = .738). The R square, the coefficient of determination, shows that 54.5% of the variation in product availability can be explained by safety stock with no autocorrelation as Durbin-Watson (.546) is less than 2. With the linear regression model, the error of estimate is low, with a value of about .65755. The regression sum of the square 134.454 is more than the residual sum of the square 112.417 indicating that the variation is due to chance. The F-statistics = 310.967 shows that the value is significant. The extent to which safety stock affect product availability with .738 value indicates a positive significance between safety stock and product availability which is statistically significant (with t = 17.634) and p = .000 < 0.05. Therefore, the null hypothesis is rejected and the alternate hypothesis accepted accordingly.

Hypothesis Two

H₂: Maintaining safety stock positively increases customer satisfaction

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.899 ^a	.809	.808	.49152	.621

a. Predictors: (Constant), safety stock						
b. Dependent Variable: customer satisfaction						
ANOVA^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	265.661	1	265.661	1099.647	.000 ^b
	Residual	62.813	260	.242		
	Total	328.473	261			
a. Dependent Variable: customer satisfaction						
b. Predictors: (Constant), safety stock						
Coefficients^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.025	.070		-.349	.727
	safety stock	.999	.030	.899	33.161	.000
a. Dependent Variable: customer satisfaction						

RESULTS

R = .899, R² = .809, F = 1099.647, t = 33.161, DW = .621

A linear regression analysis conducted to ascertain the effect of safety stock on customer satisfaction shows that there is strong positive relationship between safety stock and customer satisfaction (R- coefficient = .899). The R square, the coefficient of determination, shows that 80.9% of the variation in customer satisfaction can be explained by safety stock with no autocorrelation as Durbin-Watson (.621) is less than 2. With the linear regression model, the error of estimate is low, with a value of about .49152. The regression sum of the square 265.661 is more than the residual sum of the square 62.813 indicating that the variation is due to chance. The F-statistics = 1099.647 shows that the model is significant. The extent to which safety stock affected customer satisfaction with .899 value indicated a positive significance between safety stock and customer satisfaction which was statistically significant (with F = 1099.647) and p = .000 < 0.05. Therefore alternate hypothesis not rejected accordingly.

Hypothesis Three

H₃: There is significant relationship between safety stock and sales volume

RESULTS

Descriptive Statistics			
	Mean	Std. Deviation	N
Safety Stock	3.3510	1.42549	200
sales volume	2.4041	1.42719	200
Correlations			
		Increased market shares	Banks' profits
Safety Stock	Pearson Correlation	1	.789**
	Sig. (2-tailed)		.000
	N	200	200
sales volume	Pearson Correlation	.789**	1
	Sig. (2-tailed)	.000	
	N	200	200
**. Correlation is significant at the 0.01 level (2-tailed).			

Interpretation of the Result

Table 3 shows the descriptive statistics of the sales volume and Safety Stock. The result shows that safety stock had a mean and SD responses of 3.27 ± 1.426 while sales volume had a mean and SD responses of 2.80 ± 1.158 . The standard deviation value shows that there is less difference in terms of the standard deviation scores. This implies that there is about the same variability of data points between the dependent (sales volume) and independent variables (safety stock).

The Pearson correlation coefficient shows the relationship between sales volume and safety stock. The Pearson correlation coefficient .789 shows that there is strong positive relationship between safety stock and sales volume. This is significant as $p = .000 < 0.05$ (2tailed) therefore the null hypothesis is rejected and the alternate which states that there is positive relationship between sales volume and safety stock in aluminum firms in South East Nigeria is not rejected.

DISCUSSION OF THE FINDINGS

The result of the study demonstrated the importance of safety stock practice in the modern world, especially in the Aluminum manufacturing firms in South East Nigeria. Paramount

among the findings was that safety stock practice affected product availability, customer satisfaction and sales volume. The study revealed that safety stock practice enhanced the availability of products in the aluminum manufacturing firms in South East Nigeria ($r = .738$; $F = 310.967$; $p = .000 < 0.05$). The result conforms to the opinion of [8]. He argues that the key objective of safety stock practice was reflected in attaining the preferred level of product availability as a significant aspect of customer service. However, there is a dearth of study on whether safety stock practice affects product availability. The implication of the finding is that manufacturing firms should always maintain a safety stock of variety of products in order not to run out of stock.

Further findings revealed that safety stock practice promoted customer satisfaction in the manufacturing firms in South East Nigeria ($r = .899$; $F = 1099.647$; $p = .000 < 0.05$). The finding was in line with the findings of [11]. They found that shortages in inventory as a result of poor safety stock practice in Delmonte Industry, Kenya greatly impacted the company's ability to satisfy their customers. Similar study by [5], on the 'relationships between inventory, sales and service in a retail chain store operation, found that safety stock practice increased sales and customer service. Furthermore, the study also collaborated with the submissions of [3], who opined that proper management of safety stock ensured that the organization was not only excelling in customer service, but ultimately improving customer retention. The reason was due to the fact that when a customer's demand is not met upon placing an order, the customer may not be happy, thus dissatisfied. That made the customer to check elsewhere.

The study also revealed that safety stock practice increased sales volume in the aluminum manufacturing firms in South East Nigeria ($r = .789$; $p = .000 < 0.05$). The result conformed to various studies on the subject matter [5]; [22]. [5], in a study on 'store inventory can affect demand: empirical evidence from magazine retailing' reported that an inventory decrease or poor safety stock practice for one brand can result in a decrease of demand for the brand. That affected the willingness of the customers to place demand, thus resulting to poor sales volume. In [22] study, on the effect of product variety and inventory levels on retail store sales: a longitudinal study revealed that availability of the product whenever in need encouraged the customer to request more since the customer had very low chances of being disappointed. Also, [15]'s finding was therefore supported. They believed that higher product variety and inventory levels at retail stores were associated with higher sales. They further posited that having more products at a store increased the probability that customers would find what they wanted. The finding of the study was predicated on the fact that when customers visited the company store and saw varieties of stocks, they were motivated to buy such varieties as they find it difficult to resist the value the products added to their businesses or homes, thus resulting in more sales.

CONCLUSION AND RECOMMENDATIONS

Based on various hypotheses tested in the study, the followings are the summary of the findings:

1. Safety stock practice positively affected product availability in the Aluminum Manufacturing Firms in South East Nigeria ($r = .738$; $F = 310.967$; $p < .000$).
2. Safety stock practice positively affected customer satisfaction in the Aluminum Manufacturing Firms in South East Nigeria ($r = .899$; $F = 1099.647$; $p < .000$).
3. There was significant relationship between safety stock practice and sales volume in the Aluminum Manufacturing Firms in South East Nigeria ($r = .738$; $F = 310.967$; $p < .000$).

CONCLUSION

Inventory management in the contemporary time is a challenge to organisations at all levels. It is a common challenge faced by entrepreneurs and operations managers especially managers of organizations that deal on variety products. The study concluded that adoption of safety stock practice had positive influence on the organisations' performance especially in their ability to satisfy their customers, create higher sales volume and maintain product availability. Safety stock practice in organization is mechanism adopted in organizations to enable them meet product demand at low inventory holding costs. This is because over stocking stock incurs extra holding and capital cost while not having enough inventory impedes the ability to provide customers with the product. Its effectiveness depended on the stock managers' adequate knowledge on how well they are able to reduce investment in inventory and at the same time meet customers' demand.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations were made:

1. The management of Aluminum manufacturing firms should ensure adequate maintenance of safety stock practices on raw materials to ensure uninterrupted production of finished products, which can make for steady availability of the products to the customers. The management of firms should ensure adoption of safety stock practice in other to have enough stock to satisfy the customers
2. The management of Aluminum manufacturing firms should ensure a robust inventory control that would reflect all varieties of products produced by the company. This improves sales volume as customers tend to buy more upon meeting varieties available.
3. Safety stock practice should be properly managed by firms in order to prevent spoilage, pilferage and avoid high inventory holding costs

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