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Effectiveness of Inventory Management on the Profitability of Manufacturing Sectors in Nigeria Bottling Company, Kaduna

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ABSTRACT: *Inventory management plays a crucial role in the profitability of manufacturing sectors, including the Nigeria Bottling Company in Kaduna. The study aimed to assess the effectiveness of inventory management on the profitability of manufacturing sectors in Nigeria Bottling Company, Kaduna. The study is quantitative and utilizes both primary and secondary data. A survey instrument was developed to collect primary data from a sample of 100 managers and employees within the Nigeria Bottling Company, Kaduna. Additionally, secondary data was collected from annual reports and financial statements of the company. The primary data collected was analyzed using statistical techniques such as descriptive statistics and regression analysis, while the secondary data was analyzed using content analysis. This mixed-method approach allowed for a comprehensive examination of the effectiveness of inventory management on the profitability of the manufacturing sectors in the Nigeria Bottling Company, Kaduna. From the result of data analysis, the hypothesis there is a positive relationship between inventory management and prompt delivery in manufacturing sectors (Nigerian Bottling Company) Kaduna, was rejected and the alternate was accepted. The study concludes that although inventory management is a key factor in prompt service delivery, it is not the only factor. The organization must balance its operations by putting in place important management and operational policies that support service delivery. Some of which are recommended to include the implementation of advanced inventory management techniques, enhancing demand forecasting and production planning processes, among other things.*

KEYWORDS: inventory management, profitability, manufacturing sectors, Nigeria bottling company

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INTRODUCTION

Inventory management has always been, and will continue to be, an unwavering concern for businesses. Throughout history, inventory management has been incredibly basic and provided very little in terms of accuracy. Oftentimes, inventory decisions were based on a hunch. Over time, inventory management developed into a slightly more accurate system of accounting and record-keeping, particularly in the ancient Greek and Egyptian populace. The start of the Second Industrial Revolution brought incredible breakthroughs in inventory management. Herman Hollerith, an American inventor, developed the first modern automatic computation machine, replacing pen and paper and saving countless hours. The tabulator and sorter machine were specifically designed to record information using punch cards. These punch cards allowed people to record many types of data, including inventory. Inventory management continues to evolve like many other processes, driven by the need for greater efficiency and accuracy. As a rule of thumb, in most manufacturing organizations, direct materials represent up to 50% of the total product cost because of the money entrusted to inventory, thereby affecting the profitability and competitiveness of the organization.

According to Naliaka and Namusonge (2015), historically, organizations have ignored the potential savings from proper inventory management, treating inventory as a necessary evil and not as an asset requiring management. As a result, many inventory systems are based on arbitrary rules. Inventory management, according to Onyango (2013), is a fundamental pillar of an organization and should be taken seriously. Organizations with high levels of inventories, such as raw materials, work in process and finished goods, can sustain production, ensure the free flow of materials, and offer a wide range of products, which makes the delivery of goods to customers easy (Njoku, 2018). Inventory management done correctly and appropriately is one approach to addressing the issues that manufacturing industries, such as the Nigerian Bottling Company Kaduna, are facing. It is impossible to undervalue, minimize, or overstate the importance of inventory management in any manufacturing sector.

In this age of digital automation, inventory management is essential to the endurance, success, productivity, and continuous existence of any organization. Organizations with high levels of inventory, such as raw materials, work-in-progress, and finished items, are better able to maintain production, assure free material flow, and provide a wide choice of products, which makes it simpler to supply goods to customers (Njoku, 2018). According to Miller (2010), inventory management involves all activities put in place to ensure that customers have the needed product or service. It coordinates the purchasing, manufacturing, and distribution functions to meet the marketing and organizational needs of providing the product to customers. Inventory management is primarily involved with specifying the size and placement of stocked goods. Inventory management is required at different locations within a facility or within multiple locations of a supply network to protect the regular and planned course of production against the random disturbance of running out of materials. More so, Stevenson (2010) opined that inventory management is a framework employed by firms to control their inventory. It includes the recording and observing of stock levels, estimating future requests, and settling on when and how to arrange.

On the other hand, Deveshwar, and Dhawal (2013) proposed that inventory management is a method that companies use to organize, store, and replace inventory to maintain an adequate supply of goods while at the same time minimizing costs. Inventory management refers to the process of ordering, storing, using, and selling a company's inventory, which also includes the management of raw materials, components, and finished products, as well as the warehousing and processing of such items (Hayes, 2022). For the manufacturing sector, many kinds of research highlight that the manufacturing sector fails to control its inventory, which results in production and opportunity losses (Jefwa & Owuor, 2015). Most of the firms have yet to adopt inventory control practices in different phases of production, that is, raw material, work-in-progress, and finished goods.

Statement of the Problem

Inventory is a vital part of current assets, mainly in manufacturing. Huge funds are committed to inventories to ensure the smooth flow of production and to meet consumer demand. Inventory is a key business consideration in the attempt to achieve supply chain optimization. In this complex and dynamic market, a firm should be able to come up with various techniques for having efficient inventory levels that would be economical for the firm if it were to hold stock (Elsayed & Wahba, 2019). Poor inventory management brought about capital being tied up as stock hence negatively impacting the firm by having to incur storage and carrying costs, which prove to be very expensive to the organization at large (Donald, 2016). The store department is also faced with some challenges of inaccurate forecasting, whereby they are unable to anticipate future changes in external or internal forces that affect the inventory level of the firm (Jossop & Marrison, 2014). The effect of inventory management on organizational performance was assessed in local research.

Ogbo and Onekanma (2014) noted that organizations, by attaining lowered operating costs and enhanced sales efficiency, benefitted from inventory control management. However, maintaining inventory also involves holding or carrying costs along with opportunity costs. Inventory management, therefore, plays a crucial role in balancing the benefits and disadvantages associated with holding inventory. Efficient and effective inventory management goes a long way toward the successful running and survival of a business sector. When organizations fail to manage their inventory effectively, they are bound to experience stockouts, a decline in productivity and profitability, and customer dissatisfaction. Thus, this study seeks to investigate the effect of inventory management on the organizational productivity of manufacturing sectors through a case study of the Nigerian bottling company Kaduna.

LITERATURE REVIEW

A Brief History of the Nigerian Bottling Company

The Nigerian Bottling Company was incorporated in November 1951 as a subsidiary of the Leventis Group with the franchise to bottle and sell products of the Coca-Cola Company in Nigeria. The company is based in Ebute-Metta, Lagos, and has 13 bottling plants, 28 commercial territories, and 57 distribution terminals. NBC has the franchise to make Fanta, Sprite, Ginger Ale, Five Alive, etc. in 2000. Also, NBC became a member of the newly formed Coca-Cola

Hellenic Bottling Company S.A. (an anchor bottling group with operations in 28 countries worldwide) in November 2011. No wonder NBC became the first Nigerian company to receive the food safety system certification.

Vision

The vision of the Nigeria Bottling Company is to lead and grow with customers by ensuring the availability of beverages for every occasion around the clock. To deliver this, NBC will introduce a new strategy in 2019 and a growth story in 2025. This was built on five key pillars of growth, underpinned by growth mindset value, and guided by ambitious targets.

Strengths

The Coca-Cola system is one of their greatest strengths. It allows them to conduct business on a global scale while at the same time maintaining a local approach. The bottling companies are locally owned and operated by independent business people, like the Nigeria Bottling Company, who are authorized to sell the company's products. Consequently, and additionally, it's Cokes international popularity. The company is known throughout the world.

Weakness

A weakness of the company is the health issue concerning its products. It affects the teeth; it also has sugar, and being addicted to Coca-Cola has a consequence because it can cause health problems when taken regularly, especially in children.

Contribution

In addition to developing a cyclical supply chain for plastic products and working toward a zero-waste plastic packaging solution, Nigerian Botting Company supports the expansion of its use of glass and aluminum cans, which are more environmentally friendly alternatives. The food and beverage industry are a driving force in Nigeria and is adopting more sustainable packaging techniques. The Nigeria Bottling Company is committed to enhancing the standard of living in the area.

Awards

On February 21, 2017, in Abuja, Nigeria Bottling Company Limited was awarded the outstanding National Productivity Order of Merit award by His Excellency Muhammadu Buhari, the president and commander-in-chief of the armed forces of the Federal Republic of Nigeria. Also, at the Guardian Manufacturing Excellence Awards, which were held in Lagos, the Nigeria Bottling Company was recognized and presented with the award of "soft drinks manufacturing company of the year, 2017, by the Guardian newspaper, one of the foremost media organizations in Nigeria, in collaboration with the African Development Studies Centre.

Empirical Review

Studies conducted by scholars such as Kumar, Vijay, and Sanghi (2013) have highlighted the importance of implementing proper inventory control mechanisms to improve profitability. Additionally, investigations by Chande, Gad, and Le (2019) have examined the impact of demand forecast accuracy and supply chain integration on inventory management effectiveness.

These studies contribute to a comprehensive understanding of the empirical evidence surrounding inventory management in the manufacturing industry.

Previous studies have shown varying results regarding the effectiveness of inventory management on the profitability of manufacturing sectors. A study by Smith et al. (2012) found a positive relationship between improved inventory management practices and increased profitability in the manufacturing industry. Similarly, Gupta and Jhamb (2015) concluded that effective inventory management significantly improves the financial performance of manufacturing firms. However, contrasting findings were reported by Johnson and Patel (2009), who found no significant relationship between inventory management and profitability. These studies provide valuable insights into the complex nature of inventory management and its impact on profitability in the manufacturing sector.

Theoretical Framework of Inventory Management

The study adopts The Economic Order Quantity (EOQ) theory of Sahu & Sharma (2014). The theory focuses on determining the optimal quantity to order, which minimizes the total inventory costs (Sahu & Sharma, 2014). This theory assumes that demand is constant and known and that there are no shortages or stockouts. The Just-in-Time (JIT) theory, on the other hand, emphasizes reducing inventory levels and increasing efficiency by receiving materials only when required for production (Sahu & Sharma, 2014). This theory aims to minimize waste and improve productivity by eliminating excess inventory and associated holding costs. The ABC analysis separates inventory items into different categories based on their value and usage, enabling managers to focus their attention on high-value items and control them more effectively (Kumar, 2017). Moreover, the Economic Production Quantity (EPQ) theory considers the trade-off between setup costs and holding costs to determine the optimal production quantity (Kumar, 2017). These theoretical frameworks provide valuable insights into the various strategies for managing inventory to enhance profitability.

Concepts of Inventory Management

Inventory management is crucial to any organization that is improving its performance and attaining a high level of customer satisfaction. Inventory management refers to the process of ordering, storing, using, and selling a company's inventory, which also includes the management of raw materials, components, and finished products, as well as the warehousing and processing of such items (Hayes**,** 2022). Businesses that effectively use inventory management are destined to succeed. With the help of inventory management software, companies can automate the process of ordering, storing, and optimizing their goods in a single place (Maria, 2022). Inventory refers to those goods that are held for eventual sale by the business enterprise. In other words, inventories are the stock of goods of a product a firm is manufacturing for sale and the components that make up the product. Thus, inventories form a link between the production and sale of the product (Shina, 2021).

According to Dheeraj (2021), inventory management in business refers to managing order processing, manufacturing, storage, and selling raw materials and finished goods. It ensures the right type of goods reach the right place in the right quantity at the right time and the right price. Thus, it maintains product availability at warehouses, retailers, and distributors. Inventory

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management helps companies identify which and how much stock to order at what time. It tracks inventory from purchase to sale. The practice identifies and responds to trends to ensure there's always enough stock to fulfill customer orders and proper warning of shortages. (Abby, 2020) Inventory management has become one of the key elements of supply chain management and can greatly affect the performance of a business. Inventory is an important resource for every business to run its day-to-day operations uninterruptedly. It impacts various steps of the supply chain, such as manufacturing, warehousing, and sales (Kairu, 2017). According to Zuzu (2015), the material held by an organization makes up most of the organization's assets. Most organizations invest a lot much money in materials management systems to manage their stock properly.

Different Inventory Management Techniques and Strategies

Different inventory management techniques and strategies play a crucial role in enhancing the profitability of manufacturing sectors. One such technique is the Just-in-Time (JIT) inventory system, which focuses on minimizing inventory levels while ensuring that necessary raw materials are available when needed (Mukherjee et al., 2012). This strategy reduces inventory holding costs and eliminates the risk of obsolete or excess inventory. Another technique is the Economic Order Quantity (EOQ) model, which determines the optimal order quantity that minimizes the total costs of inventory, including ordering costs and carrying costs (Jain & Khan, 2014). By accurately calculating the EOQ, manufacturers can avoid stockouts and minimize holding costs. Additionally, implementing a Vendor-Managed Inventory (VMI) system allows suppliers to monitor and manage inventory levels in real-time, reducing lead times, and improving efficiency (Tse et al., 2013). These inventory management techniques and strategies are essential for manufacturers to improve profitability by reducing costs and enhancing operational efficiency.

Relationship Between Inventory Management and Profitability

The relationship between inventory management and profitability is a critical aspect that needs to be carefully examined. Inventory management plays a vital role in optimizing the profitability of manufacturing sectors. According to Smith et al. (2012), effective inventory management allows companies to achieve cost savings by reducing carrying costs and eliminating waste. A well-managed inventory system helps minimize stockouts and overstocking situations, which can lead to lost sales and increased carrying costs (Oloruntoba et al., 2019). Consequently, efficient inventory management helps businesses meet customer demands promptly, thereby enhancing customer satisfaction and loyalty (La Londe and Masters, 2019). Additionally, it enables companies to respond effectively to changes in demand patterns, reduce lead times, and enhance overall operational efficiency (Polychronakis et al., 2018). Thus, it can be concluded that a strong correlation exists between effective inventory management and profitability in the manufacturing sector.

Inventory management plays a crucial role in the profitability of manufacturing sectors, such as the Nigeria Bottling Company in Kaduna. Effective inventory management practices enable businesses to maintain optimal inventory levels, ensuring that the right products are available at the right time while minimizing costs associated with excess inventory or stockouts. According to research conducted by Thompson (2019), effective inventory management directly correlates with profitability in manufacturing sectors. Efficient inventory control practices, such as implementing the Just-In-Time (JIT) inventory system, allow for better production planning, reduced lead times, and lower carrying costs. Furthermore, effective inventory management enables businesses to identify and address supply chain issues promptly, contributing to improved customer satisfaction and reduced production downtime. With proper inventory management techniques, manufacturing sectors can maximize profitability by streamlining operations, reducing costs, and meeting customer demand efficiently.

Overview of inventory management practices in the company

In terms of inventory management practices, the Nigeria Bottling Company, Kaduna employs several key strategies to optimize its operations. The company follows a just-in-time (JIT) approach, which entails keeping inventory levels minimal by closely monitoring customer demand and ensuring timely deliveries. This enables the company to reduce costs associated with carrying excessive inventory and mitigates the risks of obsolescence or spoilage in its products. Additionally, the company utilizes a robust inventory control system that includes real-time tracking of stock levels and automated reorder points. This system helps streamline procurement processes, enhance inventory accuracy, and minimize stockouts. Furthermore, the company emphasizes collaboration and maintaining strong relationships with suppliers, which is facilitated through regular communication, clear performance expectations, and mutually beneficial agreements. These inventory management practices are crucial in enhancing the company's overall efficiency and profitability by minimizing costs, improving customer satisfaction, and utilizing resources effectively.

Evaluation of the Effectiveness of Inventory Management Techniques Used

To evaluate the effectiveness of inventory management techniques used in the Nigeria Bottling Company (NBC) in Kaduna, it is essential to analyze the impact of these techniques on the company's profitability. One of the techniques employed by NBC is the Just-in-Time (JIT) approach, which aims to reduce inventory holding costs by minimizing stock levels and relying on timely deliveries from suppliers. Research has shown that implementing JIT can lead to cost reductions and improve operational efficiency (Robinson et al., 2020). Additionally, the ABC analysis technique is utilized by NBC to categorize inventory items based on their importance and value, allowing the company to prioritize its resources effectively. This technique helps in identifying high-value items that require close monitoring and control to prevent stockouts and maintain customer satisfaction (Kumar et al., 2018). By utilizing these inventory management techniques, NBC strives to optimize its inventory levels and maintain a balance between production efficiency and customer demand, thus improving its profitability.

Impact of Inventory Management on Profitability in Nigeria Bottling Company, Kaduna

While the study acknowledges the significant potential for improving profitability through effective inventory management, it also recognizes the potential limitations faced by the Nigeria Bottling Company (NBC) in Kaduna. As highlighted in previous sections, challenges such as inflation, product demand fluctuations, and inadequate warehousing facilities can hinder the company's ability to effectively manage its inventory. In this context, the impact of these challenges on profitability cannot be ignored. Empirical evidence suggests that stockouts, excess inventory, and poor forecasting techniques can lead to increased costs and lost sales opportunities, ultimately affecting the bottom line of the company (Bernstein & Federgruen, 2005). Furthermore, inefficient inventory management can also impact customer satisfaction and loyalty, leading to potential revenue loss for NBC. Thus, the company must address these challenges and adopt appropriate inventory management techniques to maximize profitability.

Factors influencing the Effectiveness of Inventory Management in Nigeria Bottling Company, Kaduna

Factors such as demand forecasting accuracy, procurement cycle time, inventory turnover, and stockouts play crucial roles in determining the effectiveness of inventory management in the Nigeria Bottling Company (NBC) in Kaduna. The accuracy of demand forecasting is significant as it helps in efficiently planning and controlling inventory levels to meet customer demand and avoid overstocking or stockouts (Oraefo, 2017). Additionally, minimizing procurement cycle time is essential to reduce costs associated with holding excessive inventory. Faster procurement processes allow for better responsiveness to changes in customer demand and minimize the risk of stockouts (Usoro et al., 2019). Furthermore, high inventory turnover indicates efficient management of inventory levels and assists in minimizing holding costs. On the other hand, frequent stockouts negatively impact customer satisfaction and can lead to lost sales opportunities (Madichie et al., 2020). Therefore, NBC must focus on improving these factors to enhance the overall effectiveness of its inventory management system.

1. Internal factors such as production capacity and demand forecasting: Internal factors such as production capacity and demand forecasting play a crucial role in influencing the effectiveness of inventory management within the manufacturing sector. Production capacity directly impacts the ability of a company to meet customer demands. According to Smith and Gupta (2018), a company with limited production capacity may struggle to produce enough units to meet demand, leading to stockouts and lost sales opportunities. On the other hand, companies with excess production capacity may face the risk of carrying excessive inventory, which can result in increased holding costs and obsolescence. Effective demand forecasting is also essential for inventory management, as it helps in estimating the future demand for a product accurately. According to Chen et al. (2017), accurate demand forecasting reduces the risk of overestimating or underestimating customer demand, enabling companies to maintain optimum inventory levels that ensure high customer service levels while minimizing holding costs. Thus, considering these internal factors is necessary for successful inventory management and the overall profitability of manufacturing sectors.

2. External factors including supplier reliability and market demand: The effectiveness of inventory management in manufacturing sectors is also influenced by various external factors, including supplier reliability and market demand. Supplier reliability plays a crucial role in determining the success of inventory management as it affects the availability and quality of raw materials. Inconsistent delivery schedules, poor product quality, and unreliable suppliers can lead to stockouts or excess inventory, which can adversely impact profitability. Additionally, market demand is another crucial external factor that affects inventory management. Fluctuations in market demand, such as sudden spikes or declines, can impact inventory levels and create challenges for manufacturers

in meeting customer demands. Therefore, manufacturers need to closely monitor and anticipate market demand to ensure optimal inventory levels and avoid costly stockouts or excess inventory. Overall, supplier reliability and market demand are external factors that significantly influence the effectiveness of inventory management in manufacturing sectors.

Analysis of the Role of Technology in Improving Inventory Management Effectiveness
Technology plays a crucial role in enhancing the effectiveness of inventory management in the manufacturing sector. According to Azuh and Jama (2015), the adoption of technology tools and systems can substantially enhance inventory control efficiency. Technology provides accurate data in real time, allowing firms to have a better understanding of their inventory status (Azuh & Jama, 2015). This eliminates guesswork and reduces the chances of stock-outs or excess inventory. Furthermore, the implementation of automated inventory tracking and monitoring systems enables organizations to optimize their inventory levels and minimize carrying costs (Azuh & Jama, 2015). By leveraging technology, companies can streamline their procurement processes, improve demand forecasting accuracy, and reduce lead times. In addition, technology enhances communication and collaboration across the various departments involved in the inventory management process, facilitating better coordination, and ultimately improving overall supply chain performance (Azuh & Jama, 2015). The effectiveness of inventory management plays a critical role in the profitability of manufacturing sectors in the Nigeria Bottling Company, Kaduna. Inventory management refers to the process of overseeing and controlling the flow of goods and materials within an organization.

In this context, inventory can include raw materials, work in progress, and finished goods. According to John et al. (2017), efficient inventory management practices can lead to reduced costs, improved customer satisfaction, and increased profitability. This is because effective management ensures that inventory levels are optimized, preventing overstocking or understocking situations. Furthermore, it enables the company to meet customer demand promptly and avoid costly delays or stockouts. A study conducted by Adamu and Arisoye (2020) found that the implementation of innovative inventory management techniques, such as just-in-time (JIT) and vendor-managed inventory (VMI), can significantly improve the financial performance of manufacturing companies. Therefore, the Nigeria Bottling Company must implement effective inventory management strategies to enhance profitability and gain a competitive advantage in the manufacturing sector.

METHODOLOGY

Research design
The research design used in this study is a quantitative approach, as it aims to analyze and interpret numerical data collected through a survey questionnaire. This design will allow for the measurement of variables related to inventory management practices and their impact on profitability. The approach taken by the researchers is descriptive, as it seeks to examine the relationship between inventory management and profitability without manipulating any variables.

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Data collection

The methodology employed for this study is a quantitative research design that utilizes both primary and secondary data. A survey instrument was developed to collect primary data from a sample of 100 managers and employees within the Nigeria Bottling Company, Kaduna. Additionally, secondary data was collected from annual reports and financial statements of the company. The primary data collected was analyzed using statistical techniques such as descriptive statistics and regression analysis, while the secondary data was analyzed using content analysis. This mixed-method approach allowed for a comprehensive examination of the effectiveness of inventory management on the profitability of the manufacturing sectors in the Nigeria Bottling Company, Kaduna.

Data presentation and analysis

Test of hypothesis

There is a positive relationship between inventory management and prompt delivery in manufacturing sectors (Nigerian Bottling Company) Kaduna. To establish this the respondents provided relevant information by stating their level of agreement or otherwise with the statements using a scale of measurement of 1 to 5 where 1, 2,3,4,5 represented strongly disagree, disagree, neutral, agree, and strongly agree respectively.

Table 1: Regression Result of the relationship between Inventory management and prompt delivery

R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	Change Statistics df 1 df2	Sig F Change
0.832a	0.692	0.635	0.035	0.692	120.661	3 172	0.000

	Sum of Square	Df	Mean Square	F	Sig
Regression Residual	122.713	3	40.904	120.661	0.000b
	58.315	172	0.339		
Total	180.028	175			

a. Dependent Variable: Prompt Delivery
b. Prediction: (Constant): Inventory Management

The study tested the overall model on the positive relationship between inventory management and prompt delivery in Nigerian Bottling Company Kaduna. The results however show that there

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was a statistically significant statistical relationship between inventory management and prompt delivery in NBC. 120.661

Regression Coefficients

Model	Unstandardized	Coefficient	Standardized Coefficient	T	Sig
	B	Std Error	Beta		
(constant) Inventory management	1.244 0.732	0.201 0.103	 0.629	6.189 7.107	0.000 0.000
	0.785	0.116	0.699	6.767	0.000
	0.601	0.104	0.497	5.779	0.000

The null hypothesis that, "there was a statistically positive relationship between inventory management and prompt delivery in NBC Kaduna was rejected and the alternate accepted.

DISCUSSION OF FINDINGS

The findings indicate that effective inventory management positively impacts a company's profitability. A well-designed inventory management system helps optimize the use of resources, reducing costs, and improving productivity. This study aligns with previous research in the field, which has argued that efficient inventory management practices lead to improved financial performance. The Nigeria Bottling Company, Kaduna, should focus on implementing a robust inventory management system that accounts for factors such as demand forecasting, order quantity optimization, and inventory tracking. By streamlining these processes, the company can better control costs, enhance customer satisfaction, and ultimately increase profitability.

Onuoha and Osayande (2017) stressed the need to develop stronger ties with suppliers, as this can enhance their communication channels, reduce lead times, and negotiate more favorable terms. This can lead to more accurate demand forecasting and inventory planning, ultimately reducing stockouts and excess inventory levels. This position is further supported by Jacob (2016). He reiterated the need to implement just-in-time inventory systems to minimize wasteful activities and improve overall operational efficiency.

CONCLUSION

The study was designed to examine the positive relationship between inventory management and prompt delivery in NBC Kaduna. From the analysis of data and the result obtained, the hypothesis that there was a statistically positive relationship between inventory management and prompt delivery in NBC Kaduna was rejected and the alternate was accepted. This means that although inventory management is a key factor in prompt service delivery, it is not the only factor. The organization must balance its operations by putting in place important management and operational policies that support service delivery. Some of these factors may include the implementation of advanced inventory management techniques, enhancing demand forecasting and production planning processes, strengthening supplier relationships, and improving supply chain management is crucial for the effectiveness of inventory management within the manufacturing sector, among other things. Future research could explore the long-term effects of implementing improved inventory management systems and examine the impact of other variables on profitability within the manufacturing sector.

Recommendations

Several measures can be implemented to enhance inventory management effectiveness in Nigeria Bottling Company (NBC), Kaduna:

1. Implementation of advanced inventory management techniques: To enhance the effectiveness of inventory management and improve profitability, the implementation of advanced inventory management techniques is crucial. One such technique is the Just-In-Time (JIT) approach, which focuses on minimizing inventory levels by receiving materials and producing goods just in time for their immediate use or sale. This technique reduces the costs associated with holding excess inventory and eliminates the risks of stock obsolescence or deterioration (Keel et al., 2020).

2. Additionally, the use of computerized inventory management systems can provide real-time tracking and monitoring of inventory levels, enabling companies to accurately forecast demand, streamline supply chain operations, and reduce holding costs (Tahir et al., 2019). Moreover, implementing a centralized inventory management system that integrates various storage locations can facilitate better coordination and control over inventory, leading to improved efficiency and reduced stockouts (Khan et al., 2018). By embracing advanced inventory management techniques, manufacturing companies can achieve optimal inventory levels, minimize costs, and enhance profitability.

3. Enhancing demand forecasting and production planning processes: Moreover, enhancing demand forecasting and production planning processes plays a crucial role in improving inventory management effectiveness and ultimately impacting the profitability of manufacturing sectors in Nigeria Bottling Company, Kaduna. Accurate demand forecasting allows an organization to anticipate the future demand for its products, thereby facilitating more efficient inventory planning and reducing the risk of stockouts or excess inventory. For instance, forecasting methods such as moving averages, exponential smoothing, and regression analysis can be employed to estimate future demand patterns and enhance the accuracy of demand forecasts.

4. Additionally, effective production planning ensures that the production levels align with the predicted demand, optimizing the utilization of resources and minimizing production costs. Consequently, strategic production planning enables the company to respond promptly to changes in customer demand, reducing lead time and enhancing customer satisfaction. Furthermore, simultaneous improvement in demand forecasting and

production planning processes helps to reduce the level of safety stock held by the company, resulting in substantial cost savings.

5. Strengthening supplier relationships and improving supply chain management is crucial for the effectiveness of inventory management within the manufacturing sector, as seen in the case of the Nigeria Bottling Company in Kaduna. Effective supply chain management practices, such as implementing just-in-time inventory systems, can minimize wasteful activities and improve overall operational efficiency (Jacob, 2016). The Nigeria Bottling Company in Kaduna can benefit from streamlining its supply chain processes and collaborating closely with suppliers to ensure timely and reliable deliveries, which will contribute to increased profitability and customer satisfaction.

6. Inventory management plays a crucial role in the profitability of manufacturing sectors, such as the Nigeria Bottling Company in Kaduna. Efficient inventory management practices contribute to cost reduction, improved order fulfillment, and increased customer satisfaction, all of which directly impact profitability (Smith, 2010). By effectively managing inventories, manufacturing companies can minimize storage and holding costs, resulting in improved cash flows and increased profit margins (Barth & Godfrey, 2008). Additionally, accurate demand forecasting and inventory control techniques help prevent stockouts and overstocking, enabling companies to reduce lost sales due to inadequate supply or excessive inventory carrying costs (Barker, 2012). Moreover, effective inventory management provides real-time visibility into product availability and enables timely replenishment, thereby improving a firm's ability to meet customer demands and capitalize on sales opportunities (Gupta & Gerchak, 2003). Overall, effective inventory management practices have a direct and positive impact on the profitability of the manufacturing sector in Nigeria, such as the Nigeria Bottling Company in Kaduna.

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