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The Pros and Cons of Inventory Control Strategies, and How Does it Affect the Company's Performance

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Abstract: Inventory management plays a critical role in every organization's performance. It is an essential part of any business. Financially, it is the most valid current asset, easily converted to cash. Therefore, every organization must be able to manage its inventory according to its needs and customer's demand. Furthermore, inventory requires space inside the warehouse and keeping more than the required stock can increase the cost of carrying inventory. Hence it is essential to keep enough stock but not more than needed. Nevertheless, some organizations find it challenging to balance the supply of inventory with their customers or demand. Thus, this research aims at understanding the concept of inventory management and inventory control and identifying the issues faced by the companies in their inventory management by finding the flaws within the strategies or systems used to manage the inventory. This research employs a qualitative data collection method through journal articles, books, and trusted websites to ascertain the objectives.

Keywords: Inventory Management, Companies performance, Inventory Control, Effective Strategies

1. Introduction

According to Prempeh (2015), inventory management is the art and science of maintaining stock levels at a minimal cost with other objectives and targets set by the management; it serves as a central function in the system. A proper inventory management system helps the company in many approaches, including optimizing fulfillment, where effectively storing inventory helps make picking, packing, and shipping to customers much faster and easier. As well as improving customer experience through having enough stock at the right time in the right place and avoiding shrinkage, where buying an unnecessary amount of inventory can spoil the goods, hence, becomes unusable (Veeqo, 2022). Holding inventory can be significant in various situations, including demand flexibility; it is not always easy to notice the fluctuation in demand; it can be sudden or noticeable and managed. Hence, keeping a safety stock is protection to satisfy customers with the right product at the right time and place.

Similarly, demand is not the only factor fluctuating; prices also do. In this case, when the price of a particular product fluctuates, the organization would still have inventory in hand without needing to pay more, as buying in bulk usually comes with a discount. Not to mention, unreliable suppliers are a risk many organizations try to avoid but cannot control. Under this circumstance, suppliers need to be rehabilitated or replaced, which reduces the number of inventories in hand (Muller, 2019) and holding inventory ensures the continuity of the supply of material. But on the other hand, sometimes holding inventory can cause overstocking, which leads to unnecessary use of money that does

not generate income (Hassan, 2021). As a result, companies should invest in a reliable inventory management system to ensure that their money is well-spent.

Among the various factors that affect inventory management are financial factors like foreign exchange rates, suppliers such as unreliable suppliers, the lead time when local procurement is faster than international procurement but may be more expensive than international, product types, including perishables and non-perishables, and unexpected events that may arise. All these factors determine the success of an inventory management system, and controlling them requires an intense sense of responsibility since a company's success relies on its assets.

2. Literature Review

2.1 Factors Affecting Inventory Management

The efficiency of any inventory management strategy can be affected by several factors. Once these factors are identified, the company can easily acknowledge the issue and start making the required changes to avoid any further issues or risks that come along with such factors (Madzivhandila, 2012).

The most basic and crucial factor directly affecting inventory management is having enough knowledge about 'inventory management'. SMEs usually face such challenges (Madzivhandila, 2012), but it does not mean that large companies do not come across such problems; they may have the knowledge but at the same time use outdated techniques, unadvanced technology or do not have professionals who are specialized in such field, which can result in loss of data, low productivity, incompatibility issues and much more (Vlad, 2022).

Organizations need sufficient finances to build a successful organization with strong competing powers in the market. Suppliers cannot provide inventory to an organization without ensuring they will be paid back for their goods or services. Additionally, other expenses associated with inventory, such as warehouse operation, transportation costs, fluctuation in fuel prices, etc., can be reduced if inventory is managed efficiently.

Another important factor is the use of technology. Logistics nowadays revolves around technology, meaning that there is technical support for every part of this sector, including inventory. Inventory can be managed using advanced technology such as WMS, RFID, etc. If organizations cannot afford such systems, then managing inventory will be done manually, which takes more time and staff and can result in inaccurate data or overstocking.

Unexpected events, such as economic crises, pandemics, etc., also directly affect inventory management. For instance, in Covid-19, many organizations failed to generate profit due to the difficulty of supplying inventory at the time, especially manufacturing. Furthermore, Vergara et al. (2021) state that inventory management is very complex for biosecurity product trading companies due to the different products supplied and the demand variations. Not to mention, many organizations, such as seaports and airports, are forced to stop operating to avoid spreading the disease even more, resulting in supply chain disruptions.

2.2 Inventory Management Strategies

Managing inventory requires using strategies or systems to manage it efficiently and effectively. Hence, different strategies have been created to manage different inventories. With the help of advanced technology and appropriate strategy, inventory management can be less complex for organizations and reduce the time and effort used.

a) ABC Inventory Classification

According to Karagiannis and Paleologou (2020), when it comes to inventory management, ABC analysis is a widely used method that classifies items into three categories. As shown in table 1, category A relates to the most valuable items. However, in relatively small quantities, category B comes in larger quantities and has moderate value, and category C is the least valuable but comes in larger quantities compared to category B. Therefore, the organization must always ensure the availability of product A, then B with medium interest, and finally, C with as minimal effort as possible (Madzivhandila, 2012).

CATEGORY	% OF INVENTORY ITEMS	% VALUE OF ITEMS
A	5 – 10%	40 – 80%
B	20 – 30%	15 – 40%
C	50 – 70%	5 – 20%

Table 1: ABC Inventory Classification

The General Electric Company initially formed this model in 1951, aiming to aid managers in following up with inventory usage and its control methods (Bilgin and Tanyilmaz, 2021). However, inventory value is affected not only by its usage but other factors, such as lead time, suppliers, etc. Correspondingly, it is important to use multi-criteria decision models to enable managers to determine how valuable the inventory is by using more than one criterion (Bilgin and Tanyilmaz, 2021). There are steps to classify each item, starting with obtaining the purchased or manufactured item's price per unit, then identifying how many units were demanded for each item in the past year. Moving on, the price per unit and the usage rate is calculated to get the annual usage value. Then, they are arranged in descending order and converted into percentages to easily classify every item into its suitable category (Afolabi et al., 2017).

The ABC analysis can increase the optimization of inventory, which helps organizations identify highly demanded products and consume more space in the warehouse for such goods and less for the less demanded goods. Additionally, it can improve sales forecasting, giving managers an adequate amount of information to set inventory levels and prices (Jenkins, 2020). However, this strategy can only be suitable for internal use because it ignores the rules of GAAP (Generally Accepted Accounting Principles), and most importantly, it can cause losses due to paying less attention the category B and C and causing overstocking of such items leading to wastages and or damage of items (Merritt, 2019).

b) JIT (Just-In-Time)

JIT (lean production) is a Japanese concept first created in the 1970s at Toyota by Taiichi Ohno (Mukwakungu et al., 2019). It is a system that aims to eliminate all kinds of waste to improve productivity and is mainly used by manufacturing companies. JIT focuses on improving productivity by maintaining customer needs (demand), ensuring high-quality production, cost reduction and zero wastage of resources. It also increases an organization's service delivery (Ndegwa, 2020). However, even with its ability to reduce waste, previous studies have concurred that it is not a flawless system and is not suitable for every organization, as it has been revealed that inventory reduction costs are not as high as other cost-reduction projects in the organization (Madzivhandila, 2012). Mostly this strategy is mainly performed for very expensive goods in the form of goods with higher purchase prices, ordering costs, and holding costs, but rarely demanded. Correspondingly, since there are no goods in stock, it is crucial to ensure that goods will be delivered on time to avoid any irreparable or expensive customers due to delivery delays (Afolabi et al., 2017).

c) VMI (Vendor Managed Inventory)

Vendor-managed inventory is the other term used to describe direct replenishment used widely among many organizations to manage their inventory. Zhang (2005) states that over 60% of manufacturing companies use VMI. In a nutshell, a vendor-managed inventory program involves suppliers monitoring their customers' warehouses and ensuring the efficiency of replenishing the inventory to achieve specific targets through a highly automated electronic messaging system. A VMI program can be used to reduce inventory management costs as well as the organization's purchasing through placing and monitoring the orders by the suppliers immediately as well as coordinating a production plan along with safety stock and precise demand information, which is a win-win situation to the suppliers and the organization (Zhang, 2005).

VMI can improve an organization's inventory management by improving inventory alignment with customer demand; since suppliers take charge of replenishment, they have a closer look into the organization's stocking, demand, and customer demand; therefore, they can easily forecast the number of inventories needed over each period. As a result, a VMI program can help reduce many risks within the supply process, such as reducing last-minute orders, which can sometimes be costly, and reducing the number of orders and order returns (DXP, 2019). On the other hand, it can create a sense of losing control since the supplier will be responsible for stocking the warehouse, and in return, they require access to the organization's data which can be uncomfortable for many organizations. Furthermore, once an organization commits to a VMI program, it will have limited options causing it to not be able to supply from other suppliers due to the commitment it created with a specific supplier (American Express, 2020).

d) EOQ (Economic Order Quantity)

Economic Order Quantity (the Wilson EOQ model) is used to graphically present the trade-offs between holding and ordering costs. It clarifies how to replenish inventory at low costs and satisfy demand (Toles, 2018). In other words, aiming to minimize the annual inventory cost, EOQ determines the optimum amount of inventory that an organization orders and adds to inventory at once. It can be used to determine the amount to be ordered and when it should be ordered, making it easier for organizations to perform efficiently, with the lowest inventory costs and without shortages (Moradizadeh, 2019). The following formula is used to calculate EOQ:

EOQ = √((2 ×Annual Demand ×Ordering Cost)/(Carrying Cost))

In this technique, the inventory level is recorded all the time, and when it reaches the reorder point, as shown in figure (2) below, a fixed quantity will be ordered. According to Moradizadeh (2019), EOQ is the oldest formula that has been used successfully in the economy's automotive, marketing, retail and pharmaceutical sectors for so long.

EOQ model helps organizations minimize holding and storage costs as it is known that storing goods can be quite expensive and the model helps recommend the most economical number of units per order. Additionally, it is specific to the business, meaning that the model provides specific numbers of how much inventory to order when to reorder, and how much to hold. On the other hand, the model is a complicated math calculation that requires a good understanding of algebra and is mainly based on assumptions (Harbour, 2019).

3. Research Methodology - Materials and Methods

Research methodology is basically the 'how' of any research paper; it is referred to the ways, methods and tools used by the researcher to conduct the research (Jansen and Warren, 2020). This section describes the research process followed in this research and how the data was collected to identify papers relevant to this study. As the first step, the research objectives and research questions addressed by this study are:

3.1 Research objectives:

- To identify factors affecting inventory management.
- To distinguish between different inventory management strategies.
- To study how efficient inventory control affects the company's performance.
- To identify the usage of advanced technologies in inventory management.

3.2 Research Questions:

RQ1. What are the factors affecting inventory management?
RQ2. What are the different types of inventory management strategies?
RQ3. What are the effects of inventory control on the performance of the company?
RQ4. What is the usage of advanced technologies in inventory management?

The following step was to define the inclusion/exclusion criteria: (1) Search limitations to papers, (2) consider only papers written in the English language, and (3) Exclusion of papers not accessible as full text.

For the next step, data collection, the keywords used were defined as Inventory Management, Companies performance, Inventory Control, and Effective Strategies. Then used to search them in online journals databases and scholarly databases (Emerald insights, Taylor and Francis Group) and Google Scholar. The keywords should be found in the paper title, paper keywords and/or paper abstracts. Then the papers were read to assess their relevance and contribution to the present study, and as a final step, the discussion of the findings for future work.

4. Discussion

4.1 Effect of Inventory Management on Company's Performance

As mentioned, inventory is an important part of any organization as it plays a crucial part in the company's performance, whether it provides goods or services to its customers. Consequently, managing such elements can easily reflect on the organization's performance and its ability to control its cash flow and stocks. According to Sophia (2019), inventory management is the control of stock levels along with their physical distribution to create a balance between minimizing holding costs and maximizing handling costs. Furthermore, with the increase of inventory problems throughout the years, technological progress also increased an organization's ability to perform much more efficiently and effectively. Therefore, around the mid-80s, the benefits of inventory management planning, scheduling and production have become crystal clear to organizations.

Furthermore, there was never doubt to organizations in general that inventory management improved their operations. Therefore, inventory must be managed to leverage organizational productivity and overall performance. In a nutshell, inventory control involves procuring, utilizing, controlling and coordinating materials on hand to get the right goods, with the right quality and quantity, at the right place, at the right time, and having a system to manage it can directly or indirectly affect the profitability or the organization. Hence, if a company fails to manage inventory properly, it will likely face profitability issues (Sophia, 2019).

Any organization invests a substantial amount of its shares for its inventories, representing about 40% of its capital, 33% of its assets and about 90 of its working capital. Thus, the costs of overstocking or understocking should always be low, ensuring effective inventory control. Furthermore, effective inventory control can generate more sales, directly affecting the organization's performance. To do so, a system should be managed by a group of specialized employees who are experts in this scope (Sophia, 2019). Nonetheless, an effective inventory management system can also help organizations in becoming the top of their business, hence, be able to strongly compete in the market, and that happens through having the right technology or system to manage not only inventory but the warehouse, in general, resulting in fewer handling costs and more profit due to the efficient data and results obtained from the system.

4.2 Usage of Advanced Technology in Inventory Management

These days, technology is becoming increasingly advanced, helping every sector to easily solve their issues, enhance their performance, or develop better plans with fewer errors. For example, regarding inventory management, the purpose of using technology is to remove any manual practices or elements that usually take time and are easily open to errors and replace them with an efficient system saving time, effort, and profits (Internet Society, 2018).

4.2.1 Internet of Things (IoT)

The Internet of things (IoT) is the headline topic in the technological industry, and it is a system that embodies a wide range of networks, products, systems, and sensors. In simple words, IoT refers to network connectivity and computing capability to objects or everyday items not usually considered computers, such as smart watches, smart bicycles, etc. (Rose et al., 2015). The general idea of this system is to make machines work dynamically without the interference of humans. For instance, RFIDs can ease the communication and information-sharing process, improving the performance of the whole supply chain from the origin point to the end user. It helps reduce errors such as inventory

loss, inventory misplacement, and supply faults. RFID readers are connected to an internet terminal to identify, track and monitor items globally and automatically, which is a clear idea of IoT (Mashayekly et al., 2022).

4.2.2 Warehouse Management System (WMS)

Warehouse Management Systems are widely used in the logistics industry, in both manufacturing and retail industries. The system tracks all goods that come into the warehouse and go out until it reaches the end user. In a nutshell, it is used to optimize all the processes in the warehouse, as there are different types to make it much more convenient to its users, as follows (Rittenberg and Watts, 2020):

- Integrated
- Standalone
- On-premises
- Cloud-based

WMS helps logisticians seamlessly order, store and ship goods by eliminating manual practices and using paper spreadsheets to track every action in the warehouse. Apart from its different types, the system can be customized according to the users' requirements or ready-made with several features that aim to solve several problems. The key features of this system include (Kholodenko, 2022):

- Importing, exporting goods
- Inventory information
- Order fulfillment
- Real-time tracking
- Picking and packing
- Billing and inventory

4.2.3 Barcode System

Barcodes are an easy concept of assigning different items a unique value holding certain information about that specific item, and it is one of the most used and known types of technologies in inventory management due to their time-saving feature in tracking goods, which happens by scanning goods in less than a second. Moreover, the organization can customize these barcodes to be only used by them. In the barcoding system, there are two different types, linear and matrix. Linear barcode is the most used type of barcode, which is in the form of vertical lines arranged in a certain order with digits, as shown in figure (3), for manual input, and the most common data that it holds includes SKU number, name, weight, manufacturing and expiry date and manufacturer name. On the other hand, matrix barcodes and upgraded types of barcodes in a two-dimensional form can hold more information than a linear barcode, including ULR, SKU number, name, weight, text data, etc. (Kholodenko, 2022).

Figure 1: Linear and Matrix Barcode

5. Conclusion

In conclusion, it can be said that, for businesses, inventory is important as it plays a crucial role in the growth of organizations. Thus, when it is established that inventory is important, it must be managed efficiently to increase its effectiveness. However, various factors affect inventory efficiency, like financial factors, market demand, inventory theft, lead time, quality and quantity forecast, product types, vendors and manufacturers. As far as the inventory management techniques are concerned, no matter the size of the business, employing some of these common inventory management techniques can help to take control of the stock like Just in time (JIT) inventory, ABC inventory analysis, drop shipping, Bulk shipments, Consignments, cross–docking and cycle counting. Manufacturing companies depend on inventory to operate and fill customers' orders. Making an accurate inventory assessment means the difference between a profit and a loss. Therefore, in this research, the five important ways of managing inventory have been highlighted, which can improve business performance as it can help in planning forward, may lead to improvement in customer service and increased satisfaction, the organizations can take control of the expenses, sound inventory management helps in tracking sales and measures success. Finally, it helps in increasing the manufacturer's efficiency. Thus, in the end, it can be said that "Inventories can be managed, but people must be led".

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