

A Survey on Inventory Management System Case Study

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ABSTRACT --- Inventory management is a challenging problem area in supply chain management. Companies need to have inventories in warehouses in order to fulfil customer demand, meanwhile these inventories have holding costs and this is frozen fund that can be lost. Therefore, the task of inventory management is to find the quantity of inventories that will fulfil the demand, avoiding overstocks. This paper presents a case study for the assembling company on inventory management. It is proposed to use inventory management in order to decrease stock levels and to apply an agent system for automation of inventory management processes.

KEYWORDS--- Inventory Management, Survival, Utility and Profitability

INTRODUCTION --- This project is to develop an inventory management system for managing different types of inventory and this system falls in the area (domain) of management information system. According to Laudon, K.C. and Laudon, J.P. (2004), an information system can be technically defined as a set of interrelated components that collect (or retrieve), process, store and distribute information to support decision making and control in an organization. In addition to supporting decision making, coordination and control, information system may also help managers and workers analyze problems and visualize complex subject. In a nutshell management information system can be defined as a set of interrelated components that collect, retrieve, store, process and distribute information to support decision making, control, coordinate, analyse problems, operations, management and visualization which also include people data records and activities that process data and information in an organization. Therefore the benefit of the system is to manage and process transaction which include; easy record keeping, easy information accessibility,

LITERATURE SURVEY

Nyabwanga and Ojera (2012)

They highlighted the association between inventory management practices and business performance of smallscale enterprises (SSEs), in Kisii Municipality, Kisii County, Kenya. They used a cross-sectional survey study based on a small sample size of 79 SSEs. The study inferred that inventory comprised the maximum portion of working capital, and improper management of working capital was one of the major reasons of SSE failures. The empirical results disclosed that a positive significant relationship existed between business performance and inventory management practices with inventory budgeting having the maximum influence on business performance ensued by shelf-space management. The study suggested that by following effective inventory management practices business performance can be enhanced.[1]

Eneje et al (2012)

Investigated the effects of raw materials inventory management on the profitability of brewery firms in Nigeria using a cross sectional data from 1989 to 2008 which was gathered for the analysis from the annual reports of the sampled brewery firms. Measures of profitability were examined and related to proxies for raw materials inventory management by brewers. The Ordinary Least Squares (OLS) stated in the form of a multiple regression model was applied in the analysis. The study revealed that the local variable raw materials inventory management designed to capture the effect of efficient management of raw material inventory by a company on its profitability is significantly strong and positive and influences the profitability of the brewery firms in Nigeria. They concluded that efficient management of raw material inventory is a major factor to be contained with by Nigerian brewers in enhancing or boosting their profitability.[2]

Lwiki et al (2013)

A survey conducted on all the eight (8) sugar manufacturing firms in Kenya established that there is generally positive correlation between each of inventory management practices. Specific performance indicators were proved to depend on the level of inventory management practices. They established that Return on Equity had a strong correlation with lean inventory system and strategic supplier partnerships. As such, they concluded that the performance of sugar firms could therefore be stated as being a function of their inventory management practices..[3]

Madisheti and Kibona (2013)

Found that a well designed and executed inventory management contributes positively to a small or medium-sized enterprises (SMEs) profitability. They studied the association between inventory conversion period and profitability and the impact of inventory management on SMEs profitability. They took a sample of 26 Tanzanian SMEs, and used the data from financial statements for the period 2006–2011. Regression analysis was adopted to determine the impact of inventory conversion period over gross operating profit. The results cleared out that significant negative linear relationship occurred between inventory conversion period and profitability.[4]

Srinivas Rao Kasisomayajula(2014)

An analytical study was conducted on "Inventory Management in Commercial Vehicle Industry In India". A sample of five companies' was selected for study. The study concluded that all the units in the commercial vehicle industry have significant relationship between Inventory and Sales. Proper management of inventory is important to maintain and improve the health of an organization. Efficient management of inventories will improve the profitability of the organization.[5]

Edwin Sitienei and Florence Memba(2015)

Conducted a study on Effect of Inventory Management on profitability of Cement Manufacturing Companies in Kenya. The study concluded that Gross profit margin is negatively correlated with the inventory conversion period, Increase in sales, which denotes the firm size enriches the firm's inventory levels, which pushes profits upwards due to optimal inventory levels. It is also noted that firms inventory systems must maintain an appropriate inventory levels to enhance profitability and reduce the inventory costs associated with holding excessive stock in warehouses.[6]

Benefits:

1. **It helps to maintain the right amount of stocks:** [7]contrary to the belief that is held by some people, inventory management does not seek to reduce the amount of inventory that you have in stock, however, it seeks to maintain an equilibrium point where your inventory is working at a maximum efficiency and you do not have to have many stocks or too few stocks at hand at any particular point in time. The goal is to find that zone where you are never losing money in your inventory in either direction. With the aid of an efficient inventory management strategy, it is easy to improve the accuracy of inventory order.
2. **It leads to a more organized warehouse:** with the aid of a good inventory management system, you can easily organize your warehouse. If your warehouse is not organized, you will find it very difficult to manage your inventory. A lot of businesses choose to optimize their warehouse by putting the items that have the highest sales together in a place that is easy to access in the warehouse. This ultimately helps to speed up order fulfilment and keeps clients happy.
3. **It saves time and money:** an effective inventory management system can translate to time and money saved on the part of the business. By keeping track of the product that you already have at hand, you can save yourself the hassles of having to do an inventory recount in order to ensure your records are accurate. It also allows you to save cash that would have otherwise been spent on slow moving products.
4. **Improves efficiency and productivity:** inventory management devices like bar code scanners and inventory management software can help to greatly increase the efficiency and productivity of a business. They do this by eliminating the manual way of doing things thus allowing employees to do other more important things for the business.
5. **A well-structured inventory management system leads to improved customer retention:** for customers to keep patronizing you, you will need to always have the goods they want, at the amount they want, and at the time they want it. Inventory management helps you to meet up this demand by allowing you to have the

right products all the times so that you and your customers are never stranded.

6. **Avoid lawsuits and regulatory fines:** like mentioned previously, inventory management allows you to keep your warehouse or facility in order. If it is not kept in order, it can result in lawsuits, injury and fines associated with not following regulatory guidelines and rules. In addition, proper inventory management (including keeping records of your staff activities) helps document your actions in the event of an undesirable situation.
7. **Schedule maintenance:** once you get hold of a new appliance, you can begin to schedule routine and preventative maintenance, issue work order to your staff and track that the maintenance was actually carried out. This will help to elongate the life span of that particular asset.
8. **Reduction in holding costs:** yet another benefit of an efficient management system is that it helps to save on inventory cost. These types of cost can be large and can be detrimental to a healthy profit margin. These types of costs are financing costs, warehouse rent, warehouse staff salaries, electricity bills, security et al. The key to keeping these costs in check is to have only the amount of inventory that you need at a particular time. With an inventory management program that assists you to make good forecasts, you can avoid over stocking and thus over pay on holding costs. Furthermore, having confidence in your forecast will mean that you will not have to hold a lot of “safety stock”.
1. **Flexibility:** a good inventory management strategy will allow the manager to be flexible and adapt to situations as they arise. The business world is dynamic and often unpredictable, and the same can also be said for inventory management. There are a plethora of problems that could come up such as incorrect shipments, warehouse accidents, manufacturing issues, theft et al. It is usually not possible to foresee or predict with certainty when they could happen, but if they happen, the best case scenario will be for the manager to know at once so that he or she can rectify the issue.
2. **Increased information transparency:** a good inventory management helps to keep the flow of information transparent. This information includes when items were received, picked, packed, shipped, manufactured et al. You also get to know when you need to order more of any good, when you have too much stock or too little stock.[7]

Challenges:

1. **Bureaucracy:** [7]even though inventory management allows employees at every level of the company to read and manipulate company stock and product inventory, the infrastructure required to build such a system adds a layer of bureaucracy to the whole process and the business in general. In instances where inventory control is in-house, this includes the number of new hires that are not present to regulate the warehouse and facilitate transactions. In instances where the inventory management is in the hands of a third party, the cost is a subscription price and a dependence on another separate company to manage its infrastructure. No matter the choice you go for, it translates to a higher overhead cost and more layers of management between the owner and the customer. From the view point of the customer, a problem that requires senior management to handle will take a longer period of time before it will be trashed out.
2. **Impersonal touch:** another disadvantage of inventory management is a lack of personal touch. Large supply chain management systems make products more accessible across the globe and most provide customer service support in case of difficulty, but the increase in infrastructure can often mean a decrease in the personal touch that helps a company to stand out above the rest. For instance, the sales manager of a small manufacturing company that sells plumbing supplies to local plumbers can throw in an extra box of washers or elbows at no charge to the customer without raising any alarms. This is done for the sake of customer relations and often makes the customer feel like he is special. While free materials can also be provided under inventory management, processing time and paper work make obtaining the material feel more like a chore for the customer or even an entitlement.
3. **Production problem:** even though inventory management can reveal to you the amount of stock you have at hand and the amount that you have sold off, it can also hide production problems that could lead to customer service disasters. Since the management places almost all of its focus on inventory management to the detriment of quality control, broken or incorrect items that would normally be discarded are shipped along with wholesome items.
4. **Increased space is need to hold the inventory:** in order to hold inventory, you will need to have space so unless the goods you deal in are really small in size, then you will need a warehouse to store it. In addition, you will also need to buy shelves and racks to store your goods, forklifts to move around the stock and of course staff. The optimum level of inventory for a business could still be a lot of goods and they will need space to be stored in and in some cases additional operational costs to manage the inventory. This will in turn increase cost and impact negatively on the amount of profit the business makes.
5. **Complexity:** some methods and strategies of inventory management can be relatively complex and difficult to understand on the part of the staff. This may result in the need for employees to undergo training in order to grasp how the system works.
6. Some inventory management systems such as the fixed order period system compels a periodic

review of all items. This itself makes the system a bit inefficient.

7. **High implementation costs:** some inventory management systems can come at a high price because the business needs to install specialized systems and software in order to use them. This can be problematic for large businesses which operate in difficult locations. Even after installing the costly system, it still needs to be maintained and upgraded on a regular basis, thus incurring more costs.
8. Even with an efficient inventory management method, you can control but not eliminate business risk.
9. The control of inventory is complex because of the many functions it performs. It should thus be viewed as a shared responsibility.
10. Holding inventory can result to a greater risk of loss to devaluation (changes in price).[7]

Conclusion:

This paper describes an Inventory Management System that stores sales data for a certain desktop application. It's a simple desktop application that links to the actual distribution centre, allowing information to be refreshed and confirmed in the store. It's a secure application that prevents data from being spoiled in the stores. It also provides sales information on a daily, weekly, and monthly basis. This system makes inventory management a breeze. Increased income and profitability, a better employee climate, and an overall boost in customer satisfaction will be noticed as a result of the inventory management system.

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