Inventory Management System for Retailers

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Literature Survey

INTRODUCTION

The word inventory refers to the goods or resources used by a firm for production and sale. It also includes the matter used as helpful valuable materials to ease production. There are three basic types of raw inventory resources, work-in-progress and completed goods. Raw materials are the items purchased by firms for employment in the production of finished manufactured goods. Work-in-progress consists of all items currently in the process of production. These are, in fact, partly artificial products. Finished goods consist of those items which have already been shaped but not yet sold. Inventory management is significant from the point of view that it enables to deal with the following essential issues:

- The firm has to uphold sufficient inventory for horizontal production and selling activities.
- Investment in inventory should neither be too much nor insufficient. It should be the best possible.

Maintaining an optimum stock level is inventory management's most crucial aim. In other prose, the list is composed of resources that will be shown in future in the ordinary course of the business operations. The possessions which firms stock up as inventory in expectation of need are:

- Raw materials
- Work in process (Semi Finished goods)
- Finished goods
- Stores and Supply

INVENTORY MANAGEMENT

- The consequence or connotation of inventory management could be specified as below:
- Inventory management helps maintain an exchange between transport costs and ordering costs, which minimises the total cost of inventory.
- Inventory management facilitates maintaining adequate inventory for smooth production and sales operations.
- Inventory management avoids the stock-out difficulty that a firm otherwise would face in the lack of proper inventory management.
- Inventory management suggests the proper inventory control system to be applied by a firm to avoid losses, damages and misuses.

Inventory management: Stocks (reserves) are created to carry out the company's everyday activities. Proper and timely determination of the optimal inventory control strategy allows the freeing of a significant amount of assets frozen in the form of stocks, ultimately increasing resource use efficiency. Even though millions of different types of products are manufactured in our society, there are only two fundamental decisions that one has to make when controlling inventory: 1. How large should an inventory replenishment order be? 2. When should an inventory replenishment order be placed? e objectives of inventory management reduce the problem if it is more portable to do quickly but more expensive or slower but cheaper. Such a strategy will be optimal inventory control, which minimises the sum of milestones costs associated with the production, storage and inventory shortage per unit of time or for a specific (including infinite) amount of time— management models like the available information on the properties of the simulated system. When the value of the model parameters is well-defined, the nature of the corresponding mathematical model is deterministic. If the system systems parameters are random values with a known probability, distribution models are stochastic (probabilistic). If all model parameters do not change over time, it is called static; otherwise – dynamic. Stationary models are used when receiving a one-time decision about the level of reserves for a certain period, and emotional – in the case of sequential decision-making about stock levels or to adjust earlier decisions, taking into account the changes taking place. When static patterns of change in system parameters cannot be installed, it is necessary to solve the problem of inventory management in the face of uncertainty. In inventory management models, the following characteristics are considered: Single versus multiple items. Is dimension considers whether a single item can be used in isolation for calculations or whether numerous interdependent products should be taken into account due to pooled budget or space constraints, coordinated control or substitutability between items? Time duration. In some inventory management situations, the selling season for products is short, and excess stock at the end of the season cannot be used to satisfy the demand of the next season. In such cases, a single-period model is required. When multiple periods need to be considered, a common approach is to use a rolling horizon implementation approach. Here, decisions consider only a relatively small number of future periods and are made at the start of each period. e decisions are then implemented in the current period, and the problem is resolved at the beginning of the subsequent period. Several stocking points. Sometimes, it is appropriate to treat a single stocking point in isolation. In many real-world cases, inventories of the same item are kept at more than one location. In multi-echelon situations, the orders generated by one place (e.g., a branch warehouse) become part or all of the demand at another (e.g., a central warehouse).

Development

The project focuses on building an Inventory Management System for Retailers. It ensures that the retailers carry the right amount of merchandise the customers want, with neither too little nor too much on hand. By managing inventory, retailers meet customer demand without running out of stock or causing wastage by carrying excess amounts of merchandise.

The primary motive behind retail inventory management is to understand the sales pattern and to lower the cost of maintaining an inventory/warehouse.

Once retailers successfully log in to the application, they can update their inventory details. The users will be able to add new stock by submitting essential information. They can view details of the current inventory. The System will automatically send an email alert to the retailers if no stock is found in their accounts so that they can order new stock.

Technology Stack: Python, Flask, Docker, Cloud

Conclusion

In conclusion, an inventory management system is an essential replacement for a manual pen-and-paper system. Its intended purpose is to control the movement and storage of the products with the added benefit of enhanced security and quicker handling.

Inventory management is a set of techniques, methods, and technologies used for managing and controlling inventories. The *Inventory management system* software is a necessary tool to keep track of the stocks of a particular retailer. It is also capable of providing valuable information to sales data and analytics. Ultimately, it is the lifeline of a company as it drives profitability by generating sales. The advantages of a sophisticated and effective inventory management system can be enormous. The way a company maintains its inventory can have a significant impact on its overall success.

LITERATURE REVIEW

The study intends to review the available literature to understand the inventory control processes followed by the different companies, as well as the strategies and factors affecting the success of inventory control. Three theoretical frameworks guided the study:

- Stock diffusion theory,
- Application control theory and
- Inventory control in theory and practice.

The first three sections survey the principal domains: inventory modelling, decision support systems (DSS), and expert systems (ES). This is followed by a discussion of the intelligent decision support system (IDSS), which integrates the two fields: DSS and ES. The section reviews the intellectual (or knowledge-based) inventory systems developed recently. The study concludes with a critique of the published intelligent inventory management systems. The first mathematical inventory model is generally referred to as the Economic Order Quantity (EOQ) model, which Harris developed in 1913. Raymond's is the first complete-length book to explain how various extensions of EOQ can be used in practice.

Further research showed that the EOQ model appears to be relatively insensitive to errors in the specification of the appropriate cost parameters and estimating demand. The importance of the EOQ model is not only from the historical point of view but also because many other models designed to cope with different situations have been based on this model. However, this mathematical modelling technique of inventory management had very little application then. Perhaps this was because the new conceptions always need a period of maturation during which details can be

improved, and the original claim about increased productivity and performance can be proven through time.

CLASSIFICATIONS

Based on similarities of approaches used by the researchers, various papers reviewed were grouped into six categories:

o Models for deterministic optimum inventory policies,
o Lot-size optimisation,
o Optimisation of different specific management objectives,
o Models for optimising highly specialised inventory situations,
o Applications of advanced mathematical theories,
o Models bridging the gap between theory and practice.

The main contribution of Tinarelli's survey to the theory of inventory management is that the author referred to the publications systematically by classifying them into six groups: o Stochastic models

o Dynamic demand models,
o Models for perishables,
o Joint-ordering systems,
o Capital and volume constraints,
o Inventory control and devaluation.

To promote the application of the published inventory models, some researchers have started classifying the inventory systems to help inventory managers to find an appropriate model from the extensive inventory literature for a given condition.

INVENTORY CONTROL SYSTEM

An inventory plays a significant role in the determination of the profile of the Business. The management should decide when the quantities are to order according to the requirement & the number of units to be kept in hands. There are three types of inventories: raw material, work in process, & finished goods.

ESSENTIALS OF INVENTORY CONTROL SYSTEM

o Maintenance of proper records about the units and the value of various inventory items.
o To ensure adequate control over the receipt and of the materials issue.
o Materials should be appropriately identified, and proper storage of facilities should be made.

INVENTORY CONTROL TECHNIQUES

The inventory control organisation employs techniques within the framework of one of the basic inventory models. They fixed—fixed order quantity systems or fixed order period systems. Inventory control techniques represent the operational aspect of inventory management and help realise the objectives of inventory management and control. The most commonly used techniques are the following: Always better control (ABC) analysis. Fast-moving, slow-moving and Non-moving (FSN) analysis. Economic Order Quantity (EOQ). Maximum - Minimum technique. Bin card system (KANBAN). Materials Requirement Planning (MRP). Just In time (JIT). VED Analysis

Abc Analysis ABC analysis is based on the Pareto principle (80-,20 r,u le), which states that 80% of the overall consumption value (expense) is based only on 20% of the total items,i.e. the small portion of the items may typically represent the bulk of money value. In contrast, a relatively large number of items may form a small part of the money value. ―A‖ items: money value is highest 70%, represent only 10% of items ―B‖ items: money value is medium 20%, representing about 20% of items ―C‖ items: money value is lowest 10%, representing about 70% of items

- A-items should have tight inventory control under more experienced management. Re-orders should be more frequent.
- B-items require medium attention for control. An important aspect of class B is monitoring potential evolution toward class A or, on the contrary, toward class C.
- C-items require minimum attention and may be kept under simple observation. Re-ordering is less frequent.

Advantages of ABC Analysis

- Helps to exercise selective control over such items, which have a sizable investment.
- Helps to point out obsolete stocks quickly.
- Provides a sound basis for the allocation of funds & human resources.
- It enables the maintenance of a high inventory turnover rate.

Disadvantages of ABC Analysis

- Considers only money value of items & neglects the importance of items for production, assembly, or functioning.
- It does not categorise the items based on their critical needs; hence, sometimes, the purpose of ABC categorisation may be defeated.

Fun Analysis (Based On Turnover Ratio) In any manufacturing industry, not all items are required with the same frequency. Some materials are pretty regularly necessary, yet some others are needed very occasionally, and some materials fabrics may have become obsolete and might not have been demanded for years together. FSN analysis groups them into fast-moving, Slow-moving and Non-moving (dead stock). Inventory policies and models for the three categories have to be different. While performing this particular analysis, the turnover ratio of each item has to be calculated because the things are sorted according to the turnover ratio it possesses.

Economic Order Quantity

Economic order quantity (EOQ) is the order quantity that minimises the total inventory holding costs and ordering costs. It is one of the oldest classical production scheduling models. The framework used to determine this order quantity is also known as Wilson EOQ Model, Wilson Formula or Andler Formula. Ford W. Harris developed the model in 1913, but R. H. Wilson, a consultant who applied it extensively, and K. Andler are given credit for their in-depth analysis. 9.6 Kanban Kanban is a lean and just-in-time (JIT) production scheduling system. Kanban is a system to control the logistical chain from a production point of view and is an inventory control system. Kanban was developed by Taiichi Ohno, an industrial engineer at Toyota, as a system to improve and maintain a high level of production. Kanban is one method to achieve JIT. Kanban became an effective tool to support running a production system as a whole and an excellent way to promote improvement. Problem areas are highlighted by reducing the number of kanban in circulation. One of the main benefits of kanban is establishing an upper limit to the work-in-progress inventory, avoiding overloading the manufacturing system. 9.7 Kanban cards are a vital component of Kanban.

They signal the need to move materials within a production facility or from an outside supplier into the production facility. The kanban card is, in effect, a message that signals the depletion of products, parts, or inventory. When received, the kanban triggers replenishment of that product, part position, or inventory. Consumption drives demand for more production, and the kanban card signals demand more products, so kanban cards help create a demand-driven system. It is widely held by proponents of lean production and manufacturing that demand-driven systems lead to faster turnarounds in production and lower inventory levels, helping companies implementing such systems be more competitive. 9.8 Material Requirements Planning (MRP) is a production planning, scheduling, and inventory control system used to manage manufacturing processes. Most MRP systems are software-based, while it is possible to conduct MRP by hand. An MRP system is intended to meet three objectives simultaneously

- Ensure materials are available for production and products for delivery to customers.
- Maintain the lowest possible material and product levels in store Plan manufacturing activities, delivery schedules and purchasing activities. The essential functions of an MRP system include inventory control, bill of material processing, and elementary scheduling. MRP helps organisations to maintain low inventory levels. It is used to plan manufacturing, purchasing and delivery activities. A few examples are given below:
- If a company purchases an insufficient quantity of an item used in manufacturing (or the wrong item), it may be unable to meet contract obligations to supply products on time.
- If a company purchases excessive quantities of an item, money is wasted - the excess quantity ties up cash while it remains as stock and may never even be used at all.
- Beginning production of an order at the wrong time can cause customer deadlines to be missed. MRP is a tool to deal with these problems. It provides answers to several questions: • What items are required?
- How many are required?
- When are they required? MRP can be applied to items purchased from outside suppliers and to sub-assemblies, produced internally, that are components of more complex items. Just-In-Time Manufacturing Just-in-time (JIT) manufacturing, also known as just-in-time production or the Toyota production system (TPS), is a methodology aimed primarily at reducing flow times within production and response times from suppliers and to customers. Following its origin and development in Japan, mainly in the 1960s and 1970s and particularly at Toyota, JIT migrated to the Western industry in the 1980s, where its features were put into effect in many manufacturing companies—as is attested to in several books and compendia of case studies and articles from the 1980s. But the wide use of the term JIT manufacturing throughout the 1980s faded fast in the 1990s, as the new term lean manufacturing became established as "a more recent name for JIT." As just one testament to the commonality of the two terms, the Toyota production system (TPS) has been and is widely used as a synonym for both JIT and lean manufacturing. 9.10 Ved Analysis VED (V-Vital, E-Essential, D-Desirable) classification is based on the criticality of the inventories, in contrast to ABC classification, which is based on consumption value. • Vital (V): The medicines that are critically needed for the patients' survival must be available in the hospital all the time. Essential items (V) are items like Oxygen which are vital for the functioning of a health care establishment and whose shortage will have severe effects on the routine functioning of the organisation.

• Essential (E) Medicines with lower critical needs may be available in the hospital. Essential items (E) are those whose shortage or non– availability can only be afforded for a short time (such as intravenous sets & IV fluids in a hospital). If their shortage continues for more than the shortest time, the functioning would be seriously and adversely affected.
• Desirable (D): The remaining medicines with the lowest criticality, the absence of which will not be detrimental to the patient's health. These are items whose shortage would not affect the routine functioning of an organisation even if the need is for a long time (such as Vit E capsules or sunscreen lotions in a hospital's medical store)

Abramovitz and Modigliani (1957)

They highlighted the relationship between capacity utilisation and inventory investment. The existing stock of inventories was expected to adjust to the desired levels. Thus the variable, the current supply of lists, was essential to be negatively related to the selected stock store. The result was positively related between evening inventory ratio sales and inventory investment. The high percentage of reserves to sales in the past suggests the requirement of high lists in the promises created investment in inventories in the current period.

Krishna Murthy (1964)

StudyThe study was aggregative and dealt with inventories in the private sector of the Indian economy as a whole for the period 1948-61. This study used sales to represent the demand for the product and suggested the importance of accelerators. The Short Term rate of interest had also been found to be significant.

R.S. Chadda (1964)

A study has been made on the inventory management practices of Indian companies. The analysis suggested applying modern scientific inventory control techniques like operations research. These modern scientific techniques furnish opportunities for companies. Companies can minimise their investment in inventory, but there is continuous production flow. He argued that industrially advanced countries, like, the USA, were engaged in developing highly sophisticated mathematical models and techniques for modernising and redefining the existing tools of inventory investment.

National Council of Applied Economic Research (NCAER) (1966)

Conducted a study66 regarding the working capital management of three industries: cement, fertiliser and sugar. This study mainly devoted to ratio analysis of composition, utilisation and financing of working capital from 1959 to 1963. The study reveals that inventory constituted a significant portion of working capital, i.e. 74.06 per cent in the sugar industry, followed by the cement industry (63.1%) and fertiliser industry (59.58%). It was observed that inventory had not been appropriately managed. So far as the utilisation of working capital was concerned, the cement and fertiliser industry had a better implementation of working capital. The sugar industry had a massive accumulation of stocks, so there was inefficient utilisation of working capital heavily.

Krishnamurty and Sastry (1970)

It is the most comprehensive study on manufacturers' inventories. They used the CMI data and the consolidated balance sheet data of public limited companies published by the RBI to analyse the significant components, like the raw materials, goods-in-process and finished goods, for 21 industries over the period ranging from 1946-62. The study was a time series one, although some inter-industry cross-section analyses were carried out in the investigation. The Accelerator, represented by changes in sales, bank finance and the short-term interest rate, was an important determinant. The utilisation of productive capacity and price anticipations was also relevant in the study.

George (1972)

It was the study on cross-section analysis of balance sheet data of 52 public limited companies for the period of 1967- 70. Accelerator, internal and external finance variables were considered in formulating equations for raw materials, including goods-in-process inventories. However, equations for finished goods inventories conceive only output variables. Deliberation was given on accelerator and external finance variables.

Mishra (1975)

It is the study of six major public sector enterprises. He concluded that (i) inventory constitutes the most critical component of working capital of public enterprises, (ii) efficiency of working capital funds employed in receivables is low in the selected enterprises, and (iii) In all units, both the current assets and the quick ratios are more significant than their standards. Enterprises need proper control over receivables.

Lambrix and Singhvi (1979)

Adopting the working capital cycle approach in working capital management also suggested optimising investment in working capital. Cash flows can be improved by reducing the time frame of physical flow, starting from the receipt of raw material to the shipment of finished goods, i.e. inventory management, and by improving the terms and conditions on which the firm sells goods and the receipt of cash.

Lal (1981)

He studied Modi Steels Limited as a case study; his study focused on inventory management. He originated a model which involved price variables in inventory management; earlier price variables in inventory were not considered in that company. The analysis recommended solid policies that would look after internal and external factors; ultimately, it would help bring in efficient working capital management.

Farzaneh (1997) Presented a mathematical model to assist the companies in their decision to switch from EOQ to JIT purchasing policy. He defines JIT as "to produce and deliver finished goods just in time to be sold, sub-assemblies just in time to be assembled in goods and purchased material just in time to be transformed into fabricated parts". He highlights that the EOQ model minimises inventory costs rather than the story. Under the ideal condition where all the needs

requirements meet, it is economically better to choose the JIT over the EOQ because it results in the purchase price and ordering cost.

Rich Lavely (1998)

Asserts that inventory means “Piles of Money” on the shelf and the profit for the firm. However, he notices that 30% of the inventory of most retail shops is dead. Therefore, he argues that inventory control facilitates shop operations by reducing rack time and thus increasing profit. He also elaborates on the two types of inventory calculations determining the inventory level required for profitability. The two calculations are “cost to order” and “cost to keep”. Finally, he proposes seven steps to inventory control.

Dave Piasecki (2001)

He focused on the inventory model for calculating the optimal order quantity that used the Economic Order Quantity method. He points out that many companies are not using the EOQ model because of poor results resulting from inaccurate data input. He says that EOQ is an accounting formula determining the point at which the combination of order and inventory costs are the least. He highlights that the EOQ method would not conflict with the JIT approach. He further elaborates on the EOQ formula that includes the parameters such as annual usage in units, order cost and carrying cost. Finally, he proposes several steps to follow in implementing the EOQ model. The limitation of this literature is that it does not elaborate further on the relationship between EOQ and JIT. It does not associate the inventory turns with the EOQ formula and fails to mention the profit gain with the quantity calculated.

Gaur, Fisher and Raman (2005)

Their study examined firm-level inventory behaviour among retailing companies. They took a sample of 311 public-listed retail firms for the years 1987–2000 to explore the relationship of inventory turnover with gross margin, capital intensity and sales surprise. They observed that inventory turnover for retailing firms was positively related to capital intensity and sales surprise while inversely associated with gross margins. They also suggested models that yield an alternative metric of inventory productivity, adjusted inventory turnover, that can be used in the study of performance analysis and managerial decision-making.

S. Singh (2006)

Analysed the inventory control practices of a single fertiliser company named IFFCO. He statistically examined the inventory system with consumption, sales and other variables, along with the growth of these variables and inventory patterns. He concluded that an increase in inventory components leads to a rise in the proportion of stock in current assets. A particular focus was made on stores and spared to calculate excess purchases resulting in loss of profit. Pradeep Singh (2008), In his study, attempted to examine the inventory and working capital management of Indian Farmers Fertilizer Cooperative Limited (IFFCO) and National Fertilizer Limited (NFL). He concluded that the overall position of IFFCO and NFL working capital is satisfactory. But there is a need for improvement in inventory in the case of IFFCO. However, the stock was not properly utilised and maintained by IFFCO during the study period. The management of the NFL must try to

properly use the inventory checklist and keep the list per the requirements. So that liquidity will not interrupt.

Capkun, Hameri and Weiss (2009)

Statistically analysed the relationship between inventory performance and financial performance in manufacturing companies using the financial information of a large sample of US-based manufacturing firms over 26 years, that is, 1980 to 2005. They inferred that a significant relationship existed between inventory performance and its components' performance and profitability. Raw material inventory performance was highly correlated to gross profit and operating profit. Work-in-progress inventory was positively correlated to gross profit measures, while finished goods inventory performance was more correlated with operating profit measures.

Gaur and Bhattacharya (2011)

Attempted to study the linkage between the performance of the inventory components such as raw material, work in progress and finished goods and the financial performance of Indian manufacturing firms. The study revealed that finished goods inventory was inversely associated with business performance, while raw material inventory and work in progress did not affect the same. They emphasised that instead of focusing on the complete list, an attempt should be made to concentrate on individual stock components to manage the same adequately. They concluded that managers not paying heed to inventory performance may become weak in combating competitors.

Eneje et al. (2012) Investigated the effects of raw materials inventory management on the profitability of brewery firms in Nigeria using 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 solid and positive and influences the profitability of the brewery firms in Nigeria. They concluded that efficient management of raw material inventory is a significant factor to be contained by Nigerian brewers in enhancing or boosting their profitability.

Nyabwanga and Ojera (2012)

They highlighted the association between inventory management practices and business performance of small-scale 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 top portion of working capital, and improper working capital management was one of the primary reasons for SSE failures. The empirical results disclosed that a significant positive 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 business performance can be enhanced by following effective inventory management practices.

Sahari, Tinggi and Kadri (2012)

Analysed the relationship between inventory management, firm performance, and capital intensity. For this purpose, they took a sample of 82 construction firms in Malaysia from 2006–2010. Using the regression and correlation analysis methods, they deduced that inventory management positively correlates with firm performance. In addition, the results indicate that there is a positive link between inventory management and capital intensity.

Soni (2012)

Made an in-depth study of practices followed regarding inventory management in the engineering goods industry in Punjab. The analysis used a sample of 11 companies for a period of five years, that is, 2004–2009 and was done using a panel data set. The adequate and timely flow of inventory determines the success of an industry. She concluded that inventory size enhanced marginally over the period, paring to a hike in current assets and net working capital. Inventories constituted half of the working capital due to overstocking of stock due to low inventory turnover, especially for finished goods and raw materials. The rise in sales and favourable market conditions lead to a rise in inventory levels. It was also inferred that sales increased more as compared to the inventory.

Lwiki et al. (2013)

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

Panigrahi (2013)

Undertook an in-depth study of inventory management practices followed by Indian cement companies and their effect on working capital efficiency. The study also investigated the relationship between profitability and inventory conversion days. Using a sample of India's top five cement companies over ten years from 2001 to 2010, the study concluded that a significant inverse linear relationship existed between the inventory conversion period and profitability.

Madishetti and Kibona (2013)

A well-designed and executed inventory management contribute positively to small or medium-sized enterprises (SMEs) profitability. They studied the association between the 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 2006–2011. Regression analysis was adopted to determine the impact of the inventory conversion period over gross operating profit. The results revealed a significant negative linear relationship between the inventory conversion period and profitability.

Srinivas Rao Kasisomayajula(82014)

An analytical study was conducted on" Inventory Management in Commercial Vehicle Industry In India". A sample of five companies was selected for analysis. The study concluded that all the units in the commercial vehicle industry have a significant relationship between Inventory and Sales. Proper inventory management is essential to maintain and improve the health of an organisation. Efficient management of lists will enhance the profitability of the organisation.

Edwin Sitienei and Florence Memba(2015)

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

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