



A Study on Inventory Management System – with Special Reference to Indian Steel Industry

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ABSTRACT

The purpose of this research paper is to look at the inventory management system in steel industry. Inventory management is a method of organizing, storing, and utilizing inventories. The significance of this studies is primarily based at the benefits that may be obtained by using figuring out the problems of stock manipulate. The techniques used are unstructured interviews, on-website online look at, and annual record analysis. Inventory control is an critical place of manufacturing industry. If it is a project for the enterprise to hold fair stock. There are various inventory control strategies to be had for maintaining honest inventory level inside the business enterprise. The primary goal of this paper is to have a look at approximately inventory control techniques used in electro steel castings ltd. And find out some measures for improvement on inventory management technique of the worried enterprise. The present gadget of inventory management of the business enterprise is good. For development of the prevailing stock control system, corporation should adopt other stock management

Key Words : Inventory, EOQ, Stock Management, Steel Industry.

Introduction

Inventory in wider experience, is defined as any idle aid of a corporation. It is a physical inventory of products saved dept. For the reason of future affairs. The term is normally used to signify uncooked materials in manner, finished products, packing, spares and others – stocked as a way to meet predicted call for or distribution inside the future. Though inventory of substances is an idle resource it is not meant for immediate use it's miles nearly vital to hold a few inventories for the clean functioning of an company. The inventory itself has many definitions according to different people and party, top management uses different terms as well to describe the same idea. An inventory is actually a list of the items held in stock, but many people use it to mean both the list of items and the stocks themselves (Waters, 2017). Inventory is defined as a list of goods and materials which are available in stock for business and in accounting inventory is considered as an asset (A. Sharma, 2016). An inventory managers goal, for example, is modeled as minimizing cost or maximizing profit while satisfying customers' demands (Koumanakos, 2008). Inventory management is always about optimizing the inventory to achieve good firm performance, increase, and effectiveness and increase efficiency. Poor inventory management in production floor will cause excess or shortages of raw material which indirectly impact business performance of the company (Ooi, 2017). Management of perishable inventories is an important issue due to the need of satisfying unpredictable consumers' demand with limited supplier capabilities and storage space (Latosinski, 2017). Justified by Angel (2014), an effective inventory management must consist of six main criteria, make sure that there is an uninterrupted supply of raw materials to enable uninterrupted production process, keep enough finished manufactured goods for uninterrupted sales transactions and proficient service to customers, reduce the holding cost and period, manage assets and keep it at the best level, allow improved utilization of on hand stocks by simplifying interdepartmental handovers within a company and lastly keep enough stocks of raw materials in periods of shortage in supply and expected price increases.

The importance of inventory management

A retail business is useless without its inventory. And so while it may not be the most exciting subject, inventory management is vitally important to your business's longevity. Good inventory management helps with:

1. Customer experience. Not having enough stock to fulfill orders you've already taken payment for can be a real negative.
2. Improving cash flow. Putting cash into too much inventory at once means it's not available for other things - like payroll or marketing.
3. Avoiding shrinkage. Purchasing too much of the wrong inventory and/or not storing it correctly can lead to it becoming 'dead', spoiled, or stolen.

4. Optimizing fulfillment. Inventory that's put away and stored correctly can be picked, packed and shipped off to customers more quickly and easily.

The Indian steel industry is organized in to three categories i.e., main producers, other major producers, and secondary producers. The main producers are Tata Steel, SAIL, and RINL, while the other major producers are ESSAR, ISPAT and JVSL. The secondary sector is dispersed and consists of:

1. Backward linkage from about 120 sponge iron producers that use iron ore and non-coking coal, providing feedstock for steel producers;
2. Approximately 650 mini blast furnaces, electric arc furnaces, induction furnaces and energy optimizing furnaces that use iron ore, sponge iron and melting scrap to produce steel; and
3. Forward linkage with about 1,200 re-rollers that roll out semis into finished steel products for consumer use. India was the world's second-largest steel producer@ with production standing at 106.5 MT in 2018. The growth in the Indian steel sector has been driven by the domestic availability of raw materials such as iron ore and cost-effective labor. Consequently, the steel sector has been a major contributor to India's manufacturing output. India's steel production capacity has expanded to 137.975 million tonnes in FY19. As of 2018, India is the world's second-largest producer of crude steel (up from the eighth spot in 2003). The Indian steel industry is very modern with state-of-the-art steel mills. It has always strived for continuous modernization and up-gradation of older plants and higher energy efficiency levels. Indian steel industries are classified into three categories such as major producers, main producers, and secondary producers.

Trends and developments in Steel Sector

During the period of January to December, 2020, India remained the 2nd largest producer of Crude Steel in the world [provisional, Source: World Steel Association (WSA)]

The Crude Steel production expanded from 95.477 Million Tonne (MT) in 2016 to 99.57 MT (provisional) in 2020. However, the Crude Steel production showed a decline of 10.6% over the Corresponding Period Last Year (CPLY).

Capacity for domestic crude steel expanded from 128.277 Million Tonne Per Annum (MTPA) in 2016 to 142.724 MTPA in 2020.

During January - December 2020, the following was the industry scenario (provisional, Source : JPC): a) Crude Steel production stood at 99.570 MT. SAIL, RINL, TSL Group, AM/NS (erstwhile Essar Steel), JSW Steel Ltd. and JSPL together produced 64.068 MT with a share of 64% in total production which was down by 6.7% over the CPLY. The rest amounting to 35.502 MT came from the other producers. With 81% share in total Crude Steel production, the Private Sector produced 80.622 MT Crude Steel which was down by 10.8% over the CPLY.

Review of Literature

Jose, T., Jayakumar, A., & Sijo, M. T. (2013) found the difference between EOQ & number of pieces purchased. It is observed that the company is not using EOQ for buying the materials. Therefore, inventory management is not reasonable. From estimate of safety stock, company can decide how much inventory the company can keep in back stock per annum.

Plinere, D. & Borisov, A. (2015), concluded that, inventory management is necessary to every company, having inventories. Companies have stock, but so much as to keep away from overstock and out-of-stock situations. Inventory management can better company's inventory control existing condition and reduce costs of the company.

Hong Shen, Qiang. Deng, Rebbaca Lao, Simon Wu (2016) focused on boosting the inventory management to improve the supply chain of the company. Drop in inventory is considered one of the most significant aspects of inventory management. In practice, small inventory level is not always a better solution, so manufacturers need to maintain the correct amount of inventory at the correct level.

Mohamad, S. J. A. N. bin S., Suraidi, N. N., Rahman, N. A. A., & Suhaimi, R. D. S. R. (2016) concluded that efficiency of inventory management is a major concern area of business. Suggestions are given to improve the performance of inventory management, demand forecasting, scattered inventory & cycle counting.

Atnafu, D. & Balda, A. (2018) focuses on inventory management & explains the relationship between inventory management practices, competitive advantage & organizational performance. The finding of the study on basis of data analysis is that there is a positive relationship between competitive advantages and inventory management performance. And better organizational performance gives a firm bigger capital to apply various inventory management techniques.

Research Methodology

The study is based on primary data collected by finance executive of the Company and secondary data which are collected from the books, journals, articles, annual reports of the company & websites. Company annual reviews, records, from the stores department. For the motive of fabric control various inventory control gear had been used for arriving substances at stock degrees viz., EOQ for fundamental uncooked substances. EOQ

evaluation has been undertaken to decide the cost and significance of an item in the manufacturing cycle. The aim of the study is to examine the inventory management process, analyse the techniques used in the study are EOQ, and also calculate the inventory flip over ratios in the selected company..

Methods

ABC Analysis: The ABC method is an analytical method of stock control, which aims at concentrative efforts on those items where attention is needed most. It is based on the premise that a small number of the items in inventory may typically represent the bulk money value of the total materials used in production process. While a relatively large number of items may represent a small portion of the money value of stores used and that small number of items should be subject to the greatest degree of continuous control. Under this system, the materials stocked may be classified into a number of categories according to their importance i.e., their value and frequency of replacement during a period. The first category, we may call it the group of 'an' items, may consist of only a small percentage of total items handled but its combined value may be a large portion of the total stock value. The second category, naming it as group of 'B' items, may be relatively less important. In the third category consisting of 'c' items, all the remaining items of stock may be included which are quit large in number but their value is not high.

Categories of ABC analysis

In ABC analysis the items are classified in three main categories based on their respective consumption value.

1. **Category 'A' items:** The items, which are most costly and classified as 'A' nearly 10% of the total number of items stored will account for 70% of total value of all items stocked.
2. **Category 'B' items:** The items having average consumption value are classified as 'B' nearly 20% of total value. Statistical sampling is general useful to control them.
3. **Category 'C' items:** The items having low consumption value are put in category "C" nearly 70% of total number as items will account for 10% total value. Generally these items are slow and non-moving items in the stores, which are frequently used for production process but with more quality.

Advantages of ABC Analysis

- Closer and stricter control on those items that represent a major portion of total stock value.
- Investment in inventory can be regulated and funds can be utilized in the best possible manner.
- Saving in stocks carrying costs.
- Helps in maintaining enough safety stock for "C" category of items.
- Scientific and selective control helps in the maintenance of high stock turnover rate.

Classification and Codification

Classification of materials: Materials of similar nature are suitably classified in major groups. These groups are further classified into a number of sub groups for example soap, lubricating oil, cotton waste, etc., may be classified as tools, raw materials like metals can be classified into 'ferrous' and 'non-ferrous' metals etc.

Codification of materials: Generally classification and codification go together codification is the producer of assigning distinctive symbols for each item of store. Such symbols may be numeric or alphabetical of the two. These symbols are known as codes. Thus each material is known by a code in addition its own name.

Advantages of Codification

- Codification has the following advantages
- Ambiguity in description is avoided.
- Length in description is minimized.
- Codification is essential in mechanized accounting.
- Codes also ensure secrecy.
- Each item of stores is easily identified particularly where the same item is known by more than one name.

Economic Order Quantity (EOQ)

The economic order quantity is that inventory level, which minimizes the total of ordering costs and carrying costs. It is the question, how much to order the quantity when inventory is replenished. If the firm buying raw materials, this is to purchase the quantity of each replenishment and if it has to plan for production run, it is how much production to schedule. It may be solved through EOQ.

EOQ Involves Two Types of Costs

➤ Carrying Cost

➤ Ordering Cost

Ordering Cost: Ordering cost is referred to as the cost of placing an order and securing the supplies. Ordering cost depends upon the number of orders placed and a number of items ordered at a time. Higher will be the ordering cost when frequent orders are placed. Similarly, lesser the ordered quantity, higher the ordering cost.

Carrying Cost: Carrying cost or holding cost refers to the cost of keeping the materials which includes capital cost, cost of storage and cost of deterioration and redundancy. Larger the volume of inventory, higher the inventory carrying cost and vice versa.

EOQ For an item is arrived on the following assumptions.

- Demand is continuous at a constant rate
- The process continues infinity
- No constraints are imposed on quantities ordered, storage capacity, budget etc.,
- Replenishment is instantaneous.
- All cost is time invariant.
- No shortages are allowed.
- Quantity discounts are not available.

EOQ for an item is arrived by the following formula

EOQ = Where

EOQ = Economic order quantity

AC = Annual consumption of an item

Co = Cost of ordering an order

Ch = Cost of carrying one unit / year

Discussions

Indian crude steel production reduced by 20% in March, 2020 and by 69% in April, 2020 compared to CPLY. Allmajor ISPs had to reduce their production substantially with JSW, TSL, AMNS and SAIL reducing their production by around 50%. SAIL alone had inventory accumulation of 3 lakh tonnes. The secondary steel players also faced issues regarding labour and working capital. During this period, Imports reduced by 35% while Exports went down by 17%. Supply chains and availability of service providers and labour were also impacted. The finished steel consumption has also recovered and come back to normalcy after October, 2020. Export of finished steel which had increased during lockdown period in view of lack of domestic demand, it has started declining from September, 2020 with the increasing domestic demand following gradual unlocking of the economy.

The initial question that guided our research was: what are the prominent inventory issues that majority of Indian steel firms from leading to medium as well as small enterprises are facing? Along with this other aspect that involves factors, drivers, barriers, its impact and suggested methods are considered. From these six themes emerged: Inventory issues in the steel industry; Major drivers for effective inventory management in Indian steel industry; factors responsible for its existence; Major barriers for the implementation of effective inventory management techniques including the implementation of ERP/MRP to manage inventories; Impact of inventory issues; Inventory control techniques to resolve these issues. Basically the problem of managing inventories is an optimization problem between overstocking and under stocking cost. It's easy to have too much inventory and not enough of the right inventory. In contrast, it takes some skill and sophistication to do a good job of inventory management. In reality it is found that there exist procurement lags between orders and deliveries and the length of these lags will depend on the source of supply and their availability. Uncertainty in the market for raw material and the demand for the final product is another factor influencing the speed of adjustment. Reducing inventory levels is not a good business solution if it means the customer runs out of parts. We sought to understand inventory issues at their component level. Enlarge the inventory management knowledge, and based on a scientific and reasonable inventory management, reflect the deficiency of internal inventory management, so as to set up a correct and comprehensive concept of inventory. It has two fundamental flaws that detract from its effectiveness. The first and most fatal flaw is that inventory is a post-performance metric. In other words, companies only recognize that there is a problem once they have the inventory on hand. By then, it is often too late to remedy the situation. The second flaw is a function of today's modern supply chain, which is outsourced and extends to multiple companies. Companies are delaying when they take inventory, so the numbers are artificially low. While there are fewer inventories on the books, there is not necessarily less inventory risk. Six themes emerged from the narratives: : Inventory issues in the steel industry ; Major drivers for effective inventory management in Indian steel industry; Major barriers for the implementation of effective inventory management techniques including the implementation of ERP/MRP to manage inventories ; Impact of inventory issues ; Inventory control techniques to resolve these issues. It is To realize more accurate, more timely and comprehensive information communication between the

enterprise upper and grassroots, according to the reasonable information flow, to determine the organization setup, canceling middle-level organization which is blocking information flow, strengthening the functions of information collection and processing control layer and decision-making layer. Without primary data study of inventory management in Indian steel industry is incomplete. Considering the nature of the problem and challenges that exist in managing inventory at component level in steel industry, this research is of prime important to provide an empirical evidence of barriers, drivers and best practices of managing inventory in Indian steel industries.

Suggestions

Existing inventory management system of the organization is good but if inventory management system is to be improved they should adopt some new inventory management system. The organization should also try to adapt more inventory management techniques like Just In Time (JIT) inventory system. This technique will save the time of the organization and will also reduce the inventory holding cost in the organization. As the organization is already following Lean manufacturing, now the organization can also try and implement different manufacturing techniques like TQM, Six Sigma etc. Also organization would like to adopt latest technologies to manage the inventory. A unique care ought to be taken in wet seasons to have at the least 2 or three months inventory in hand (slag), due to the fact for slag they observe just in time approach. The inventory turnover ratio has extended from 7 to nine by means of implementation of lean six sigma of version 3.0. By enforcing the sap within the management to get benefits like deduction of lead time, on time shipment, discount in cycle time, higher client pleasure, improved supplier performance, growth flexibility and enhance choice making talents.

CONCLUSIONS

After studying the inventories of the business enterprise over the last 5 economic years it is clear that, inventories of the business enterprise isn't always strong. The corporation via strictly following control techniques like EOQ, ABC evaluation can growth its earnings. By following the inventory control approach like JIT, the corporation can reduce its costs and deliver the completed items at affordable fees to the clients. This study also contributes to provide necessary measures to solve these such as over investment in inventories, overproduction, mismanagement and higher inventory levels, etc. Identifying the factors responsible for inventory issues and driving force to resolve them for the growth of steel industry is a prime concern in this paper. Several techniques such as the relevance of inventory control techniques such as JIT, ABC analysis, Inventory Speculation, Inventory postponement, inventory consignment and reverse inventory consignment (supply chain strategies). There are a number of interesting managerial implications. Managers can understand the factors influencing the inventory management of Indian steel industries, Secondly, best practices of inventory management could be replicated from one industry which is doing better to the other company.

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