



## STUDY ON INVENTORY MANAGEMENT AND ITS CONTROL TECHNIQUES IN WHEELS INDIA LIMITED

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### ABSTRACT

*The term 'inventory' originates from the French word 'Inventaire' and Latin word "inventarium" which implies a list of things found. The more popular of them are 'the term inventory includes materials – raw, in process, finished packaging, spares and others stocked in order to meet an unexpected demand or distribution in the future'. The research was conducted mainly to study the inventory management and its control techniques in wheels India limited. The secondary objectives were to classify various materials based on ABC analysis, to analyse the Economic Order Quantity & Economic Batch Quantity, to calculate the Financial Ratio's in relation with Inventory, to study trend of inventory in wheels India limited and to provide suggestions and recommendations to improve the inventory management controlling techniques and policies. The details regarding the history, finance and inventory policies of the company were collected through discussion with company officers, annual reports and stores ledger. Secondary data was collected through annual reports and stores ledger. The data collected were analyzed with the help of inventory control techniques viz. economic order quantity, economic batch quantity, ABC analysis, inventory ratios and statistical tools namely correlation analysis and trend analysis. . It was found from the research that the inventory management is a complex action because of the large amount of material that is being used and the study reveals that the inventory management is a complex action because of the large amount of material that is being used. The company must take proper technique to control the inventory and it is better for the company to reduce the inventory level to a considerable degree so that the profitability of the company might improve by way of unnecessary locking up of capital.*

### INTRODUCTION

Inventories constitute the most significant part of current asset of a majority of companies in India on an average inventories are approximately 30% of the current asset in the companies in India because of the large size of the inventory maintained by the firm a considerable amount of fund is locked in the form of inventory. An undertaking neglecting the management of inventory will be jeopardizing its long run profitability and may fail ultimately.

In financial parlance, inventory is defined as the sum of the value of raw materials, fuels and lubricants, spare parts, maintenance consumables, semi-processed materials and finished goods stock at any given point of time. The operational definition of inventory would be the amount of raw materials, fuel and lubricants, spare parts and semi-processed material to be stocked for the smooth running of the plant. Since these resources are idle when kept in stores, inventory is defined as idle resources of any kind having an economic value.

According to Bailey and Farmer inventory management is the "management of the flow of materials into an organisation to the point where, those materials are converted into the firm's end products".

### WHEELS INDIA LIMITED

Wheels India limited is a comprehensive global source of steel wheels for commercial vehicles, passenger cars, utility vehicles, agricultural tractors and construction equipment. Wheels India is promoted by the TVS group and was started in the early 60's to manufacture automobile wheels. Today, Wheels India has grown as a leading manufacturer of steel wheels for passenger cars, utility vehicles, trucks, buses, agricultural tractors and construction equipment in India.

The company supplies 2/3rd of the domestic market requirement and exports 18% of the turnover to North America, Europe, Asia Pacific and South Africa. The company also has a technical-financial



collaboration with Titan Europe. Wheels India designs and manufactures wheels for the specific requirements of the customer. Wheels India limited had revenues of Rs.1000 crores in the financial year 2006-2007. The company is headed by Mr. S. Ram.

The company objectives are to maintain leadership in the domestic market and presence in export markets, ensure customer satisfaction through timely delivery of quality products and services, at competitive prices, continuously improve & innovative product design, process technology and work environment to offer better products, bring about involvement of all employees in achieving the above objectives.

### QUALITY POLICY

Wheels India Limited has fully qualified staff of personnel reporting directly to top management. Wheels India Ltd has been certified for ISO 9001 and IOS 9000 expected to get ISO for environment policy.

### COMPANY POLICY

- Maintain domestic market.
- Leadership with quality products at competitive prices.
- Continuous improvement in product design, process technique and work environment thus offer improved products.

### RESEARCH REVIEW

**The article on inventory management research by Brent D. Williams, (Department of Marketing and Logistics, Sam M. Walton College of Business, University of Arkansas, Fayetteville, Arkansas, USA), Travis Tokar, (The Ohio State University, Fisher College of Business, Marketing and Logistics, Columbus, Ohio, USA) 4<sup>th</sup> JUN 2004:**

Articles published in major logistics articles, beginning in 2004, which contribute to the inventory management literature are reviewed and cataloged. The articles are segmented based on major themes extracted from the literature as well as key assumptions made by the particular inventory management model. In this article two major themes are found to emerge from logistics research focused on inventory management. First, logistics researchers have focused considerable attention on integrating traditional logistics decisions, such as transportation and warehousing, with inventory management decisions, using traditional inventory control models. Second, logistics researchers have more recently focused on examining inventory management through collaborative models. This paper catalogs the inventory management articles published in the major logistics journals, facilitates the awareness and appreciation of such work, and stands to guide future inventory management research by highlighting gaps and unexplored topics in the extant literature.

**The article on “simple way to find order quantities subject to an aggregate constraint” by Silver, Edward A. Dec 22, 2002**

This article considers the context of a population of items for which the assumptions underlying the economic order quantity derivation hold reasonably well. However, as is frequently the case in practice, there is an aggregate constraint that applies to the population as a whole. Two common forms of the constraint are (1) the existence of a budget to be allocated among the stocks of the items and (2) a purchasing or production facility having the capability to process, at most, a certain number of replenishments per year. Because of the constraint, the individual replenishment quantities cannot be selected independently. Moreover, often parameters such as the fixed (setup) cost per replenishment and the inventory carrying charge are very difficult to estimate in practice.

**The article on “average cost lot sizing heuristics: revised stopping conditions with increased intuition” by Tibben-Lembke, Ronald S Dec 22, 2002**

As other authors have noted, there is no lack of research aimed at improving solutions to the single-level unconstrained resource lot-sizing problem. Today's computers use existing algorithms to quickly solve these simple problems. Although this article does not show how to solve the problems more quickly, or achieve results closer to the optimal, it revises two common lot-sizing methods to provide a more intuitive understanding.

In discrete lot-sizing problems, it is assumed the firm knows how many units of a part will be demanded in each future period. To minimize the sum of ordering and holding costs, the firm must decide how many units to purchase or produce at one time. One of the most successful and most widely implemented methods for solving these problems is the Silver-Meal heuristic. To begin, enough parts for one period are ordered. The number of periods covered by the replenishment is then increased until a stopping condition is met, which ensures that the best solution available to the algorithm has been found. This article presents a revision of the stopping condition for this method, which allows for greater intuition than the traditional stopping condition. A similar stopping condition is also developed for the least unit cost method.

**OBJECTIVES OF THE STUDY**

The primary objective of the study was to know the inventory management and its control techniques in wheels India limited. The secondary objectives were to classify various materials based on ABC analysis, to analyse the Economic Order Quantity & Economic Batch Quantity, to calculate the Financial Ratio's in relation with Inventory, to study trend of inventory in wheels India limited and to provide suggestions and recommendations to improve the inventory management controlling techniques and policies.

**RESEARCH DESIGN**

The research design used in this study on inventory management and its control techniques is an analytical because the facts and information that is readily available are being to make critical evaluations of inventory management to carry out various analyses for the components pertaining to wheels India limited.

**RESULTS**

ABC analysis we can give more priority on class A materials and keeping a regular track in maintaining the inventory level at high. The entire B category items inventory should be maintained at a moderate level i.e. neither higher nor lower inventory. The entire C category items inventory should be maintained at a minimum level. BOLT 3PWO142 is 3654 units of EOQ and the annual consumption of the product is high and the cost per unit is low when compared to other items. By EBQ analysis of the five most fast moving items it's inferred that the component named Saw Wire 4.8mm Md411 Bobbin Imp Lincoln has the highest EBQ when compared to other items.

The inventory turnover ratio for the period of five years was analysed and it was found that it has fluctuated every year. The company has to maintain higher ratio, so that it shows efficiency of management. The inventory ratio over a period of five years was analyzed and it was found that it has increased during the financial year 2004-05 to 2007-08, but has decreased in the year 2008-09 and from 2008-09 and 2009-10 it has increased. The inventory turnover period over a period of five years was analysed and it was found that it has fluctuated every year. The company has to maintain higher ratio, so that it shows efficiency of management.



The inventory turnover ratio for raw materials over a period of five years was analysed and it was found that it has fluctuated every year. The company has to maintain higher ratio, so that it shows efficiency of management. The inventory turnover ratio for Work-in-progress over a period of five years was analysed and it was found that it has increased and decreased every year. Currently it's in an increasing rate to show efficiency in management the company has to maintain a higher ratio.

The inventory turnover ratio for Finished Goods over a period of five years was analysed and it is found that it has decreased over the year. The company has to maintain higher ratio.

The inventory turnover ratio for stores & spares over a period of five years was analysed and it was found that it has fluctuated every year. The company has to maintain higher ratio, so that it shows efficiency of management.

The inventory turnover ratio for loose tools over a period of five years was analysed and it was found that it is in decreasing stage to show efficient management the company must maintain higher ratio.

## CONCLUSION

Inventories constitute a major portion of current assets maintained for smooth business operations. If not managed effectively, the investment made in inventories cannot be justified, that will decrease the overall return on investment. The Performance of inventory can be measured by calculating efficiency and turnover ratios. These will be helpful in managing inventories effectively.

Inventory management is required for all organization. Inventory management is a concerted to integrate the firm's value chain and its inventory policy. Each companies Production capacity is finite, and perhaps random in each period. So inventory management is important for any firm.

The study reveals that the inventory management is a complex action because of the large amount of material that is being used. The company must take proper technique to control the inventory. It is better for the company to reduce the inventory level to a considerable degree reduction in excess inventories carries a favourable impact on the profitability of the company by way of unnecessary locking up of capital.

The study on inventory management in wheels India limited has helped in measuring the efficiency level of the concern inventory management system. The recommendations and suggestions given, if implemented will improve the positions of the inventories in wheels India limited.

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