

Automotive spare parts manufacturing supply chain



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Abstract

This research study is objectively aimed at studying Inventory management in the global supply chain. The case study of an enterprise in the automotive spare parts manufacturing sector is presented to understand important aspects of functioning related to inventory control management in the global supply chain.

The automotive industry has always been a booming industry and continuous to remain the same on a all levels i. e. local, national and global. The supply of automotive components forms a vital link and process in the automotive industry. Many business small, medium-sized and large through inventory management form a part of the global supply chain effectively.

The researcher, proposes to present a case study analysis of Kapoor Automobiles (India), a medium-sized organization of repute and good market standing in the Global supply chain of automotive components. This research would throw light on the inventory management system employed by the organization, its effectiveness, shortcomings and remedial measures taken to fulfill consumer needs, retain them and grow through effective modes of Inventory control in the Global Supply Chain.

The researcher, further proposes to utilize business analytical tools of primary research i. e. qualitative research and quantitative research, secondary research, S. W. O. T analysis (Strength, weakness, opportunity and threats) and P. E. S. T. L. E. analysis (Political, economic, social, technological, legal and environmental) to ascertain the above mentioned objective of the research.

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Introduction:

Kapoor Automobiles (India) was incorporated in the year 1965 in Mumbai (India). In the commencement Kapoor Automobiles (India) functioning in the capacity of a trading company for the sale and purchase of automotive rubber parts. In the year 1990, the business enterprise ventured into manufacturing activities and gradually advanced towards gaining a secure and permanent market position overseas in the automotive rubber parts replacement segment of the market. Kapoor Automobiles (India) succeeded in doing so on account of the provision of high quality services to their growing clientele.

Kapoor Automobiles (India) places a high magnitude of emphasis on high quality and increased productivity to meet the global consumer demand and counter-attack competition. The Research and Development team of Kapoor Automobiles (India) focuses in continuity research on the changing consumer needs and the firm attempts to incorporate those needs in their production activities.

Kapoor Automobiles (India) has been recognized as an organization of international repute by the following certification:

ISO 9001: 2000 Quality Management System Certificate by French giants SGS.

From humble beginnings of a small workshop, Kapoor Automobiles (India) currently has a manufacturing plant with an area of 12000 sq meters with state-of-the-art anti vibration connection technology. Here, assembly elements of rubber-metal composition are manufactured.

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The highlighting aspects of Kapoor Automobiles (India) are as follows:

The organization has a staff of 127 production staff, 12 administrative officials and 2 rubber technicians.

The products of the organization are a varied range of automotive rubber components for vehicles such as Bedford, BMC, BMW, Fiat, Hino, Isuzu, Iveco, Lada, Land Rover, Mazda, Mercedes, Mitsubishi, Nissan, Opel, Peugeot, Renault Toyota, VW, Volvo to name a few for the purpose of exemplification.

Kapoor Automobiles (India) focuses on four major production processes:

- Rubber mixture preparation and Preforming
- Metal forming and Machining
- Metal and pipe surface preparation.
- Vulcanization

Kapoor Automobiles (India) has a clientele spread across the African and European continent and the Middle East.

Aims and Motivations of the Research Study:

The automobile industry is a global industry which is witnessing a high level of growth. The competition in this global industry necessitates a well-coordinated process of supply of the automotive parts to car manufacturers as an when there is a demand for the same. Thereby the need to have good level of inventory management in the global supply chain is of prime importance to meet the demand of the market, help the business to survive and grow in this competitive market.

My motivation and aim of this research study is to comprehend all the aspects which make possible successful inventory control in global supply chain management. My area of research and analysis in this context would lay focus on the automotive parts manufacturing sector.

General Objectives:

This study aims at on a general or basic level understanding Global Supply Chain Management and its significance in today day and age of excessive competition. The objective is also to learn about all the factors which influence inventory control in global supply chain management in a positive and negative way especially the automotive spare parts industry. To gain knowledge about how an improvement in the smooth functioning of global supply chain management can be brought about by a good level of inventory control.

Specific Aims:

This research is specifically aimed at understanding the functions of Kapoor Automobiles (India) with regard to inventory control in global supply chain management. In this regard its current activities, the positive aspects, the shortcomings and how improvisation could be brought about in the process of inventory control of Kapoor Automobiles (India) for global supply chain management.

Research Questions:

This dissertation is aimed at answering the following questions:

- What is Global Chain Supply Management?
- What is inventory control?

- How does Inventory Control in Global Supply Chain Management function in context to the automotive spare parts industry?
- How do firms in the automotive spare parts industry effectively manage inventory control as a part of Global Supply Chain Management?
- Kapoor Automobiles (India)'s strategy of Inventory Control in Global Supply Chain Management?
- How could Kapoor Automobiles (India) improve on their Inventory Control in Global Supply Chain Management and compete better in the overseas market?
- What are the future trends perceived in the Automotive parts Inventory Control in Global Supply Chain Management?

Dissertation Structure:

The structure of this dissertation incorporates the following: Chapter 5 lays focus on the theoretical grounding for the research, reviewing a generous selection of literature on Supply Chain Management, Inventory control, all the aspects necessary to be taken into consideration for successful inventory control, the need of it and Global Supply Chain Management. Furthermore the literature review also brings forth the importance of good inventory control in the global supply chain management of the automotive parts industry. Chapter 6 introduces the method of study to be employed to analyze inventory control in global supply chain management of Kapoor Automobiles (India). Chapter 7 presents the study's findings and discussion which are initially presented in diagrammatic form, then discussed. Chapter 8 will collate the main findings of the study to provide solid conclusions. The

limitations are given, followed by an appraisal of the project's main strengths and weakness. Recommendations for future research are also provided.

Literature Review:

Supply Chain Management:

A Supply Chain Management activity could be understood as the management of materials, vital information and finances as they are channelized from a supplier to the manufacturers then to the wholesaler, retailer and finally the consumer. The activity of supply chain management comprises of skillful coordination and integration of the above aspects within organizations and among them. The final goal of an efficient supply chain management process is to bring about a reduction in stock with the basic ideology that products are available when needed. (Cooper, M. C., Lambert, D. M., & Pagh, J. (1997)

Supply chain management flows can be divided into three main flows which are as follows:

- The product flow
- The information flow
- The finances flow

The product flow constitutes the flow of products or commodities from a supplier to a consumer. The second aspect which is information flow comprises of transmission of orders and updates on status deliveries. The third aspect is the financial flow which comprises of terms of credit, payments, consignment and title ownership arrangements. Supply Chain

Management of different organization differs depending on the size and nature of the organization and the product manufactured. An effective supply chain management ensures process of obtaining supplies and components, conversion of the same in to finished products and making supply of these products to the final consumer. Supply Chain Management is the management of all these aspects aptly without delays and at a low cost fulfilling the needs of the consumer in the process. (Haag, S., Cummings, M., McCubbrey, D., Pinsonneault, A., & Donovan, R. (2006)

There are six key elements to a supply chain: (Ketchen Jr., G., & Hult, T. M. (2006)

1. Production
2. Supply
3. Inventory
4. Location
5. Transportation, and
6. Information

The following describes each of the elements:

1. Production

The needs (Kouvelis, P.; Chambers, C.; Wang, H. (2006) and demands of the consumer is taken into account prior to production. Decisions regarding what to product, how to produce and how many units need to produced are taken. Furthermore, it is also decided upon whether to produce the whole product or certain parts should be outsourced. These vital decision regarding production activities should be made keeping in mind the volume of goods, <https://assignbuster.com/automotive-spare-parts-manufacturing-supply-chain/>

the quality, capacity and the consumer wants and levels of satisfaction.

Decision regarding operational activities should focus on equipment maintenance, scheduling and quality control.

2. Supply

An organization (Larson, P. D. and Halldorsson, A. (2004), cannot produce all the components required for the manufacture of a product and the need to outsource parts arises. The organization should be cautious in the choice it makes of the supplier of components. The focus of the organization while engaging a supplier to supply components should be on quality, flexibility and the development of velocity and at the same time should maintain low costs. In summation, vital decision has to be taken to make the outsourcing partnership or activity a viable one for the manufacture and supply of the final product.

3. Inventory

Important decisions (Lavassani, M. K., Movahedi B., Kumar V. (2008) regarding how much should be stocked in the organization should be taken. A proper balance should be maintained as inventory holding is an important aspect of a good supply chain management process. The consumer demands should be met up without any supply delay and hence optimum level of inventory should be decided upon and place at strategic consumer points to serve the consumer as and when the demand for the product arises. Control policies must be checked upon to maintain right levels of supply at order and reorder points.

4. Location

Strategic decisions (Movahedi B., Kumar V. (2008) regarding location of the production plant, facilities of stocking and distribution should be made to ensure that the consumer avails the product when he demands without any delay. When the parts or components are light in weight and market driven, manufacturing units should be located near the final consumer. In heavy industries, sources of raw materials should be taken in consideration while deciding where the manufacturing plant should be located. Tax and tariff issues should be looked into while making strategic decisions.

5. Transportation

In context (Mentzer, J. T. et al. (2001) to fulfilling consumer demands, decisions related to transportation and inventory are quite closely connected. Utility of air transport is quick but expensive in comparison to water or road transport but makes the product available in a short span of time to the consumer. Water or road transport means being in possession of high levels of in-house stock to meet immediate consumer demands. Depending upon the demand the product generates, the cost of the product and the stock available decision relating to transportation should be made.

6. Information

A (Simchi-Levi D., Kaminsky P., Simchi-levi E. (2007) supply chain management in order to be effective focuses on acquiring information for point of final consumption and connecting the information resources all through the entire chain to bring an effective flow. A good organization of information is required to bring in innovation in operation. Connecting

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computers through networks and having the information flow streamlined helps consolidate knowledge and helps in creating velocity for the products. Account management software, product configurators, enterprise resource planning systems, and global communications are important factors to be considered.

Pragmatic Applications

Today the market scenario (de Kok, A. G., S. C. Graves (Editors) 2003) demands fast delivery of goods. By high levels of stocking, many organizations try to fulfill this market demand. The organizations are at times unable to produce goods as and when the market demands and hence maintains high stocks. If processes are analyzed in the supply chain then the causes and solutions could be found to bring reduction in throughput time. Reducing the time in the chain of events right from the moment the consumer places to the order to the delivery for the same could help a company gain a competitive edge without the need to have large stocks.

Need for an effective Supply Chain Management:

There is a high degree (Stock, J. R., D. M. Lambert. 2001) of competition in the business scenario today which demands that an organization in order to have a competitive advantage should utilize its resources to do what it is good at and indulge in outsourcing those processes that are not significant from an overall objective of the organization. SCM enable an organization to restructure its complete operation focusing on core competencies and outsourcing certain processes which would help the organization gain apt market positioning. Furthermore, is important to make the right decisions of

partners, resources and manpower. The organization should understand which process or pattern could reduce wastages and raise levels of competence.

For the sake of exemplification, the Japanese (Coyle, J. J., E. J. Bardi, C. J. 2002) car industry manufactures small cars by capitalizing on its available resources. The Japanese car industry effectively utilizes supply chain management to maximize core competencies and create niche market positioning. Toyota Motor Corporation, a Japanese company, is stated to be the number one auto car maker overpowering Ford and General Motors of the United States.

Value Advantage

Supply Chain Management (Bowersox, D. J., D. J. Closs, M. B. Cooper. 2002) has made provision for business nowadays to not just have benefits of productivity alone but also on value advantage. Productivity advantage provides a lower cost profile and the value advantage gives the product an extra 'plus' over competitive offerings. Through maximizing added value there is cost reduction and more innovation can be brought to the product and process. Mass manufacturing offers productivity advantage and through mass customization, consumers are given the value advantage. For illustrative purposes, the Toyota Production System practiced in Toyota, evaluates (Ballou, R. H. 2003) its supply chain and determines what is value added activities and what is not value added activities.

Inventory Holding:

Advantages:

The aspect which proves to be an (Silver, E. A., D. F. Pyke, R. Peterson 1998) advantage with regards to high inventory holding is that it acts as a buffer to the company when market demands are high. If prices are expected to rise then high stocking results in capital advantage or gain. The risk of supply shortage is overcome by high inventory. Market shortage of goods is also met with by high inventory.

Disadvantages:

High cost warehouse management is the main disadvantage of having large inventory of finished products. There could be a possible capital loss to the business if the prices fall in the market in future. Cash is bound in carrying stocks and there is a risk of loss on account of degradation, defects and write-offs. Lack of proper management of inventory could lead to losses too. It should be noted that though inventory assists in operations, it is an asset that ties up funds i. e. working capital and the related opportunity cost.

Other disadvantages:

- Stock could be stolen, lost or forgotten
- Might be dangerous to store
- Might involve high cost to store particularly in terms of value.
- There is a possibility of replication or duplication at several different points e. g. retail stores, hospitals, builders, merchants.
- There are additional costs such as administrative and insurance costs

Techniques to purchase stock and manage inventory efficiently

It is vital for any (Blackburn, J. D. 1990) business organization to learn to manage inventory with efficiency thereby making possible a company to stock inventory sufficiently to meet the consumer needs. Lack of sufficient stock leads to delays and causes disrepute to the business. On the contrary, large inventory block organizational funds. A business which is primarily retail makes money only on the sale of stock and maintenance of stocks involves the following costs:

Charges of Interest on any loans taken to buy goods.

- Charges for storage space.
- Transportation costs for stock movement and for its display.
- Cost of time involved in stock management.
- Cost involved in stolen or damaged stocks.
- Payroll expenses.

Substantial amounts of an organization's funds could be blocked in inventory. Apt management of inventory essentially leads to high profits and lower costs.

Purchase the right products

Employ market research to make the identification of right products for the right market.

Analysis of sales charts of previous financial years.

Identify needs of consumers and create those products to satisfy needs.

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Analysis of economy forecast in the periods to come and make a determination of how market would function or react.

Draw comparison between you and your competitors' sales.

Make the right decisions based on experience regarding what to products to buy and at what quantity.

Buying Correct Quantities

In order to meet the varying market demand, it is necessary to maintain the right quantity of inventory. In the process of maintaining the right quantity of inventory care should be taken to not have overstocking of obsolete products. (Gilmore, J. H., B. J. Pine. 2000)

To do this you must:

- Have knowledge of the right product to order
- Order the right quantity of the product
- Have knowledge of the right time to order the product
- Have knowledge of product arrival
- Have knowledge about the right quantity of product to stock during the business cycle
- Have knowledge of when reorders need no submission
- Have knowledge of when products should not be stocked

This knowledge is acquired by analysis and experience:

Ensuring suppliers have market reputations and would supply products in needed quantities.

Making a study of lead times for the purpose of supply and delivery to make possible ordering at the apt time, or determining the delivery time for the consumers is more products have to be ordered.

Overbuying should be avoided just to take advantage of special supplier deals.

Re-check buying plans weekly and amend as needed. If the stock is being sold or being utilized faster than expected, look to source more products as soon as the trend is identified and in existence.

Make a note of required stock levels (minimum, maximum and at the point to re-order).

Success of Inventory Control:

The regular and periodic (Stalk, G., T. H. Hout. 2003) evaluations of key performance indicators in companies help determine the success of an inventory system. The basic group of indicators reveals how well the inventory system fulfills the business needs and does it exceed the customer expectations. The inventory system should have the capability of accounting for that exists at the finished goods inventory with the inclusion of what was manufactured in the latest production cycle. This process makes it possible to bring forward units for consumer orders in at the right time without delays and help companies shorten the lead-time and thus building repute in the process.

An efficient system makes it possible to maintain a good balance between the stock that is in possession and the stock that is required to operate the business efficiently.

Global Supply Chain Management:

For many business (De Geus, A., (1998) organizations, Global Supply Chain Management has become increasingly important as there has been an increase in offshore sourcing and globalization. As global supply chain management involves many countries thereby the issues or difficulties to be tackled are many too. Primarily the overall costs need to be considered. Though labor cost could be minimal, cost of space, tariffs and other costs need to be considered with doing business abroad. The exchange rate (Drucker, P. (1988), rate too needs to be factored. The company's lead-time could positively or negatively affect depending on the productivity of the employees overseas and the shipping time involved. There could be time lags on account of custom clearance time and other governmental red tape. (Gersick, C. J. G. (1991). Supplier selection is also another important aspect of global supply chain management. Extensive research should be carried out by the company to help make the right choice. Logistical issues such as deciding the number of plants and their locations to surface and have to be worked out carefully. (Romanelli, E. and Tushman, M. L. (1994)

Assembler-supplier relationships in the global auto industry

For the last two decades, there has been a change in the relationship between assemblers and suppliers. Initially there has been a shift from supply of individual components to supply of complete function such as “corners”, systems, modules or sub-assemblies.

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(Sadler, D. (1998) a supplier who is first-tier assembles parts and makes a supply of them as complete units (such as dashboards, rear axle assemblies, body panels and seats). Operations earlier carried out in-house by the assembler, such as the manufacture of seats and exhaust systems, are moved on to the first-tier supplier. Second, component producers have taken an further role in the creating design of components and systems (Humphrey, J. and M. Salerno (2000) First-tier component producers assert more involvement with their consumers and have transited to providing ‘ black box’ parts or systems. While the assembler gives overall performance specifications and information about the interface with the remaining aspect of the car, the supplier designs a solution using its own technology, often taking in a basic design to the customer’s specific requirements. 3 This shift has facilitated car assemblers to transfer R & D costs to component manufacturers and to take advantage from the specialized technological skills of these producers.

Conclusion

As supply chains have moved from a cost focus to a customer focus and now currently to a strategic focus, the need to think strategically about the supply chain has never been more important. The success of a strategy is only as good as the company’s ability to fully and properly execute it. A great supply chain strategy, linked with operational excellence, can provide success for not only the company in question but also its partners and customers.

Methodology:

This chapter will essentially focus on the method employed for the conduct of research and analysis. The reasons governing the techniques chosen would be furnished. Furthermore, the chosen method of analysis of data compiled and the ethical consideration therein would be discussed.

Primary Research:

Ethical Considerations:

The researcher is of the conviction that no research should be carried out without attention being paid to the implications which are of ethical nature. On ethical grounds, the researcher presented in all clarity to the participants or volunteers for this research study that the research was purely for academic reasons and the data compiled and analyzed would be utilized for the purpose of Academic projects and would not be in any manner shared with any other individuals other than Academicians evaluating the research conducted nor would the data collected be employed for commercial usage. The researcher provided this indemnification and hence the participants agreed to volunteer vital information regarding Kapoor Automobile's policies of Inventory holding and Global supply chain management.

Furthermore the participants were informed of the fact that no participation fee would be levied or charged.

Face to Face Interviews:

Face to face interviews were conducted with the C. E. O. of Kapoor Automobiles (India) and the Board of Directors of the company to gain an understanding into the overall aspects of the functioning of the organization

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and to also gain information about their modes of Inventory control in their Global Supply Chain Management activities. Information about this was provided in depth and the research succeeded in getting a clear practical picture of their operations. The researcher failed to acquire figurative data relating to inventory control as the C. E. O and the Board of Directors expressed confidentiality issues. The interviews too were conducted in an informal manner as they the participants (C. E. O and Board of Directors) insisted on anonymity and the researcher assured them of the same.

For gaining an understanding of the production process and actual physical inventory control process, rubber technicians and warehouse supervisor of Kapoor Automobiles (India) were interviewed and productive insight was gained by the researcher.

Time and Access:

Limitations emerged in the form of lack of time and access in the case of certain Board of Directors of Kapoor Automobiles. Of the 8 Board of directors, 2 of them could not be accessed as they were overseas to conduct negotiations of Kapoor Automobiles (India) and hence they could not be interviewed. Some of the available Board of Directors could not spare sufficient time of the interviews as they had to attend to the day to day management affairs of the organizations. Though the time they made available was limited, their input were undoubtedly valuable.

The C. E. O. expressed inability to even provide approximations of figurative data citing confidentiality issues and hence the researcher failed to have access to any figurative data whatsoever.

Secondary Research:

The techniques of secondary research employed by the researcher were essentially gaining vital data from the online library provided by Cardiff Business School. This library of the Cardiff Business School was of immense utility as all the theories relating to Inventory Control and Global Supply Chain Management were available in abundance and facilitated a process of ease in understanding and compiling the much required theories and data. The search engines of Mintel and Ebsco proved to be of immense use to the researcher.

Besides the above mentioned source, the researcher referred to several books written by experts in the field of Inventory control and Global Supply Chain Management to acquire multiple perspectives on the area of research and analysis. The information gained was significant and hence employed by the researcher in his research study.

Findings and Analysis:

Introduction:

Employing the primary research techniques, the researcher learnt through face to face interviews of the C. E. O and Board of Directors of Kapoor Automobiles (India) that the organization being medium-sized, financially they are not in a position to have high levels of inventory to meet unforeseen demands of the consumers in the Global Supply Chain Management process. Kapoor Automobiles (India) initially commenced as a very small business outfit carrying out its production, stocking and distribution activities from a very small workshop. Kapoor Automobiles (India) grew successfully over a period of time and now possess a large production and warehousing unit in <https://assignbuster.com/automotive-spare-parts-manufacturing-supply-chain/>

comparison to what they had when the business commenced and this is owing to the fact that business leaders at Kapoor Automobiles (India) formulate the apt strategy to meet demand of consumers spread across the continents of Asia, Europe and the Middle East. Financial constraints necessitate Kapoor Automobiles (India) to follow the Just-in-time inventory management process.

Just-in-time (JIT) could be defined as a strategy of inventory management. This methodology focuses on bringing about an improvement in the firm's return on investment by bring down or reducing the in-process inventory and related carrying costs. Just-In-Time production method is also termed as Toyota Production System. In order to fulfill objectives of Just-In-Time, this inventory management method is reliant on Kanban or signals emerging between different points in the link, which indicate the production department as to when the next batch should be produced.

Initially, Kapoor Automobiles (India) was following this method on account of financial constraints which did not permit holding large inventory but now Kapoor Automobiles (India) prefers this method as the market trend is changing in continuity on account of new technological developments at regular and short intervals and this required constant change in product and the production methods and the other obvious reason as stated by Kapoor Automobiles (India) is the fact that they are yet a medium sized enterprise and would not be in a position to have large inventory.

They further stated that large inventory for the Global Supply Chain Management process could lead to financial losses as the inventory could go

obsolete as the automobile industry is a progressive and booming industry and there is a requirement of constant modification in the spare parts or components utilized for the manufacture of automobiles.

Conclusively, Kapoor Automobiles (India) have stated that Just-In-Time inventory management system helps them reduce the in-process inventory costs and other related costs and hence is the most preferred mode of inventory management. They further state that their organization is in a state of growth in continuity and they objective aim at converting Kapoor Automobiles (India) which is currently a medium sized organization into a large sized organization and when Kapoor Automobiles (India) attains this objective they would continue to function utilizing Just-In-time inventory management system to meet the demands of their clients in the Global Chain as the product features and demands related to it are changing continuously and maintaini