

Implementation of Supply Chain Management in Indian Industry - A Case Study

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ABSTRACT

The aim of this paper is to identify areas for improving the level of supply chain management (SCM) execution and convey how these drivers of SCM may be used on a conceptual work during supply chain design, planning and operation, and operation to improve performance. In present work, efforts have been made to analyze techniques like logistic management, quick customer service, vendor base management, inventory management etc. The key effective to supply chain management is supply chain integration, ensuring that all parts of the supply chain work together, rather than cross purpose. The supplier selection is no more based on factor like having low cost or speed of delivery alone. Productivity and quality have become prerequisite.

Keywords: Supply chain management, Process management, Performance management, Suppliers, Strategic management.

1. INTRODUCTION

Supply chain management (SCM) is the term used to describe the management of the flow of materials, information, and funds across the entire supply chain, from suppliers to component producers to final assemblers to distribution (warehouses and retailers), and ultimately to the consumer. In fact, it often includes after-sales service and returns or recycling. Figure 1.1 is a schematic diagram of a supply chain. In inventory management, which coordinates inventories at multiple locations, SCM typically involves coordination of information and materials among multiple firms. Supply chain management has generated much interest in recent years for a number of reasons. Many managers now realize that actions taken by one member of the chain can influence the profitability of all others in the chain. Firms are increasingly thinking in terms of competing as part of a supply chain against other supply chains, rather than as a single firm against other individual firms. The costs of poor coordination can be extremely high.

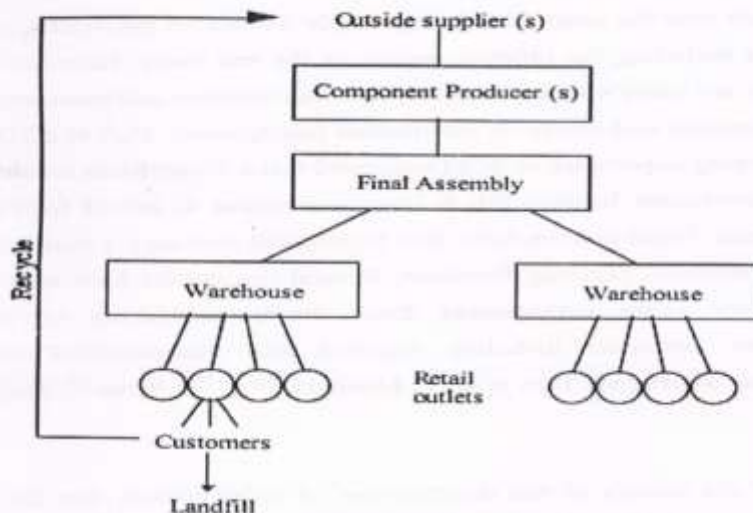


Figure 1.1 A Schematic Diagram of a Supply Chain.

1.1 THE OBJECTIVE OF SCM

These are some main objectives of supply chain,

- To reduce the physical supply chain links
- To define supply chain responsibility to core service competency
- To decrease the time and cost of getting end user product in required quantity the place of requirement.
- Efficiency & Cost Effectiveness across the entire Chain SCM objective is maximize the overall value generated.
- All flows of information, product or funds generates costs within the supply chain.
- Supply chain management involves the management of flows between and among stages in a supply chain to maximize total supply chain profitability etc.

1.2 DRIVER OF SUPPLY CHAIN PERFORMANCE

To improve supply chain performance in terms of responsiveness and efficiency, we must examine the logistical and cross-functional drivers of supply chain performance: facilities, inventory, transportation, information, sourcing, and pricing[6].

Facilities: - are the actual physical locations in the supply chain network where product is stored, assembled, or fabricated. The two major types of facilities are production sites and storage sites.

Inventory: - encompasses all raw materials, work in process, and finished good within a supply chain. Changing inventory policies can dramatically alter the supply chain's efficiency and responsiveness[10].

Transportation: - entails moving inventory from point to point in the chain.

Information: - consists of data and analysis concerning facilities, inventors, transportation, costs, prices, and customers throughout the supply chain.

Sourcing: It is the choice of who will perform a particular supply chain activity such as production, storage, transportation, or the management of information.

Pricing: - determines how much a firm will charge for goods and services that it makes available in the supply chain.

1.3 THE ROLE OF IT IN A SUPPLY CHAIN

Information is a key supply chain driver because it serves as the glue that allows the other supply chain drivers to work together with the goal of creating an integrated, coordinated supply chain. Information is crucial to supply chain performance because it provides the foundation on which supply chain processes execute transactions and managers make decisions[11]. IT consists of the hardware, software, and people throughout a supply chain that gather, analyze, and execute upon information. IT serves as the eyes and ears (and sometimes a portion of the brain) of management in a supply chain, capturing and analyzing the information necessary to make a go decision.

1.4 SCM PROBLEMS

Problems identified in supply chain are Total Productive Maintenance (TPM), customer complaints, proper utilization of space, inventory control, employees efficiency and satisfaction, communication gap between customer and unit etc. Inventory Management: Quantity and location of inventory, including raw materials, work-in-progress (WIP) and finished goods. Cash-Flow: Arranging the payment terms and methodologies for exchanging funds across entities within the supply chain. Supply chain execution means managing and coordinating the movement of materials, information and funds across the supply chain.

2. LITERATURE REVIEW

In this chapter, a brief review of supply chain management and global supply chain management is discussed from various articles published in literature. The problem solving technique is discussed in India and other country by using supply chain management concept that has been stated by survey and review of literature.

2.1 Literature Review given Prior to 1990

It seems that integration, long the dream of management gurus, has finally been sinking into the minds of western managers. Some would argue that managers have long been interested in integration, but the lack of information technology made it impossible to implement a more "systems oriented" approach. Clearly industrial dynamics researchers dating back to the 1950's (**Forrester**,[1]) have maintained that supply chains should be viewed as an integrated system. With the recent explosion of inexpensive information technology, it seems only natural that business would become more supply chain focused. However, while technology is clearly an enabler of integration, it alone cannot explain the radical organizational changes in both individual firms and whole industries. **Dalkey, N. C.**[2, 3], The Delphi technique is a widely used and accepted method for gathering data from respondents within their domain of expertise.

2.2 Literature Review given between 1990 to 1995

Hammond,[4], The costs of poor coordination can be extremely high. In the Italian pasta industry, consumer demand is quite steady throughout the year. However, because of trade promotions, volume discounts, long lead times, fill truckload discounts, and end of quarter sales incentives the orders seen at the manufacturers are highly variable **Altschuld** [5] determines that in most instances, two iterations were enough to obtain a good estimate of the distribution and consensus view of candidates and often not enough new information was gained to warrant the cost of more rounds. Due to the time frame of this study, the scope of this thesis is limited to the initial, most elaborate, iteration. According to **Christensen, C. M.** [6],The Drivers of Vertical Disintegration. To improve supply chain performance in terms of responsiveness and efficiency, we must examine the logistical and cross-functional drivers of supply chain performance: facilities, inventory, transportation, information, sourcing, and pricing. These drivers interact with each other to determine the supply chain's performance in terms of responsiveness and efficiency.

2.3 Literature Review given after 1996

E. Ziglio, M. Adler[7], "The Delphi Method and its Contribution to Decision-Making", Combined technique to solve the Supply Chain Management Case Study of an Indian Manufacturing Industry. Here we use Delphi technique and Logistics process with the help of some Quality tools to represents the data by charts or graphs etc. The effect is that these increases and decreases are exaggerated up the supply chain. Risk consequences are the focused supply chain outcome variables like costs or quality, i.e. the different forms in which the variance becomes manifest, and the Bullwhip Effect in Supply Chains by **Lee, H. N.C Dalkey** [8].**Simchi-leviet. al.**[9] Supply chain management is a set of approaches utilized to efficiently integrate suppliers, manufacturers, warehouses and stores, so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time, in order to minimize system wide cost while satisfying service level requirements.

Henningsen [12], Brainstorming is a group or individual creativity technique by which efforts are made to find a conclusion for a specific problem by gathering a list of ideas spontaneously contributed by its member(s).

Vivek Nagarajan[18], Logistics involves the integration of information, transportation, inventory, warehousing, material handling, and packaging, and occasionally security. Logistics is a channel of the supply chain which adds the value of time and place utility.

3. CASE STUDY

3.1 METHODOLOGY

In this case study, we use Delphi Technique , logistical processes and some statistical quality tools just like as charts, brainstorming, Pareto Diagram , Histogram etc. The Delphi technique is a widely used and accepted method for gathering data from respondents within their domain of expertise. The Delphi technique is well suited as a method for consensus-building by using a series of questionnaires delivered using multiple iterations to collect data from a panel of selected subjects. Subject selection, time frames for conducting and completing a study, the possibility of low response rates, and unintentionally guiding feedback from the respondent group are areas which should be considered when designing and implementing a Delphi study[2,3].

3.1.1The Delphi Process

Theoretically, the Delphi process can be continuously iterated until consensus is determined to have been achieved[7].

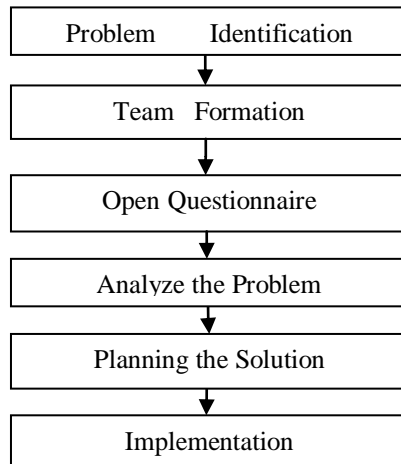


Fig. 3.1: Flow Chart of Delphi Technique

Round 1: In the first round, the Delphi process traditionally begins with Problem Identification. Main problems are identified in supply chain. Problems are found in Total Productive Maintenance (TPM), customer complaints, proper utilization of space, inventory control, employees efficiency and satisfaction, communication gap between customer and unit etc.

Round 2: After problem identification, Team formation (10-12) is done in Delphi process which are related with problems.

Round 3: The open-ended questionnaire/interviews serves as the corner stone of soliciting specific information about a content area from the Delphi subjects. After receiving subjects' responses, investigators need to convert the collected information into a well-structured questionnaire. This questionnaire is used as the survey instrument for the forth round of analyse the problems. The use of a Delphi process is appropriate if basic information concerning the target issue is available and usable.

Round 4: In the forth round, each Delphi participant receives a second questionnaire and is asked to review the problems summarized by the investigators based on the information provided in the earlier round. Accordingly, Delphi panelists may be required to rate or "rank-order problems to establish preliminary priorities among problems. As a result of earlier round, areas of disagreement and agreement are identified"). In some cases, Delphi panelists are asked to state the rationale concerning rating priorities among problems. After the questionnaire and discussion Delphi panelists analyze the problems.

Round 5: In the fifth round, each Delphi panelist finalized the solution of problems. The solution provides by the Delphi panelists are continuous maintenance of machines are done which avoid breakdowns that improves Total Productive Maintenance (TPM), Customer complaints are reduced by providing special training and awareness programs to the inspector, Proper utilization of space is done which helps in increase the store area for inventory and other usage, inventory is done properly by increasing store area and FIFO (First In First Out) is properly implemented, employees efficiency and satisfaction are improved by providing training program and economically and moral support to employees at regular interval, communication gap between customer and unit is reduced by taking feedback survey from customer. This round gives Delphi panelists an opportunity to make further clarifications of both the information and their judgments of the relative importance of the problems.

Round 6: In the sixth round and often final round, the solution of the above problems are suggested to implement in the future in the plant which improves the productivity, customer satisfaction, inventory control, Improving Overall Equiped effectiveness (OEE), overall cost reduction of production cost, Improving Quality rate, Performance rate Improving, Improving Availability, sales turnover increased of unit.

3.2 SCM TARGETS

Taking the Objectives in to consideration, we have set the following targets as shown below:

A) TARGET TABLE

Description of target parameters		Units	Bench mark	Target
Main	Subordinate			August 2016
1.0 – Profit	Increase in profit amount	Millions of Rupees	125 (Year 2014-15)	133.9
2.0 – Sales Turnover	Increase in sales turnover	Millions of Rupees	2500 (Year 2014-15)	2575
3.0 – Productivity	Increase in plant labour productivity	Millions of Rupees	11.4	11.8
4.0 – Quality	Reduction in customer complaints	Number per month	19 (April-June 2015)	0.0
5.0 – Cost	Decrease in production cost	% of sales	77.4	74.3

B) GRAPH USED TO SHOW PROFIT AND COST

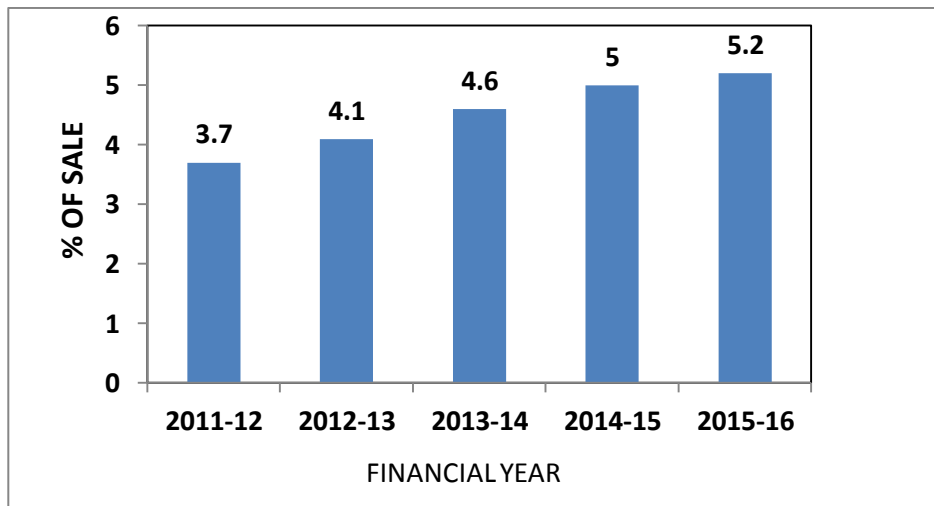


Figure 3.2: Operating Profit Rate

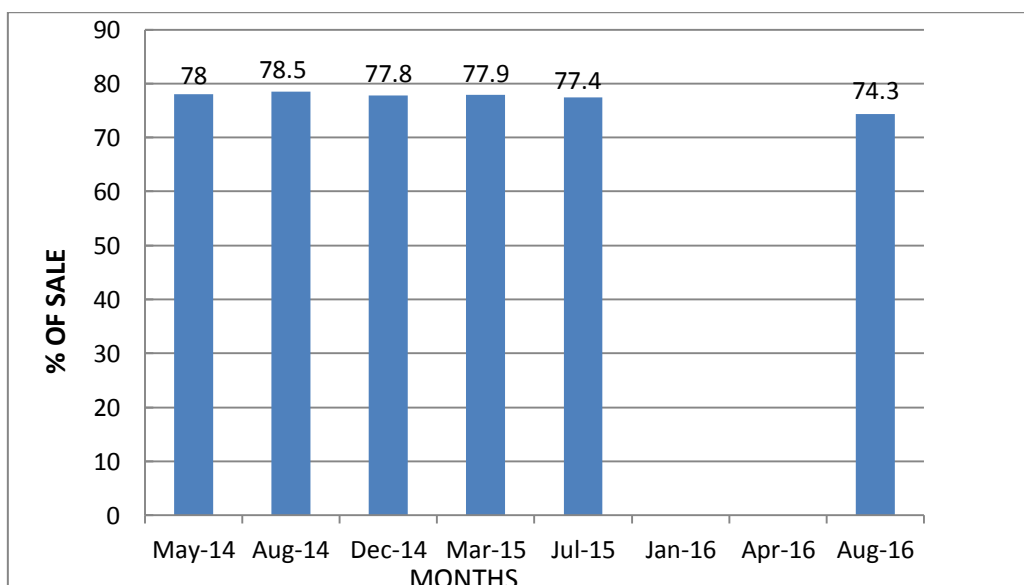


Figure 3.3: Production cost

3.3 OBSERVATIONS

- Company not providing training to its employees, so training should be provided by the company to its entire employees.
- Area of the finished goodstore is not so big; sometimes it creates problems in continuous supply of finished product. So company should increase its store floor area so that inventory can be made of 1-2 days and help in continuous supply of product in case of emergency.
- Generally company is using 4-5 days inventory of raw material that require more floor area and also increase the overall cost of final product. So, company should minimized inventory to 2-3 days.
- FIFO(First In First Out) is not properly implemented in store. So, FIFO should be well implemented.
- Economically and Moral support should be provided to the staff to improve their efficiency.
- Continuous TPM (Total Productive Maintenance) of machines to avoid breakdowns which improve overall productivity of plant.

3.4 RESULTS AND DISCUSSION

3.4.1 SUMMARY OF WORK DONE

Tangible results achieved:

- Improving Overall Equiped effectiveness (OEE).
- Increase in plant productivity.
- Performance rate Improving.
- Inventory control.
- Improving profit of the group.
- Decrease in production cost.
- Improving Quality rate.
- Improving Availability.
- Improving sales turnover.
- Improving delivery rate
- Reducing customer complaints

3.4.2 LIMITATION OF PRESENT WORK

The work performed in this dissertation has following limitation:

The company didn't provide authentic written documents/data. So all information is verbally collected. So the result outcome is not so accurate.

3.5 CONCLUSIONS & SUGGESTIONS FOR FUTURE WORK

3.5.1 CONCLUSION

The success of SCM at this strategic level requires considerably more integration with other enterprise systems. Since many business targets and performance indicators are established in the budgeting process, efficiency demands that the planning, budgeting, sales and marketing, and SCM systems talk with one another. Among the key features in best of breed SCM solutions are:

- Optimization tools to help identify the realistic solutions that best fit the company's criteria.
- Modeling capability to allow creation of realistic models of your business.
- Collaboration tools to support business partner involvement.
- Analytics to evaluate and report performance relative to key performance indicators.

3.5.2 SUGGESTIONS FOR FURTHER RESEARCH

The primary recommendation of this study is to perform a Delphi and Logistic Process based interview round. This would include the development of a questionnaire with multiple choice questions based on the coordination approaches Controlled feedback and a second round iteration would also allow creating higher level consensus among respondents and refining requirements and obstacles necessary to achieve external coordination. Research in this area would include identifying a set of requirements, issues, and obstacles for building the supply network. A detailed framework from these findings would help the supply chain manager determine for which products and situations the supply network arrangement would make strategic and financial sense. A number of coordination structures required for such close

coordination, specifically in the separate legal approach, are not rigorously analyzed in their viability under the current legal system and business law at present.

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