

Effective Logistics Management Strategies in Bicycle Industry

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Abstract

The objective of this paper is to identify how the bicycle manufacturing organizations achieve a better logistics management strategy. Logistics management in many industries has been successful for achievement of cost reduction and increasing the overall effectiveness and hence the productivity of manufacturing. An attempt has been made to evaluate the activities to improve logistics management practices. The paper also analyses the factors responsible for achievement of cost reduction in bicycle manufacturing organisations.

Key Words

Logistics Management, Bicycle Industry, Logistics Strategy

INTRODUCTION

India is the second largest bicycle producer of the world. The size of the Indian bicycle industry stands at 1.5-billion USD. Today, Indian bicycle industry is well-accepted and is also widely recognized for its quality standards in the international market. There is a significant scope for export of Indian bicycles, bicycle spare parts and bicycle accessories. The bicycle industry of India, which posted double-digit growth rates for the past few years, recently hit hard due to the jump in steel prices as well as the increasing competition from Chinese bicycles in the world market. Thus, the industry is facing tough challenges marked by rising steel and input costs, poor supply chain, declining market share, reduced profitability etc. Moreover, the customers' demand for better transportation performance and on-time delivery performance has increased. The organisations can improve return on

investment by reducing cost or increasing sale. The manufacturer's choices to use suitable marketing strategies to earn profits seem to be exhausted. Not only costs and performance need to be managed, but also a plurality of other, often conflicting objectives, such as risk mitigation, sustainability and innovation (Handfield Robert *et al.*, 2013). However, logistics cost remains one of the most important goals.

In light of the above and the increased cost of raw materials, a better management of logistics function is expected to ensure reduction in overall cost of operation. The efficient management of logistics functions is of utmost importance in any business organization. The importance lies in the fact that any significant contribution made by the manufacturer in reducing material cost will go a long way in improving the profit and the rate of return on investment. The organisation profit margin reflects management's ability to control costs in relation to revenue. To compete at the supply chain level, manufacturers must adopt a supply chain management strategy. Such a strategy requires integration and coordination of key external processes such as purchasing, selling, and logistics with supply chain partners (Green Kenneth W. *et al.*, 2008). Stavroulaki *et al.* (2010) emphasized the need for alignment between the key aspects of a product and its supply chain processes and highlighted the link between supply chain processes and supply chain strategy.

CONCEPTUAL FRAMEWORK

Logistics management is a supply chain management component that is used to meet customer demands through the planning, control and implementation of the effective movement and storage of related information, goods and services from point of origin to destination. Springinkle and Wallenburg (2012) examined effective working relationships and achieved integration between the production and logistics functions regarding their performance impacts and their antecedents. Logistics management helps organisations to reduce expenses and enhance customer service. Logistics encompasses the total flow of materials, from acquisition of the raw materials and purchased component parts, to delivery of a finished product to the customer. Generally speaking, the cost of logistics occupies 5-35% of the sales amount that constitutes an important item in cost of business. Therefore, the logistics has always played an important role in the business.

For a long time, logistics management was regarded as a routine function. But over the years, with accelerating economic, technological, social and environment changes, this function has become more important, more complex and more professional. Singh Rajeev and Nagraj Suneetha (2011) in their paper explained that scientific approach enabled by the technology is a better way to tackle the challenges.

The challenges that need to be addressed for an efficient and effective supply chain are managing variety proliferation, aligning to the emergence of new channels and managing the challenges of reach.

In broad sense, Logistics management is regarded as a key business function that involves the integration of information, transportation, inventory, warehousing, material-handling, supply/ demand planning and packaging of materials in an optimum manner so as to provide a pre-decided service to the customer at a minimum cost. Logistics deals with the flow and storage of goods and related information, as defined by the Council of Logistics Management.

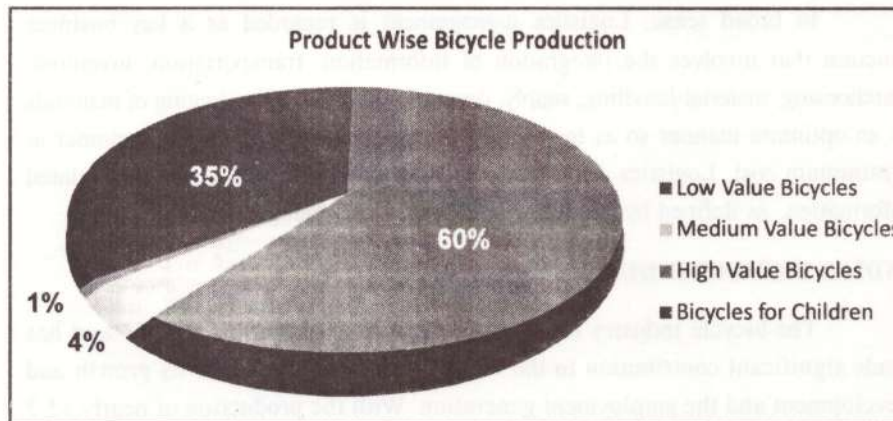
INDIAN BICYCLE INDUSTRY

The bicycle industry in India has been in existence since 1951 and has made significant contribution to the Indian economy in terms of its growth and development and the employment generation. With the production of nearly 15.5 million (TERI, 2014) bicycles in 2012-13, the bicycle industry is one of the established industries in India. The industry has been witnessing a slow growth in the demand for bicycles. The domestic demand of bicycles has been growing at a very moderate growth rate of 6% per annum. The demand in the domestic market is concentrated primarily in the entry-level/low value standard bicycles and children segments, and is highly price sensitive. The industry caters primarily to the domestic market and exports a very small share of about 5% to 7% of its annual production, primarily to the developing countries in Africa and South Asia. These exports, however, are also predominantly in the low-value product/standard segment and face stiff competition from bicycles manufactured in China. The domestic market is also starting to witness a competition from imported products in all segments and the industry faces real challenges in terms of improving both its cost and quality competitiveness in order to survive successfully in the future.

The bicycle industry in India has a two-tier structure, wherein the bicycle parts and components are manufactured in the small-scale sector, complete bicycles are manufactured by large scale organizations belonging to the organised sector.

Ludhiana is the hub for bicycle manufacturing in India with more than 40,000 cycles per day being manufactured (TERI 2014, OPCMA website and ASSOCHAM, 2014). There has been a moderately average annual growth of 4% in bicycle production in the last five years. An important aspect of bicycle production capacity in India is the dominance of entry level/ low-value bicycles (i.e., bicycles

having BDP< Rs 3,000), which constitute nearly 60% of the total production, followed by bicycles for children (35%), medium value bicycles (Rs 3,000-6,000) which account for 4%, and high value models (>Rs 6,000) which are less than 1%.



Source : TERI (2014) Pedalling towards a Greener India. A report on promoting Cycling in the Country, The Energy and Resources institute, New Delhi.

RATIONALE OF STUDY

The research on logistics management is carried out for formulating strategies for efficient and smooth running of business affairs. The logistics management helps to maintain continuity of supply, preventing interruption of the flow of materials and services to users. If a manufacturer has no stock of goods at all and receives a sale order, he has to place an order for purchase of raw material, wait for their receipt and then start his production. Thus, the customer will have to wait for long time for the delivery of goods and may turn to other suppliers. Mathematically, the problem of maintaining the inventory arises due to the affect that if a person decides to have a large stock, his holding cost increases, but his shortage cost and set-up cost decrease. On the other hand, if he has small stock, his holding cost decreases, but shortage cost and set-up cost increases. Thus, it becomes necessary to have a compromise between over stocking and under stocking by making optimum decisions by controlling value of some variable. The effective handling of all the components of logistics management process is necessary in order to improve the soundness of manufacturing concerns and to reciprocate improvement in profit and profitability.

OBJECTIVES OF STUDY

The main objectives of the study are -

1. To evaluate the activities to improve Logistics Management Strategy in Bicycle manufacturing organizations under study.
2. To study the factors responsible for achievement of cost reduction in Bicycle manufacturing organizations under study.

RESEARCH METHODOLOGY

In order to make meaningful research, a suitable methodology has to be adopted. Both the primary and secondary data has been collected for the purpose of study. The primary data has been collected with the help of the structured questionnaire and conducting interviews with employees of the concerned department of companies under study. The secondary data is collected from the records available with manufacturing units, corporate offices, annual reports, monthly and annual plan charts, magazines, research journals, books, publications, studies and articles. The population for the study comprises complete bicycle manufacturing firms operating in Punjab. The bicycle industry includes both the organized and unorganized sectors. The Indian bicycle market comprises four major players, out of which two are situated in Punjab. The ten bicycle manufacturing companies situated in Punjab are selected for carrying out the research study. The two organized manufacturing houses Hero cycles and Avon Cycles are included and the rest organisations are selected from unorganized sector, so as to provide representation to both the sectors. The organisations included from unorganised sector are Seth Industrial Corporation, S. K Bike Pvt. Ltd, Eastman Industries Limited, Kohinoor Cycle Pvt. Ltd, Jindal Fine Industries, Ravi Industries, Vishal Cycles Pvt. Ltd and Partap Engineers.

The basis for choosing Punjab for carrying out research is due to concentration of more bicycle manufacturing organisations in the state. Hero cycles, the largest bicycle manufacturing organization is based at Ludhiana. Ludhiana is hub for bicycle manufacturing in India, producing more than 40000 bicycles per day. There are not many units producing complete bicycle, thus an in-depth analysis of selected organizations could, overall, present the clear view about the logistics management practices followed in the industry. The data has been analyzed using suitable statistical techniques like mean, standard deviation, coefficient of variance etc.

ANALYSIS

In order to frame the suitable strategies to improve the logistics management practices among bicycle industry, the research study was carried out. The respondents' priority and preferences to various variables is analysed using percentages, mean, S.D techniques, which is presented in the Tables given below.

Table 1
Activities in Order to Improve Logistics Management

| S. No. | Activities | Mean | Std. Deviation | One Way ANOVA | | |
|--------|----------------------------------|--------|----------------|---------------------------------|--------|------|
| | | | | Between Groups | F | Sig |
| 1. | Close Partnership with Suppliers | 3.9524 | 0.21424 | Between Groups Within Groups | 7.439 | .000 |
| 2. | Close Partnership with Customers | 3.9524 | 0.21424 | Between Groups Within Groups | 7.439 | .000 |
| 3. | JIT Purchasing | 3.7619 | 0.42848 | Between Groups Within Groups | 23.101 | .000 |
| 4. | Outsourcing | 2.1190 | 1.01084 | Between Groups Within Groups | 46.685 | .000 |
| 5. | Third Party Logistics | 0.4524 | 0.73476 | Between Groups Within Groups | 14.950 | .000 |
| 6. | Few Suppliers | 3.5952 | 0.49379 | Between Groups Within Groups | 33.378 | .000 |
| 7. | Vertical Integration | 2.2857 | 0.45447 | Between Groups Within Groups | 50.508 | .000 |
| 8. | Holding Safety Stock | 3.8095 | 0.39504 | Between Groups Within Groups | 18.402 | .000 |
| 9. | Use of External Consultants | 0.7381 | 1.09895 | Between Groups Within Groups | 89.894 | .000 |

Table 1 presents the analysis of the various activities in order to improve logistics management practices. The analysis indicates that the organizations give preference to maintain close partnership with suppliers (avg. mean 3.9524) and customers (avg. mean 3.9524) followed by holding safety stock (avg. mean 3.8095), JIT purchasing (avg. mean 3.7619), few suppliers (avg. mean 3.5952). The activities

like vertical integration (avg. mean 2.2857), outsourcing (avg. mean 2.1190), use of external consultant (avg. mean.7381) and third party logistics (avg. mean.4524) are given least priority.

Further, the analysis of variance indicates that F value for Close Partnership with Suppliers (7.439), Close Partnership with Customers (7.439), JIT Purchasing (23.101), Outsourcing (46.685), Third Party Logistics (14.950), Few Suppliers (33.378), Vertical Integration (50.508), Holding Safety Stock (18.402), Use of External Consultants (89.894) which is significant $p(<.05)$, implying that groups are significantly different from one another with respect to the different activities.

Table 2
Factors Influencing Cost Reduction Objective

| S. No. | Activities | Mean | Std. Deviation | One Way ANOVA | | |
|--------|-------------------------------------|--------|----------------|---------------------------------|---------|------|
| | | | | Between Groups | F | Sig |
| 1. | Reducing Logistics Expenses | 3.5476 | .79766 | Between Groups Within Groups | 208.884 | .000 |
| 2. | Reducing Direct Material Expenses | 2.0238 | 1.51281 | Between Groups Within Groups | 37.714 | .000 |
| 3. | Reducing Indirect Material Expenses | 1.7143 | 1.35834 | Between Groups Within Groups | 36.748 | .000 |
| 4. | Reducing Rework/Rejection | 1.1905 | 1.12449 | Between Groups Within Groups | 118.681 | .000 |

Table 2 presents the analysis of factors responsible for achievement of cost reduction objective in bicycle manufacturing organizations. The analysis presents that reducing logistics expenses (avg. mean 3.5476) has been greatly considered by the respondents as a factor responsible for achievement of cost reduction objective in bicycle manufacturing organizations under study. The other factors like reducing direct material expenses (avg. mean 2.0238), reducing indirect material expenses (avg. mean 1.7143) and reducing rework/rejection (avg. mean 1.1905) are comparatively least preferred.

Further, the analysis of variance indicates the F value for Reducing Logistics Expenses (208.884), Reducing Direct Material Expenses (37.714), Reducing Indirect Material Expenses (36.748) and Reducing Rework/Rejection (118.681) implying that groups are significantly different from one another with respect to the factors responsible for achievement for cost reduction objective.

CONCLUSION AND SUGGESTIONS

Logistics has been performed since the beginning of civilization. The implementation of best practices of logistics has become one of the most challenging operational areas of bicycle manufacturing organisations. The study is conducted to understand the importance of logistics management strategy. The analysis indicates that the Bicycle manufacturing organizations prefer to maintain close partnership with suppliers & customers, holding safety stock, JIT purchasing and linkages with few suppliers.

We suggest that the organizations should prefer to maintain close partnership with suppliers & customers and focus on a few supplier strategy which make organisations improve the purchase quantity to enjoy the preferential price, and at the same time, can keep buyers and sellers of the credit relations. Safety stock is required to be maintained by companies to ensure that they have sufficient quantities of material in stock. The safety stock provides coverage for unexpected customer demand and damages in the warehouse. Whatever method is used to calculate safety stock, it should be monitored periodically to ensure that it is accurate and satisfy the need it is intended for. The marketers can focus on Just-in-time (JIT) purchasing as it helps in reducing inventory and increasing the overall effectiveness of purchasing function and hence the productivity of manufacturing. Cost reduction plays a major role in the current competitive market. An appropriate logistics system has to be evolved for cost reduction in Bicycle manufacturing organisations. Therefore, the Bicycle manufacturing organizations could redefine and improve their logistics management strategy accordingly.

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