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Benchmarking Study for Rubber-Based Indian Automotive Industry (Tier 1) Supply Chain

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Abstract – The present study was aimed at understanding and logically benchmarking the various factors which affect the supply chain management system in the automobile industry especially the rubber sector. The benchmarking was done so as to bring across the various factors which influence the functioning of the automobile companies, so as the areas of improvement could be brought to light. The study specifically focused on the relation of rubber sector and the supply chain, as the products from rubber sector make up significant proportion of the vehicular parts. The supply from the rubber sector was seen to come from two different categories, that is, the tyre sector and the non tyre sector. The tyre sector presents itself as an organized sector upto some extent, but still lacks the advance technologies and the research aimed towards instilling novel material and methods of tyre production. The non-tyre industry posed higher degree of challenges pertaining to its unorganized nature, primitive technology and low cost input. Hence, the benchmark associated with the rubber sector included the challenges posed especially by the non-tyre sector The Tier 1 companies cater to a large proportion of supply of rubber parts, hence the production lines are manage quality standards upto some extent, but they exist in small numbers and thus more such quality level suppliers and manufacturers are required.

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1.1 BACKGROUND OF STUDY

1.1.1 Overview of Automobile Industry in India with special reference to Rubber Sector

India is the sixth largest producer of automobiles in the world, and churned out 24 million vehicles in 2016 alone. The sector can be divided into four wheelers (passenger and commercial vehicles with a market share of 14% and 3% respectively), three wheelers (market share of 3%), and two wheelers (market share of 80%). India also presents itself as the fifth largest passenger and commercial vehicle market in the world. At domestic level, the automotive industry in India employees about 19 million people, and accounts for 7.1% of country's GDP. The country also has largest clusters of automobile industry located in Delhi, Gurgaon, Faridabad in the north, Mumbai, Pune, Nashik, Aurangabad in the west, Chennai, Bengaluru and Hosur in the south and Jamshedpur-Kolkata in the east (Government of India 2016). Due to the delicensing of FDI in 1993 the automotive industry has seen significant growth, leading it towards new and better technologies and alignment with the global developments. This industry acts as the major driver of country's economic growth as it influences and affects other sectors of the economy from whom the raw materials and finished parts are procured for the automobiles, resulting in development of a parallel Auto Component Industry.

The Auto Component Industry includes a wide range of industries such as iron and alloy steel, oil and grease, fabrication tool, plastics, rubber and many more, and accounts for 2.1% of the GDP output of the country (ASA & Associates 2015). The rubber industry forms an integral part of the assembling process of an automobile as a wide range of rubber products are installed in the vehicle. The three categories or forms of rubber which are employed in production are natural, synthetic and reclaimed rubber, with India being the third largest producer and fourth largest consumer of rubber around the world (synthetic and natural). The automobile industry is the largest consumer of natural rubber, and the usage can be categorized into tyre and non-tyre sectors. The tyre sector includes all the different types of tyres used in automobiles, whereas the non-tyre sector involves technologically and capitally primitive products of small scale production (KPMG 2007).

The various non-tyre products include brakes, chassis, fuel seals, fuel cell gaskets, HVAC parts and others. The tyre sector in India was involved in production of an estimated 125 million tyres during the year 2013, with 51 functional tyre factories around

the company, producing tyres for 39 auto companies (ICRA Management Consulting Services Limited 2013). The non-tyre industry of India includes around 6000 manufacturing units among which many are unregistered and are distributed across the country. This sector majorly includes the micro, small, and medium enterprises, with highest production reported from Kerala. It consumes all the three types of rubbers, constituting one third of the total rubber consumption. The annual turnover of this sector was about Rs. 32,000 crores during the year 2014-15 (Rubber Skill Development Council 2016).

1.2 NEED FOR THE STUDY

The automobile industry and the auto-component industry run parallel to each other, however the growth rate and scenarios of both the industries are different. On one hand where the automobile industry is showing healthy growth rate, the auto-component industry does not seem to fulfill its potential due to challenges such as labour skills, production costs, availability of resources and certain government policies (Borgave & Chaudhari 2010). The products from the rubber industry form an important aspect of the supply chain in the automotive industry, as the tyre and non-tyre industrial products. The segregation of the rubber industry makes the supply chain more complex and subject to influence from the various factors which affect both the categories individually. The industry requires establishment of standards of quality control and assurance and better technologies, which can help in controlling costs as well as quality. Consequently, a research study is needed to illuminate the possible areas of concern and improvement within this sector.

1.3 AIMS AND OBJECTIVES OF THE STUDY

Aim: The current paper aims at benchmarking the existing issues and challenges of the (Tier 1) supply chain of the Rubber sector of the Indian Automotive Industry.

Objectives:

- To understand the dynamics related to the supply chain management of automotive industries with respect to the rubber sector.
- To prepare a benchmark report efficiently determining the associated challenges and thereby bringing out the area of improvement and growth within the supply chain.

1.4 LITERATURE REVIEW

1.4.1 Overview of Supply chain management of Automobile industry

Supply Chain is the essence of any business process as it involves with all the spheres from the procurement of the raw materials to the final delivery of the product or service to the consumer, thereby an efficient supply chain management system is important to ensure the error free delivery to the consumer, manage long term company growth besides reaping maximum profit and gain from the business along with handling short term volatility (Shivaraman et al. 2013). The automotive industry is largely dependent on the auto component industry for obtaining the various automotive parts. The auto-component industry is characterized with the presence of a large number of industries which are involved in the production. There are about 6400 manufacturers out of which only 6% are organized, rest are unorganized industries operating at small scale. The Tier 1 suppliers involved in the Indian automobile industry include the players operating at global level such as TVS-Sundaram Group of Companies, Shriram Group, Bharat Forge, Bharat Gears, and Rane. These large manufacturers enjoy the privilege of receiving direct orders from the automobile industries, and thus succeed in recovering the costs, whereas the Tier 2 and 3 manufacturers cannot reap the same cost benefits. The other challenges associated with supply chain globally also faced by the Tier 1 manufacturers are cost containment, risk management, visibility, globalization and increasing customer demands (Butner 2010). Hence, the production units which are cost effective, aligned with latest methods and technology, and reduced lead time are required so as to ensure the competition survival at the global level (Babu 2012).

Several original equipment manufacturers such as Mahindra, Bajaj, Hero and TATA motors of Indian origin have also started setting up production units in the international markets, creating significant opportunities of globalization (Philip 2015). In recent years, due to increasing competition and consumer demands the supply chains have seen a shift from reducing the operational costs and inventory levels to improving customer service and speedy delivery of products to the markets, which has somehow compromised the proper management of the supply chain and increased pressure on the manufacturing units (Malik et al. 2011).

1.4.2 Benchmarking the issues and challenges in the Rubber sector of Automobile industry

The Indian Rubber sector supplying to the Automobile industry is organized and established with respect to a supply chain system, between the Original Equipment Manufacturers and the rubber parts suppliers (Tier 1, 2 and 3). Although the automobile related rubber industries have contributed significantly towards the country's GDP, several issues with respect to the organization and operations of the supply chain system exists within the sector. As seen in Table 1, the existing supply chain in this sector has several issues, mainly cost related problems, problems with respect to the Indian Government, problems of Quality Control of the products, issues of procurement and raw materials and also labour skills levels.

Trends Impacting the Industry	References
High cost on logistics • Lack of specialized integrated firms • Lack of effective technology • Inadequacy of infrastructure	Bhattacharya et al. (2014); Rubber Skill Development Council (2016); Mohanakumar (2014)
Government Policies	Bhattacharya et al. (2014; Rubber Skill Development Council (2016); Mohanakumar (2014)
Cost advantage	Bhattacharya et al. (2014)
Buyer supplier relationship	Bhattacharya et al. (2014)
Quality Control challenged due to supply complexities	Bhattacharya et al. (2014)
Sourcing of raw materials	Bhattacharya et al. (2014); Rubber Skill Development Council (2016)
Largely Unorganized Nature of Non-tyre Sector	Rubber Skill Development Council (2016); Mohanakumar (2014); Saranga (2011)
Lack of skill of the workers	Rubber Skill Development Council (2016); Mohanakumar (2014)
Small capital	Mohanakumar (2014)

Table 1: Issues and challenges present in the supply chain of Rubber-based Indian Automobile Industry

With respect to logistics, the major problems were found to be lack of infrastructure and effective technology. The rubber industries in India are mainly small and medium sized industries that are unable to access latest technology or infrastructure, due to lack of adequate capital (Mohanakumar 2014). Furthermore, the problem of outdated technology can also be seen to affect the entire process of supply chain management within the automobile industry, from communications to updating information on movement of goods and warehousing. Another major issue plaguing the rubber sector in India is the cost advantage, which is due to two reasons, increasing cost of natural rubber and lack of latest technology (Bhattacharya et al. 2014). This problem of cost affects the small and medium industries more than the major players within the sector. Furthermore, sourcing of raw materials, tied up with the costs of natural rubber, is also a problem within the industry, with dwindling forest reserves within the country (Mohanakumar 2014). Lastly, the most significantly problem within the sector appears to be lack of skilled labour and trained professionals, which when combined with the lack of latest and efficient technology, leads to high cost consumptions and wastage of material (Rubber Skill Development Council 2016; Mohanakumar 2014).

1.5 CONCLUSION

Supply chain management is a tool which can provide competitive edge to the practicing organization in the market as it facilitates quick movement of the goods to their respective destination. The time lead it provides to the company not only makes the market presence more significant but also contributes towards the cost factor. The efficient supply management also helps in engineering prominent global presence by catering to the customer demands with quality products and services. The automotive industry in India although presents significant scope for growth and expansion, but it suffers from certain drawbacks associated with its manufacturing process, and in procurement of the products involved in assembly of the vehicle such as from the rubber sector involving tyres and non tyres products. Although the supply chain management systems are in places which aid the process of procurement, assembly and delivery, still the inconsistencies associated with the indigenous rubber sector indirectly affect the automotive production lines. The non tyre sector of the rubber industry is largely dependent on the primitive technology and manufacturing processes besides unskilled labor. These factors adversely affect the costing procedures, also the unorganized nature of the sector makes it difficult to put standard procedures of quality assurance and control at the level of supply which also contributes to the costing factor. There is a need to organize the rubber sector and employee skilled labor with adequate up to date technology and infrastructure.

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