

SUPPLY CHAIN MANAGEMENT PRACTICES APPLICABLE TO TIER 2 SUPPLIERS OF INDIAN AUTO INDUSTRY: STUDY FROM PRACTITIONER'S VIEW POINT

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Abstract: Presence of major global auto companies has pushed the domestic sector into adopting supply chain management (SCM) practices in order to stay competitive in the market. This has also helped many companies to export their product in the international market. Automotive Supply Chain is complex network of nodal (main) organization, auto ancillary companies, distributors, dealers & others. Tierization of auto supply chain further complicates the adaptation of SCM practices as relationship, size & scope differs from Tier to Tier. It has been seen that Tier-1 companies are becoming stronger & bigger because of market growth & by adopting best management practices but Tier-2s & other upstream companies are struggling for survival in competitive & fast paced business environment. Low margin, meeting strict Quality Standards, frequent changes in Delivery schedule from customers & little bargaining power are the some of the challenges faced by them. These companies are largely home grown, proprietary driven with small structure, lack resources, knowledge & experience in best SCM practices. SCM practices in Tier-2 companies has not received serious attention from academicians & industry alike in the past. Little literature is available in this aspect of study. Therefore, a need is felt to study SCM practices from Tier 2 perspective. The article, based on theoretical reviews & expert practitioner's view point highlights the best SCM practices for Local Tier 2 suppliers for improving their competitiveness from futuristic perspective. Further it is found that many of the SCM practices need inter-organizational (supplier- buyer) collaboration for its effective implementation at Tier-2.

Keywords: Indian Automotive Ancillary Industry, Automotive Supply Chain Management, Tier 2 suppliers

1. INTRODUCTION

With many Automotive Multinational companies, set up their plants in India and there is huge growth in the market. Transformation and growth in Indian Auto Industry has opened a vast research field involving supply chain management. The supply chain is not a chain of businesses with one-to one, business- to-business relationships, but a network of multiple businesses and relationships. This mainly happens through linkage of processes namely planning and analytics, supplier relationship management, internal supply management and customer relationship management. In that sense, SCM deals with total business process excellence and represents a new way of managing the business and relationships with other members of the supply chain. To succeed today and to pave the way for a better future, Indian organizations need to create strong linkages with their business partners using the concept of supply chain management. More and more Indian organizations today are realizing the importance of developing and implementing a comprehensive supply chain strategy – and then linking this strategy to the overall business goals. Changes in the environment have been so dramatic and sudden that Indian automotive sectors have realized the inappropriateness of competing effectively in isolation from their suppliers and other associates of supply chain. Rather, the need for adopting collaborative methodologies, at this stage, is more than ever before because of the recent economic deregulation and globalization of the Indian industry.

Auto ancillary industry has witnessed capacity expansion and modernization initiatives post liberalization phase. The entry of global manufacturers enabled introduction of new Technology, new Products & new Processes. Further, these changes have added different dimensions to the traditional approaches in almost every function of business. Supply Chain Management is one of the areas play very vital role in the entire dynamics of auto industry. However Automotive Supply Chain is complex in nature, it includes multitude of Tier 1, Tier 2, Tier 3 suppliers or manufacturers with many assembly operations and number of dealerships. Small and Medium size enterprises, such as Tier 2, Tier 3 are identified as weak links in Automotive supply chain for various reasons [4]. Different forums in India recommends that Tier 2s should adapt SCM practices as being done by large companies, to remain competitive in the market place with greater speed in responding to customer requirement [11]. SMEs such as Tier 2 suppliers are bogged down by day to day activities and confined by limited resources finding hard to understand & adopt new practices.

Since most of the knowledge comes from developing nations, and SCM is recent phenomenon,[5] examples of implementation in the company of same type of operation, with similar scale & in Indian context are not easily available. It is essential to identify relevant Supply Chain Management Practices for Tier 2 suppliers in Indian Automotive Industry as most of the available literature & research is pertaining to Nodal firm or Main Entity as it is considered a strategic center of Supply Chain.

2. OBJECTIVES

To identify the relevant Supply Chain Management(SCM) Practices for Tier 2 suppliers of Indian Automotive Industry.

3. RESEARCH METHODOLOGY

This article is exploratory in form and based on a study of published literature (local & international), research papers, surveys by reputed consulting companies, websites etc. and data captured through interviews of senior management staff during visits to Tier 1 and Tier 2

companies. It takes a practitioner's view point in identifying relevant SCM practices for Tier 2 from futuristic perspective. These practices are further discussed with SCM professionals from the same industry and ratified by them. Personal insight gained by self, having long experience with Automotive Industry, has also been useful in deciding the relevance of practices.

4. SUPPLY CHAIN & SUPPLY CHAIN MANAGEMENT IN AUTOMOTIVE INDUSTRY:

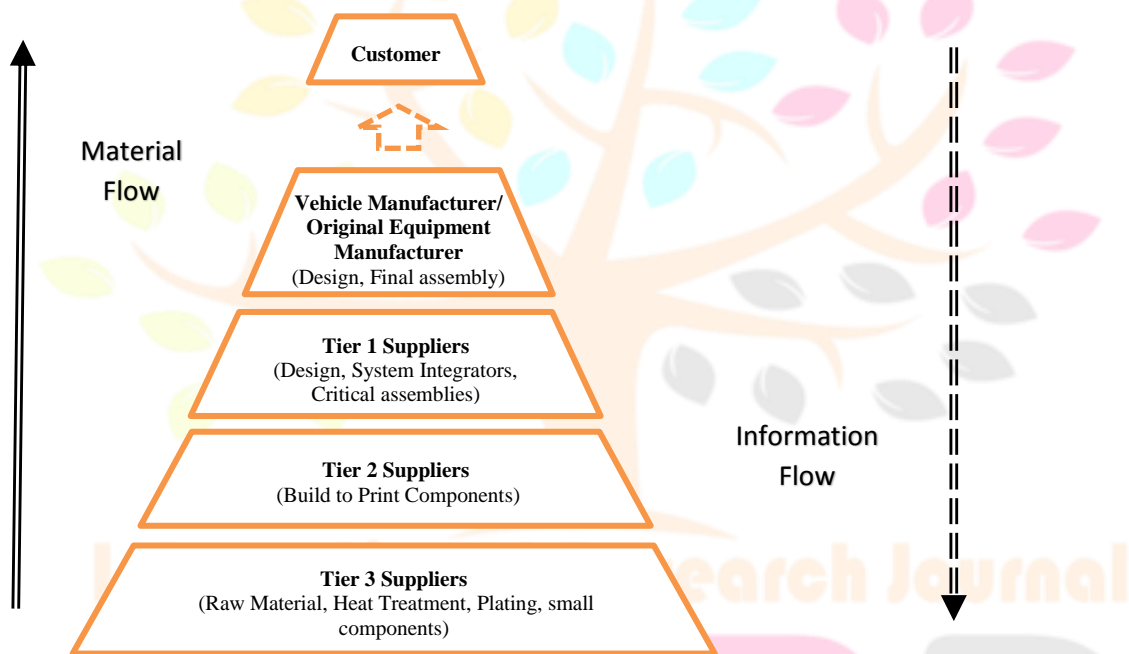
The Supply Chain encompasses all activities associated with transformation of goods from the raw material stage to the final stage, when the goods and services reach to end customer [2] and Supply Chain Management encompasses every effort involved in producing and delivering a final product or service, from the supplier's supplier to the customer's customer. Supply Chain Management includes managing supply and demand, sourcing raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, distribution across all channels, and delivery to the customer.



Source: Author's adaptation

Fig. 1: Typical Supply Chain

In Automotive manufacturing, there are complex, highly-sophisticated supply chains consists of **OEMs** (Original Equipment Manufacturers) and **Auto ancillary organizations**. Members of the Automotive Supply Chain are grouped in Tiers, as defined below:



Source: Author's adaptation

Fig. 2: Tierization of Automotive Supply Chain.

First tier suppliers (Tier 1): The first tier of component manufacturers comprises companies, which are capable of supplying integrated systems to the vehicle manufacturer rather than individual components, e.g. dashboards. These suppliers will need to offer not only a broad range of technologies and materials but require also strong research capabilities in order to work closely with the vehicle manufacturers to develop better systems. Tier 1 suppliers are involved in the design, development and testing process of the products/systems they are responsible for. They also need to be financially strong in order to invest continuously into new technologies and manufacturing capacities. The tier 1 suppliers would involve companies that are financially strong, technology-oriented, large players who operate on a global basis, e.g. Delphi Automotive System, Bosch, Visteon.

Second tier suppliers (Tier 2): The second-tier suppliers include those companies, which supply the first-tier manufacturer with finished components. The profile of a second-tier auto component company is generally that of a small to medium manufacturer, who yet, does not have either the financial, or technical resources to supply integrated systems to vehicle manufacturers.

Third tier suppliers (Tier 3): Third tier companies include those firms, which supply raw materials and basic parts and components to the second-tier automotive component manufacturers. They are indirect suppliers [7][9].

There are few cases, where Tier 2 supplier provide product or service to OEMs & Tier 1 both. And there are cases where, Tier 3 company provide services to many companies which include Tier 1, Tier 2 & OEMs. But that is not dominant pattern.

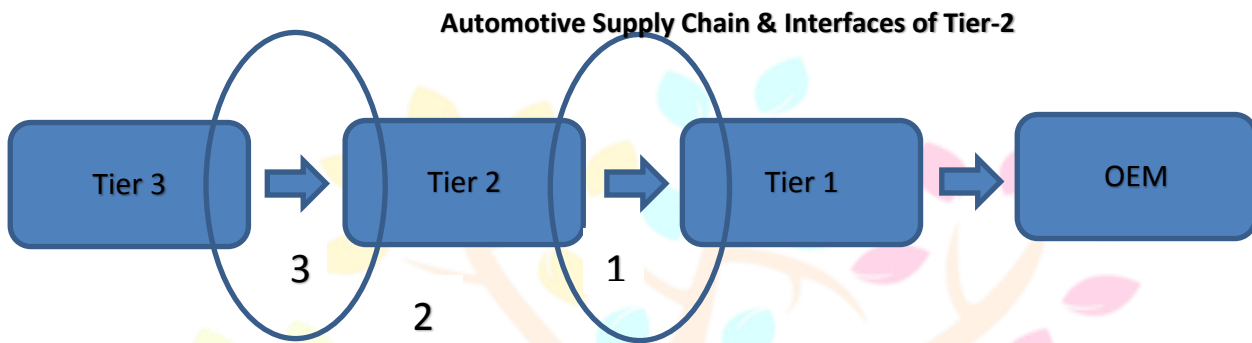
5. SUPPLY CHAIN MANAGEMENT PRACTICES FOR AUTOMOTIVE INDUSTRY

The complexity of the automotive supply chain may be gauged from the fact that a typical vehicle comprises approximately 20,000 components with about 1000 sub-assemblies or modules.[14] The automotive supply chain includes number of Tier 1, Tier 2 and Tier 3 suppliers, manufacturers, assemblers and a number of dealerships. Weakest link determines the throughput & effectiveness. Customer demand for varied specific configurations and features add to the high level of response needed from automobile supply chains. In order to effectively manage supply chain, Auto Companies are resorting to number of practices. Widely used practices are: Outsourcing, Integration of Supply Chain, Early involvement of vendors in development, Inventory Management, Supplier Development, 3rd Party logistic, Lean manufacturing, EDI, Demand Planning, Supplier Rationalization, Direct on Line (DOL) etc.[18]

6. IDENTIFICATION OF SCM PACTICES FOR TIER 2 SUPPLIERS

6.1 Interfaces of Tier 2 suppliers

Tier 2 suppliers are an integral part of the supply chain of the auto industry. For the Tier 1 suppliers to be able to supply their OEMs in a timely and cost-efficient manner, it is necessary that the Tier 2 suppliers ensure that their components move through the supply chain effectively and any logistics challenges are dealt with immediately. Meeting demand, assuring product quality, dealing with pricing issues, and keeping lines of communication open are signs of a strong and responsive Tier 2 supplier.



For the sake of convenience supply chain is divided into following three parts [18].

1. Customer side supply chain / Distribution side
2. Internal Operation side supply chain
3. Supplier side supply chain

6.2 Supply Chain Management Practices for Automotive Tier 2 suppliers:

Customer organization typically rates suppliers on three factors according i.e. Quality (Q), Delivery(D), Cost(C). In order to meet customer requirements, relevant SCM Practices for Tier 2 suppliers are identified and placed under above mentioned 3 parts [1][5][8].

Part 3: Supplier side Supply Chain	Part 2: Internal Operation side Supply Chain	Part 1: Customer side Supply Chain
1. Outsourcing to approved sources- Raw material, Special processes, 3 rd party services etc.	1. Production Planning & Control based on customer schedule	1. Early involvement during development process
2. On time deliveries from sub-suppliers	2. Tracking Delivery, Quality, Cost, Inventory, Lead time, New product development performance	2. Integration of Information & Material flow- Inventory, Schedule, Performance, Payables status etc.
3. Tracking lead time	3. Application of Lean techniques such as VSM, 5S, SMED, TPM	3. Delivery Mode- DOL/ JIT/ Kanban
4. Inspection of incoming parts/ material	4. Inventory Management	4. Relationship with customers
5. Relationship with sub-supplier	5. In-bound & out-bound Transport Management	
	6. Operation Flexibility- Adjusting capacity, fulfilling demand of non-standard orders	

Table 1: SCM practices for Tier 2 suppliers

Source: Author’s design

6.3 SCM practices influenced by Scope of supply or RFQ (Request of Quote)

Although identified SCM practices are relevant and needs to be adapted by Tier-2, for improving the competitiveness from futuristic perspective, but actual adaptation will depend on the scope of work defined at the time of RFQ (Request for Quotation) with customer companies. For example, if Tier 2 is part of Milk Runs (combine shipments for several suppliers on a single truck); than Transportation, Lot size & Frequency of supply are defined & managed by customer. In such case, Goods tracking in transit is not required by Tier 2. Similarly, if supplier is member of “Vendor park” set up by Tier 1/OEM, Warehouse may not be required [1]. Another example is where Raw Material is supplied by customer, in such case, Tier 2 has no role in ensuring quality of Raw Material and customer owns Inventory too.

7. CONCLUSION

Fifteen key SCM practices identified for Tier 2 companies to improve its competitiveness from future perspective. (Reference Table 1). It is seen many of the SCM practices are inter-organization in nature, and strong Customer- Supplier relationship will help to establish those practices.

8. ORIGINALITY / VALUE

This paper is among the first to focus on the importance of viewing Supply Chain Management practices from Automotive Tier 2 suppliers' perspective.

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TABLE OF ACRONYMS

ACMA: Automotive Component Manufacturers' Association

BIC: Best In Class

CII: Confederation of Indian Industry

DOL- Direct on line

3PL: Third Party Logistics

EDI: Electronic Data Interface

FG: Finished Goods

ITO: Inventory Turn Over

IT: Information Technology

JIT: Just-in-Time

MNC: Multi-National Company

MTP: Make to Print

MTS: Make to Stock

OEM: Original Equipment Manufacturer

RM: Raw Material

RFQ: Request for Quotation

SCM: Supply Chain Management

SME: Small & Medium Enterprises

SMED- Single minutes exchange of dies

TPM- Total Productive Maintenance

VM: Vehicle Manufacturer

VSM: Value Stream Mapping

VMI: Vendor-Managed Industry

WIP: Work in Progress