



A study of Supply Chain Management and Marketing Logistics at TATA Motors

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Abstract:

We can see remarkable amendments in the manner that organisations do business. Organizations are functioning in a highly changing and economic environment. To work successfully in any business environment, organizations require to become much more involved in how their suppliers and customers do business. Due to expansion in global markets and competitions, organisations have to pay much more attention about what kind of products and services customers are looking for. To make that products and services available to their customer organisations have to pay close attention to where materials come from, how their suppliers design their products and services, how they are transported and stored and what their direct consumers and end-product users are really looking for. Supply chain management is “the design and management of seamless, value-added processes across organizational boundaries to meet the real needs of the end customer.” Supply chain management covers whole procedure till final product get in to consumer’s hand i.e. from providing raw materials till final product reaches to end product consumers. The main intension of supply chain management is to how organisations make use of supplier’s process, technology and capability to increase competitive advantage. In this report we are going to explain about supply chain management of one of the leading Indian Automobile Industry. Indian automobile sector is growing rapidly with beating economic growth rate of 8.4% in the year 2005-06. Global automotive companies are constantly restructuring their business activities by outsourcing their non-core activities to low cost countries. In view of current competitive environment automobile manufacturers are expected to innovate new features in their products and process as well as to follow environmental standards along with economical cost. Due to this organisations are forced to source more components from low-cost countries.

Keywords: Supply Chain Management, Marketing, Logistics, TATA Motors

1. INTRODUCTION

Businesses have been compelled to explore outside their four walls due to factors like infrastructure constraints, supply chain network unpredictability, shortened product lifecycles, and the proliferation of product varieties. As companies work to increase their competitiveness on a worldwide scale and in order to save costs, boost quality, improve customer satisfaction, and guarantee supply continuity, supply management strategic challenges are vying for more and more of their attention. This significantly raises the status of supply management within organisations. For a world-class company to survive, supply chain management's significance and efficacy are more important. Organisations all over the world are using value innovations to manage their businesses strategically and operationally in order to maintain and improve their competitiveness. The term supply chain describes the organizational elements that go into uniting legally distinct organisations as well as controlling information and material flow within a distribution network for obtaining and producing goods. A Supply chain is the method your business employ in order to sell your wares to consumers, beginning with resource procurement and finishing with final product shipment. In order to maximize efficiency and speed, your activities must be optimized for the supply chain. Because clients value prompt service, speed is crucial. However, increasing speed might result in skyrocketing prices, so maximizing efficiency is also

crucial. The best supply chains ensure that things are delivered as quickly and affordably as possible without compromising on quality. The best businesses achieve this by utilizing cutting-edge logistics technologies, such as computer algorithms that determine the best shipping routes for products and massive enterprise databases that facilitate real-time collaboration and information sharing across dispersed workers. Supply chain management is a scientific approach to controlling the flow of commodities from raw material producers to manufacturers and ultimately to end consumers. Supply chain management affects production in a variety of ways, including the accessibility of raw materials, the prices and profits of finished products, the quality of the firm's infrastructure, and the relationships between the firm and its suppliers and customers. Enterprises. All CEOs and entrepreneurs in the sector should be aware of the operational and strategic effects supply chain management has on manufacturers. A network of integrated upstream, production, and downstream processes, supply chain management transforms raw materials into finished goods that satisfy consumer demand. Manufacturing businesses now face additional challenges as a result of expanding markets, heightened competition, and drawn-out SCs. It is becoming more and more clear that in order to achieve operational excellence, we must cut waste, deploy improvements in inventory management, adherence to rules and regulations, customer service, and overall efficiency.

Growth and Development of Indian Automobile Industry

Automobile, it is result of continual invention of immense efforts put by innovative engineering generations, who have put their life together, to help human kind. It has happened through the generations and by devoted numerous architects. The history of the automobile reveals an age-old evolution that took place worldwide. Guido da Vigevano in 1335 was the first one. Vaturio designed but never built. Later Leonardo da Vinci aimed clockwork driven tricycle with tiller steering and a differential mechanism between the rear wheels. In about 1678, Father Ferdinand Verbiest, Catholic priest, has been said to have built a steam powered vehicle for the Chinese Empower Chien Lung. As it was 1705, when James Watt invented the steam engine, it is guessed that, Father Ferdinand Verbiest was possibly actual father of a model vehicle powered by a mechanism like Hero's steam engine, a spinning wheel with jets on the periphery.

Efforts put by Indian Government for Industrial Development

Industrial Policy: As a step taken to shrink the liability of Government of India, and at the same time, bringing in competitive environment by way of privatization of Industrial Sectors, Govt aimed at sinking the burden of PSU's and brought in the concept of "Accountability" in this sector. As one of the measure, Govt of India welcomed FD I's in Industrial sectors, which brought in new technology and development to the arena of Indian Industries. These measures establish components of a policy that has targeted increased productivity. Progressive opening of the domestic market to international cooperation is being pursued to outgrowth industries to progress their global effectiveness. As an effect, list of high-priority industries was compiled in which organizations were allowed to raise foreign capital up to 51 percent of equity. Expansion plans that were chalked out for which foreign capital expenditure were expected to be funded by the foreign fair play. As a result, Suzuki was allowed to increase its holding in the highly successful Maruti venture to 50 percent in expectation of a new model designed for export to European markets. Similarly General Motor's proposal, together with Hindustan Motors, was accepted; where in much of the investment was expected to be geared for export of components to GM's operations worldwide.

Supply Chain and Marketing Logistics of Automobiles in India

The supply chain of automotive industry in India is similar to the supply chain of the automotive industry in Europe and America. The orders arise from the bottom of the supply chain, i.e. from the consumers and go through auto makers and climbs up until third tier vendors. However, the products, flow in traditional way, flow from the top of the supply chain to reach final consumer. Automakers in India, are the key to supply chain and are responsible for the products and innovation in the industry.

Third tier vendors provides basic products like, rubber, glass, steel, plastic and aluminum to second tier vendors. Second tier vendors design vehicle systems or bodies for first tier vendors and original equipment manufacturer (OEM's). They work on designs and drawings provided by first tier vendors or OEM's. First tier vendors, these are the organizations who supply major systems directly to assemblers (OEM's). These organizations have global coverage to follow their customers to various locations around the world. They design, develop and innovate to provide "black box" solutions for the requirements of their customers. Like the word suggests, black box solutions are created, designed and developed by vendors to meet the innovative product requirements of the OEM's. First tier vendor~ are

not only responsible for the assembly of the parts into complete units like, dashboard, suspensions, brakes, seats, cockpit but also for the management of second tier of the vendors. Original Equipment Manufacturers (OEM's) are those, who researches the customer wants, needs and aspirations and convert them into innovative products to satisfy the customer needs. Automakers starts designing the models which are tailored to customer's demands. The design process is considerably long one, normally take five years. These OEM's have world class manufacturing facilities where the products are engineered and manufactured based on the parts supplied by first tier vendors. Examples of these organizations are Tata Motors, Mahindra & Mahindra, Toyota, Maruti, Skoda etc. Innovation, design capability and branding are the main focus areas of these organizations.

Dealers: Once vehicle is ready, it is shipped in the market through agency called "Dealer" the dealers then sell the vehicle to end customer.

Parts and Accessory: The OEM's provide the spare parts support to customers for replacement of the parts like, tyres, windshield glass, air bags etc. through their first tier vendors.

Service Providers: Some of the services to customers includes, servicing of vehicle, repair of parts or providing finance to customers. These facilities are made available by OEM's at dealer end.

Components of the Supply Chain

The supply chain is made up of a number of components that cooperate to facilitate the seamless transfer of goods and services from the beginning stages of manufacturing to the final consumer. Generally speaking, a supply chain consists of the following elements:

- **Suppliers:** Those organisations or individuals who supply raw materials, parts, or finished goods to the manufacturer or distributor are known as suppliers. They are essential in guaranteeing a consistent flow of production inputs.

- **Manufacturers:** Through a variety of production techniques, manufacturers are in charge of converting raw materials into completed goods. According to demand, they mix labour, equipment, and other resources to produce things.

- **Distributors:** Distributors, also referred to as wholesalers, serve as a bridge for distributors and makers. They purchase products buy in bulk from producers, then distribute to merchants for individual sale. Distributors assist in reducing the gap between production and consumption by efficiently storing and transferring goods.

- **Retailers:** Before products reach the end user, retailers are the last stop in the supply chain. Through physical stores, online shopping sites, or other means, they sell their goods directly to customers. Retailers oversee inventory, marketing, and customer support to guarantee prompt product availability.

- **Logistics and transportation:** Moving things from one place to another is a part of logistics and transportation. It entails numerous tasks like inventory management, order fulfilment, order fulfilment, packing, warehousing, transportation planning, and reverse logistics (processing returns). For expenses to be as low as possible and deliveries to be made on time, effective logistics are essential.

- **Inventory management** entails monitoring and regulating the quantities of raw materials, commodities that are still being produced, and finished goods. Minimizing storage costs while ensuring adequate stock levels to fulfil customer demand is the goal of effective inventory management.

- **Demand Planning and Forecasting:** Accurate demand forecasting aids in procurement, inventory management, and production planning, allowing businesses to efficiently satisfy consumer demands while reducing inventory carrying costs.

- **Information Systems:** Information systems are vital for supply chain management. They allow companies to collect, examine, and share data along the supply chain, which makes it easier to coordinate and make decisions.

Technologies that improve visibility and efficiency include Customer Relationship Management (CRM) software, ERP systems, and supply chain analytics tools.

Objective

- To study supply chain management and its importance in a manufacturing unit in detail.
- To comprehend how TATA Motors, a large Indian automaker, uses the lean, JIT supply chain management philosophy.
- To comprehend how TATA Motors may use various SCM technologies to enhance supply chain management.
- To understand for need and importance of SCM at TATA motors.

Source of data:

There must be data for analytical purposes for every study. There is no way to do research without data. Every study requires the collecting of data. It may be obtained from a variety of sources.

Primary Data: The supply chain practices will be the main focus of a study to collect first-hand information from the market. Knowing the standard procedures used in the market would be helpful. Data gathered directly from first-hand experience or observation. Primary and secondary data are two different types of data. Secondary data is information the researcher has obtained from internal or external secondary sources; primary data is information the researcher has independently collected. The secondary data alone might be able to address the issue in some circumstances. The price of acquiring secondary data is typically substantially less than the price of compiling primary data. Secondary data also has a number of additional uses.

Secondary Data: Secondary data collecting techniques Secondary data includes previously compiled information, information that has been published, and information that has been obtained from third parties.

- Businesses and other websites
- Reports, Articles, and Blogs; periodicals and journals Business magazines and newspapers
- Published sources, including books, reports from the government, newspapers, and magazines, etc.
- Unpublished sources, such as internal company reports that they have prepared and distributed to their analysts and trainees for research.
- In order to find information, websites, certain official sites, and other sites are also searched.

2. Methodology in Supply Chain Working

Real supply chain .management calls first for a thoughtful of each driver and how it operates. Each driver has the capacity to directly affect the supply chain and enable certain capabilities. The next step is to develop an appreciation for the results that can be obtained by mixing different combinations of these drivers. These drivers are,

A) Production: Production refers to the capacity of a supply chain to make and store products. The amenities of production are factories and warehouses. The central decision that Executives face when making production decisions is how to resolve the trade-off between responsiveness and efficiency. If factories and warehouses are built with a lot of superfluous capacity, they can be very elastic and react quickly to wide swings in product demand. Facilities where all or almost all capacity is being used are not capable of responding easily to fluctuations in demand. On the other hand, capacity costs money and excess capacity is idle capacity not in use and not generating revenue. Hence, the more excess capacity that exists, the less efficient the operation becomes. Factories can be built to accommodate one of two approaches to manufacturing:

1. Product focus-A factory that takes a product focus, achieves the range of different operations required to make a given product line from fabrication of different product parts to assembly of these parts.

2. Functional focus-a functional method focusses on performing just a few operations such as only making a select group of parts or only doing assembly. These functions can be applied to making many different kinds of products.

A product methodology tends to result in developing expertise about a given set of products at the expense of expertise about any particular function. A functional approach -results in expertise about particular functions instead of expertise in a given product. Organizations need to decide which approach or what mix of these two approaches will give them the capability and expertise they need to best respond to customer demands. As with factories, warehouses too can be built to accommodate different approaches. There are three main approaches to use in warehousing:

1. Stock keeping unit (SKU) storage-in this old-fashioned approach, all of a given type of product is stored together. This is an efficient and easy to understand way to store products.

2. Job lot storage-in this approach, all the different products related to the needs of a certain type of customer or related to the needs of a particular job are stored together. This allows for an efficient picking and packing operation but usually requires more storage space than the traditional SKU storage approach.

3. Cross docking-an approach that was pioneered by Wal-Mart in its drive to increase efficiencies in its supply chain. In this approach, product is not actually warehoused in the facility. Instead the facility is used to house a process where trucks from suppliers arrive and unload large quantities of different products. These large lots are then broken down into smaller lots. Smaller lots of different products are recombined according to the needs of the day and quickly loaded onto outbound trucks that deliver the products to their final destination.

B) Inventory: Inventory is spread throughout the supply chain and includes all from raw material to work in process to finished goods that are held by the manufacturers, distributors, and retailers in a supply chain. Again, Executives must decide where they want to position themselves in the trade-off between responsiveness and efficiency. Holding large amounts of inventory allows an organization or an entire supply chain to be very responsive to fluctuations in customer demand. However, the creation and storage of inventory is a cost and to achieve high levels of efficiency, the cost of inventory should be kept as low as possible.

There are three basic decisions to make regarding the creation and holding of inventory:

1. Cycle Inventory-the amount of inventory required to satisfy demand for the product in the given period between purchases of the product. Organizations incline to produce and to purchase in larger lots in order to gain the benefits that economies of scale can bring. However, with large lots also comes increased carrying costs. Carrying costs come from the cost to store, handle, and insure the inventory. Executives face the trade-off between the reduced cost of ordering and better prices offered by purchasing product in large lots and the increased carrying cost of the cycle inventory that comes with purchasing in large lots.

2. Safety Inventory-Inventory that is held as a buffer against ambiguity. If demand forecasting could be done with perfect accuracy, then the only inventory that would be needed would be cycle inventory. But since every forecast has some degree of uncertainty in it, we cover that uncertainty to a greater or lesser degree by holding additional inventory in case demand is suddenly greater than anticipated. The trade-off here is to weigh the costs of carrying extra inventory against the costs of losing sales due to insufficient inventory.

3. Seasonal Inventory-this is inventory that is built up in anticipation of predictable increases in demand that occur at certain times of the year. For example, it is predictable that demand for woolen garments will increase in the winter. If an organization that makes woolen garments has a fixed production rate that is expensive to change, then it will try to manufacture product at a steady rate all year long and build up inventory during periods of low demand to cover for periods of high demand that will exceed its production rate. The alternative to building up seasonal inventory is to invest in flexible manufacturing facilities that can quickly change their rate of production of different products to respond to increases in demand. In this case, the trade-off is between the cost of carrying seasonal inventory and the cost of having more flexible production capabilities.

C) Location: Location refers to the environmental placement of supply chain facilities. It also includes the decisions related to which activities should be performed in each facility. The openness versus proficiency trade-off here is the decision whether to consolidate activities in fewer locations to gain economies of scale and efficiency, or to reorganize activities in many locations close to customers and suppliers in order for operations to be more approachable. When making location decisions, executives need to deliberate a range of factors that relate to a given location comprising the cost of facilities, the cost of labor, workmanship skills available in the workforce, infrastructure conditions, taxes and tariffs, and nearness to suppliers and customers. Location decisions tend to be very premeditated decisions because they commit large expanses of money to long-term plans. Location decisions have strong impacts on the cost and performance characteristics of a supply chain. Once the size, number, and location of facilities is determined, that also defines the number of possible paths through which products can flow on the way to the final customer.

D) Transportation: Effective, efficient transportation is basic ingredient of Marketing Logistics and back bone of Supply Chain Management. In transportation the trade-off between reaction and competence is displayed in the choice of transport mode. Fast modes of transport such as airplanes are very responsive but also more costly. Slower modes such as ship and rail are very cost efficient but not as responsive. Since transportation costs can be as much as a third of the operating cost of a supply chain, decisions made here are very important. There are six basic modes of transport that an organization can choose, like, Ship, Rail, Pipelines, Road, Airplane, and Electronic transportation. Out of these different modes of transportation and the location of the facilities in a supply chain, executives need to design routes and networks for moving products. General rule for transportation is, the higher the value of a product (such as electronic components or pharmaceuticals), the more its transport network should emphasize responsiveness and the lower the value of a product (such as bulk commodities like grain or lumber), and the more its network should emphasize efficiency.

E) Information: Appropriate and Timely Information is life line of any and every business, it is the basis upon which to executives make decisions regarding the other four supply chain drivers. It is the link between all of the activities and operations in a supply chain. To the degree that this link is a strong one, (i.e. the data is accurate, timely, and complete), the organizations in a supply chain will be able to make good decisions for their own operations. This will also tend to exploit the profitability of the supply chain as a full. That is the way that stock markets or other free markets work and supply chains have many of the same dynamics as markets. Information is used for two purposes in any supply chain, these are, Coordinating daily activities related to the functioning of the other four supply chain drivers: production; inventory; location; and transportation and other one is, Forecasting and planning to anticipate and meet future demands. Available information is used to make tactical forecasts to guide the setting of monthly and quarterly production, schedules and timetables. Information is also used for strategic forecasts to guide decisions about whether to build new facilities, enter a new market, or exit an existing market.

Threat to Indian Automobile Industry

India's ambition to become a global auto player hub is at stake as it is challenged by many aspects like, inability to uphold low cost production base, stringent labour legislations, political environment of India, etc. Indian auto components manufacturers are cautious about sustaining the low cost base as overheads including labour cost and complex tax structure is constantly rising. Global auto major players are also critical about India's low cost manufacturing base, but the main hindrance is complex tax structure. With GST coming in place, this may ease out the pressure on automotive industry in India. It is true that labour cost in India is increasing, but still it forms only 5% of operational cost however, the political pressure and tax structure plays important role while we consider the threats to the dream of Indian Automobile Industry as global hub. While we do the SWOT analysis of Indian automobile industry, we can see that "weak link" of Indian automobile industry is, tax structure, labour legislations as compared to western countries, political interference into the business, local goons controlling the local labour force, not only this, but divided labour force among multiple trade unions is the major hindrance for development of automobile industry in India. We can observe this in case of industrial unrest at Maruti which took place in Manesar plant, which resulted in temporary closure of the plant as the staff was killed by the mob. All these incidences send negative message and cruel image of India, as far as, sustainable growth of Indian Automobile Industry is concerned. There are many examples those can be cited here as pull out by Tata's from Singur which delayed the dream project of TATA's NANO, industrial unrest at Bajaj Auto due to lack of collective bargaining over wage settlements and unrest at Force Motors

at Akurdi plant for wage settlement and there are many more examples, which can be cited due to which India's dream of becoming global auto player is at stake.

Historical Development of Supply Chain Management

Introduction: The word "Logistics" eventually appeared in article as early as 1898 "The French have a third process, which they call logistics, the art of moving and quartering troops". Conveyance has always been a spinal-cord of logistics and supply chain management. Transportation in military setting is then the foundation of modern logistics and supply chain management. In 1919, first logistics and supply chain management program also started out as business degree in traffic and transportation. Travelling Salesman Problem which is the early form of vehicle routing method was so important that Proctor and Gamble created a competition for it in 1962. The first logistics organization was also started as National Council of Physical Distribution Management in the USA in 1963. The earliest form of logistics outsourcing, which is known today as Third Party Logistics Provider (3PL) concept, appeared in the scene in 1985. Supply chain management has evolved from an initial focus on improving relatively simple, but very labor-intensive processes to the present day engineering and managing of extraordinarily complex global networks, over past 100 years. Strategic partnerships can be formed "horizontally" and "vertically" - the latter being expressions of supply or channel relationships. Closer bonds are: what separates partnerships from a more transaction based set of exchanges which are limited in scope and purpose. The essential point is to identify and describe a domain of theory and practice where there is potential for some additional gain by re-conceptualizing it in a particular way. The important idea captured at least in part by "supply strategy" (or "strategic supply management") is that a mode of thinking and action which encompasses, and seeks to exploit, interlocking relationships could potentially be used as a powerful lever for competitive advantage.

Traditional Approach to Supply Chain Management

Supply Chain Management is often misunderstood as parts procurement only. Traditionally when the industrialization started, that time all the functions of the organization were centrally managed by the owner and all decision making was centered at his hands only and truly that was need of the hour that time. Slowly when business got expanded and expertise became the essence of the business, the multi-functional organization came into existence. When we trace back the history of Supply Chain Management, we find that all the functions of SCM were individually done by separate group of people, let us say, procurement was done by purchase people, inspection by job inspectors, manufacturing by production people and selling by sales team. All these people use to operate as individual entities and were having individual goals to achieve. All these entities were not essentially aligned to the final goals of the organization. It is truly said that, "Times have changed since Henry Ford made the River Rouge complex in Dearborn, Michigan, into the ultimate in vertical integration, with iron ore going in at one end and shiny model A's coming out the other. Now vertical dis-integration is the order of the day- in autos, in handheld computers, in pharmaceuticals, in ink-jet printers, in health care~ in cameras ..."

History of Supply Chain Management

During World War II (1939-45), the corporate significance of purchasing inputs was increasingly recognized, and courses in business logistics were offered in various US universities, but the post-war phase was quieter as the number of market-driven firms increased in the USA. Purchasing sustained a substantial portion of costs of goods sold, but was not managed by skilled personnel. Interest in materials management grew around 1960s to 1970s and the attention was more on resolving the problems from a total system with a viewpoint for an organization rather than the separate function. During this period, purchase Executives highlighted multiple sourcing through economical bid pricing, and the major focus of buyers was on purchase price and the prevention of line shutdowns, while main ingredients of SCM, Suppliers were rarely viewed as value-adding partners. By the end of 1970s and the beginning of 1980s, the world business situation changed drastically and was influenced by globalization, automation, technological change, increased inflation, international competition and strategic alliances. These changes affected the SCM and gave birth to an integrated approach to SCM, where the demand and requirements of the customers and role of suppliers were accorded increased importance. In recent years, purchasing and materials management has been measured vital in adding value to the overall organization and increasing its profitability.

- Roots of Supply Chain Management Marketing Logistics is the root of Industrial engineering and operations research. Author of "The Principles of Scientific Management", Fredrick Taylor, aimed in his early research to improve manual loading processes. This marked the beginning of Marketing Logistics. Operations Research began

when scientists established the value of analytics in the study of military logistics problems in the 1940s as a result of the complex requirements of World War II. Roots of Supply Chain Management and Marketing logistics can be traced right from Greek Era to Modern world. It started from Military exercise and ended in civilized world.

- The Early Years before the 1950s, logistics was thought of in military terms. It had to do with procurement, maintenance, and transportation of military facilities, materiel, and personnel. It was revolving around transportation costs with inventory costs, and discussed the benefits to the firm of getting the right goods to the right place at the right time, the organization within the typical firm around the activities currently associated with logistics was fragmented. Below figure is illustrative for organized key activities.

- Current Scenario a new name transpires: Supply Chain Management (SCM). This name is taking the logistics area by hurricane as so many in various business fields seem to squeeze it and see activities of their areas imbedded in it. The derivation of the name appears a secret and correctly what supply chain management is, associated with physical distribution and logistics, is being questioned. Some opines that it is a satisfaction of the activity combination promise understood in early descriptions while others think it is a new and bold theory. It started from 1960 wherein all the activities were fragmented into each individual cell, such as purchasing, production and fund management etc. by 2000, these were grouped and Purchasing or Material Management and Physical Distribution Management. Post modernization era, after 2000, all these fragmented elements are brought under one umbrella which is widely known as "Supply Chain Management" which included "Marketing Logistics". Those who believe believing that supply chain management is evolutionary construct a diagram of the type shown in below figure.

Council of Supply Chain Management Professionals defines logistics as

Logistics Management is that part of SCM that plans, implements, and controls the efficient forward and reverse flow and storage of goods, services, and related information between the point of origin and point of consumption in order to meet customer requirements. In this definition, First note that procurement (i.e., purchasing) and conversion (i.e., production) are now explicitly included in the scope of managing material flows. Second, emphasis is placed on coordination, collaboration and relationship building among channel members that are missing from logistics management. Other way round, Supply Chain Management can be regarded as having three measurements. These are activity are, process administration, inter-functional coordination, and inter-organizational coordination. Activity and process administration is much of what logistics has been doing. That is, managing activities such as transportation, inventories, warehousing, and order processing that are within the responsibility of the logistics function. Inter functional coordination refers to collaborating and building relationships with other functional areas in the same firm, such as with marketing and finance. Inter organizational coordination has to do with collaborating and coordinating product flows among channel members.

3. Participants in the Supply Chain

Being simplest form, a supply chain is composed of an organization and the suppliers and customers of that organization. This is the basic group of participants that creates a simple supply chain. Extended supply chains contain three additional types of participants. 1) There is the supplier's supplier or the ultimate supplier at the beginning of an extended supply chain. 2) Customer's customer or ultimate customer at the end of an extended supply chain. 3) Finally there is a whole category of organizations who are service providers to other organizations in the supply chain. These are organizations who supply services in logistics, finance, marketing, and information technology. In any given supply chain there is some grouping of organizations who perform different functions. There are organizations that are producers, distributors or wholesalers, retailers, and organizations or individuals who are the customers, the final consumers of a product. Supporting these organizations there will be other organizations that are service providers that provide a range of needed services.

Producers: Producers or manufacturers are organizations that make a product. This includes organizations that are producers of raw materials and organizations that are producers of finished goods. Producers of raw materials are organizations that mine for minerals, drill for oil and gas, and cut timber. It also includes organizations that farm the land, raise animals, or catch seafood. Producers of finished goods use the raw materials and subassemblies made by other producers to create their products

Distributors: Distributors are organizations that take inventory in bulk from producers and deliver a bundle of related product lines to customers. Distributors are also known as wholesalers. They typically sell to other businesses and they sell products in larger quantities than an individual consumer would usually buy. Distributors buffer the producers from fluctuations in product demand by stocking inventory and doing much of the sales work to find and service customers. For the customer, distributors fulfill the "Time and Place" function—they deliver products when and where the customer wants them. A distributor is typically an organization that takes ownership of significant inventories of products that they buy from producers and sell to consumers. A distributor can also be an organization that only brokers a product between the producer and the customer and never takes ownership of that product.

Retailers: Retailer's stock inventory and sell in smaller quantities to the general public. This organization also closely tracks the preferences and demands of the customers that it sells to. It advertises to its customers and often uses some combination of price, product selection, service, and convenience as the primary draw to attract customers for the products it sells.

Customers: Customers or consumers are any organization that purchases and uses a product. A customer organization may purchase a product in order to incorporate it into another product that they in turn sell to other customers. Or a customer may be the final end user of a product who buys the product in order to consume it.

Service Providers: These are organizations that provide services to producers, distributors, retailers, and customers. Service providers have developed special expertise and skills that focus on a particular activity needed by a supply chain. Because of this, they are able to perform these services more effectively and at a better price than producers, distributors, retailers, or consumers could do on their own. Some common service providers in any supply chain are providers of transportation services and warehousing services. These are trucking organizations and public warehouse organizations and they are known as logistics providers. Financial service providers deliver services such as making loans, doing credit analysis, and collecting on past due invoices. These are banks, credit rating organizations, and collection agencies. Some service providers deliver market research and advertising, while others provide product design, engineering services, legal services, and management advice. Still other service providers offer information technology and data collection services.

Linking the Supply Chain with Business Plan

An organization's supply chain is an essential part of its approach to the markets it serves. The supply chain needs to proactively react to market requirements and do so in a way that supports the organization's business plan. The business plan an organization employs, starts with the needs of the customers that the organization serves or will serve. Depending on the needs of its customers, an organization's supply chain must provide the appropriate mix of approachability and effectiveness. Basically business is about making your own practices outdated and invent new, else your competitors will do it for you, in the same way, an organization whose supply chain consents it to more professionally meet the needs of its customers will gain market share at the expense of other organizations in that market and also will be more profitable.

Supply Chain Management and Marketing Logistics at Tata Motors

Introduction: Indian automobile sector is growing rapidly with beating economic growth rate of 8.4% in the year 2005-06. Global automotive organizations are constantly restructuring their business activities by outsourcing their non-core activities to low cost countries. In view of current competitive environment automobile manufacturers are expected to innovate new features in their products and process as well as to follow environmental standards along with economical cost. Due to this organizations are forced to source more components from low-cost countries. Competitive environment forcing automobile organizations in mergers and acquisitions. They are facing challenges in improving their quality, cost reduction and developing time to market. Because of this reason, the automobile industry has been passed through major structural and other changes in last decade. The association between automobile assembler and their suppliers is changed due to current globalization, implementation of lean production and development of modularization. All this factors helps organizations towards product separation by reducing cost of Research and Development, innovative sales, marketing approaches, rising focus on enhancing effectiveness in production and supply chain. E-business, outsourcing, and Supply chain management is playing a vital part in

automobile sector. Organizations are very considerable a part of our atmosphere. Not only do they be present but function, persist and mature by interacting with us and endeavoring to influence their environment. The Executives, staff and the divisional heads of an organization aim to achieve their objectives, sometimes with the help of the environment irrespective of its external influences. It is the role of the executive in particular to manage with change in manner that is harmonious to the business purpose policy, structure and values of the organizations. The intensity of the environmental impact and the management of this determine the success or the failure of the organization. Business environment may defined as a set of situations which including social, legal, economic, political and institutional that is uncontainable in nature and affects the functioning of the organizations Business environment may divide into internal environment and external environment. Internal environment is the environment that a direct impact on the business. Here there are some internal factors which are generally controllable because the organization has control over these factors. Examples of internal environment include the value system, vision, mission and objectives, the management structure and the nature of the organization.

Due to competitive environment automobile companies are getting engage in mergers and acquisitions. They are facing challenges in improving their quality, cost reduction and developing time to market. Because of this reason, the automobile industry has been passed through major structural and other changes in last decade. The relationship between automobile assembler and their suppliers is changed due to current globalization, implementation of lean production and development of modularization.

Figure 1: All this factors helps organisations towards product separation by reducing cost of Research and Development, innovative sales, marketing approaches, rising focus on enhancing effectiveness in production and supply chain. Therefore during the days of e-business and outsourcing, supply chain management plays a vital part in automobile sector.

Figure 2: Typical model of Automobile Supply chain

Tata Motors (TML) is India's leading automobile manufacturer, which is established in 1945. It is amongst the top 5 manufacturers of commercial vehicle in the world. TMS is largest Indian automobile company with consolidate Revenues of Rs. 92519 crores (USD 20 billion) in 2009-10" (www.tatamotors.com). It has employed around 24000 employees. Manufacturing base of TML is spread around various Indian states. TML is not only limited up to Indian market, it has also started expanding its footsteps into international market. Today Tata Motors is a global player having markets in several countries around the world including Europe, Africa etc. In 2008 TMS has purchased British car companies Land Rover and Jaguar and in 2004 South Korean 2nd largest truck making Daewoo Commercial Vehicle Company. TMS is the first company to be listed on New York Stock Exchange from Indian engineering sector. TMS has recently released Tata Nano which is lowest price car in the world.

Tata Motors dealing in wide range of vehicles such as passenger cars, utility vehicles, Trucks, Commercial passenger vehicles as well as defense vehicles.

The main competitors of automobile company such as Tata Motors are the large manufacturer of commercial and passenger vehicles in India who are, Ashok Leyland, Eicher Motors, Swaraj Mazda, Mahindra and Mahindra etc.

Valuable tools, models and theories will give a detail understanding of issues dealing with supply chain management. Theory around the issues of operation management, supply chain management, porter's five forces, and the four V's and value chain will give a through insight of the value added in the product and services. Therefore, an analysis of all above will follow, focusing on the Indian Automobile Industry.

Operation Management:

Each organisations has to make the product or service available, that their end- organization, which produces products or services. Operation management always deal with the main purpose of the business which is, to produce products and services. Operation management is "Planning, scheduling and control of the activities that transform inputs into finished goods and services". The general transformation process model shows importance of operations, which can be seen as a transformation process that takes a set of inputs and transforms them into outputs.

Figure 3: Typical Transformation process model

In the case of Tata Motors inputs of organisations are raw materials such as seats, steering, clutch pads, etc. which will help to produce or assemble car, information such production process, People such as engineers, designers who will help to design and assemble car, facilities and machinery for the production and assemble different parts of the car. The transformation process includes manufacturing and service operations which is must to change inputs in to outputs which are different types of automobiles such as, car, bus, truck etc.

Inputs: Raw materials: (seats, steering, clutch pads etc.), People (Engineers, Designers etc.), Facilities and machinery/equipment's

Transformation Process: Manufacturing process, Service operations

Outputs: Cars, buses, trucks, army vehicles etc.

Figure 4: Transformation process model for Tata Motors.

Even if above view point of the process might be use throughout the organization, it is not necessary that it should be follow in the same manner all the time. There are variations in the processes which need to be considered. Four characteristics of demand which are known as 'four V's' processes which affect the method of processes which required to be managed. The four V's are Volume i.e. how many products or services produced via operations, Variety: how many different types of products or services produced by operations, Variation: amount of level of demand changed over time and Visibility: amount of visibility of its processes to its customers. The operation management process might need to be differentiate depending on effect of above four V's. Four V's dimensions are important in assuming how easy it is for operation management to operate at low cost.

Volume: In terms of Volume Tata Motors is high. Volume stands for number of productions or services via operations. As a huge company in automobile industry volume of production of vehicles through operations is high.

Variety: In terms of Variety Tata Motors is medium to high. Variety stands for different types of products or services produced by the operations. As a largest Indian automobile company Tata motors is manufacturing wide range of vehicles except two wheelers and luxurious cars. They are mainly deals in different kinds of commercial vehicles, passenger vehicles, army vehicles etc.

Variation: In terms of Variation Tata Motors is Medium to low. Variation stands for amount of level of demand change over time. Demand for the Tata Motors vehicles are predictable. Therefore it is easy for the operations to produce the products or services according to demand however if there is any change in demand over time Tata's operations are able to meet such change.

Visibility: In terms of Visibility Tata Motors is medium to low. Visibility stands for amount of visibility to its customer. It is unlikely that whole process is visible to its customer however up to certain level it is possible for e.g. via internet or phone 'track and trace' facility customer can have visibility of where their order is or they can check the availability of products. Thus visibility of processes is low to customers compare to dealers or agents in Tata motors.

Above stated 4 V's can be reviewed in figure given below.

Figure 5:

Now we will look at the organization by applying porter's five forces. They are very important to measure strengths and weaknesses of any organization deeply and they can also be very helpful for strategy development of any organisations. As per Porter, capacity of any organization largely depends on threat of new entrance, bargaining power of buyers, bargaining power of suppliers, threats of substitutes and rivalry amongst current or existing competitors. The above mentioned five forces have a large impact on price, cost and required investment as it deals with external factors which influence nature of competition and internal factors which influence the way in which organisations compete and there how five forces relates to the profitability of any organisations.

Threats of new entrance: The investment, technology and knowledge required to set up automobile industry like Tata Motors could be big barrier to enter in such field, which stop new entrance. However Indian economy is on rise. There is lots of progress in infrastructure mainly the better roads and highways, unexpected growth in financial sectors have expanded financing options to people all around the country and especially to rural populations. Due to such available facilities Indian market is becoming more and more attractive; hence there are many possibilities of new entrance. Thus, probably for the automobile industry like Tata Motors threat of new entrance is high. Example: Tata Nano which is a small and cheapest car of Tata Motors. The threats of new entrance for Nano can be Suzuki global car, Reva, Bajaj's Renault, Nissan's small car, Ajanta group's small car project etc.

The Bargaining power of buyers: Various domestic automobile companies like Eicher, Swaraj Mazda, Mahindra and Mahindra as well as more than 20 foreign automobile manufacturers are selling their products in Indian market which will provide range of choice for the Indian buyers. Hence in Tata Motors bargaining power of buyer is high as variety of choice available for the customers and services they get from the manufacturer do not vary from one company to another. Though there is very least options available for the products like Tata Nano which is low cost car in the world.

The Bargaining power of suppliers: Supplier power is largely depend on number of suppliers available to any automobile manufacturer. If a particular supplier provides very essential part to make any product then they are able to charge more prices to earn more profit, where we can say the bargaining power of supplier is high. Most probably it is assume that suppliers have considerable bargaining power as they are not dependent on a single manufacturer. However in case of Tata motors we can assume that the bargaining power of supplier is low as Tata motors is operating its joint ventures in various countries around the world. They have got experience and resources available from all the regions they are operating in therefore when any cost effective variable changes they can gather information from different countries to find out subjected matter. If the price of one supplier goes up they have got option to get that product from the different supplier from another region or country. Recent example: Tata motors took completely new approach to their supplier. They have just provided expected output to their suppliers and allowed them to obtain creativity with their design, materials and prices, which will probably reduce the bargaining power of supplier.

Threat of Substitutes: As India is well-known for the two-wheelers threat of substitutes is high to automotive manufacturers. The another important reasons for high threat of substitutes is, various competitors such as maruti, swaraj mazda, Eicher etc. are constantly striving to enhance their market share, which increase pressure on Tata motors to innovate and compete with these substitutes. Example: If the price of Nano goes up, the person who is switching from bike to car won't move to car and will think to remain in bike.

Rivalry among existing firms: Rivalry among existing firms is high as there are various competitors of Tata Motors in India which are, Maruti, Swaraj Mazda, and Eicher as well as foreign automobile makers which are constantly seeking the ways to be better than others. Example: Currently Tata Motors has introduced cheapest car in the world, now Many other companies (such as Ajanta group small electric car with proposed price of INR 85000) have planned to introduce cars in the same segment therefore price competition will start. Thus for the Tata Motors rivalry among existing firms is high.

Supply Chain Management:

Supply chain management is one of the important and necessary function of the organization. It concerns with flow of information as well as the flow of products and services. It is a management of relationship between operations and processes. The concept of supply chain applies to the internal relationship between processes as well as the outside relationship between operations. Overall it is a management of activities and relationship which intends to achieve maximum customer value and sustainable competitive advantage.

The supply chain management normally concerned with the flow of information as well as the flow of products and services.

In a supply side normally organisation send the information to the first tier supplier about their needs such as quality of material required, time limit, quantity, cost etc. Based on this first tier supplier send the relative information to

second tier customer and depending on this the second tier supplier supplies the products required to the organisation via first tier supplier.

To manage the demand side well, organisation obtain the information from the end customer of the product directly or via second tier customer and first tier customer and send it to its suppliers. So we can see that the information obtained from end customer requirement reaches up to last supplier via different channels such as, second and first tier customer, organisation, first tier supplier and so on and depends on this end customer obtains required products. To manage whole process of supply chain, management has to consider all its stages such as supply side, product manufacturing and demand side.

Supply side in Supply chain: The potential of any process or operation is largely depended on the receivable inputs. Therefore supply management is a required for effective operations management. There are three main activities involved in supply side, which are:

For a smooth process or operations it is necessary to pass through all above mention activities.

Selection of supplier: One of the important activities of the supply side management is selection of proper supplier. To select the supplier first of all they have to understand the requirement of all processes within their operations as well as to understand the capabilities of the supplier, because they are going to provide products and services required for the operations. To select the right supplier most of the firm mainly take up supplier scoring or assessment procedure which makes them able to evaluate different suppliers considering the relative importance of factors like, range of products or services provided, quality of products or services, awareness, delivery and volume flexibility, cost, ability to supply the required quantity as well as their potential for innovation, willingness to share link, long term commitment to supply etc. Another important decision of supply side management is sourcing decision which means whether to make or design component in-house (insourcing) or to get them from the suppliers (outsourcing). The next activity of supply side management is to decide source each individual product or service from single supplier or to use more than one supplier. Both single and multi-sourcing have their advantages and disadvantages.

Planning and controlling ongoing supply: Once the selection of suppliers is done the next activity of supply management is to plan and control the ongoing supply. Planning and control of ongoing supply is about ensure that the suppliers are given right information and encouragement to maintain smooth supply as well as to make sure that any internal discrepancy does not affect the suppliers ability to supply. Therefore maintenance of ongoing process requires relative method or system set up to ensure two-way flow of information between customer and supplier. To maintain this process well some organisations bring a degree of formality to supplier relationships by encouraging all suppliers to agree service-level agreements (SLAs). Such kind of agreement covers types of issues which can disturb the ongoing supply which are, response times, range of services, dependability of service supply etc.

Developing and improving supplier's capabilities: Developing and improving supplier capabilities is an important issue in supply side management. To help supplier to improve not only enhances the service from the supplier but it may also about lead to greater supplier loyalty and long-term commitment as it helps to enhance productivity, competitive advantage as well as to build a long term supply chain competitiveness which is necessary for success of any process or operations. To improve the supplier's capabilities company can use cross sourcing. Organisation can use single supplier for the certain sectors and another supplier with same capabilities for similar part of the business. Then it can give business to each supplier based on their performance which can motivate the supplier to improve its capabilities and performance. By this way organisation can also have backup if one supplier is not able to meet its requirement it can move to another easily.

Practical approach of supply side by using example of Tata Motors:

For the Automotive organisation, the main products provided by their suppliers are different automobile parts such as radiators, heat exchangers, seating system, gear boxes etc., raw materials like steel, iron, plastic required for manufacture some parts, design, technology etc. TML mainly divide its component into two different types: proprietary design and Tata Motors design. For proprietary design sector, TML use established suppliers such as Bosch who supplies engine management system whereas for in-house parts and system design TML choose supplier with

strong process capabilities who can give valuable suggestions as well as improve the designs. TML use multiple source for their supply side as they have started work with 600 suppliers and total 1800 supplier part combinations which were dropped down to 100 suppliers. TML prefers to go for long term contract instead of annual contract which helps them to low down their cost. About 75% of their components are from single source whereas about 90% of total cars are being outsourced. In 2001 TML have understood that dropping cost was only the option for their existence. To drop cost they have adopted entirely new approach to their supplier relationship. Instead of following typical model of supply chain they have simply given the outputs they expected and allowed their supplier to get creative with their design, materials and prices. Thus TML is being innovative to their supplier relationship to obtain desired goals.

Manufacturing products:

Manufacturing division can be divide in two parts. Such as the operations which produce products, is tangible whereas operations which produce services their output is intangible. However most of the operations produce mix of tangible and intangible. For automobile organization like Tata Motors produce tangible output such as commercial vehicles, passenger vehicles, certain parts of automobiles etc. along with intangible output such as information for safe drive, fuel save, end of life vehicle process as well as other services provided by the organization to their stakeholders. In automobile sector launching new model normally takes 3-5 years from initiation to assemblage. First of all manufacturer try to assume what would people like to drive after few years, then after they design automobile which suits to people's choice. Afterwards designer prepare the basic drawings which helps to see appearance of proposed vehicle. Based on this they make the clay model which can be studied by the styling experts and engineer. Once it's been pass through all the stages for review and acceptance & tool designer gives the permission to make tools that will manufacture the parts of the new model.

Figure 7: manufacturing Plant of Tata Motors.

The manufacturing process of Tata Motors

Machine shop (Transaxle) where Exhaust manifold, Intake manifold, gear box casting, gear are produced in machine shop. Heat treatment is also done for gears and other parts. This plant is equipped with latest CNC machines.

Engine shop: Engine works as a heart for any automobile. Here five important C's (necessary parts) of engine are received from machine shop and assembled with other components. Before the assemble engine is ready to dispatch to final assembly line, they test the engine on engine test beds where RPM, power and torque is checked.

Press shop: Here in this shop they make different body panels required to make the body of automobiles. Some skin panels are made in this shop whereas other panels are made by vendors. Here pick and place robots are being used to move part from one station to another station.

Figure 8: Manufacturing Plan Layout

Weld Shop: To make the body of the car skin panels from press shop and other panels from vendors are welded in this shop. Generally spot welding operations is carried out in weld shop. To move the jobs from one station to another they normally use hoist and tackle or by lift and carry arrangement.

Paint shop: Here they remove the dust and oil deposition from surface of the car body which is transferred from weld shop. Once this is done they pass car body through Cathode Electrode Deposition (CED) bath and afterwards they apply final colour to the car body according to production plan.

Trim cum Chassis fitting: Final assembling of the car is carried out in this section. Transmission setup from engine shop and painted car body from paint shop are received here for assembling as well as other accessories such as seat, wheels, window glass etc. are also fitted in this shop. Once all this done totally manufactured car comes out from this shop which is ready for test and inspection.

Demand side in supply chain:

All the organisations or supplier has to manage two types of demands, one is dependent and another is independent demand. The management is highly depended on certainty of demand. If the demand is assumable it is called as dependent demand. This kind of demand is assumable because it is depended on the particular factors which are predictable as well, which allows suppliers to make plan to meet demand in a systematic manner. Thus, in dependent demand supplier can assume the demand and work accordingly. However independent demand is unpredictable because such kind of demand is not dependent on visible factors. Therefore suppliers are often required to supply demand without having any visibility of customers order. Logistic management is “that part of supply chain management which plans, implements and controls the efficient forward and reverse flow and storage of goods, services and related information between the point of origin and the point of consumption in order to meet customers’ requirements”. Logistic means moving products to the customers. It includes transportation, material handling, packaging, inventory management, warehousing, information system etc. Any organization heavily depended on all above as organization’s cost, flexibility, delivery performance greatly depends on its logistics. In a global market, organisations are heavily depended on their logistic management in order to gain competitive advantage as well as to stand forward than rivals. Number of organisations thinks to outsource their logistics to third party providers, which vary in terms of range and integration of their services. In recent year logistics becomes more globalize and information-intensive. Due to development in technology, information can flow more quickly via internet which assists customers, transport companies, suppliers to track where products or goods are in the supply chain as well as where they are going next. Automatic identification technologies have also contributed in logistic management. Use of barcode provide visibility to the suppliers by allowing them to keep track of how many products are stored at particular location. This allows operation within the chain to co-ordinate their activities more readily as well as gives potential for cost saving. As Tata Motors dealing in commercial vehicles, passenger vehicles and defense vehicles, Tata Motors vehicle mainly sold to dealer, agent, businesses, army etc. They also sale their cars directly to the customers such as households and small businesses through company owned show rooms.

First passenger vehicle of Tata Motors was Tata India which was launched in 1998. To manage its demand side Tata motors has gone the whole hog while strengthening its dealership spread. TML was constantly trying to increase dealers as well as establishing easily accessible service points across the country to provide quality service after-sales. The company’s research centre has added a number of new features to the car through constant customer interaction. They have set up four parts warehouses at suitable locations to make the genuine spare parts available throughout the country at reasonable rate. TML has also arranged service programme at Pune city in India for all service executives of dealers and outlets as well as four regional training centres. TML has also set up toll free phone number accessed from 51 cities as well as they have set up customer help lines, dealer help lines and mobile service vans in more than 50% of dealerships. To meet the demand of all tire customers they have gone a long way in providing customer service in very short time. TML is also using InfoTech and internet to manage the customer and to raise its brand image. It has a special website with customer interaction facilities. The process of linking its dealers and service network is going on, which will improve the customer service level. This network will also help them to track orders from straight to the shop floor as well as greatly help in part management and delivery. They have also developed ‘knowledge management system where products complains is stored for the future benefit of service network. Thus TML has taken various steps to manage demand of all tire customers such as dealers, agents, end products customer etc. and as a result of all above company has been successful in selling 100000 cars much faster than its rivals Maruti 100 and Zen & also they have been successful in overcome its shortcomings in double quick time along with customer satisfaction.

Value chain:

Value chain analysis is much important for each organization as its divide firm in to various distinct activities carry out by the organization such as, designing, manufacturing, marketing etc. The concept of value chain is developed from accounting practices which helps to analyze the value added to organization at every stage of manufacturing or services or marketing.

The value chain involves two types of activities: Primary activities & Support activities. Primary activities change inputs (Inbound logistics, operation, outbound logistics, marketing and sales, service) into outputs and bring them to customer. All this primary activities are carried out by use of support activities which are firm infrastructure, Human

resource management, technology development and procurement. Every single activity in value chain 'can contribute to firm.

4. Conclusion

Among other things, supply chain management (SCM) focuses on sourcing, producing, and delivering goods and services to final consumers in order to gain a competitive edge, lower costs, improve quality, and offer better customer service. For it to thrive, adopters must develop specific competencies, work together on the supply chain, communicate openly, and outsource non-core competencies. SCM encompasses a number of different aspects, including inventory, information sharing and technology, transportation, warehousing, partner commitment and cooperation, as well as customer satisfaction. Businesses with effective supply chain integration experience lower inventories, quicker cash flow cycle times, less expensive logistics, cheaper purchasing costs, more productive workforces, and more responsive clients. The primary contribution of this work is the identification and development of a model for SCM, its concepts, and JIT for TATA Motors, a car manufacturing company. No attempt has ever been made to integrate this revolutionary technology into any Indian industries before to now.

References

1. Dawar, N. (2018). Tata Motors: A Case Study on Marketing Strategies.
2. Kumar, A. (2020). Assessing the Impact of Digital Marketing on Tata Motors' Brand Perception: A Survey Analysis.
3. Singh, R. (2019). Customer Satisfaction and Loyalty in the Automotive Industry: A Case Study of Tata Motors.
4. Chakraborty, M. (2018). Marketing Communication Strategies of Tata Motors: A Survey-Based Study.
5. Mehta, V. (2020). Social Media Marketing Strategies of Tata Motors: An Empirical Analysis.