

Supply chain of toyota motors



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In the automotive industry, supply chains are extensive and include elements of producing based on several forecasting techniques. The amount of money invested is large and fixed. Key trend in the automotive industry is the increase of the variant numbers on individual models and standardization of components in the supply chain. This means that models can be adjusted to the individual tastes of customers and new models are developed and produced continuously in order to meet the changing market demand. The uncertainty in the market place is translated into mix flexibility and volume flexibility in order to be competitive in the market place.

The supply chain which was developed by Toyota was one of the premier in Low Cost supply chains. The entire chain was intended to reduce the costs and get the cost to minimal possible values. But there was no compromise on customer satisfaction, quality and delivery time. It maintained “reasonable service levels”. The objective of the SCM was to place the “Right Product” at the right store in right quantities catering to the right customer at right time and a right price.

The supply chain created by Toyota (Exhibit 2) was highly integrated. It had a complete integration of right from the raw material providers to its Tier 1 and 2 vendors along with the manufacturing plants, warehouses, dealers and end customers. International collaborators were also a part of the supply chain which made it even more robust and inclusive. The analyses of some of elements of this highly integrated SCM are as below

Suppliers

Toyota organized its suppliers into functional tiers. The first tier suppliers worked together in a product development team and the second tier suppliers made individual parts. The first tier suppliers were highly co-operative. There is a high degree of co-operation and information exchange between them. This greatly reduces the lead time in new product development as it avoids “ Re-inventing the wheel”. Toyota also believes in having an overall technological development throughout their suppliers as well. It sends personnel to suppliers to compensate for greater working load. Besides that it also transfers senior working managers for top positions at their suppliers. This not only gives the suppliers greater insights to Toyotas management practices but is also a move to make the suppliers master “ Lean production practices” initiated by Toyota.

Related to flexibility, the following can be said. Since Toyota strives for a long-term relationship with its suppliers and also pursues a single-sourcing strategy for their strategic components, it does leave the OEM vulnerable for disruptions. But, the single-sourcing strategy is also a means to establish a long-term and flexible relationship with a supplier. Since each supplier shares its destiny with other suppliers and Toyota, the level of collaboration horizontally and vertically is higher. Therefore, a singly sourcing strategy itself is considered to be as hazardous, the relationship itself is far more flexible than a more economic-oriented relationship between a buyer-and-supplier.

The concept of minimal production cost is so well practice that the vendor pricing is also done on “ Market Price Minus” concept rather than “ Supplier

Cost Plus” This is basically a value analysis to the end user. By this particular move they try to provide the necessary value to the end product at minimal manufacturing cost. Besides that the “ production smoothening” concept enables the suppliers to maintain a constant business volumes. Overall the intention of the company is to maintain long term relationships with co-operation and team work.

Procurement

Toyota does not partner with its suppliers just functionally but in operation terms as well. Suppliers are integral elements of Toyota. They are geographically located within 56 miles radius. A security of guaranteed order is given which enables them to produce the best quality raw materials at cheapest cost achieving economies of scale. Toyota does not believe in choosing supplier as a lowest bidder. But it believes in gradual mutual improvement. It believes in “ vendor creation and development”. As an initiative in this direction it trains its suppliers as per required.

Packaging is also given a great importance with respect to transportation efficiency. Packaging is done in medium box size and small pallets. There is a dedicated transport service. Consistent daily route and periodic route revision is provided so as to cater to even smaller requirements.

Supplier Relations

Toyota has a supplier partnership hierarchy in which it develops or builds relations with its suppliers. This is called as supplier partnership hierarchy. This hierarchy is as described below.

Kaizen and training 6. Interlocking Structure

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Joint Improvement 7. Mutual Understanding and Trust

Information Sharing

Compatible Capabilities

Control System

As per this particular hierarchy what Toyota tries to achieve is create levels of responsibilities in the tiers itself along with strict cost and timing awareness. It has integrated the JIT (Just In Time) approach also

Toyota can be considered as the first automobile brand that introduced a clear need for flexibility in its entire business system. Toyota's 'lean philosophy' is not only restricted to its manufacturing system: it describes a philosophy that incorporates a collection of tools and techniques into the business processes to optimize time, human resources, assets, and productivity while improving the quality level of products and services to their customers.

Currently, several automobile brands clearly recognize the strength of 'lean thinking' in relation to increase flexibility in their supply chain activities. In the dyadic relationship between a buyer and supplier, emphasis is put on how the work can be done smoothly in order to improve quality and reduce costs. Best value procurement becomes more important instead of merely a cost-oriented approach that ensures a close relationship with suppliers. First tier suppliers are incorporated into the production development program.

This means that suppliers make their own engineering decisions instead of designing on the basis of blueprints solely. Next to this, these suppliers have

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their own 2nd tier suppliers under itself who supply parts for these components. This ensures that the exchange of information is possible horizontally which improves the collaboration between suppliers. This collaborative aspect is of major importance in a relationship when market demand (or other influences) requires changes of demand in the buyer-supplier relationship. This collaborative aspect among suppliers is rather uncommon in many industries since sharing information increases the risk of losing the next bidding process among suppliers to an assembler.

As a preliminary conclusion, the Toyota cases sheds light on the mix, volume, new product and delivery time aspects of flexibility in SCM.

MANUFACTURING

Toyota believes in continuous development by adopting lean production process and is a pioneer in TPS known as (Toyota Production System). The system is designed on “ Pull strategy” and customer is at the prime focus in the entire production facility. It implements lean production facility which has features like Cellular layouts and could be set up in small time. It has pull scheduling emphasizing decreased wastes. Loss aversion is one of the basic feature of lean. Besides that Toyota also assures six sigma qualities. The overall result of this policy being excellent quality at low costs combined with fast response abilities. Exhibit 3 shows some key principles of Lean manufacturing by Toyota

DISTRIBUTION

It applies “ Toyota way” to manage dealers based on 3 key principles

Complete freedom to dealers to make decisions. It helps them invest in right things to improve. Dealers become extremely proactive because of this move

Toyota believes in joint development with dealers. It believes in organic growth with dealers

Competition is key to improvement

Exhibit 4 shows the geographical distribution of Toyota

WHAT MAKES TOYOTA DIFFERENT FROM ITS COMPETITORS?

Toyota has an earthquake resilient supply chain- An pioneering initiative

Toyota and other Japanese automakers were forced to halt a large portion of their production both inside and outside Japan for months after the earthquake and tsunami cut off the supply of hundreds of parts from the country's devastated northeast.

Toyota was taking three steps to fight supply chain risks that he expected would be completed in roughly five years. The first is to further standardize parts across Japanese automakers so they could share common components that could be manufactured in several locations. The second step is to ask suppliers further down the chain to hold enough inventory — perhaps a few months' worth — for specialized components that cannot be built in more than one location, or take anti-quake measures that guarantee safety against any tremor or tsunami. Part of the second step would involve developing technology that would provide more options for parts and

materials, such as substituting rare earths found mostly in China. The third step to becoming more resilient was to make each region independent in its parts procurement so that a disaster in Japan would not affect production overseas.