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JUST IN TIME PURCHASING – AN APPROACH IN SUPPLY CHAIN MANAGEMENT AND ITS RELEVANCE TO INDIAN AUTOMOTIVE INDUSTRY

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ABSTRACT

In today's highly competitive global market place the pressure on organizations to find new ways to create and deliver value to the customers grows ever stronger. There have been many new ideas and concepts in business management over the last thirty or so years, some of which have endured and others discarded. However, perhaps one of the most significant principles to become widely adopted and practiced is that of just in time, or JIT. It is a philosophy as much as it is a technique; it is based upon the simple idea that wherever possible no activity should take place in the system until there is a need for it.

With increasing pressures on profits, due to the launch of several new models, with marginal differences in prices, Indian Automotive companies would do well to move towards JIT purchasing systems. Given the extent and variety of constraints and the existing purchasing mindset in Indian Automotive industry, it will take some more time to understand and practice the technique.

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This paper attempts to understand the possibilities of implementing JIT technique in the Indian automotive industry. This will help the automotive component manufacturers to effectively formulate their marketing strategies to create value to their OEM customers. It also helps the vehicle manufacturers to be competitive in the end market.

JIT is a concept based on the fact that the activity should not take place until there is need for it. Hence the inventory item should not be brought into the system until it is required for making the final product. It is characterized by maintaining zero inventories of raw materials and assemblies at the assembly plant. For this the JIT system involves close coordination between the buyers and the suppliers on a real time basis. This means frequent receipt of raw materials from suppliers. The following are the prerequisites of a successful JIT system.

- Buyer-seller partnership
- Online communication and information sharing
- Commitment to zero defects from both sides
- Frequent and small lot size shipments

The success of the JIT system works on mutual trust and commitments from both the sellers' and purchasers side. In a nutshell it is a philosophy of "Help to get helped". However the main barriers to the successful operation of the JIT system are:

- Organization structure
- Organization culture
- Technology differentials at the buyer and supplier ends
- Reluctance in information sharing
- Dispersed suppliers

The JIT system has its success stories in Japan, wherefrom it originated. The adoption of JIT by Americans could not bring them the desired results, resulting in their moving to other techniques. The reason being that a joint decision-making culture is required to operate the JIT system. Its success depends on the collaborative relationships and the decisions reached by group consensus rather than by individual's empowered in the organization based on a hierarchial structure. To make JIT a success, total cultural and structural changes are needed in both the buyer and seller organizations and they should operate from mutually beneficial policy platforms.

Although the Indian automotive industry has made great strides in various aspects, supply chain management is one area where there is a tremendous scope for improvement. In order to study the need for JIT, an analysis should be made with respect to the inventory turnover ratio and the profitability ratio (net profit as a percentage of sales) with respect to each company in the Automobile industry. We can find a significant correlation between inventory turnover ratio and profitability ratio. The higher the inventory turnover ratio the higher is the profitability of the company.

The Indian automotive component industry is growing. A recent trend analysis has shown that the industry's production has grown by 15% while exports have risen by 30%. Consequently the industry has now crossed the $5 billion mark in the output and $800 million in the exports. These represent important milestones for the Indian automotive component industry.

Keeping in mind the growth rate of automotive component industry, supply chain integration plays an important role in deciding the value addition to the end customers. The OEMs have to mainly concentrate on the logistics to bring efficiency, cost effectiveness, productivity in the business process to gain competitive advantage.

A framework is being offered which may be used to implement JIT purchasing system in the Indian automotive industry. The framework consists of three phases.

Phase I

Understand clearly the differences between the traditional purchasing and the JIT purchasing. The following table gives an idea regarding the same:

Table 1. Traditional Purchasing vs JIT Purchasing

Sl No.	Purchasing activity	Traditional purchasing	JIT purchasing
1	Establishing lot size	Purchase in large batches with delivery schedules for the whole financial year	Purchase in small lots with frequent deliveries
2	Selecting suppliers	Multiple sourcing with short term contracts	Single source for a given part, preferably close by, with a long term contract

Table1. *(Contd.)*

Sl No.	Purchasing activity	Traditional purchasing	JIT purchasing
3.	Pricing	Transportation approach	Relationship and collaborative approach
4.	Incoming inspection	Buyer is responsible	Supplier is responsible
5.	Logistics of transportation	Buyer is not worried. Only schedules are given to suppliers	Buyer actively participates. Identifies the transporter who can provide all logistics support
6.	Setting product specification	Buyer relies more on design specifications suppliers have little freedom in design specifications	Suppliers will be involved with buyers for product development
7.	Paper work	Great deal of formal paper work	Less time is spent on formal paper

We can see that the JIT purchasing is quite different from the traditional purchasing. It is very much essential to get the support of the executives to implement this system. We have to conduct workshops to educate the concerned purchase executives. We should also obtain the top management support and should move gradually and consciously to achieve lower inventory levels, to reduce wastages, to upgrade in house quality and to upgrade supplier quality. The time frame maybe approximately be fixed as 1-2 years to achieve this.

Table 2: Region wise Classification of Auto Component Manufacturers

Region	Total no. of manufacturers	% Of total
Eastern region	22	5
Northern region	184	41
Southern region	102	23
Western region	139	31
Total	447	100

Table 3. Category wise Classification of Auto Components

Category	No. of components in the category	% Of total
Engine parts	56	26
Electrical parts	14	6
Drive transmission and steering parts	33	15
Suspension and braking parts	18	8
Equipments	20	9
Body parts	24	11
Others	52	24

Source: ACMA Buyers Guide 2003

The difficulty in implementing JIT system in Indian context is that the JIT system needs the suppliers to be located close to the buyer well within a radius of 10 Kms from the plant. Hyundai motors when it started its operations in India at Tamilnadu, one of the pre conditions to the suppliers was to set up the production plant nearer to their plant or a warehouse to be set up in the area.

Traditionally in MRP systems the schedules are given for the whole financial year and the suppliers are free to decide the transporter, the only requirement is that the supplies has to be made as per schedules. In such organizations implementing JIT systems all of a sudden is difficult. Further implementing the JIT system organization wide enough for the entire component range is not advisable. The transition should be done gradually so as to stabilize the system.

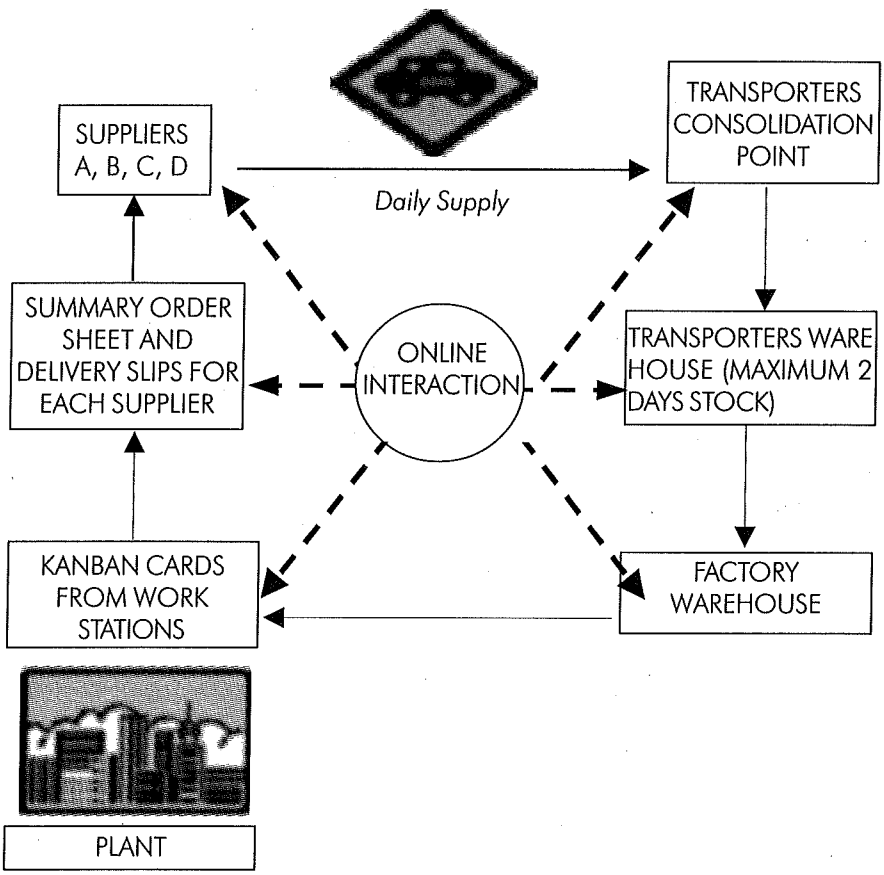
Once the organization is ready to accept the concept of JIT the next move is to classify the inventory according to ABC analysis. Identify a few components preferably A&B class items which contributes to the inventory value more and the suppliers of these components, using the region wise and component wise stratification as given in the Table 2 & 3.The OEMs have to take these suppliers in to confidence and convince them to organize a warehouse well within 10 kms radius of the plant. We can set a time frame of 6 to 8 months for this phase.

Phase III

Identify a transporter in consultation with these suppliers who can provide logistics support efficiently. The following points are to be considered.

1. Decide the routes to be covered by the transporters.
2. Determine the number of KANBAN cards required by each component.
3. Determine containers to be used and the delivery frequency.
4. Decide on the safety stocks.
5. Establish online interference with suppliers.
6. Establish online interference with transporter.
7. Implement the full fledged JIT system for the identified components

Once the system is in place and stabilized, it can be extended to other components also. We can set a time frame of 8 months to 1 year for this phase.



A Model for Implementing JIT System Plant

Conclusion

This paper only attempts to put some major issues in perspective and offer a broad based guidelines for doing so. Also, JIT systems are equally relevant in every manufacturing industry and need not be confined to the automotive industry alone. In fact it is even applicable in the services sectors also as the underlying concept is to do all activities "JUST IN TIME" and eliminate wastages of all kinds, which are relevant to all aspects of life let alone business.

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