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A comprehensive study of just-in-time commensurating Indian companies

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ABSTRACT

This conceptual paper analyses the concept of Just in Time in the supply chain and whether it can be applied to an Indian scenario. Based on the understanding of articles that have conducted research regarding supply chain, it is learned that just in time is one of the efficient ways to commensurate the company's objectives to reduce costs. Although Just in Time seems helpful it shall not be a resort in India. India, being a developing nation, has to go through lots of advancements in the way businesses are operated. India being a rurally dominated society; companies have to produce according to the convenience of customers which forces them to peg their goods at an affordable rate and turn that as its primary objective. This policy of plummeting the costs through an efficient supply chain has worked well for all the companies but the question remains as to which technique to be implemented. The paper suggests an alternative to Just in Time, which shall be implemented with ease, Hybrid Supply Chain. This model can prove helpful to the companies if it is able to correspond well.

Keywords*— Just in time, Hybrid Supply Chain, Lean manufacturing, Agile manufacturing, Supply chain, Lead Times, Third-Party logistics, Safety stocks, Total quality management*

1. INTRODUCTION

Just in time inventory can be defined as production in response to the customer, it involves the procurement of raw materials from suppliers as and when required for production, hence it is more of a pull-based system of supply chain.

Based on information derived from articles there are 5 dimensions to a just in time supply chain:

- **Procurement of raw materials and selection of supplier:** It should be economical, and as the name suggests should be present as and when required for production, the suppliers should be responsive to the needs of the company, since just in time is heavily dependent on the supplier, heavy research should be conducted on the supplier before selecting him/her as suppliers tend to have a long term relationship with a business when they are enlisted, thus ensuring quality of source, shorter lead times is extremely pivotal for just in time to work in an organization.
- **Manufacturing process**: Just in time inventory can work only if the manufacturing process is efficient as well as it involves standardized procedures for manufacturing and ensures that all raw materials are used efficiently without wastage, as the primary goal of Just in time inventory is to ensure zero inventory, it is necessary that it is complemented by an efficient manufacturing system.
- **Distribution Process**: The distribution process requires very low lead times, cross-docking(practice in logistics of unloading materials from an incoming semi-trailer truck or railroad car and loading these materials directly into outbound trucks, trailers, or rail cars, with little or no storage in between),quick delivery, third-party logistics(outsourcing of warehousing and transportation) can also take place, quality packing is pivotal to ensure that no damage occurs to goods during transit, Vendor managed inventory can also provide much-needed breathing room to companies by sharing the risk with the supplier, the supplier forecasts demand and replenish raw materials, if the demand fluctuates or falls then he/ she repurchases the raw material sold, thus reducing supply chain costs drastically for the company.
- **Information sharing**: There should be frequent information exchange between company and supplier, to ensure transparency and efficient response to market conditions, thus reducing bullwhip effect and also reducing inventory costs, there should be a mutual trust-based relationship between the supplier and the company.
- **Human Involvement**: Just in time supply chain requires a win-win situation between supplier and company to work as they both are dependent on each other, the supplier needs to provide information to companies in advance regarding market conditions as all innovation ideas will come from the supplier, through his/ her networks this can be through communication with distributors, lobbyists, etc.

1.1 Parameters to analyze Just in time inventory performance:

- Reduction in supply chain costs and holding close to zero inventories, this improves overall business performance, as well as the only area where cost can be reduced, is in supply chain operations, marketing, hr, sales, etc. tend to remain constant in terms of expenditure and supply chain reductions, even if it is negligible has an incremental effect on overall profitability and shareholder value.
- Efficient manufacturing process, to ensure that production is taking place in a very efficient manner.
- Efficient logistics, to ensure there are no delays in production and the market isn't "starving".
- Information sharing can be analyzed in terms of the accuracy and timeliness of information.
- Supplier performance can be analyzed based on quality of raw materials and timeliness for delivery of inputs and market information.

1.2 Advantages of Just in time Supply chain:

- A close relationship with suppliers, leading to quicker delivery, better market information
- Reduction in space requirements due to lesser inventory holding.
- Lesser safety stock leads to a reduction in costs of the overall firm, thereby leading to increased profits.
- Reduced manufacturing lead times
- Reduction in supply chain costs provides the firm with competitive advantage and more funds to invest in expansion and growth.
- Better forecasting of demand through efficient information sharing.
- Improved response to the market, as it is a pull-based supply chain system

1.3 Limitations of Just in Time:

- Long term relationships with suppliers are very difficult to maintain.
- Processes are very interdependent on each other, one problem could result in the entire system failing, domino effect.
- Heavy dependence on one or two suppliers as maintaining such a close relationship with multiple suppliers, while ensuring they deliver according to the company's Total quality management and Research and Development parameters is very difficult.
- Demand cannot always be forecasted accurately, which may lead to overstocking of finished goods or understocking of finished goods leading to market starvation.
- Just in time doesn't work in settings where continuous production isn't taking place.

2. A SUCCESS STORY OF JUST IN TIME INVENTORY

Apple has successfully streamlined its supply chain costs and reduced inventory holding costs drastically by implementing Just in time Inventory under Tim Cook's leadership. Some noteworthy features of Apple's supply chain are:

- Apple utilizes China's cheap labor to assemble commodities
- It has a centralized warehouse in California, thus reducing logistics cost drastically.
- All data is sent to the centralized warehouse, leading to better efficiency in the forecasting of demand, leading to reduction in effect of Bullwhip Effect.
- Manufacturing is outsourced, third party manufacturers (3 PM), leading to focus on core business activities and reduced costs in production.
- Requesting suppliers through smart and scientific negotiation, thereby retaining loyalty and at the same time reducing the cost of procurement.
- Requesting suppliers to relocate closer to Apple's factory's leading to zero safety stock, improved responsiveness and efficiency.

Hence Apple's supply chain is very robust and responsive due to these strategic decisions undertaken by Tim cook, reducing Inventory holding cost to a negligible amount, plus the quality is retained due to centralization and control is retained as well due to this feature.

Apple's supply chain accommodates new product launches every 6-8 months with a new I phone model, Apple watches etc in the market, thus showcasing the responsiveness and robustness of the supply chain.

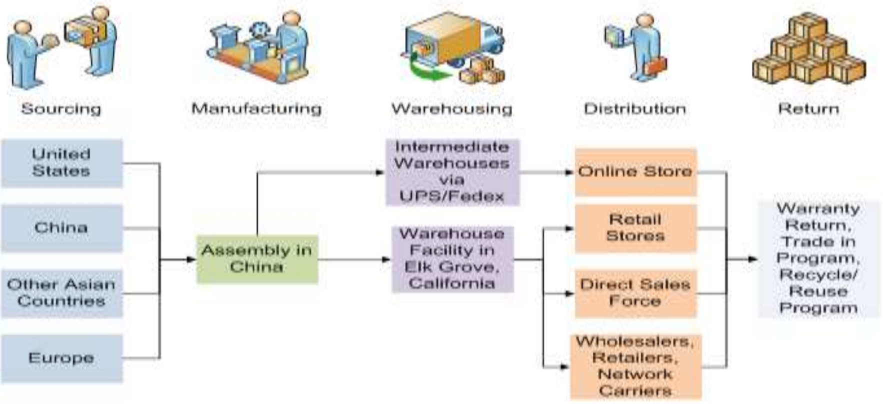

Fig. 1: Supply chain

3. JUST IN TIME INVENTORY IN INDIA

Implementation of Just in time Inventory in India is very doubtful and difficult due to multiple reasons:

- **Trust:** No trust in the vendor, the vendor, and the companies tend to have lack of mutual trust towards each other, leading to misinterpretation of marketing information, not believing the supplier, keeping higher stocks of inventory then required, leading to increased supply chain costs.
- **Cost:** Most supply chain operations tend to focus on the parameters of Right place, Right time, Right Quality and Right source, cost is held below these parameters, but in developing countries like India cost becomes a huge factor of importance, leading to increased negotiations with the supplier, this leads to a poor relationship with supplier, as the company's negotiation may lead to supplier getting squeezed, which leads to loss of goodwill.
- **Safety Stocks:** Indian Supply chain managers tend to be laggards and focus on saving their skin, which leads to them following outdated systems, and holding high amounts of safety stock which leads to increased supply chain costs of close to 15%.
- **Infrastructure support:** Poor infrastructure, power outages during production, poor roads, heavy traffic congestions, taxation(introduction of GST has admittedly led to centralization and streamlining of the procedure leading to reduction in state-based taxes as there is one single tax).
- **Jobs loss:** The implementation of this model will result in jobs lost in the economy since the production shall run only when there is demand. For companies which require inducive demand or operate better seasonally then it becomes difficult to maintain the trust of the employees.

All these factors drastically affect the implementation of Just in time inventory in India and make it questionable whether it can be successfully implemented or not in an Indian Scenario.

3.1 Real Life scenarios of just in time in India

The Indian companies which currently operate on the basis of JIT come majorly from the automobile industry. Companies like Maruti Suzuki, Hyundai, and Tata Motors are getting the tastes of the economic slowdown in 2019 along with other industries like FMCG, Hospitality, and NBFC's.

The impact of consumption crunch in the country has forced the companies to temporarily slow down their production lines who are basically acting according to the demand of the market. JIT is also performed on the same lines when the production is functioning only during demand.

Now taking that into consideration we may relate to the impact of JIT in the economy of the country. There has been a massive job cut in this year leading to lots of panic in the market. The JIT can be efficient and the industry can perform well only if the market is free to take decisions. But JIT turns out to be the cause for a market rift by minimizing production and manpower.

Another important factor that has to be taken into consideration is the mindsets of manufacturers. Unlike Japan who is focused more on improving the total performance of the unit, India prefers to be manufacturer oriented who tries to minimize the defects, reduce the costs, etc.

This is the biggest flaw in the Indian market and the arguments to support these claims are framed further. Maruti Suzuki recently had to call back 40000 units of Wagon R due to faulty fuel houses and TVS motors had to call back one of its 2 wheelers due to suspicious brake issues. These 2 companies give us a hint of how the Indian companies operate whose focus relies only on the eliminating defects, reduced costs, and average quality. Though Maruti Suzuki has implemented JIT in India, it has still failed to provide the quality products, Wagon R (Aug 2019) and Swift (2013) remain the example. The problem with the implementation of JIT is the mentality of customers and producers, below par technology to support supply chain and the economic loss due to its implementation.

4. IF NOT JIT, THEN WHAT CAN INDIA DO?

4.1 Hybrid Supply Chain

India can attempt to achieve a supply chain that is both lean and responsive in nature. This will provide Competitive advantages to any Indian company who successfully adopts it as it will allow them to engage in customization and be more responsive to the market, a successful example of a lean and agile supply Chain Company is ZARA (clothes producer), they are able to customize their products based on customer requirements.

- Lean: Value edition for customers through the removal of unnecessary wastes like bottlenecks, unnecessary product features, etc.
- Agile: Creating a Supply chain that is responsive to the changing market conditions, can handle disruptions and unpredictability.
- This can be achieved by:
- Reducing unnecessary costs like insurance on goods for example, when accident rates are extremely low.
- Improving relationship with suppliers, to ensure a constant stream of raw materials, the relationship should always be win-win in nature, if there is too much emphasis on cost reduction then the supplier may start providing raw materials to competitors and not reserve any for the company squeezing him/her, thus leading to market starvation.
- Better information through better relationship with supplier, suppliers can use their various networks to provide companies with first-mover advantages or prepare themselves for any disruptions in demand, increase or fall in price in advance through their lobbyist connections in the government, they can provide product ideas through their understanding of the market, hence good relations have to be maintained with suppliers.

5. CONCLUSIONS AND RECOMMENDATIONS

Based on analyses of literature, the best supply chain form India should aim for is a hybrid supply chain, Just in time is currently very difficult to manage in India, due to its developing nature in terms of infrastructure, government policies, culture, etc. Further research is required in this area is Just in time which is a very alien concept in India and is something that is unachievable at the moment.

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