

Responsiveness vs efficiency in supply chain management



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A firm's ability to satisfy customer requirements in a timely manner is referred to as Responsiveness, while efficiency is a firm's ability to deliver goods in accordance with the customer's expectations with least wastage in terms of raw materials, labour and cost.

While choosing what supply chain process is to be used, the choice one has to make is between responsiveness and efficiency. It is extremely vital to identify the correct framework to devise the most effective supply chain. Different frameworks have been suggested for arriving at a proper supply chain process. But the choices have been widely varied. The first person to arrive at a standardized solution was Fisher, who suggested the proper supply chain framework can only be decided by analyzing the nature of the demand for the product. For functional products (stable, predictable demand, long life cycle, and slow "clockspeed") Fisher argues that the supply chain should be designed for cost efficiency; for innovative products (volatile demand, short life cycle, fast "clockspeed") he maintained that the supply chain should be designed to be fast and responsive. Fisher's model was modified by Lee in 2002 who suggested that the choice between responsiveness and efficiency can only be made by considering the tendency with which the value of the product changes between production and delivery to the customer. He deduced that for products whose value remains constant throughout the entire supply chain, any of the two parameters can be selected. But for perishable products whose value changes very rapidly throughout the supply chain and hence in the cost of time delays, both the parameters i. e. responsiveness and efficiency can be used collaboratively to retain the value of the product.

As we see for products like melons, sweet corn, flowers or sea food the declining value varies with time. In the initial stage the declining value is sufficiently high while in the later parts the value stabilizes to a large extent. In such a scenario we will not be able to use a single supply chain methodology throughout the entire process. If the entire process is responsive, then the later part of the supply chain will not be cost efficient whereas if the entire process is cost efficient the products may not reach the customers timely and due to very high declining rate at the initial stage of the supply chain, the products may get degraded. In such a scenario we use a combination of responsive and efficient supply chain.

The supply chain process for melons has been illustrated below.

In the critical time period between picking and cooling (t_0 to t_1), product loses value at a rapid, exponential rate and the supply chain must be responsive. In the interval post-cooling (t_1 to t_2), the product's value declines at a much slower rate and the supply chain can be designed for cost efficiency.

Then again for products whose loss in value cannot be stabilized and continue to lose value at an exponential rate, like sweets the supply chain has to be responsive to attain optimization. There are other perishables like milk whose declining value at initial stage is low but degrades at a rapid pace at the later stages, a reverse combination i. e. initially a cost efficient then a responsive supply chain may be devised. Thus we can effectively conclude that the supply chain process can be determined only after

analyzing the value system of the particular perishable and it changes from item to item.

ROAD AHEAD

The major players in the \$125-billion logistics and supply chain space are Railways, roads, ports, airlines and warehouses. The unorganized sector accounts for most of the business, comprising truck owners, warehouse operators and freight forwarders. Road transport is dominated by fleets consisting of less than 5 trucks that accounts for over two thirds of the trucks operating in India, according to a Delloite report. Increasing understanding and collaboration between these small operators can bring down costs as well delivery time significantly. The government of India has taken up the initiative of constructing 2500 Kms of road by 2010-11. As well they have taken up the effort to improve other road transport means by a huge extent. The planned list of such targets has been tabulated below. With such plans in place it is expected that the road network to be much more extensive and transport to be much more robust.

Indian Railways is the dominant player in the rail segment spanning 63, 332 route km. Though the existing railway network is constrained by capacity limitations, there sector is being liberalized gradually with licenses being awarded to private players for container transportation. India's port infrastructure consists of 12 major ports and around 180 non-major ports. Several of them have drawn foreign and private equity investments. These include Gujarat Pipavav, Mundra Port and Gangavaram Port. As for air transport, again, with a vibrant and robust private sector participation has led to infrastructure improvement. The civil aviation ministry has set a target

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of getting around 500 airports operational all over the country. This will include renovation of old airports as well as developing Greenfield airports. Industry experts hold the opinion that the warehousing segment will have potential once Goods and Services tax(GST) regime replaces the differential state tax structure. Now, companies set up small warehouses in different states to adhere to various tax codes. But with goods and services Tax companies are expected to set up large IT-enabled centralized warehouses that would provide a huge impetus to the logistics and supply chain operations. Enabling one stop logistics shopping is another major drive. Some others also are attempting to achieve the same goal, but by bringing in different operators together and keeping their own assets and resources low. For perishable items the development of Cold Chain storage is extremely vital.

The Government of India (GOI) has accorded high priority to the establishment of cold chains and encourages major initiatives in this sector.

- Foreign equity participation of 51% is permitted for cold chain projects.
- There is no restriction on import of cold storage equipment or establishing cold storages in India.
- National Horticulture Board (NHB) operates a capital investment subsidy scheme (CISS) which provides 25% (maximum Rs. 50 lakhs) subsidies to the promoter.

Furthermore, to handle the expected higher agricultural production during the Tenth Plan Period, the Inter Ministerial Task force on Agricultural Marketing Reforms constituted by Ministry of Agriculture, Government of

India has recommended the creation of additional cold chain facilities at an investment cost of Rs. 2500 crore of which Rs. 625 crore are to be provided as subsidy and the rest has to come as private investment. They have also suggested modernization of existing facilities with an investment cost of Rs. 2100 crore of which Rs. 525 crore are to be subsidy and the balance to come as private investment. The state governments also have initiatives in the food processing and cold chain sectors.

With all these development the effectiveness and efficiency of the logistics and supply chain of perishable items is expected to grow by a huge extent in India and the waste is supposed to get reduced substantially.