

The Role of Multi-modal Logistics on Food Supply Transport & Storages in India

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Abstract

This paper aims to analyze the importance of logistics on the present environment and the challenges required to meet for the future growth on logistics requirements on Food Supply transport and Storages in India.

Globalization, privatization and liberalization are forcing the logistics service providers to orient themselves for delivering better value to the customer at lowest cost. Further, the environmental pressures and the regulators are creating pressures to provide the services within the given set up regulatory framework.

Realizing the development of Indian Food supply Transport and multimodal logistics movements, the present study attempts to understand the Indian logistics for food supply transport and storages cost. Further also based on cost model as a framework using data for a case the study attempts to narrow down attributes the cost.

Around 30-40% of food grown in the country goes to waste as the country is having largest agricultural challenges.

The infrastructure challenges in India are a serious concern depending on both the region and crop grown. The close proximity to a major market and also to metro cities makes transportation logistics relatively costlier.

The current transportation infrastructure has no effective means to transport crops to market in the first place. Poor roads, a lack of tractors and trucks, and long distances to city markets collectively make it difficult for farmers to extract fair prices as a result multimodal transport has become inevitable to make the logistics cost more economically viable.

Keywords: Indian Food Supply Transport, Logistics cost, sustainability, competitiveness, Transportation cost.

1. Introduction

Globalization has provided tremendous opportunities and challenges for Indian firms. The firms have realized that in order to survive and sustain in open and liberalized environment, they need to adopt a strategy which will provide them not only competitive edge but also sustainable for future operations.

The infrastructure challenges are different depending on both the region and crop grown. In remote parts of India, where transportation infrastructure *is* problematic, there's often no effective means to transport crops to market in the first place. Poor roads, a lack of tractors and trucks, and long distances to city markets collectively make it difficult for farmers to extract fair prices. Further, the extra cost of getting to market means that in bumper crop seasons, when prices fall, it's often uneconomical to harvest in the first place. As a result, crops are left to spoil in the field.

Multi-Modal Logistic means transport of cargo on "door-to-door" basis, i.e from the premises of the shipper to that of the consignee by more than one mode of transport under a single contract evidenced by a single transport document. Multi-Modal is single transport document which entails full of liability and that is why delays and delivery are to be managed by multi-modal transport operator.

This paper aims to analyze the importance of logistics on the present environment and the challenges required to meet for the future growth on logistics requirements in food supply transport and storages in India. The paper is organized as, initially the relevant literature is presented along with the identifications of gaps, this is followed by the case of Indian firms and understanding the cost elements, finally a framework is proposed and concluding remarks are presented.

2. Literature Review

The Literature review in the present case has been categorized as presented in Fig. 1.

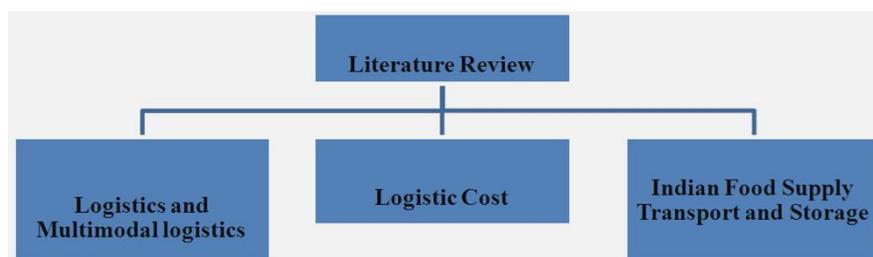


Fig. 1: Literature categorization.

2.1 Logistics and Multimodal logistics

A number of researchers have explored the subject of logistics from time to time, as a result the subject has gained attentions. Table 1, below presents a select compilation of different views on logistics as proposed by various researchers.

Table 1: Select summary of various views on logistics and Multimodal logistics

Sl. No.	Author (Year)	Definition
01	Berresford and Dubey (1990)	Multi-Modal Logistics is a process along -with the chain, both cost and value accumulate and possibilities for locations for inventory holding and other activities are identified..
02	Christopher (1996)	Christopher (2005) states that there is a need to analyze specific supply chains in term of the consumption of time by non-value adding and value adding activities. For clarity, he suggests a graphical approach that captures movement, value addition, processing and storage..
03	Zheng et al., (2005)	Model can be applied to the full range of freight classes in order to examine combinations of transport modes which are potentially best able to satisfy critical service criteria.
04	Gentry(2006)	Multimodal Logistics are the “critical elements of successful collaborative arrangements are sustained service performance on behalf of the carrier”..
05	Christopher, 1992; Mason and Lalwani, 2006; Mason et al.,(2007)	Multi-Modal Logistics chains increasingly compete with each other, the interdependence of elements within the chains becomes even more critical.

2.2 Logistics Cost

Since past, different researchers from time to time, reviewed and explored the subject of reduction on logistics costs by use of multimodal logistics. While, Genetry (2006) comment that Logistics costs and goals are often in conflict with the use of multimodal logistics, a situation normally resolved by finding a compromise solution, aimed to produce an acceptance outcome, balancing cost and quality. Mason et al, (2007) worked on transportation costs by use of multimodal logistics and views that transportation costs explain why most of the food supplies are quite high in the world are located on the waterways, where ships can deliver the finished products with no transshipment operations and no double handling of such perishable cargo.

2.3 Indian Food Supplies Sector at a Glance

Infrastructure

The infrastructure challenges look different depending on both the region and crop grown. In more remote parts of India, where transportation infrastructure is problematic, there's often no effective means to transport crops to market in the first place. Poor roads, a lack of tractors and trucks, and long distances to city markets

collectively make it difficult for farmers to extract fair prices. Further, the extra cost of getting to market means that in bumper crop seasons, when prices fall, it's often uneconomical to harvest in the first place. As a result, crops are left to spoil in the field.

2.4 Government Purchase and Distribution Schemes

Bureaucracy and corruption are well known problems in India and food supply systems are not immune.. This massive program involves a number of government agencies and intermediaries. Farmers and Commission Agents and corrupt officials running storage depots often rig weighing scales to indicate less grain coming in, siphoning off the excess to the gray or black markets. Most of the farmers are not aware about the government's role in assuring food safety while simultaneously helping farmers make ends meet.

2.5 Middlemen, Bargaining Power, and Price Transparency

Before food gets from a farmer to a consumer, it's typically exchanged through a number of intermediaries, Traders buy and ship produce and Commission Agents arrange transactions between farmers and traders. Since the typical farmer only works a couple acres of land and is not an important supplier to Trader and Commission Agents, these middlemen have an advantage in terms of information and bargaining power.

Farmers often won't know the price for their product before they get to the wholesale market. Once at the market, the Commission Agents can dictate the price as it's not economical for the farmer to take the goods back in order to wait for a better price. Commission Agents have little incentive to prevent waste as they are compensated based on the total transaction value, without ever taking ownership of the product. Since they generally receive only a 2.5-6% commission on sales, it makes little sense for them to invest time to find traders offering marginally higher prices – they can earn more income by completing many deals as quickly as possible.

2.6 Price Volatility

All of these factors contribute to price volatility, or extreme and somewhat unpredictable fluctuations, which compounds the waste problem further. When future prices are difficult to estimate, farmers cannot plan to grow the most economically efficient crops. This is problematic for two reasons. First, farmers will often choose to grow crops that were profitable over the past couple seasons. When this herding behavior occurs, prices then plummet, and it becomes uneconomical to harvest. Secondly, when farmers cannot estimate their income in the coming year, it becomes much more risky to make long term investments that would improve future efficiency. An attempt is made to understand various external pressures on logistics cost, a typical representation is presented in Fig. 2 below.

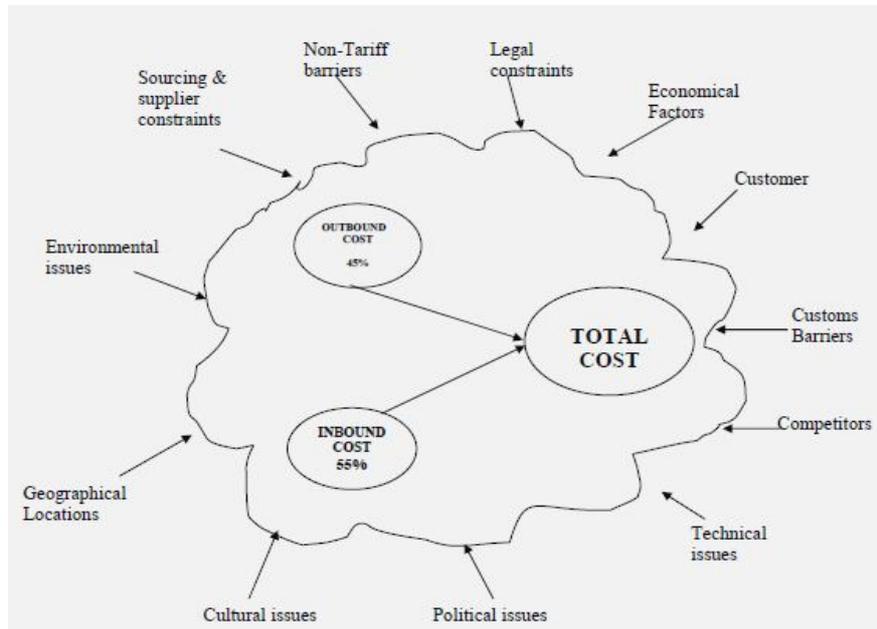


Fig. 2: Typical environmental impacts on logistics costs of ABC limited.

3. Concluding Remarks

The present study was undertaken to understand the logistics cost reduction by way of using the multimodal logistics in the food supply transport and storages in India. In more remote parts of India, where transportation infrastructure is problematic, there's often no effective means to transport crops to market in the first place. Poor roads, a lack of tractors and trucks, and long distances to city markets collectively make it difficult for farmers to extract fair prices.

Further the detailed analysis revealed that transport cost on food supplies is about 55% of the total logistics cost and thus accounting as a major section of the total cost. The reasons for this may be attributed to the fact that transportation in food supplies and storages mainly deals with bulk movement of Rice, wheat and sugar to different locations for transportation and storages. For such bulk transport we need for the suitable modes like an appropriate combination of rail with land transportation system might have a significant reduction on logistics cost on one side but may demand a heavy investment for infrastructure on the other side and hence there is a strong need for developing and determining the customized ways of optimizing the logistics costs in infrastructure sector.

Finally, this study has presented a series of research directions as to understand in details the impact of these environments on transportation costs. Analyze whether the strategic decision of sourcing, transportation through multimodal system will lead to cost reduction, becomes a key research issue which need to be addressed. Hence this study may be seen as a step further in understanding the transportation sector on food transportation in India.

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