

# Strategic Change in Supply Chain of Fruit and Vegetables

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**Abstract:** Supply chain planning in the fruits and vegetables (F&V) supply chains, dealing with short life cycled products in a competitive marketplace, integrates the complex network of farmers, food processing and supply to end customers to enhance operational effectiveness. This planning framework aggregates data from multiple sources, such as customers, super markets, farmer cooperatives and contract farmers, to provide visibility of demand supply status for inter-enterprise collaboration. The supply chain analysis has included the aspects of business planning, supply and demand management, inventory, transportation, logistics optimization from the perspective of information sharing to satisfy the need of the end customers. Further, this report explains the sustainability of change in the management of procurement activities and infrastructure which makes a change in the traditional marketing technique which ultimately provide benefit to both farmer as well as customers.

**Keywords:** Food industry, Supply chain planning, Information sharing, Collaborative practices

## 1. INTRODUCTION

In today's competitive marketplace, there is a high pressure on organizations to find new techniques to organize and deliver value to customer. Gradually, in emerging economies and developments markets, the power of the seller has overtaken that of the customer. Supply chain Management helps in cutting costs, and also adds to maintain and improve the Quality of fruits and vegetables marketed. In marketing vegetables and fruits, which are Perishable in nature, supply chain plays a important role. SCM for fruits and vegetables is complicated by the very nature of land holding by the farmers, mainly in remote villages, diversified consumptions patterns and poor infrastructure, varied climate conditions, production spread over wide geographical area. In India, SCM is at its initial stage in marketing of Fruits and Vegetables. The perish ability, seasonality and bulkiness and consumption habits of the Indian Consumers makes Marketing of Fruits and Vegetables challenging. In adding that, poor equity in SC, poor infrastructure, and conventional small scale unorganized retailers, make process of supply

chain challenging in the present scenario. The Indian retail market is mainly dominated by unorganized retailers who are homogeneous group. Recent development in retailing is the entry of large number of organized retailers. Current supply chain catering mainly to the unorganized retailers containing many drawbacks.

In a buyer market, the rules are different. In particular, customer service becomes most important as the needs and the demands of customers continually changes and increases. At the same time, market maturity collaborated with new sources of global competition has led to over capacity in industries creating an inevitable pressure on prices. Prices are very important competitive variable in any markets and it becomes an issue to think upon as commoditization of markets continues. Supply chain management plays a critical role in maintaining business costs minimum and profitability as much as possible.

There are many factors in the process of supply chain management. Flow is the foremost element, the foundation for all types of the process. There are three main types of flow, such as the product flow, the information flow and the finances flow. The product flow includes the movement of goods from a supplier to a customer, as well as any customer returns or service needs. The information flow does transmitting orders and updating the status of delivery. The challenge for us in supply chain management is to maintain all three flows and all three unique in an efficient manner which resulting in optimal results for farmers, growers, wholesalers and end customers.

## 2. SUPPLY CHAIN MANAGEMENT

SCM is the proper collaboration of material flows, information flows and financial flows among all the involved organizations so as to confirm that the right product is in the right place, at the right price, at the right time, and in the right condition. Supply Chain Management plays a crucial role in marketing of goods and services. "It is the supply that compete, and not individual businesses" – is an accepted saying. Every business plans to cut the costs, which do not add to maintain and improve the quality of goods and services delivered. In this direction,

supply chain has played major role across the world in varied industries. . Supply chain Management helps in cutting costs, and also adds to maintain and improve the Quality of fruits and vegetables marketed. Efficient SCM in marketing, not only increases the profitability and efficiency of retailers, but also adds value to different stakeholders such as farmers, consolidators and consumers.

Hence, supply chain management can be defined as the design and operation of physical, management information and financial systems needed to transfer goods and services from point of production to point of consumption in an efficient and effective manner. The entire supply chain management process is a value chain where bottlenecks, value adding factors and liability factors are identified and addressed, thus making the retail organization to have an efficient supply chain. The supply is the important part of retail operations that confirms that the right product is in the right place, at the right time and at the right cost. The supply chain knowledge can help the retailers identify superior suppliers and distributors which help them to improve the productivity, which ultimately cut the customers costs.

### 3. OBJECTIVE

In India, about 30 percent of the fruits and vegetables grown gets wasted annually creates instability of prices, farmers not getting advantageous prices, rural depletion making in farmers' frustrations and suicides. Enough attention should be paid at the pre-harvest stages for increases the levels of production by innovative techniques like crop rotation, pest control, fertilizers, irrigation, soil conservation etc. but, post harvest issues have not been addressed appropriately. Besides having achieved national food security, the lives over 200 million Indian farmers and farm workers and their well-being who have been the backbone of Indian agriculture continue to be a matter of major concern. Agriculture and its allied industries sector employs 67 percent of the country's population. By practicing improved supply chain management practices, there will be considerable decrease in the wastages of fruits and vegetables which in turn will give profit to both the farmers and the consumers by means of increased returns and decrease in prices respectively.

Major advantages of supply chain management are:

- Reduction of product losses in transportation and storage
- Increase of sales
- control of product safety and quality

- Large investments and risks are shared among partners in the chain
- Increasing efficiencies and the volume of trade
- circulation of technology, advanced techniques, capital and knowledge among chain partners
- Better Information about the flow of products, markets and technologies
- Tracking and tracing to the source
- satisfaction of customer

### 4. INDIAN FRESH FRUITS AND VEGETABLES SUPPLY CHAIN

India's agricultural sector majorly contributes to GDP and growth and most of India's Population continues to depend on it. Despite rapid growth of the services and industries sector as globalization leads to taking in the foreign technology and practices, agriculture continues to be in medieval times. India's food supply chain leads to large wastage and inefficiencies as 30% of India's vegetable and fruit produce being wasted. The unproductive supply chain leads to periodic shortages of food items used by Indian part of the daily diet as Onion prices have hit around Rs.70-80 per kg.

In Indian market, there is two different kind of supply chain exists in the fresh fruits and vegetables market. In traditional supply chain, the main difference between the two supply chains is this that the number of intermediates in the traditional supply chain is high and thus the amount of wastage is high with transaction cost.

#### A. Present Fruit and Vegetable Supply Chain Model in India

Fig. 1 shows the schematic diagram of fruit and vegetable supply chain in India which shows the number of intermediates involved in the traditional supply chain of vegetables and fruit in India. In India the majority of the trade works with traditional way. Generally the growers sale fruits and vegetables to the middleman who collect fruits from various adjacent areas and sales to the commission agent or traders. Commission agents are the middleman or intermediate that finds various buyers for the local middleman and take some commission against the sales made. They generally find out the bigger players or traders who buy fruits in large quantity. Then trader collects all small quantities and consolidates of large varieties and sale those to the wholesaler.

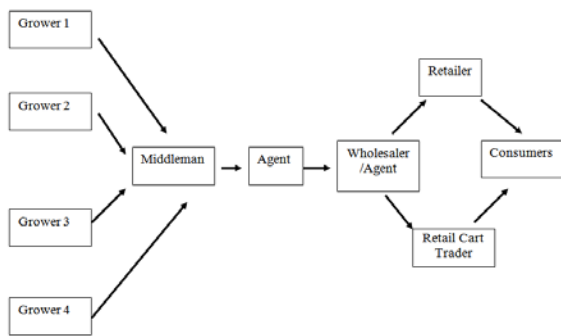


Fig. 1: Flow of Supply Chain of fruit and vegetables In Local Areas Market

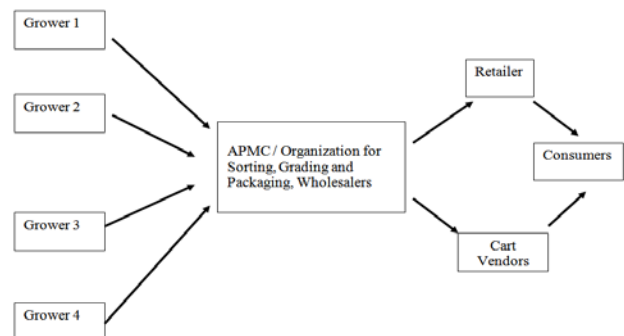


Fig. 2: Proposed Supply Chain Model of Fruit And Vegetables

The major problem in this supply chain is the transaction cost which is too high because of more number of intermediaries in the supply chain. Only 30-35% of the end price reaches to the fruit growers and other part goes to the different intermediaries. Since supply chain is long and scattered, wastage of fruit and vegetables is around 10-12% of the total quantity which increases the condition of cost rise for the end customer.

### B. Proposed Supply Chain Model

Fig. 2 shows the schematic diagram of fruit and vegetable supply chain in India which shows the number of intermediates involved in the supply chain of fruit and vegetables is reduced. Farmers or growers transport fruits and vegetables from farming location to the buying centers. Modes of transport are mini truck, bullock cart, bicycle, tricycle, motorcycle and baskets etc. At the buying centers (APMC), there will be auction for wholesalers to purchase from growers. Then organization should provide the facility with good infrastructure, equipment, and new technology for sorting, grading the fruits and vegetables. After proper sorting and grading, the fruits and vegetables will be packed in crates and boxes. Then it is sold.

Thus by the improved supply chain model, transportation limits up to certain extent and reduces inefficiencies in supply chain, proper handling, and minimize the rate of wastage, thus reducing the overheads of supply chain. Minimization of transportation and wastage during the supply chain of fruit and vegetables controls prices for end consumer with good food quality. So the end cost may decrease up to 20-30% and wastage can be decreased up to 10-15%.

## 5. CONCLUSION

Vegetables, fruits play a major role for the existence of people and also a very crucial role in the economy of India. The traditional retailings of vegetables are not so organized, and about 97% of the total market is extremely localized with high interruption of large number of intermediates. The long transport process from the growers to the end consumer makes the wastage of 10-12% of total in addition with the transportation cost. This increases the cost of fruit and vegetable for the end customer also affects the quality. The food supply chain requires the attention of the academics, the industry sector and the Government. In the traditional business model, wholesalers are intermediaries who hold a predominant link in the retail vegetable logistical chain. In general, all the retailers are necessarily dependent on the local wholesales market. The major factors are poor transport facilities, non availability of large scale cold storage, no clean policy guidelines from government and fragmented and small farmers.

The inefficiencies discussed in the above study have to be handles more carefully. The factors which affect the supply chain also have to be monitored and development to improve the supply chain efficiency has to be carried out in India. Working with suppliers on different issues not only generates significant environmental benefits, but also opportunities for cost containment and enhanced quality of product.

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