

RESEARCH NOTE

Identifying the Constraints in Supply Chain of Vegetable in Small Production System

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ABSTRACT

Market plays an important role in effectiveness of any enterprise importantly for agricultural produce like vegetables is more challenging than others because of perish ability, seasonality and bulkiness. Vegetable marketing in Jharkhand is predominantly unorganized and retailer oriented. The very nature of small size of land holdings by the farmers, aberrant weather condition, and typical habits of consumption (buying fresh vegetables) of the consumers and poor Supply chain infrastructure makes marketing for vegetables more critical to its entrepreneurship. This study attempts to identify various issues and constraints involved in managing supply chain in vegetables and identifying and analyze different strategies that can be applied to optimize supply chain management of vegetables. This research was exploratory and primarily involved in depth interviews with players in the organized retailing as well as unorganized retailing. It was found that constraints with which vegetable supply chain facing are influence of intermediaries, high level of wastage in transportation and logistics, quality degradation during transport as well as during storage, lack of infrastructural facilities and poor market intelligence. In organized retail management lack of formal agreement between buyers and farmers are main hindrance to access high price and consistency of supply and quality to be maintained were major constraints. It has to be concluded that Government and private sectors have to join hands in private –public partnership mode to improve the physical infrastructure, information dissemination and the service required for quality and consistent improvement of the supply chain.

Key word: *Supply chain of vegetables; Constraints analysis; Exploratory interview; Intermediaries; Wastage level;*

Although we are second to china in vegetable production but post harvest loss is such an issue which hinders its profitability a lot. The process of liberalization and globalization has brought far-reaching impacts on the nature of the market opportunities, for producers around the world particularly local producers. Majority of them are small and marginal one. One of the most challenging tasks in today's food industry is controlling the product quality throughout the food supply chain. (Aiyong Rong, 2011) Issues and methodologies requires to be researched for designing a farmer friendly and cost effective supply chain so that we could add value to it as well as make this venture cost effective for small farmers.

India produces 146 million tons of vegetables and 75 million tons of fresh fruits per annum. Marketing of

vegetables is more challenging than many industrial products because of the perishability, seasonality and bulkiness. Diversified consumption patterns of the Indian consumers and poor Supply chain infrastructure makes marketing for vegetables more complicated. (Rajkumar, 2010)

Retail marketing of vegetables in India is on cross road today. In India about 60 percent of food quality is lost in supply chain from farm to final destination. (Report by ministry of agriculture and cooperation) Unorganized retailing serves a wide mass and provides direct employment to producers. Shifting this unorganized retailing with well designed supply chain adds value to it without affecting the existing format of unorganized retailing of vegetables. Vegetable marketing in Jharkhand is predominantly unorganized and retailer

oriented. The very nature of small size of land holdings by the farmers, aberrant weather condition, and typical habits of consumption (buying fresh vegetables) of the consumers and poor supply chain infrastructure makes marketing for vegetables more critical to its entrepreneurship.

In this context, logistics and supply chain management have become the crucial areas of management and national focus. Jharkhand the plateau state endowed with varying climatic conditions is suitable for growing large number of horticultural crops. Yet potential has remained unexploited due to various managerial and technological descriptors. Farmers involved in vegetable production are mostly small and marginal possessing good entrepreneurial attitude towards vegetable production.

This study attempts to identify various issues and constraints involved in managing supply chain in vegetables and identifying strategies that can be applied to optimize supply chain management of vegetables.

METHODOLOGY

Perceiving the potential of commercial vegetable production and unmanaged supply chain as a managerial hindrance to explore the potential, KVK, Saraikela made an effort to find put the constraints in supply chain management of vegetables and strategies to manage it. The research is exploratory and instead of finding relationship with problems factor and conclusion we carried out a situational exploration of two different situations prevailed in supply chain of small production system. The purpose is learning of problem defining factors so that further strategies related to supply chain could be advocate to different situation of vegetable growers.

This research is exploratory and includes research instruments like in depth interviews with focused vegetable growers based on checklist prepared in consultation with scientist marketing professional, farmers and intermediaries.

Since the study was targeted to assess constraints related to supply chain of major vegetables, two categories of respondents i.e. respondents who are surplus in vegetable production and follow practices of selling through traders (vendors /Agents/wholesellers), and respondents who are surplus in vegetables production and sell vegetables through retail in nearby

markets directly by himself/herself had been selected to study. Fifty farm families from each of the selected category in two different vegetable growing villages have been selected in two villages. Thus, the whole sample consisted of 100 respondents.

Apart from the use of schedule detailed information were collected through informal discussion with the respondents and by critically scrutinizing the practices followed for vegetable production. Besides the use of PRA tool, field observation and non-participant observation techniques were thoroughly used.

RESULTS AND DISCUSSION

Market orientation of vegetable production : Vegetable retailing in India is witnessing a rapid growth in India's organized retail sectors.

Here in Jharkhand traditional retailing of vegetables is not very much organized, and highly fragmented with large number of intermediaries. It was observed that the intermediaries between the customers and farmers are traditional retailers with different outlet formats- non-permanent shops in the market, pavement vendors, roadside vendors and push cart vegetable sellers, wholesale traders, commission agents and auctioneers. The farmers themselves sell their produce directly to the end consumers in local markets, or they sell to intermediary's agents and organized retailers. The market place is usually in proximity to the farmland and customers living in and around locale accessing the local market but marketing of vegetable through agent and whole sellers is not in close proximity to farm rather farmers travel through 12 -15 km on their own cycle or auto rickshaw to sell their produce as wholesale. Farmers sell bulk of their produces to commission agents and auctioneers. The agents buy vegetables from farmers and transfer it to wholesalers directly or through another agent.

The auctioneers are people who enter into buying contract with farmers for whole or partial quantity of the produce and sell the produce to an agent or a wholesaler. Auctioneers also transfer the vegetables to wholesalers directly or through another agent. Wholesalers of vegetables sell to retailers—both traditional and organised retailers, and to customers, who buy in large quantity. Cart vendors, a type of traditional retailers, buy vegetables from wholesalers or organized retailers, sell to customers in mobile carts and deliver to

customers at customer's doorsteps.

Wholesale market is a vital link in vegetable supply chain. Both the traditional and organised retailers are dependent on wholesale market with different propositions. With respect to market access and market orientation there two situation of supply chain of vegetables :

- i. Farmers directly sell their produce to whole sellers and consumers.
- ii. Farmers sell their produce through whole sellers, vendors or traders.

Farmers Vegetables transported through auto rickshaw or small truck to distant market. Vegetables selling through intermediaries were very common. Farmers sell produce directly to wholesalers at price fixed by whole sellers and for truck marketing mostly traders or agents procure produce from farmers directly and collect it at a common place where they transported through truck to metro cities like kolkatta, Mumbai, Chennai through vendors. Since farmers were unorganized and there no any institutional support, prices fluctuate and traders can influence its price for their benefit.

The small farmers prefer to sell their vegetables directly to the customer. They were of opinion that when they sell directly to customers its their choice regarding price per kg. and as per local demand they harvest their produce in interval. For wholeselling they have to sell large volume and as there were no proper infrastructure to store and process they bound to sell on the price fixed by agent and middle man. (Reddy, GP. et al. 2010) also indicated in their study that the number of players is less in modern retailing than in the traditional retailing,

so margin of profit at farmers end is less. Both organized and unorganized retailing wholesalers play vital role as both format of supply chain depend on them for produce.

Retailing of vegetables is very different from other parts of country. While organized supply chain is fragmented and inaccessible unorganized retailing is also complex and influence too many actors of vegetable marketing. It creates inefficiency in supply chain of vegetables. The infrastructure and linkages of the supply chain are very poor, and are affecting the growth potential of the agricultural sector. (Reddy, GP. et al. 2010)

Table 1 revealed that Lack of grading facility and Lack of cold storage facility was found foremost constraints followed by lack of storage and packing facility among organized as well as unorganized retailing of vegetables. Due to lack of storage and cold storage at local level vegetable growers are bound to sell at price fixed by agent/ wholesalers. This stress selling reduce profit margin at growers end. Manuals grading and cleaning reduce the efficiency of vegetable supply chain.

Lack of market network and market information was other constraints lming the supply chain of vegetables. Wholesaler and agents dominate n fixing prices and buy produce on their choice price. Timely marketing information's and network reducing the overall productivity of vegetable. Reddy, GP. et al (2010) also observed similar findings and stated that due to weak linkages in the supply chain, the price received by the grower is only about one-fourth to half of the retail price the consumers.

Shanabhoga et al. (2020) also reported that important constraints in Pomegranate growers in

Table 1. Constraints faced by the vegetable growers in selling the produce to different formats in the Supply chain

Particulars of problems	Unorganise		Organized		Aggregate		Rank
	No.	%	No.	%	No.	%	
Distant location of selling unit	18	36.0	6	12.0	23	23.0	IX
Lack of transportation facility	32	64.0	4	8.0	36	36.0	VIII
Lack of market information	50	100.0	12	24.0	62	62.0	V
Malpractices of buyers	34	68.0	10	20.0	44	44.0	VII
Lack of grading facility	50	100.0	50	100.0	100	100.0	I
Lack of packing facility	50	100.0	28	56.0	78	78.0	III
Lack of storage facility	50	100.0	32	64.0	82	82.0	II
Lack of cold storage facility	50	100.0	50	100.0	100	100.0	I
Lack of financial assistance from any agency	16	32.0	6	12.0	22	22.0	X
Dominating role of traders in price fixation	42	84.0	6	12.0	48	48.0	VI
Lack of marketing network	50	100.0	23	46.0	73	73.0	IV

Table 2. Physical loss of vegetables at different levels in supply chain

Levels	Unorganised	Organised
<i>Farmer</i>		
Quantity handled per day (kg)	32.0	234.0
Quantity of loss Per day (kg)	2.56	7.95
Percentage of Wastage	8.0	3.39
<i>Wholesaler</i>		
Quantity handled per day (kg)	2800	8500
Quantity of loss Per day (kg)	168.0	187.0
Percentage of Wastage	6.60	2.20
<i>Retailer level</i>		
Quantity handled per day (kg)	150.0	190.0
Quantity of loss Per day (kg)	13.8	12.6
Percentage of Wastage	9.2	6.4

chitradurga district were categorized as labour, technical, marketing, input and financial constraints. Other author *Satyajeet et al. (2019)* reported similar findings that unorganized organic market was foremost constraint for organic vegetable growers in marketing of produce. *Physical loss of fresh vegetables at different levels in the supply chain* : Vegetable in the area undergo physical losses while handling with different channels in retailing of vegetables. This loss makes supply chain of vegetables inefficient and imperative. An effort had been made to quantify physical loss of vegetables while handling with different stake holders of vegetable marketing. The estimation of physical loss at the different level in the existing whole sale supply chain is

presented in Table 2.

In the unorganized management of supply chain management the percentage loss of vegetables was 8, 6.6 and 9.2 at respectively for farmers, wholesaler and retailer level while in the organized supply chain management the loss percentage was found 3.39, 2.20 and 6.4 respectively at farmers, wholesaler and retailer level. Loss of vegetable was found maximum at retailer’s level. It’s due to the reason of lack of grading and faulty transportation of vegetables. It resulted in higher cost at retailer level; they compensate their loss by increasing price of vegetables.

CONCLUSION

In state like Jharkhand where vegetable production is in surplus. The supply chain of vegetable is a weak node for potential growth of vegetables. It is lacking in infrastructure. it require strengthening of input delivery, post-harvest management, creation of cold store chains, establishment of processing units and modern storage plants. The development of cold chain network will help in reducing post-harvest losses, which means overall improvement in their per unit productivity. Increasing entrepreneurship in agriculture sector particularly in vegetables and bringing rural youth in main stream of agribusiness will be important to improve promotional strategy for profit maximization in vegetable sector. Commodities would be identified at village level to generate entrepreneurship based on it.

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