

# Changing Nature of Indian Agricultural Market and the Need of Well Managed Supply Chain

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**Abstract:** Indian agriculture sector in general and agricultural market in particular has gone through a rapid transformation since the launch of economic reforms. In the result, various private players came into this sector to play a key role through the opening up of procurement, wholesale trade and retailing. Moreover, the amendment of Agricultural Produce Market Committee (APMC) Act 2003, has allowed private sector in agriculture market to bring efficiency. In this way, it is being observed that the traditional agricultural market has gone through a quick change. In addition to this, the consumer base and pattern of food demand has also changed. And also the quality and safety concern among consumer has brought a new inside into the agricultural market. Though various developments in response to supply chain management have taken place, yet there is lot more to improve. With this regard, the present study has tried to analyse the importance of supply chain management in Indian agriculture with view to the changing nature of agricultural market. Meanwhile, conceptual clarification, steps and Issues of supply chain management has scrutinised. Finally, the study has discussed significance of food supply chain management and explored area for further research.

**Key words:** agriculture, market, retailing, supply chain management

## 1. INTRODUCTION:

Agriculture has been playing a crucial role in Indian economy by providing employment more than 50% of its population (census 2011) and contributing 17% to the country's Gross Value Added (current price 2015-16, 2011-12 series). Further, the sector has potential for market-based economic development that can create benefits through agricultural supply/value chains. Supporting agriculture-based activities can promote economic prosperity in the country where poverty is widespread. And, it can also address key socio-economic issues that affect day-to-day lives of farmers and traders. Since, a couple of years this sector has seen changes in its structure. Especially, after the introduction of new economic policy agriculture (certainly agricultural marketing) sector has attracted many private players and the role of government has decreased. The private sectors has come up in forms of contract farming, public-private partnerships, food retailing and food wholesaling with the amendment of Agricultural Produce Market Committee (APMC) Act 2003. Than after, corporate sector participation has become an emerging trend in agriculture market by accessing new market (Gulati, 2009). Particularly, the food retail sector has changed drastically by being major destination for private investment. Various private companies such as Metro, Wal-Mart, Tesco, Carrefour, Reliance-Fresh, Pepsico, Cash & Carry etc. have increasingly participated in food retail sector. While the food retail sector has been a major part of Indian retail industry by increasing at a rate of 9 percent annually (Kannaiah & Vinayagamoorthy 2016). Moreover, Foreign Direct Investment (FDI) has been permitted up to 51% of equity in multi-brand company and 100% of equity in single brand retail (Singh 2012).

In addition to above changing nature of Indian agricultural market, there also changes have happened in consumer base and food demand. There has vast population growth at a rate of more than 1.2 % since 1995. This has created a vast consumer base for food product. It has estimated that in India food accounts 53 percent of total private consumption expenditure while it is 9.7 percent in America (Viswanadham & Patnaik 2006). Further, with the sharp rise in income of middle class, change in preferences and lifestyle, transformation in work profiles and demography has created a huge demand for high-value commodities and horticultural products such as fruits, vegetables, spices, coconut, medicinal and aromatic plants, mushrooms, cashew, cocoa etc. Apart from these, changes in tastes, preferences and food habit of Indian towards pre-cooked or ready-to-eat items have also increased particularly among youth and working class.

In-spite of above changing nature of Indian agricultural market, the sector has not grown like non-agriculture sector since the economic reforms. As a result the disparity between the growth rate of agriculture and non-agriculture sector has risen sharply. One of the important reasons is that the price incentive offered by agriculture market did not improve as these markets remained fragmented, inefficient and dominated by low scale and multiple middlemen (Chand 2016). Similarly another issue is the inclusion of small holder farmers in this changing nature of agricultural market. While small holder farmers are major player in Indian agriculture and they do not form a homogenous group. Moreover, due to weak bargaining power and holding capacity small holder farmers face problems both in traditional

and changing agricultural market (Singh 2012, Trebbin 2014). Therefore, there is a need of well managed food supply chain to have a positive impact on the economy, environment and social indicators.

With this light the present paper has examined the importance of supply chain management in Indian agriculture with view to the changing nature of agricultural market. The remainder of this paper is organised as follows. The following section discusses the conceptual analysis of food supply chain. Section-3 explains the existing market structure with view to economic reforms. Section-4 deals the discussion regarding opportunity in food supply chain management and explores area for further research. And section-5 concludes the paper.

## 2. CONCEPTUAL ANALYSIS OF FOOD SUPPLY CHAIN MANAGEMENT:

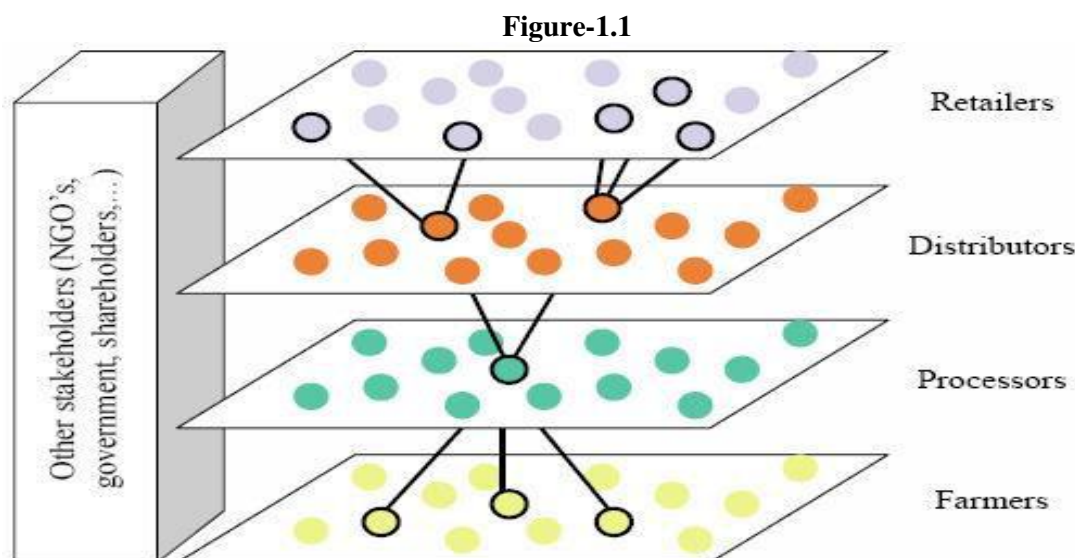
The term food-supply chain has been used to describe the activities from production to distribution that bring agricultural or horticultural products from the farm to the table (Boudahri et al., 2012). It is like any other supply chain where a network of organizations working together in different processes and activities in order to bring products and services to the market, with the purpose of satisfying customers' demands. This chain includes various intermediary processes of a commodity from its production to its consumption. In this system, product as well as information flows between various organisations (Chakraborty & Chaudhuri, 2012).

The concept supply chain management is a more generic issue applied in different sector, including health care, semiconductor and in academia. But its use in the agriculture in the case of perish-ability, seasonality, variability, bulkiness, small-scale production, and traceability has distinguished the agricultural supply chain form other type of supply chain (National Institute of Agricultural Extension Management). Similarly, quality and safety food is again a common issue, which is obviously more critical in the food supply chains. Finally, public policies and regulations have a significant role in influencing agricultural supply chains since the 'product' is an essential good, every citizen is a consumer, and a significant percentage of the citizens are producers. In the above context, agriculture sector needs to develop a wide thorough supply chain perspective to meet the challenges of modern food supply chain. It also ought to be understood and developed as a link between the farm and non-farm sector (Acharya 1983).

## 3. STRUCTURE OF FOOD SUPPLY CHAIN:

Food supply chain structure refers the detailed information about where, how, and by whom the products are produced, distributed and consumed. According to a research report of the United States Department of Agriculture (USDP), published in the year 2010, agri-food supply chain structure refers to the organization of processes, participants and product flows as a product moves from producers to consumers. The food supply chain structure is highly complex because there are different types of crop and food involved in this chain. Further, there is huge variety within each crop in terms of how and where it is produced and by whom. And also in this chain, environment factors play an important role in case of production KPMG International (2013).

Thus, an organised food supply chain functions as a part of a very complex network. The National Institute of Agricultural Management (MANAGE) depicts a basic supply chain at the organization level within the context of a complete supply-chain network. This is shown below in Figure-1.1



*Source: Supply Chain Management in Agriculture (base on lazzarini et.al, 2001)*

This diagram shows each firm is positioned in a network layer and belongs to at least one supply chain, i.e. it usually has multiple (varying) suppliers and customers at the same time and over time.

#### 4. ISSUES IN FOOD SUPPLY CHAIN MANAGEMENT :

Managing food supply chain is a difficult task because this sector involves a diverse range of distinct stakeholders such as farmers, commission agent, processor and distributors. Further, unlike developed countries Indian agriculture is far more complex and difficult to manage because of its unorganised nature (Parwez 2014). While in present day farmers are demanding better price for their produce and consumers are willing to pay reasonable price. Therefore, to solve this problem we need to understand the issues involved in this process as explained in below.

##### 4.1 Market Information

Sharing of market information among supply members is a complex issue in food supply chain as there are many stakeholders involved in the process. So there is always a chance of mismatch between demand and supply in this chain process. Further consumers demand, both nationally and internationally, are changing from time to time. Thus to operate a better supply chain it is necessary to have better information about the consumers/market demand. By knowing market demand the problem of mismatch between demand and supply can be avoided. And it becomes possible to supply different products at different localities according to these regions' demand so that transaction cost can be reduced (Chakraborty et al. 2012). Therefore, information sharing can notably increase the ratio of order-fulfilment in the situation of non-stable demand (Angulo et al. (2004). And also through information sharing coordination among chain members can be achieved (Zheng 2008).

##### 4.2 Food Losses

The food loss statistics in the world is shameful. According to the World Bank statistics, published in May 2014, up to a third of the world's food is wasted. Out of these, 400 to 500 calories per person per day in developing world and 1,500 calories per person in developed world is wasted. At the same time about 2 billion people in the world are malnourished and less fed (Kim, 2014).

In developing countries like India, food is wasted in farms or on the way to market due to poor infrastructure and storage facilities. Food and Agriculture Organisation (FAO) of the United Nations has explained that around more than 40 percent of the "food loss," meaning food that fails to make the journey from farm to fork in developing countries due to impassable roads and inadequate storage.

Therefore we need to develop a better supply chain management by creating adequate storing facility, good transporting system and better infrastructure. Then only we can prevent economic and environment problems which create through food losses.

##### 4.3 Quality and Safety of Food

The two terms food quality and food safety are needed to be understood because sometimes they look complex. The term Food Safety refers to all those hazards that may make food injurious to the health of the consumer. It is not negotiable. But the term Food Quality includes all other attributes that influence a product's value to the consumer. This includes negative attributes such as spoilage, contamination with filth, discoloration, off-odours and positive attributes such as the origin, colour, flavour, texture and processing method of the food (WHO, 2015). This distinction between safety and quality has implications for public policy and influences the nature and content of the food control system most suited to meet predetermined national objectives. Complex food value chains system, food quality and safety are important issues for consumers as well as for governments.

##### 4.4 Organizational Relationships

Organizational relationships are a fundamental issue in food supply chain management. It is difficult to understand or less well understandable. Without organisational relationship, any effort to manage the flow of information or materials across the supply chain is likely to be unsuccessful (Handfield et al. 1999). Further, this relationship fits well with the logistical requirements of modern food markets, especially those for fresh and processed perishable foods (National Institute of Agricultural Extension Management 2001). Therefore organisational relationship in food supply chain is a fundamental issue to know. Through it the participants can achieve higher levels of service and can add substantial value to the product there by can serve as leverage points both for economic growth and for poverty alleviation.

#### 5. CHANGING NATURE OF INDIAN AGRICULTURE MARKET:

A better functioning agricultural market always needs a competitive environment, strong physical and institutional infrastructure, and a favourable regulatory system. Hence, farmers can get reasonable price for their produce as well as consumers can get the product at an affordable price. But in a developing country like India, all these necessities cannot come up on their own (Chand, 2012). While in India agricultural market has a long history of inefficient running, which can be imagined from the report of Royal Commission on Agriculture 1928. It had noted in the report that '*the agricultural development in India has done much to improve the quality and to increase the quantity of the cultivator's outturn but it cannot be said that they have been able to give the cultivators substantial help in securing the best possible financial return for his improved quality and his increased outturn*' and also noted that complain had received about the disability of market where cultivator labour were selling his produce. Therefore, strong agricultural market policies are needed through the development policies of the government so that market can function smoothly and all the stakeholders involved in the marketing process can get the benefit.

Keeping this in view Indian government intervened in agriculture market since 1935 by setting up of the office of the Agricultural Marketing Advisor to Government of India which is now known as Directorate of Marketing & Inspection (Mani et. al. 2015). Till the mid-1960s, the government was mainly facilitating the smooth functioning of markets and keeping a check on activities that was considered unfavourable to producers and consumers. Then after, government intervention did increase in the form of market regulatory and infrastructure and pricing policy. In the market regulatory framework Agricultural Produce Market Regulation Act (APMRA) was introduced to rid of several malpractices and imperfections in agricultural markets, and to create orderly and transparent marketing conditions, as well as to ensure a fairer deal to farmers selling (Acharya 2004). Apart from the APMC Acts, several other legal instruments disseminated to regulate market functionaries (Acharya 1998). Between 1976 and 1991, the total number of regulated markets in the country increased from 3,528 to 6,217, a 76%. Similarly the government also did intervene in price policy to influence the level of fluctuations in prices and the price-spread from farm gate to the retail level. However, after the economic liberalisation, pressure mounted to change this market regulation and remove its various restrictions because non agriculture sector grown faster than agriculture sector by attracting private sector. Then after, government amended the APMC Act in 2003 under which the private and cooperative sectors are allowed for direct marketing and the establishment of agricultural markets. The aim of the amendment was to bring efficiency in agricultural supply chain by corporate involvement and investment (Singh 2012). Due to this policy decision an environment was created where private sector feel comfortable to invest in this sector. Especially, the food retail sector that attracted both domestic and foreign corporate to invest in. And Foreign Direct Investment (FDI) was allowed into the sector in spite of large variation in views. In 2003 Metro (a German supermarket chain) was the first one to enter India. Then after in 2006, 51% FDI in Single Brand Retail Trade (SBRT) was allowed. Following this various players like Walmart, Metro and Carrefour had have set up shop in India and have multiple outlets ranging from two in the case of Carrefour to as many as 14 in case of Bharti-Walmart (Singh 2011). And since 2010, 51% FDI in multi-brand retail and 100% in single brand have been allowed.

Now corporate participation in the food retail sector is an emerging trend in India and the food retail sector is expected to reach Rs 61 lakh crore (US\$ 915 billion) by 2020. The rising consumer groups aged between 20-45 years is enhancing consumerism culture which boding well for retail growth. Further rise of disposable income, the growth of middle class and the spread of urban life style creates demand for organised retail in food sector. Thus we may say that there is potential opportunity for organised retail sector to grow in Indian food market.

## **6. SIGNIFICANCE OF FOOD SUPPLY CHAIN MANAGEMENT AND AREA FOR FURTHER RESEARCH:**

In a changing scenario of Indian agriculture market a well managed food supply chain is must need condition. By which farmers can get better knowledge, information about market demand and better price for their produce. At the same time modern and particularly urban consumer will get safe and quality food at a reasonable price. Further agriculture value chains in fruits and vegetables provide an alternative for the diversification of agriculture in view of high income, employment, foreign exchange earnings and a new method to combat challenges of food security while India is the second largest producer of fruits and vegetables next to China. The production of fruits and vegetable constitutes around 12.6% and 14% of the total world production of fruits and vegetables respectively (National Horticulture data base 2014).

In the modern days of knowledge intensive, food supply chain can provide benefit to every stake holders of the chain process. Through better knowledge and efficient information production, marketing and distribution can increase. In addition to this, food supply chain can provide a platform where small and marginal farmers can get benefit (Namdhari Fresh, which involved smallholders and practised CF with the vegetable growers). Moreover an efficient food supply chain can solve the problem of food shortage and nutrition security while India has to ensure food security for 17.5% of world population (Patidar et. al 2012).

Though there are various studies in relation to food supply chain but empirical studies is lagging behind. Its application in Indian food sector is not fully recognised. Therefore more field based study requires in relation to its implementation. Moreover issue as well as methodology based study is required. By which the problem of food losses, inclusion of small farmers and sustainability issue can be solved.

## **7. CONCLUSION:**

Agriculture is still the mainstay for Indian population. Over the period, it has achieved from food insufficient to sufficient by applying of new technology for production. However the problem of farmers has not been addressed properly, while the shape of the problem has changed over the time. Previously, problem was related to production now that has changed to marketing. Though there are various recommendation have been made still farmers are struggling to get reasonable price for their produce. At the same time consumers are paying more than higher price for the product.

Moreover Indian agricultural market is going through a transformation followed by economic reforms. Both domestic and foreign companies are coming to this sector. Especially the food retail sector has seen much corporate

participation. Further the government changing policy relating to Foreign Direct Invest has created a suitable environment for the sector to grow. However, some economists raise questions relating the inclusion of small holder farmers which constitutes more than 80 percent of operational land holding.

In this regard Indian agriculture need a well managed food supply chain. Through it issues like food waste, quality and safety food can be touch upon and the diversification of agriculture could be possible. For this both government and private sector need to show their will. Moreover government need to adopt a policy to synergy between private sector, cooperative and government institution.

## REFERENCES:

1. Agricultural Census, Government of India, 2011.
2. Gulati, A.: Emerging Trends in Indian Agriculture: What Can We Learn from these?. *Agricultural Economics Research Review*, 22, 171-184 (2009).
3. Kanniah1, D., & Vinayagamorthy, A.: Foreign Direct Investment and Retailing in India: Opportunities and Challenges. *International Journal of Economics and Finance*, 8 (12), 216-223(2016).
4. Singh, S.: New Markets for Smallholders in India Exclusion, Policy and Mechanisms. *Economic & Political Weekly*, XLVII (52), 95-105(2012).
5. Viswanadham, N., & Patnaik, N. Dynamics of Retail in India Case Studies of Andhra Pradesh and Punjab. In N. Viswanadham (Eds), *Achieving Rural & Global Supply Chain Excellence The Indian Way*, 23-470 (2006).
6. Chand, R. E-Platform for National Agricultural Market. *Economic & Political Weekly*, II (28), 15-18 (2016).
7. Trebbin, A.: Linking Small Farmers to Modern Retail through Producer Organizations – Experiences with Producer Companies in India. *Food Policy*, 45, 35–44 (2014).
8. Boudahri, F., Bennekrouf, M., Belkaid, F., and Sari, Z.: Application of a Capacitated Centered Clustering Problem for Design of Agri-food Supply Chain Network. *International Journal of Computer Science Issues*, 9(1), 300-304 (2012).
9. Chakraborty, S., & Chaudhuri, S.: Application of Supply Chain Management in Agriculture of SAARC Nations (2012). Retrieved on ([http://www.rtc.bt/Conference/2012\\_10\\_15/5\\_SwatiChakraborty-Slides\\_SupplyChainManagement.pdf](http://www.rtc.bt/Conference/2012_10_15/5_SwatiChakraborty-Slides_SupplyChainManagement.pdf)).
10. Acharya, K. C.: *Food security System in India*. Naurang Raj Publication Co, New Delhi, (1983).
11. KPMG International: The Agricultural and Food Value Chain, (2013). Retrieved on (<http://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/Documents/agricultural-and-food-value-chain-v2.pdf>).
12. Parwez, S.: Food Supply Chain Management in Indian Agriculture: Issue Opportunity and Further Research. *African Journal of Business Management*, 8(14), 572-581(2014).
13. Angulo, A., Nachtmannand, H., & Waller, M. A.: Supply Chain Information Sharing in A Vendor Managed Inventory Partnership. *Journal of Business Logistics*, 125 (1), 101- 120 (2004).
14. Zheng, Q. Essentials for Information Coordination in Supply Chain Systems. *Asian Social Science*, 4 (10), 55-59 (2008).
15. Kim, J. Y. Food Waste a Bigger Problem than You Thought”, (2003). Retrieved on (<http://www.huffingtonpost.com/jim-yong-kim/food-waste---a-bigger-problem-5000462.html?ir=India>).
16. World Health Organisation: Food Safety: “What you should know” (2015) [http://www.searo.who.int/entity/world\\_health\\_day/2015/whd-what-you-should-know/en/](http://www.searo.who.int/entity/world_health_day/2015/whd-what-you-should-know/en/).
17. Hanfield, R. B., & Nichols, E. L.: *Introduction to supply chain Management*, Englewood Cliffs, NJ: Prentice-Hall (1999).
18. National Institute of Agricultural Extension Management: “Supply Chain Management in Agriculture”, (2001). Retrieved on (<http://www.manage.gov.in/studymaterial/scm-E.pdf>).
19. Chand, R.: Development Policies and Agricultural Markets. *Economic & Political Weekly*, XLVII (52), 53-63(2012).
20. Mani, G., Mohanty, S., and Ashok, M.V.: Agricultural Marketing in India: Review of Some Issues. *Indian Journal of Agricultural Marketing*, 29(3), 1-19 (2015).
21. Acharya, S. S.: *State of the Indian Farmer, A Millennium Study, Agricultural Marketing*, Department of Agricultural and Cooperation, Ministry of Agriculture, and Academic Foundation, New Delhi (2004).
22. Acharya, S. S.: Agricultural Marketing in India: Some Facts and Emerging Issues. *Indian Journal of Agricultural Economics*, 53(3), 311-332 (1998).
23. Singh, S.: FDI in Retail: Misplaced Expectations and Half-truths. *Economic & Political Weekly*, XLVI (51), 13-16(2011).
24. Patidar, R., Khan, I., and Sharma, A.: “supply Chain Management: Application in Agricultural Marketing”, *Inter-science Management Review*, ISSN: 2231-1513, 2 (3), 53-56 (2012).
25. Handbook on Horticulture Statistics: Ministry of Agriculture, Government of India, (2014) Retrieved on <http://agricoop.nic.in/imagdefault/handbook2014.pdf>.