

# Agriculture Marketing and Supply Chain Management: Challenges and Opportunities in Indian Market

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**Abstract**— In today's competitive world, competition among different types of firms has become very fierce and expectations of the customers has forced marketers to invest and experiment new business models. Modern management thinkers advocate the collaboration among different business partners including agro business. In this context, study of supply chain management has become an important part in agriculture marketing. Today agro food businesses have realized that they cannot compete as a solely autonomous industry and have to collaborate with other agencies to serve customers better. A pivotal reason for collaborating with supply chain companies is the shelf-life constraints of food and agricultural products, the perishable nature of food products and increased customer awareness to safe and environment friendly products. The objective of this paper is to understand the concept of supply chain management and its application in agribusiness. This paper will focus on the concept of Supply chain management, its potential performance constraints and suggested improved approaches.

## I. INTRODUCTION

Agricultural marketing is the backbone of Indian economy due to its resource contribution and employment generation capabilities. It is the source of revenue and livelihood for many farmers, intermediaries, processors, government and exporters because all of them are interdependent in one way or another. India has been known as an agrarian economy over the centuries as the agricultural sector provides employment for more than half of the country's massive population. However, the agriculture sector has contributed only 20.2% to the nation's Gross domestic product (Chandrasekaran, N)

The economic contribution of agriculture to India's GDP is steadily declining with the country's broad-based economic growth. Still, agriculture is demographically the broadest economic sector employing more than half of the country's population and thus, it plays a focal role in the overall socio-economic fabric of India. As per FAO (The Food and Agricultural organizations of the United Nations) 2014, India is the largest producer of fresh fruits, vegetables, groundnut, sugarcane, cotton, rice and other staples. India leads in production of fisheries, poultry, livestock, spices, tea, coffee and plantation crops. It is also the second largest producer of wheat, rice, dry fruits in the entire world.

India is ranked among the five largest producers of over 80 % of agricultural produce items. However, India's share in trading of food products at the world level is a mere 0.2%. This is much lower than the proportion of world trade which is ruled by developing countries such as Vietnam and Brazil. (Ghosh 2008)

Following table shows percentages of total population and agricultural worker. Total 54.6 % of total population depends on agriculture for their earning indicating agriculture is major source of livelihood for them

Table 1: Population and agricultural Worker

Year	Total Population	Rural Population	Total workers	Cultivators	Agricultural labourer	Total
2011	1210.9	833.7	481.9	118.8	144.3	263.1
Percentage		68.9		45.1	54.9	54.6

Source: Registrar General of India.

Following table shows no of agricultural workers area wise. Agriculture is the main source of income for male and female laborer in rural area. There is significant difference in no. of male and female laborer in both urban and rural area. This difference is significant in urban area. The fact in agriculture is the main source of income for rural population.

Table 2 : Classification of agricultural workers

No of agricultural workers	Cultivators (Main & Marginal)	Agriculture Labour	Male cultivators (Main and marginal)	Male agricultural labour(Main & marginal)	Female cultivators(Main and marginal)	Female agricultural labour(Main & marginal)
Total	118808780	144333690	82762934	82742337	36045846	61591353
Rural	115084638	136998308	79895308	77932222	35189330	59066086
Urban	3724142	7335382	2867626	4810115	856516	2525267

Source: DA&FW, DGCI&S, DFPD, RGI and NSO

\*As on 28.02.2023

Following table shows gross value added by economic activity at constant basic price. One can conclude that agriculture and allied activities are the main source of livelihood for rural population

Table 3 : Gross Value Added by Economic Activity at Constant Basic Prices ( Rs crore)

Sr No	Industry	2021-22
1	Agriculture, forestry and fishing	2149122
2	Crops	1158250
3	Livestock	654937
4	Forestry & logging	188416
5	Fishing & aquaculture	147519

Above data shows rural population is much depends on agriculture and allied activities for livelihood . India is struggling with productivity and marketing of various crops is lack of support mechanism in supply chain management(C Ganesh Kumar 2017). Agricultural supply chain includes farmers and backward linkages with raw material supplier and forward linkages with intermediaries , distributors , wholesalers , processors , retailers and exporters. (Mahak Bhatia) Different types of commodities such as fresh products, processed , semi-processed and ready to eat food , customized food can be marketed across geographical boundaries through supply chain networks. It covers various marketing activities that have distinct features and complexities which pose challenges in managing supply chain network. This distinct coverage needs strategic planning for different supply chains in local, national or international context.

1.1 Review of Literature: (Anupam Ghosh, 2008)

Bhatia has developed agricultural model which provide an in-depth analysis of crop allocation, operational activities involved, labor required, harvesting and a

conceptual model of distribution planning which assist the farmers to simplify the complex supply chain management system and to supply fresh produce to consumers (Bhatia, 2020)

It is evident that the post-harvest losses have impact at both the micro and macro levels of the economy. Somashekhar has critically reviewed the scenario of agriculture supply chain management in India by studying agriculture supply chain management in India (Somashekhar I C, 2014)

Bhagat, Deepak’s study provides a healthier understanding of the critical elements of agriculture supply chain management and the effect of their interrelationship on supply chain, value chain and network performance. (Bhagat & Dhar, Sep2011)

According to (Moazzam et al., 2012) Supply chain management integrates all the factors which include manufacturer , supplier , processor , stockist and consumer thus providing a link to facilitate chain for the smooth flow of agricultural material from producer to consumer

Batt studied potato supply chain issues in Vietnam. He interviewing 60 potato cultivators, 10 traders and 25 retailers and concluded that there is strong relationship between different components of supply chain network and innovation boosting competence .

Chandrashekar studied fruits and vegetable SCM networks of Karnataka SAFAL markets and concluded that better utilization SCM increases productivity .

Punjabi studied problems encountered in SCM practices of fresh food and vegetable items in India by interviewing corporate managers and interpreted many issues such as insufficient warehousing , cut throat competition among traders , improper handling of postharvest produce and lack of skilled labour .

(Shilpa, 2023) studied vegetable SCM network in Bangalore and concluded many reasons such as inefficient sales record keeping, middlemen interference, quantity sold to consumers and not sold are the major areas of concern in vegetable SCM

Major problem perishability and product quality is the major issue in logistic management. To overcome the issues faced by the farmers, decisions to be taken from different levels as operational level decisions, tactical decisions and strategic decisions. ((Omar Ahumada, 2011)

### 1.2 Objectives:

1. To study and analyse supply chain network in agricultural marketing
2. To study the challenges faced by different stakeholders of supply chain network
3. To study the strategies to overcome challenges faced by supply chain network

### 1.3 Supply Chain Network

Supply Chain Management is the life line of any industry. It involves the three stages of procurement , production and distribution. It also includes various stakeholders such as manufacturers, suppliers, transporters, warehouses, wholesalers, retailers, consumers/customers and other intermediaries. The agricultural supply chain includes various stakeholders such as farmers, aggregators, processors, wholesalers and distributors.

Supply chain is an integrated process of producing value for the end customer. It integrates all the activities from the earliest raw material, conversion of raw material into processed products to the ultimate customer. The supply chain management network has been used as a competitive weapon by many MNCs such as Amul, HUL (Hindustan Unilever), Pepsi, ITC (India Tobacco Company Ltd.) etc.

Supply Chain Management focuses on increasing competitive advantage by using supplier processes, technology and capability.

Definition of Supply Chain Management: Supply-chain management (SCM) is ‘the management of the entire set of production, distribution, and marketing processes by which a consumer is supplied with a desired product’

A supply chain is “an integrated process wherein a number of different business entities work together to procure raw materials, convert it into specified final products and deliver final products to retailers”.

The supply chain comprises of the production and supply of materials and parts, and its serves both the manufacturing logistics chain and distribution logistics chain

### 1.4 Activities involved in agricultural supply chain management



Figure 1: Stakeholders of Agricultural supply chain management

Source: Author

Agricultural supply chain includes no.of processes such as supply management , production management and demand supply management through a distribution channel . Supply chain network include many of other dimensions such as information , value , finance and risk flow from one stakeholder to next stakeholder along with material.Though India is among the top producer of many agricultural commodities but criticized for improper distribution management. Important reasons for this is diversity of production , demand differentiation and improper logistic network. Seasonality of the product , perishability and bulkiness of product also increases complexity of agricultural supply chain network

Supply chain network consists of Logistics and Supply chain system. Logistics” deals with storage, packaging, transportation of goods . “Supply chain system” deals to coordinate different parameters of logistics. “(Frazzon et al.,2019)

### 1.5 Issues and challenges in Agricultural Marketing and Supply Chain Management:

1. Lack of Supply Chain Integration : Many issues in agricultural supply chain management such as fragmented supply chain , poor marketing infrastructure , ineffective warehousing , perishability of high value products , lack of knowledge of using technology cause challenges in agricultural marketing . Suppliers are enable to predict demand analysis which makes resources costly.Transportation services are fragmented which cause logistics problems among different stakeholders of SCM.
2. Lack of knowledge among farmers : Farmers are unable to gather quality inputs such as seeds and fertilizers , process of cultivation, harvesting etc. Most of the farmers are unable to take advantage of government schemes. Traders and middlemen

exploits farmers because farmers do not have sufficient knowledge, do not have bargaining capacity and have a very less marketable surplus. Lack of finance from government institutions, absence of crop insurance, unawareness of using technology, lack of knowledge of using pesticides and fertilizers are some other challenges faced by farmers. Indian Agriculture is dominated by smallholders. 86% of farmers have landholding size of less than 2 hectares

3. Climate Risk : Unprecedented climatic conditions or emergent climatic conditions also create chaos in their life
4. Arhathias (middleman) from the value chain : Middlemen lack uniformity in dealing with buyers and sellers and also mislead farmers .
5. Policy risk and Market risks : Difficulty in credit recovery and reluctance of farmer in approaching banks as farmers are not knowledgeable about various government policies . Inefficient compensation delivery system in case of product failure.: Low penetration of ‘one-stop-shops’, Inefficient buy back system (purchase of farm output) . Share risks among chain partners, especially for large investments.
6. Economic Risks : Traditional supply chains are inefficient with poor information flow. Long lead time in the production of agricultural product. Marketing structure is inadequate. Agricultural markets are regulated through the model PMC Acts. The APMC market does not have adequate infrastructure to enable farmer traders to store, grade and test the goods on quality parameters. The APMC (Agricultural Produce Marketing Committee Act has created monopolistic scenario because of wrong practices.
7. There are no sufficient supply chain management and business models. Major problems in Supply chain management are.
  - Lack of accessibility to regulated markets.
  - No proper law to regulate the markets.
  - Absence of nationwide common agricultural market.

#### 1.6 Opportunities to improve SCM network

1. Market place for agricultural product : APCMR act-major agricultural marketing act being implemented by different states of India, enable promotion of contract farming, direct marketing and setting up of

private markets. These measures will provide forward and backward linkages to evolve supply chain network for different agriculture products in India.

2. Three types of decisions such as operational, tactical and strategic decisions will help to solve the problems of supply chain network. Operational decisions include different decisions such as what to plant, how to plant, operational activities needed for cultivation, inventory management, distribution and transportation. Tactical decisions will include allocation of land for different types of crops, variety of types of crop to be cultivated, scheduling of irrigation facility, usage of pesticides and fertilizers, mode of transportation for agricultural produce. Strategic decisions include the effective ways to reach to consumers by allocating products to the mandis and the market places which is easily accessible to them. Thus overall decisions have to be considered which include in depth analysis of crop allocation, operational activities involved, labour requirement, harvesting and supply chain management activities.
3. Government’s impetus to private extension services: Suppliers and manufacturers were connected with different farmers’ federations so that they can maximize their reach and offer services to remote locations through single contact points .
4. One-stop-shop can act as facilitators of microfinance, new channel evolved can be used to reach market place. Farmers can use conglomerate diversification strategy to sell their products. Can rent equipment’s or hire agricultural machine on rent to get extra income or save money respectively. Farmers can develop forward linkages with stakeholders to reach the market efficiently. Farmers can Promote credit based sales. They can invest and earn from agricultural extension activities.
5. Farmers can develop backward linkages, Can export the produce, get export subsidy, can get assistance from consumer federations, can give land on lease. Farmers may be encouraged to form associations, consortiums, cooperatives and self help groups which will enhance efficient utilization of resources

#### 1.9 Supply Chain Risks and Strategies to overcome risks

Table 4 : Supply chain risks and strategies needed to overcome these problems

Participants	Risks	Strategies
Supplier	Policy Risk, Climate risk, Logistic risks	Conglomerate diversification, Proximity to market, good storage facility and credit based sales
Manufacturer	Policy Risk, Climate risk , Logistic risks, Fragmented Market , Price risks, lack the facility of regular and cheap transport, lack necessary information and skill regarding scientific production method	Proximity to market , Good storage facility ,public distribution and credit based sales
Stockiest	Policy risk , Information risks, Climate risks , Price risk, lack the basic amenities of godowns or storage facility, lack of proper drainage and pavements, water supply and parking facilities	Inventory management , Public distribution , Forward integration
Retailer	Policy risk , Information risks, Climate risks, perishability, seasonality,	Credit facility , proximity to market , Transportation , Handling diverse products
	non-homogeneous product feature, unpredictability, yield variability	
Consumer	Policy risk , Price risk	Availability of different channels to procure goods , stable prices , Regular supply of goods

CONCLUSION

Dissemination of information is a crucial factor to efficient agricultural markets. Accurate price of commodity and other market information can reduce risk and transaction cost. This will help farmers to plan and coordinate production and trading activities. Well-coordinated supply chain can result in greater profitability and employment. Supply chain coordinates can Provide access to new markets  
 Disseminate information on technology and finance  
 Share risks among chain partners  
 Reduce lead time and losses of perishable products  
 Increase employment  
 Reduce massive wastage of agricultural produce and  
 Enable farmers to use technology for getting information.

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