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## Agricultural supply chain management is an intrinsic tool to rural development

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### Abstract

Development means unfolding, revealing or opening up the facts of world which are latent. For human being it is nurturing his potential power. Primary objectives vested in development are economic growth, equity in income distribution, political and economic freedom and equitable access to resources, health care, education, opportunities of employments and justice. Rural development is part and parcel of overall development and connotes the achievement of these basic objectives in overall rural area of the nation. Source of income i.e. type of economic activities in which the rural population involved is the one of the most important determinant of rural development. The major source of rural livelihood and income of 58.2% workforce of India is agriculture but unfortunately it is growing only at a pace of 2.8% during 2010-11. In India, agriculture has been facing the issues of ineffective Supply chain Management (SCM) long before.

This descriptive research paper studies the Supply Chain Management of two agricultural products viz., Rice and wheat and finds SCM is an intrinsic tool for rural development.

**Keywords:** Rural Development and Agricultural Supply Chain Management (SCM).

### Introduction

India is a country of villages. Approximately 75% population of India (equalling 12.2% of world's population) lives in 638365 villages spread over 32 lakhs square kilometres (Balram Dogra, 2011) [4]. This huge section of Indian population is facing the problem of livelihood and underdevelopment.

Rural development is part of overall development. Development means unfolding, revealing or opening up the facts of world which are latent. For human being it is nurturing his potential power. Basically it is a change which is desirable and may differ at a particular time, place and in a particular culture from at other places or other times at the same place and in the same culture. The basic objectives of development are economic growth, equity in income distribution, political and economic freedom and equitable access to resources, health care, education, opportunities of employments and justice. Rural development connotes overall development of rural areas and basic objectives are to provide basic necessities of life or basic amenities, self-respect and dignity for everyone and freedom.

**Table 1:** Important Socio-economic Features of India

Features	Period	India
Rural Population (in millions)	2012	845.2
Share of agriculture in GDP (%)	2012-13	14.1
Hunger (Malnourished) Population (%)	2006	43.5
Share of Agriculture in Workforce (%)	2012-13	58.2
Poverty (%)	2012	25.7

*Source:* data compiled from economic survey 2012-13: <http://indiabudget.nic.in/survey.asp> and [www.worldbank.org](http://www.worldbank.org)

### Supply chain management

Supply chain of a product refers all links through which the product is transferred to consumer from the producer. In agriculture it connotes a link that take a product from farm to

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fork. General supply chain of a product includes producer, wholesaler, retailer and consumer. In today's business scenario supply chain management is of strategic importance as each and every business organisation want to spread its operations within and beyond country in which it is operating its business and without efficient supply chain management it is impossible to any business doing so.

### Agricultural supply chain management

Agricultural supply chain management is basically concerned with agricultural inputs and produce and agro-products. The basic concept of every supply chain remains same but it is some or other ways unique for each and every product depending upon its nature, cost, value, availability and government policies etc. Agriculture has varieties of products that differ in nature, cost, value and durability like vegetables and fish are perishable in nature and have different supply chain as grains. Vegetables need cold storage to be preserved but grains need only warehouses to be preserved.

In agricultural supply chain management backward and forward integration are very important as it provides inputs to farmers and help them in selling their produce in the different markets. Backward integration implies the relationship building with different input supplier (seed, fertilisers, manures, pesticides, insecticides, credits, labours, government subsidies, information regarding weather and different crop diseases, etc.). Forward integration is concerned with relationship management with different channel partners that help the farmers in selling their produce in different markets at optimum price. The

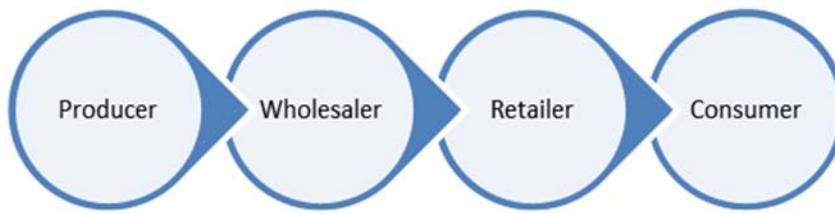
participants in forward integration are adhatiya (middleman), information provider of different markets and their existing prices, wholesalers, retailers and modern retailers like fresh stores, Field Fresh, Choupal Fresh, Choupal Sagar, Adhar and Nature Basket and Global Green, etc.

Supply Chain Management will be as strong as its weakest link. And every link to be strong the backward and forward integration should be strong. So, good relationship management with every stakeholder of supply chain management is of strategic importance as it is a key to success. In this research paper, some light have been thrown on agricultural supply chain management with the help of supply chain management of wheat and rice and what impact it has on the rural development.

### Emergence of supply chain management

Prior to 1950s, there has been no formal concept or theories of supply chain management but the system was prevalent in the corporate world with no recognition. The second half of the twentieth century witnessed a phenomenal growth and development in the overall concepts and approaches toward it. Supply Chain Management is acknowledged in 1990s and a lot of research was conducted by various researchers. They defined it as per their knowledge, understanding and area of research. Some of the definitions are as under:

Global Supply Chain Forum of 1996 has defined supply chain management as 'the integration of key business processes from the end user through original suppliers that provides products, services and information that add value for customers.'



**Fig 1:** General Supply Chain of a Product

LaLonde and Masters (1994)<sup>[5]</sup> proposed that a supply chain as a set of firms pass materials forward.

Christopher (1998)<sup>[2]</sup> defines a supply chain as the network of organisations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hand of ultimate consumers.

The Supply Chain Group at the University of Tennessee (Mentzer, 2000)<sup>[6]</sup> define supply chain management as 'the systematic, strategic coordination of the traditional business functions within a particular company and across businesses within the supply chain, for the purpose of improving the long-term performance of the individual companies and the supply chain as a whole.'

Council of Logistic Management (2004) defines supply chain management as something that 'encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistic management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers.'

In essence, Supply Chain Management integrates supply and demand management within and across companies.'

The term supply chain has constraint of a mammoth number of definitions most of which are inconsistent with each other and focused on particular perspectives or characteristics. It is Christopher (1992) who provides a reasonably generic definition that considers multiple set of firms working upstream and downstream with often multiple firms functioning at each stage in the chain (for example alternative competing suppliers). Thus, Supply Chain Management is a multi-disciplinary and multi-functional set of activities which deals with physical and tangible attributes and activities (i.e. logistics) as well as behavioural and intangible dimensions (i.e. relationship building and management).

Basically, Supply Chain Management (SCM) is the managerial and operational strategy which removes each and every hurdle at each and every link in a supply chain so that overall cost may be optimized while delivering best value to the customers as well as chain partners and ensuring best returns, information, competence and continuous upgradation of overall supply chain.

### Supply chain of wheat and rice

Wheat and rice markets are different from other agriculture commodities as government controls wheat and rice' procurement for price stabilization and nation's food security. Participants in wheat and rice supply chain are input suppliers of seeds, fertilizers, manures, pesticides and insecticides, farmers, commission agents (Arthiya), FCI (Food corporation of India), other government procurement corporations such as central warehousing corporations, Markfed, Central Warehousing Corporation, large millers of wheat and rice, wholesalers and retailers of processed grains and consumers. Input suppliers consist of major chemical producing companies, government distributors, wholesaler, retailers, and even very small retail shops that sell small quantities of seed, fertilizer, manure and pesticide to peasants at the village level. Being traditional and less water consuming than rice, wheat is a major crop for most of the peasants. Most of the farmers cultivate rice and wheat on same land in rotation for years rather than opting for other alternative crops such as pulses, oil seeds, or vegetables. Supply chain of wheat and rice in major producer states like Uttar Pradesh, Punjab, Haryana, Madhya Pradesh, and Rajasthan carries lesser stakeholders than other states. In Punjab even small farmers sell their produce directly to commission agents and small millers (chakkiwalas). In other states large farmers directly sell their produce to commission agents and millers but medium and small farmers generally sell their produce in Mandis. Commission agents (arthiyas) are licensed commission agents based in Mandis charging 2.5% (in Punjab) commission on the sale and purchase of wheat and rice.

Food Corporation of India (FCI) is the largest national procurement and distribution agency of wheat and rice in India. FCI was founded to protect the interest of farmer, keeping the buffer stocks for national food security and distribution of food grains throughout the country. Miller deals in one or both crops in the supply chain of wheat and rice. Wheat is milled into four products: bread flour (atta), cake flour (medha), semolina (suji), and bran whereas rice processing involves cleaning, polishing and packaging. The by-products, wheat husk and de-oiled rice bran cake, are used as animal feed and rice husks are used as a base for soap. Large retailers are procuring wheat and rice directly from the large manufacturing companies like ITC, Pillsbury, Shakti Bhog, Ashirwad and Pantaloons Food etc. Small retailers in villages buy Wheat products and rice from regional wholesalers and distributors. FCI and other state

procurement agencies purchase wheat and rice from commission agents in Mandis. Commission agents charge 2.5% on the sale of grains and further transfer the funds to the farmers at minimum support price announced by CACP (Commission for agriculture cost and price) that year.

### Public distribution system

Markets for wheat and rice are different from other agricultural products as Government controls wheat and rice' procurement with the view to stabilize price and provide food security throughout the nation. For the procurement of wheat and rice, Food Corporation of India was founded followed by other state procurement agencies. The procurement for FCI occurs in the states and then FCI transfers the grains to the beneficiaries through Fair Price Shops.

In India, the Public Distribution System (PDS) is an important policy of government for enhancing food security and a huge supply chain effort goes into delivery of wheat and rice and other essential commodities to the eligible beneficiaries. The PDS provides subsidised wheat and rice (and other grains and essential commodities) through a vast network of 'fair price shops'. After procurement government decide the quota of wheat and rice for every state of the country and accordingly the FCI allocates wheat and rice to the different states (State Procurement Agencies) of the country. The state procurement agencies transport these grains to the districts of concern states (wholesale point). From wholesale point wheat and rice are transported to the Fair Price Shops at villages of concern districts. These Fair Price Shops allocate wheat and rice to the beneficiaries as per the Ration Card.

PDS has to face strong criticism for diversion and leakages in delivery during procurement, transportation and distribution at Fair Price Shops level. To avoid these diversions, leakages and pilferages many State Government in India use Information Communication Technology (ICT) in Public Distribution System (PDS) still the events of diversions and leakages are happening some or other way. These events of leakages and diversions are badly affecting the Supply Chain of most pertinent grains and other necessary commodities supplied to the poor by government of India. India is now self-sufficient in at least two grains viz. wheat and rice which can be understood by tables given below still facing the problem of hunger death. The only and only problem may be the ineffective Supply Chain Management (SCM).

**Table 2:** Supply and Demand Balance for Wheat (1000 metric tonnes)

Wheat	2010–11 Apr–Mar	2011–12 Apr–Mar	2012–13 E Apr–Mar	2013–14F Apr–Mar
Area (1000 Ha)	28,460	29,069	29,865	29,434
Yield (Kg/Ha)	2,839	2,988	3,176	3,135
Production	80,800	86,870	94,880	92,300
Beginning Stocks	16,125	15,364	19,952	25,000
Imports	188	2	4	0
Total Supply	97,113	102,236	114,836	117,300
Exports	68	872	6,500	5,000
Food Use	74,920	76,200	77,836	78,800
Seed, Feed, Waste, Other	6,761	5,212	5,500	6,000
Total Use	81,681	81,412	83,336	84,800
Ending Stocks (government)	15,64	19,952	25,000	27,500
Total Distribution	97,195	102,236	114,836	118,500

*Source:* [http://www.ncaer.org/downloads/Reports/Agriculture-Report\\_July-Sept%20\\_%202013.pdf](http://www.ncaer.org/downloads/Reports/Agriculture-Report_July-Sept%20_%202013.pdf)

**Table 3:** Supply and Demand Balance for Rice (Thousand tonnes)

Rice	2009–10 Oct–Sep	2010–11 Oct–Sep	2011–12E Oct–Sep	2012–13F Oct–Sep
Area (1000 Ha)	41,920	42,860	43,970	43,200
Yield (Kg/Ha)	2,125	2,239	2,395	2,356
Production	89,090	95,980	105,310	101,800
Beginning Stocks	15,349	18,444	20,359	23,373
Imports	0	0	0	0
Total Supply	104,439	114,424	125,669	125,173
Exports	2,082	2,774	10,376	7,000
Food Use	81,913	89,091	89,920	91,273
Seed Feed Waste Other	2,000	2,200	2,000	2,200
Total Use	83,913	91,91	91,920	93,473
Ending Stocks (government)	18,444	20,359	23,373	24,700
Total Distribution	104,439	114,424	125,69	122,500
Stocks to Use Ratio %	22	22	25	26

Source: [http://www.ncaer.org/downloads/Reports/Agriculture-Report\\_July-Sept%20\\_%202013.pdf](http://www.ncaer.org/downloads/Reports/Agriculture-Report_July-Sept%20_%202013.pdf)

**Table 4:** Food Balance Sheet (thousand tonnes) for 2013–14

Item	Rice	Wheat
A. Supply side		
Beginning stocks	23,000	24,200
Production	109,000	92,460
Imports	0	0
Total supply	132,000	132,000
B. Demand side		
Domestic consumption	99,000	93,660
Exports	9000	5000
Utilisation	108000	98660
C. Closing stock	24000	18000

Source: [http://www.ncaer.org/downloads/Reports/Agriculture-Report\\_July-Sept%20\\_%202013.pdf](http://www.ncaer.org/downloads/Reports/Agriculture-Report_July-Sept%20_%202013.pdf)

### Conclusion

Wheat and rice are such agricultural products that are used by each and every people and section of the society in some or other ways. Going by the above tables, we can easily state that India has been a self-sufficient nation with respect to food grains and cereals. But existing levels of poverty and standard of living indicate deeper problem lying in the grass roots level which is on the supply side. Almost 1980s onwards the production of wheat and rice exceed the demand but still a major chunk of Indian population remains unfed and lacks necessary resources for the same creating an endless chain of poverty and unfulfilled basic needs. Government of India introduced National Food Security Act, 2013 to ensure the food security for the country especially for the rural poor and the destitute but the ineffective supply chain management requires a proper planning of the characteristic bottlenecks impeding the smooth flow of the important food products. The mismanaged supply side creates an overall imbalance in demand and supply equilibrium. This further hampers their already existing meagre incomes and ultimate means of livelihood rural development. Hence, there is a clear cut relationship between the supply chain management and rural development.

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