

AN EMPIRICAL EVALUATION OF AGRICULTURAL SUPPLY CHAIN IN INDIA WITH SPECIAL REFERENCE TO PUBLIC DISTRIBUTION SYSTEM (PDS) AND CONTRACT FARMING

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ABSTRACT

This paper tries to explore concept of agriculture in its broadest sense from farm to fork is a sector that will benefit from enhanced modern research and development (R&D) input, information transfer & sharing, and improved marketing channels at local, national and international levels. Public distribution system which is an outdated system and its inefficiency in achieving the objective is not hidden. As there other forms of agricultural distribution system are visible such as contract farming but this model is also not devoid of exploitation of farmers. Development of horticultural sector should be accompanied by the growth of agro-processing industry. There is a need to improve post-harvest operations related to handling, storage and marketing of fresh and processed agri produce. This sector needs to be developed as an organized industry and has to be managed collectively by all the stakeholders with farmers as the entrepreneurs. This study is based on secondary data. There is wide research gap in this sector, having such potential and prospectus for overall growth there is not much research in this field. The paper concludes that efficient supply chain plays very important role for development and contemporary issue for agriculture therefore; government action must address the issue of infrastructure development to achieve the objective of food security for all.

Keywords: *Contract farming, Public distribution system, Agri-supply chain, Information and Communication Technology*

INTRODUCTION

This paper provides an overview of different aspect or types of food supply chain, be it public sector (PDS) or Private sector (Corporate) working in food supply chain across the country and it has been able to enhance quality of food supply chain and most importantly being able to provide reasonable fair price for the produce of farmers and same time looking after availability of food material and ensuring food security for all because due to deeply unequal bargaining positions of food producers and consumers on the one hand, and buyers and retailers on the other hand, the latter can continue to pay relatively low prices for crops even when the prices increase on regional or international markets through government agencies and it is changing slowly due to corporate, contract farming and other agricultural activities of corporate world.

India has experienced a remarkable growth in the production of various agricultural commodities over the last four decade. Technological intervention in mid 1960s contributed significantly towards bringing the country from deficit to surplus stage in food grain production, the recent trends of cropping system is creating lots of problem relating to sustainability and market imbalances. Several studies and research work suggest that the reform policy of government only focused on the price measures and ignored the infrastructure and institutional changes which have caused an unfavourable effect on agricultural growth in recent decades (Kumar, 2002; Chand, 2005). Various empirical studies have also shown the strong and positive impact of public investment on agricultural productivity and growth in India (Chand, 2001; Landes, 2004), which has been declining over time. But contrary to this, with the

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emergence and intervention of World Trade Organisation (WTO) to competing in the international market, Indian agriculture needs more public investment and support in several areas to overcome prevailing structural limitations such as very low scale of operation, post-harvest losses, dismal rural infrastructure, a lack of product diversification, inadequate Research & Development (R&D) spending, low productivity, absence of marketing infrastructure and inadequate financial support (Chandrashekhar, 2002; Naik, 2003).

The agricultural production is broadly categorized in to these sub-system-input supply, production, processing, sales and distribution to consumer and quality and food safety measures. Integration between these components is negligible throughout the agriculture sector in India. In practice, most of these components act independently and the flow of information between different components is either missing or very poor. Due to lack of coordination between various sub-systems, the agriculture operates inefficiently at each stage of supply chain. A low level of adoption of high yielding seeds and other modern inputs show that these inputs are not reaching the potential client effectively and completely. It is not only the purchasing power of farmers which hinders the adoption rate, it also the farmer's insecurity about the crop failure that prevents them for adopting any change. Likewise, at the production level, farmers usually do not make decisions based on market trends in a planned manner, nor they plan the use of resources in appropriate way.

PUBLIC DISTRIBUTION SYSTEM (PDS)

Public distribution system was started in 1939 as a war-time measure by British government and later they taken it to six more cities and other regions. The drought and food shortages of the mid-sixties suggested requirement of food storage and distribution system for ensuring food security by strengthening and continuing with it and the Public Distribution System (PDS) was made a universal scheme in the 1970s. Thus, from its inception as a rationing scheme in big cities during World War II, the PDS was converted into a universal programme for the provision of cheap food and made a component of the strategy to alleviate poverty. It was originally started at a few urban centres, but was extended in the 1980s as a measure for food

security and poverty alleviation (Department for Food and Public Distribution, GoI, 2010). Central and state governments jointly manage PDS with the centre being responsible for procurement, storage, transportation and allocation. The government is responsible for the distribution as well as for identification of deserving families who fall below poverty line (BPL), implementation, monitoring and evaluation. The misuse of resources and ill management of the scheme was widespread and well recognised. Because of it Indian government re-launched Public Distribution System (PDS) as the Targeted Public Distribution System (TPDS) with many reformative measures in year 1997. TPDS is mainly targets the population who fall above and below poverty line categories and objective has been to achieve target of 60 million families below poverty line with 20 kg grains per month. It also introduced a dual price system, with population falling in BPL category receive grain at 50 percent of the economic cost. These price changes have been criticised for the likelihood of increasing malpractices and information issues resulting in confusion among customers about the appropriate prices to be paid (Rajagopalan, 2010).

Targeted PDS

Within the line of World Bank document (World Bank, 1996) guidelines and advice the Government of India introduced the Targeted PDS (TPDS) in year 1997 in order to reduce the food subsidy. The policy targeted households on the basis of an income criterion with income poverty line to recognise 'poor' and 'non-poor' households to establish new rules in TPDS as it differs from earlier variants of the PDS in certain key respects.

Targeting: The most distinctive feature of the is the introduction of TPDS in Indian policy has been targeting, specifically, the division of the entire population into below-poverty-line (BPL) and above-poverty-line (APL) categories, based on the poverty line as per government and treatment very for both group for quantities and prices of foodgrain.

Dual (multiple) Prices: The second most distinguish feature is that the TPDS having the dual prices which differ for BPL and APL consumers. A third kind of price, introduced in 2001, for the Antyodaya Scheme beneficiaries. In March 2000, a major policy change occurred and it says that Food Corporation of India (FCI) will sell grain to State governments, will be set at half the 'economic cost'

incurred by the FCI for BPL households and at the full 'economic cost' for APL households.

Centre-state Control: The third most important element of the TPDS is that it has changed responsibilities of centre and state with respect to entitlements and allocations of foodgrain to the PDS. In the past, the governments at states has demanded a good amount of allocation from the central stock, and based on many factors, most significantly, past utilization and the requirements of statutory rationing. With the establishment of TPDS, the size of the BPL population and the entitlements are decided by the central government and the allocations for APL populations are decided based on past utilization and demands from States government.

Logistics and Supply Chain Work in PDS

The public distribution system (PDS) acts as suppliers of the raw materials and the mid-day meal program in the schools and hawkers as the retailers. The PDS works through ration cards and supplies only rice, wheat and sugar. The food cooked is not nutritious creating problems of healthcare. It needs to be supplemented with milk, meat and other materials. The cooking takes place in house with no windows creating carbon monoxide poisoning problems especially for children (Viswanadham, 2009). To keep PDS in place, the government has the minimum support price policy and also has created the food corporation of India for storage of the rice and wheat etc. The government also has created the Mahatma Gandhi National Rural Employment Guarantee Act (NREGA) for the benefit of the rural unemployed. The projects created for supporting NREGA scheme have no long term potential. The midday meal program is supported by the Government to attract children to the schools and there by improve the literacy levels in the rural areas. The Government particularly the central Government spends thousands of crores of rupees without any visible benefits or impact. Currently there are several successful food suppliers implementing part of the schemes. They include Akshaya patra and other midday meal programs serving more than 1.3 million school children a day. Kolkata's 145,000 lakh street food vendors-no other city in the country has as many-cater to nearly 10 million people, many unable to afford restaurants. That street food can be healthy and hygienic has been proved by Kolkata's Hawker Sangram Committee (HSC), which, in association

with the city-based All India Institute of Hygiene and Public Health (AIHPH), has been conducting training programs for food vendors on health and hygiene issues and quality control. Periodic tests by the Institute, the Kolkata Municipal Corporation and the state health department have revealed that this street food is nutritious and safe (Kattumuri, 2011).

The Impact of Supply Chain on PDS

Given the perishable and hygienic nature of the agricultural based food supply chain, the products are produced and whole produce ends by the night which suggest very short life span so it requires very efficient and effective supply chain mechanism to serve. This requires careful management of demand forecasting, routing and rerouting of the supplies and monitoring the anti-social activities for on time availability of produce at right time. The program needs trained supply chain and ICT based human resource and thousands of other efficient manpower for the jobs. Several product, service and system innovations are required and there are numerous opportunities for small and big private entrepreneurs, corporate houses and other Foreign Institutional Investors (FIIs) to come and avail the opportunity to make this program successful. Depending on the demand one can find the optimum number and locations to streamline the processes using the networks, smart cards, computing, mobile vans equipped with the heaters and refrigerators to implement the PDS programme (Viswanadham, 2009). This innovative ways of achieving the food security will get rid of the corrupt practices which are prevalent at the moment and can be made smart and efficient. The working model for this food grain supply chain system can be worked out with an assemblage and coordination of small and big private entrepreneurs, NGOs, Corporate and Government. Making this work is a challenge but the rewards and impact would be very effective and game changing for Indian food industry. It would help to give a new direction to the system which is rotten, leaking and wasteful. The new system can be designed using new innovative technologies such as smart cards, wireless, WiFi, new designs for carrying van and truck, push carts equipped with refrigerators and ovens, hygiene indicators and several others. It is clear and given that looking in to current situation that the TPDS has not been effective in ensuring food security to society and country. According to an

evaluation revealed by the Planning commission, GoI (2005) on performance of TPDS, 'the transition from universal PDS to TPDS has neither benefited the poor, nor helped reduce budgetary food subsidies.'

There are many leakages and problems with the TPDS; the most relevant among them are the following. First, targeting has led to the large scale exclusion of needy persons from the PDS. Secondly, targeting has affected the operation and economic viability of the PDS network adversely. Thirdly, TPDS has failed to achieve the objective of price stabilization through transfer of cereals from surplus to deficit regions of the country. Lastly, there are reports of large-scale leakages from the PDS, that is, of grain being diverted and not reaching the final consumer.

CONTRACT FARMING

Available literature suggest that contract farming, as an institutional arrangement, has been economically viable with lower costs to the contract farmers compared with non-contract farmers. In addition to the assured market and stable monetary return, the backward linkages help control transactional and marketing cost, yielding higher level of returns to contract farmers. Although in the case of cooperative prices offered can be less than prevailing open market prices, member farmers earn higher profits because the cooperatives provide low-cost inputs.

An IFPRI study (Birtal et.al. 2005) of MDFVL, Nestle, and Venkateshwara Hatcheries also showed that contract farming helped farmers reduce costs of farming and earn profits compared to farmers whom are not contracted. The results show that net profits for contract farmers were more than double those of non-contract farmers in the case of dairy, 78 percent higher for vegetable (spinach) growing farmers, and 13 percent higher for poultry farmers. Costs of production for contract farmers were lower by approximately 21 percent for milk and 21 percent for vegetables compared with non-contract farmers. The share of marketing and transactional cost to total cost was much lower for contract farmers. Among non-contract producers, these costs accounted for 20

percent of costs for milk producers and 21 percent of costs for vegetable producers. In the contrary, transactional and marketing cost accounted for just 2 percent of total costs for contract milk and vegetable producers. Other studies on cooperatives reveals that contract farmers earn higher profits compared with non-contract farmers (Gupta, et al. 2006).

Similarly, a study on Mahagrapes elaborated that profits earned per acre annually by contract farmers were approximately 39 percent higher than that for non-contract farmers (Roy and Thorat 2008). Since Mahagrapes deals with international markets, prices received are almost three times more than in the domestic market. Also, farmer members benefited from better quality inputs and extension services at cheaper rates. A similar case study of contract grape growers in Andhra Pradesh, also supplying the export market, showed that contract growers received 55 percent higher net returns than supplying to the domestic markets (Rao et.al., 2007).

Available research work on contract farming reveals that contract farmers are better off because they will be able to reduce the costs of cultivation and earn more profits. However, not much emphasis has been given to measures of risk against production and price instability, which are important for sustainability of contracting ventures. Mutual trust and confidence in the farm-firm relationship is a major driver of contract farming arrangements. Legal status of contracts maybe desirable to make agreements forcible but it is seen that neither the companies nor the farmers are keen to approach the court. Hence there could be provisions for third party intervention that can help resolve disputes without having to resort to courts. This is not that significant for the marginal farmers in particular who often find themselves in a wrong side of bargaining position and have to bear uneven burden of the risks of contract.

A Supply Chain Perspective in Agriculture

Contract Farming has been in existence for many decades as a means of organizing the agricultural production for farmers and market. In an age of market oriented mechanism, globalization and expanding food business, there is a threat that marginal farmers will find difficulty in sustaining

themselves in the dynamic market economy. The basic concept of 'Contract Farming' says that it is an efficient and effective process to co-ordinate, innovates and promotes production and marketing in agricultural system. Contract Farming can be defined as an agreement between farmers and marketing firms for the production and supply of agricultural produce under agreements at predetermined prices.

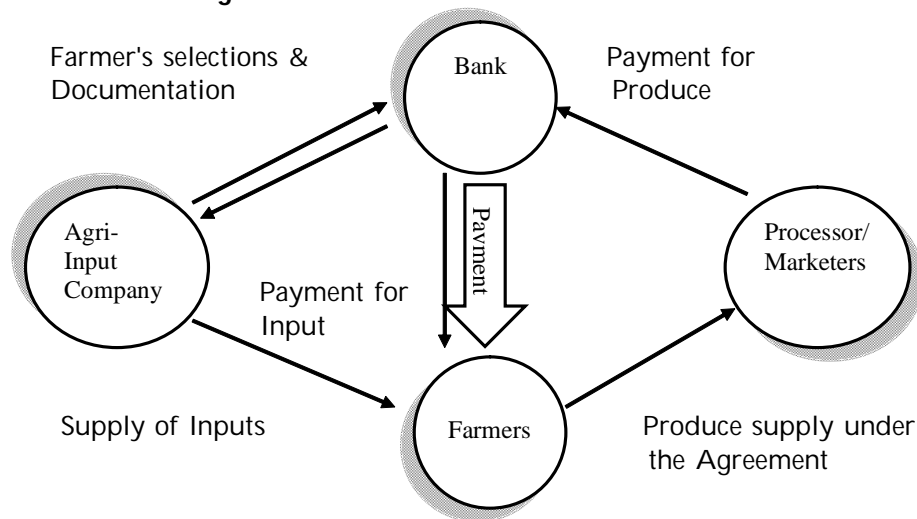
Contract Farming is an agreement between two unequal parties, corporate, Government institutions or big entrepreneurs on the one side and economically and marginally weaker farmers on the side. The most important feature of Contract Farming is that the buyer supplies all the inputs material and technical support required for cultivation to the farmer. This approach is widely used in all kind of contract related to agricultural and allied sector, it is not only for cash crops but also for fruits and vegetables, dairy products, poultry, fish etc. It reveals that, Contract Farming is characterized by diverse kind of mechanism and products contracted but also different ways in which it can be implemented and performed.

Basically contractual agreements between parties can be of three types: 1) contracts which only talks about sale and purchase; 2) contracts under which a firm provide agricultural inputs and the final produce is bought at a contracted price, and 3) contracts where a firm provides all capital and technical support and the farmer provides land and labour. The significance of the various models of production and contracts differ among various commodities. Each model is guided by a different market, resource and management variations that lead to the role and capacity of the companies in association with the farmers. In above mentioned model, the trend of risk taking depends on the provisions of agreement and farmers most of time have to bear the risk of production process. In another model all risks will be taken by the firm and farmers neither bearing the risk nor making any profits. Various empirical studies reveal that in the condition of price volatility either farmer have did not sell the produce or the firm refused to procured produce, such incident has also taken place. Also, in the advent of crop failure, farmers have to bear the

expenses without any financial assistance from the firm. There are also cases when substandard quality of product has forced in firms to refuse procurement of produce. These issues need to be handled carefully in balanced, transparent and with all the equitable legal provisions in order to protect the interests of both farmers and firms.

THE CORPORATE PERSPECTIVE AND STATUS ON CONTRACT FARMING IN INDIA

Contracting in agriculture is not a new concept in India, it can be traced back since sugarcane sector era, which was primarily organized under the cooperative structure. Although the sugarcane sector heavily dependent on government assistance but on the other hand the dairy sector due to white revolution in India flourished under the cooperative commercial structure and millions of marginal farmer benefited from Operation Flood in early 1970s. Later other milk based cooperative or in other sector including private players in dairying and allied business also followed the "Amul pattern" of cooperative dairy development and, have been contracting with dairy based farmers for procuring milk. Contract farming has also done well segment such as poultry, basmati rice and potato production, primarily led by big corporate firms. Contract farming in high value agricultural commodities, such as tomato and chillies, began as early as the 1990s, and contracting in high value vegetables, such as baby corn has been a more recent event. Contracting in horticultural product in fruit, such as mango, citrus, and grapes, has been successful and conducted in large scale. Punjab has been among the first in introducing contract farming, with PepsiCo in tomato production and processing in 1989. Taken lead out of this local firm, Nijjer Agro Foods Ltd in 1991 also went for contract farming for availability, quality and low cost. Southern states such as Andhra Pradesh, Tamil Nadu, and Karnataka and same time western states as Maharashtra and Gujarat have been in the forefront for contract farming in poultry and other livestock based product, with major poultry and livestock integrators such as Suguna, Pioneer, Godrej Agrovet, and Ventakeshwara Hatcheries in southern and western part of country operating in large scale.

Figure 1: The contract farming Model

Source: Adapted from S. Singh, *Contract farming and the State*, 2006.

Few years back, the Bharti Group in a joint venture with multinational retail Company Wal-Mart has started its venture into agricultural markets and supply chain in Punjab, primarily targeting on the export oriented market, and contracting with the farmers for supply of produce. In the early part of last decade retail ventures led by Reliance, Spencer's, Subhiksha, and others are procured their agricultural product requirements from all possible local sources, from auction at mandis to individual farmers, but did not directly tying up or contracting with the farmers for large amount of supply of their requirements. However, ITC Choupal has been the one of most successful and giant corporate unit being engaged in contract farming for horticultural products such as fruits and vegetables. And, in the dairy sector, many corporate and private players have entered the dairy market following amendment and available economic feasibility of the Milk and Milk Product Order (MMPO) by the government. Nestle has been one of the major corporate in the dairy sector and same has been engaged in contract farming for dairy product in large way. In the cooperative sector, due to the success of Amul and Mother Dairy, apart from them there are a number of state cooperatives set up are now operating in the dairy business by adopting Amul model. Several studies conducted by the International Food Policy Research Institute (IFPRI) and others over the past few years on contract farming in dairy, fresh fruits and vegetables, and poultry, in particular. While the

information gathered is not uniform and the findings are subject to further research, it provides a broad idea of the nature of contract farming in selected commodity chains, the existing limitations, the lessons learned, and the issues involved in moving forward (Gulati et al, 2010).

There has been various example of a public-private partnership in India, the Council for Citrus and Agri Juices in Punjab has taken up the concept of contract farming of citrus orchards to supply "Tropicana" juices, a product of PepsiCo. The Council for Citrus and Agri Juices has acquired 5,185 acres of land in Punjab, of which 2,600 acres have been planted, with a target to acquire additional 10,000 acres under horticultural cultivation in 2008. Same kind of trend also observed in Andhra Pradesh as Sam Agritech is a private company engaged in contract farming for mangoes, pomegranates, grapes, chikoos, and exotic horticulture based product. Initially, Sam Agritech ventured with large farmers, but now is tying up with marginal farmers as well. Global Green Company in Andhra Pradesh is yet another firm involved in Contract farming in gherkins under private model that has helped link the marginal holders with the international markets. Mother Dairy Fruits and Vegetables Limited (MDFVL) a sister unit of Mother dairy Cooperative procured fresh fruit and vegetables from about 100 producer associations that include more than 18,000 farmers (Gulati, Ganguly, and Landes, 2009). Most farmers associations in agricultural sector are informal

cooperatives or managed by the farmers themselves. These informal cooperative are aware about the quality of horticultural product (fruit and vegetables) that should be cultivated and farmers need to deliver produce by bearing the cost to Mother Dairy collection and processing centres, eliminating local middleman from the supply chain. Farmers receive money at par with mandi (Market) prices. Payment is made by cheque, with both farmers and milk suppliers and they receive payment within 10 days. For horticultural product (fruit and vegetable) procurement, the farmers' cooperative are paid a commission of 1.75 percent to meet the expenses of running the cooperative, such as remuneration, water and electricity costs. While farmers get the benefit from an assured market transaction for produce of acceptable quality, most of time there is no written contract agreement with the farmers to safeguard their interest and vulnerability to farming and price risks.

Mahagrapes is one of first few organizations in Maharashtra with characteristics of both a cooperative and a private sector marketing firm. By mobilising existing cooperatives of grape grower, Mahagrapes initially contracted formally and informally to nearly 20,000 farmers and 29 farmer cooperatives as members of the firm for supply of horticultural produce. Going by the objectives of the Maharashtra State Agriculture and Marketing Board (MSAMB) to promote marketing of horticultural produce (fruits) by providing financial, technical and marketing assistance and support, Mahagrapes has been able in reducing transaction costs. Mahagrapes was supported by MSAMB during its initial few years, which were suffering from problems resultant from high prices of consignment rejections in the European markets (Roy and Thorat 2008). The cooperative, with the assistance from public sector, was able to update storing facilities, pre-cooling and cold chain facilities, same time acquiring knowledge about the global food safety standards. As a result, shipment rejections were reduced to less than 10 percent in late 1990s and to less than 1 percent after 2001 (Roy and Thorat, 2008). MSAMB was influential in the development of Mahagrapes along with MahaMangoes and MahaBanana were also set up and developed subsequently in mangoes and bananas category respectively. Another horticulture based firm Field Fresh Foods (P) Ltd. (FFL) has been actively contracting with farmers for supply of high

value fruit and vegetables. FFL operations are mainly directed to the international market for fresh product, such as baby corn, okra, bitter gourd, french beans, bell peppers, and snow peas. FFL contract with farmers for production and by encouraging them for required standard cultivation and handling practices. FFL has 300-acre model farm facility in Ladhawal (Punjab) has instrument to promote modern standard farming practices and to provide demonstration and pilot testing sessions for farmers. Initially as start up firm FFL leased in farm in Sangrur, Fatehgarh, and Jalandhar districts in Punjab to undertake farming. The contract also offered farmers other extension assistance and supply of seed, the cost of which was to be adjusted in the final transaction cost. Even though farmers initially faced losses due to sub-standard and poor quality production and produce that made FFL reluctant from purchase, most of the contracted farmers wanted to try again in next year 2008 and same time FFL had a target of acquiring 10,000 acres land for baby corn cultivation. Bharti's joint venture with the US retail giant Wal-Mart may lead to generate and acquire resources, transfer of technology & knowledge and development of infrastructure needed to make linkages between corporate and farmers more remunerative and rewarding for the farmers.

An case study of IFPRI (Rao et.al., 2007) shows that higher revenue, stable prices and assured markets circulation have compelled farmers to diversify into gherkin production. Global Green Company which is working in international level has tied up with about 10,000 farmers in Andhra Pradesh, Karnataka and Tamil Nadu. Farmers are given payment on basis of the quality of the produce. In order to sustain the contractual relation, the company also procure produce that is not fit for export or international market and sell it in the domestic market. Apart from purchasing the produce, the firm provides technical assistance and agricultural inputs (seed, pesticides, and fertilizer) to farmers on payment basis, with the cost adjusted in the final purchase transaction of produce.

ITC e-Choupal Integrated Supply Chain Model

A case study of ITC e-Choupal clearly gives an idea that how information and communication can revolutionize Indian agriculture. The e-Choupal has been most successful initiative to connect rural India and to involve the farmers in learning. ITC e-

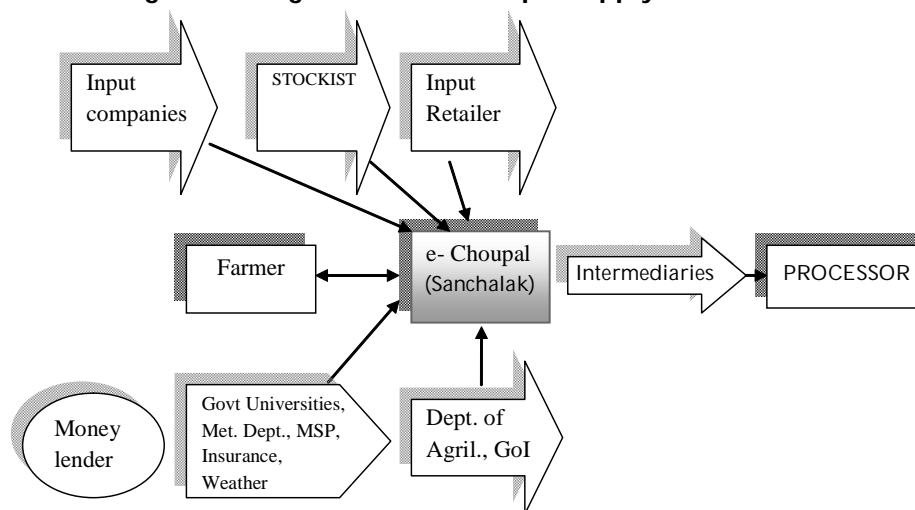
Choupal has also attracted attention from the renowned academicians, since e-Choupal has managed to innovate the supply-chain, and model applied by ITC has enough potential to be replicated in the under-developed and developing countries. ITC's example also shows the key role of information technology- in this case provided and maintained by a corporation, but used by local farmers- in helping to bring about transparency, to increase access to information, and to catalyse rural transformation, while enabling efficiencies and low cost distribution that make the system profitable and sustainable. ITC has been successful in making the farmer feel the sense of ownership and encourage them to generate additional revenue by eliminating middleman. Participating farmers have been able to enhance their income and eliminate the delay in getting the payment once the product is sold. It has helped in reducing debt burden of the farmers.

The e-Choupal model has been specifically designed to tackle the challenges posed by the unique features of Indian agriculture, characterized by fragmented farms, weak infrastructure and the

involvement of numerous intermediaries, who block critical market information from passing to the farmers and use that information for getting a big margin for themselves. But e-Choupal sets things in order as it smoothens the flow of information to the farmers by disintermediating intermediaries from the chain of information flow and at the same time leverages the physical transmission capabilities of the them as they deliver critical value at every link for a very low cost in a weak infrastructure environment. The structure of e-Choupal network is shown in Figure 2.

The project e-Choupal is an ICT platform for carrying out trade at a number of locations. In this, ITC sets up a back-up physical service support at the village level, called Choupal, through Sanchalak: a lead farmer, who acts as the interface between computer and the farmer. ITC accumulates information regarding weather, modern farming practices, and market prices from sources like Meteorological Department, Agri-universities, mandis (regional market) etc., and upload all information on to e-Choupal web site.

Figure 2: Integrated ITC e-Choupal supply chain model



Source: Conceptualised by Author

All information is customized according to local farmer's needs and provided into the local language through computer set up established by ITC in Sanchalak's house. As one observe in above (figure 2) that Sanchalak access this information and facilitates its dissemination to farmers which is generated through the information gathered from Dept. of Agriculture (GoI), Universities, Indian

Meteorological Department (IMD), input firms, stockist, retailers and many more. Information regarding weather and scientific farming helps farmers to select the right crop and improve the productivity of their farms. Availability of market information helps farmers to become market oriented. They know what price ITC is quoting and the price prevalent in the local market (Mandi), thereby helping

better price realization for farmers.

For establishing an efficient and effective supply chain system in the Indian agriculture, there is an urgent need to improve the functioning of regulated markets and amend the APMC Act by the state government in India as per the model act on agricultural marketing suggested by the central government to ensure private participation in supply chain system in an organized and legal manner. This will enable private agro processing units and business operators to link themselves with farming community directly, eliminating multiple intermediaries. For increasing efficiency in food processing segment, the process of raw material sourcing needs to be redesigned in an efficient organizational framework with proper backward linkages. The emergence of agribusiness activities and food retailing are providing both opportunities and challenges to policy makers. There is need to assess all the existing policies affecting the agricultural supply chain and modify them as per the requirements of market forces, with proper regulatory mechanisms to protect the interest of all the stockholders in the chain.

Reliance Fresh Supply Chain framework

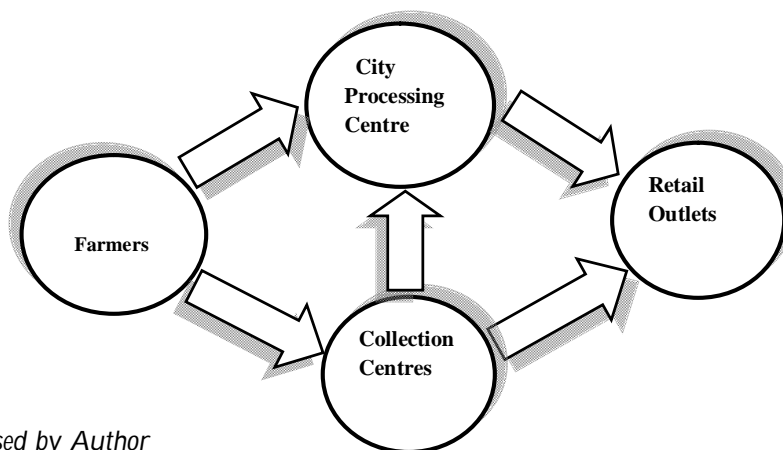
Reliance Fresh was the first foray into retailing by behemoth known as Reliance Industries Limited (RIL). Reliance Fresh is somehow different from business model of ITC e-Choupal mainly in terms of use of information technology and being working as a tool for increase in productivity by assisting farmers, which is major part of ITC e-Choupal model but for the Reliance Fresh it is more about procuring the material, processing it then distribution to various retail outlet for timely

availability of the food produce in most efficient and effective form by utilisation of information technology tool such as Enterprise Resource Planning (ERP) and SAP software in best possible way. Reliance Fresh launched by opening retail stores in Hyderabad on November 2006 then it 12 opened "Fresh" outlets in Chennai increasing the total store count to 40. Reliance was testing its retail concept by controlled entry, beginning in the southern states.

There were three basic reasons for Reliance Industries Limited choosing foods and vegetables for entering into retailing sector as Reliance Fresh. First, it wanted to go after the very core of the great Indian retail opportunity in terms of agricultural based business. Second, its aim was to build a high-profitability business and food was perhaps the best place to start. Third, the grossly inefficient food supply chain provided a well-resourced and well managed organization like RIL with an opportunity of amending the flaws which would also make business sense and to materialise that it has increased the number of stores to till June 2013, around 1,500 from 1,150 in 2010.

Reliance Fresh has been contracting farmers, and being linked to the Reliance Fresh supply chain to ensure availability and that number will grow to millions. By going to the farmer directly, Reliance Fresh hoped to disintermediate the supply chain and eliminate waste. Even contract farming by assisting farmers in procuring high-quality seeds, fertilisers and other essential raw materials to ensure quality of agricultural produce then to collect the produce through collection centre then send it to City processing centre which works as central hub.

Figure 3: Reliance Fresh Supply Chain Network



Source: Conceptualised by Author

As above (figure 3) suggest that source has been the farmers and City processing centre and Collection centres works as intermediary part of chain to avail the produce at retail outlet. Farmers also see advantage of quantity procurement by Reliance Fresh of vegetables they need from them and they can go there and get there consignment graded at their collection centre. The centre would get the price-band and quantity of vegetables it needed to collect that particular day. Reliance Fresh provides a good example of a successful case, depicting improvement in the economic conditions of the farmers through their network, rising income levels and more opportunities. Contract farming, unlike corporate farming, brings farmers into the mainstream of the economy. It reduces their market risks, and enhances supply chain efficiencies by providing both knowledge and material inputs. Reliance Fresh model operates on a very small scale, and is able to meet the administrative and infrastructural constraints to turn out to be a successful model. If this supply chain model is expanded, then the viability of it largely depends on the integration of variables and development of agricultural infrastructural facilities.

The success story of supply chain system of organizations like Reliance Fresh and ITC e-Choupal has given new lessons to the government agencies and corporates in the country in context of importance of supply chain mechanism in agriculture sector. By embarking on this initiative, ITC has shown that ICT platforms can benefit farmers and rural India.

CONCLUSION

Indian agriculture at the crossroad right know, fundamental mistakes will take you away from the objective and programme such as public distribution system (PDS) needs to be more efficient and effective than what it is at the moment and there are many loopholes in PDS, the most relevant among them are that targeting has led to the large-scale exclusion of genuinely needy persons from the PDS. Targeting has negatively impacted the operations and economic viability of the PDS network and led to a collapse of the delivery supply chain system. TPDS has not been able to achieve the aim of price stabilization through transaction of cereals from surplus to deficit regions of the country. There have been reports of large-scale leakages from the PDS. Most of time food grain being diverted and not

reaching the final needy consumer. Functioning of contract farming in India has been largely observed as lower transaction costs and higher net returns. While the economic viability is very important, it has been revealed with several studies that the basic framework of contract farming and the provisions are not clear and exploitative in nature most time mainly in context of marginal farmers. Even though the contract agreements discussed above apparently have quantity, price and quality clause acceptable to both firm and farmers but there is no mechanism in place that work towards the non-adherence to these provisions by either party especially in terms of corporate. While usually most of time the contract are in written format but not many of them are actually registered to be considered as legal documents. By in large, it is the mutual trust that is behind working ethics these contract farming business activities in India. For large farmers, who already have several acres of land contract farming enables them to earn more incomes. On the other hand for the smaller farmers, while contracting may provide an divert risk of subsistence farming.

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