Transform Agriculture through Supply Chain–Case of Corporate Entry in Agricultural Markets in India

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Abstract

The need for a more integrated market structure where the farmer is provided both backward and forward linkage and which will help to minimize inefficiencies in the marketing system was addressed by legislation in early 2000. Accordingly, the monopoly of traditional regulated markets was broken with the entry of direct marketing, corporate entry, private markets, etc. This paper is therefore an attempt to compare two marketing channels, namely regulated markets and corporates in the marketing of pomegranates in order to observe price spread and net returns to farmers. The corporate selected is Deepak Fertilizers and Petro Chemicals Limited (DFPCL) which provides the registered farmers with total agri solutions through soil, water, plant testing facilities along with complete crop nutritional management. Further, DFPCL also provides marketing linkage to the farmers with product buy back and retailing. The study observed that the net price received by farmers in case of sale to corporate was 75 percent higher than traditional channel. This was explained by the fact that the corporate purchases only superior quality produce and further the farmers do not have to bear transport or marketing costs which are borne by farmers who sell their produce to regulated markets. Post harvest losses were also less when sales were made through corporates in view of better storage structures and therefore less decay of produce. India is a leading producer of fruits and vegetables but only a negligible portion of superior quality production is purchased by corporates. The scale of operations of such corporates must therefore be increased so that farmers can benefit from advisory service and thus produce better quality produce and also obtain higher prices. Regulated markets which are still the dominant source of marketing must strengthen their infrastructure and maintain orderly marketing. Efficient marketing can thus benefit both the producer as well as consumer.

Key words: pomegranate, marketing channels, price spread, post harvest losses

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Rationale

Indian agriculture has set new milestones in its progress. Since independence, major strides have been made in production of food grains, not only due to increase in area but also due to technology. As a result the food grain production increased from 50.82 million tonnes in 1950-51 to 252.68 million tonnes in 2014-15 (Government of India, 2016). After self sufficiency in food grains was met, the policy makers realized the need for diversification of agriculture to achieve higher growth rates as well as to adjust to the changing consumption pattern of the population which was experiencing urbanization and rising per capita incomes. Thus dairy, horticulture, poultry and other allied sectors were given impetus and are being promoted through various policy measures. India now ranks high in the global map in milk production, fruits and vegetables and in production of eggs (Government of India, 2016). This increased production has brought in its wake new challenges to handle in terms of huge marketable surplus. Thus while increasing productivity and production in the agriculture and allied sector have always been the focus of Indian agriculture, attention is now being drawn on building up an efficient marketing system which includes adequate physical facilities for safe and economic handling of produce as well as institutional and legal support for orderly transactions. In the traditional agricultural value chain, bulk of trade in agricultural commodities takes place in the wholesale markets which are managed by Agricultural Produce Market Committees. Commission agents in these wholesale markets organize auctions on behalf of the farmers so as to sell the produce to the highest bidder. The intended aim of the commission agent is to enable farmers to get highest possible price and the farmer can directly witness the auction of his produce. Further, the commission agents also ensure that accurate and timely payment is made to farmers, so that transactions are in order. Marketing of agricultural produce also serves as a link between the farm sector on one hand and other sectors on the other hand. An efficient marketing system helps in the optimization of resource use, output management, increase in farm incomes, widening of markets, growth of agro-based industry, addition to national income through value addition and employment creation (Acharya, 2006).

Despite several advantages that regulated markets had, there still existed several limitations. A number of regulated markets could not function efficiently owing to collusion among traders in bidding low prices. There was similar collusion in the lack of prompt action by the Market Committee against breach of rules by any trader. The Market Committees for all practical purposes were dominated by traders’ interest. Also, at times the proportion of village sales was so large that it made the functioning of the regulated markets which were backed by legislation, very ineffective in providing fair price to the producer.

Further, the market fee collected by the Market Committee was barely used for development of the market and provision of modern facilities. There was often congestion in the market yard and farmers had to wait for long to sell their produce. Also, there were no proper facilities for the farmer to wait till his produce was finally sold. Finally when the produce was disposed off, deductions were made from the price to be paid to him on grounds that his produce was not up to the mark. The regulated markets also led to the monopolization of trade by way of granting licenses to intermediaries which barricade the entry of new functionaries.

Again this method of sale of agricultural produce led to the supply chain in India becoming inefficient because of the presence of a large number of intermediaries in agricultural marketing. The presence of intermediaries in India is a substitute for infrastructure. These intermediaries perform the distribution function as produce is normally consolidated at the village markets and reconsolidated again by intermediaries atleast two to three times before it reaches the final consumer. The supply chain is dominated by traders who operate on high margins for not much value added. In such a process there is wastage and huge losses besides both the farmer and consumer lose in terms of price. A more integrated market structure where the farmer is provided by both backward and forward linkage and which will help to minimize inefficiencies in the marketing system therefore deserves attention.

Taking into consideration the limitations with the functioning of regulated markets, a need was felt in early 2000, to bring about policy changes with respect to marketing of agricultural produce. The marketing system of sales through regulated markets had limitations and alternative marketing systems which provide better returns to farmers and reduce inefficiencies were required. The alternative marketing systems would ofcourse operate parallel to and in addition to the present system of auction sales in regulated markets. Issues that plague supply chains in India include non – transparent pricing, limited investment, primitive sorting and grading facilities, post harvest losses, etc. Therefore the purpose of the alternative marketing structure was to establish modern efficient trade practices as a catalyst for change in the market towards improved transparency, efficiency and integration of farm production with domestic and global markets, so as to strengthen the supply chain.

In view of the above, legislation was passed and marketing of agricultural produce became more dynamic as the monopoly of regulated markets was withdrawn. Due to reforms, direct marketing of agricultural produce, contract farming, private markets and corporate entry into agricultural marketing were promoted and became features of the amended marketing legislation. Accordingly with commercialization of agriculture and attempt to transform marketing supply chains, corporate units entered agricultural markets with a “farm to fork” retail plan. Some of these corporates provide extension services to farmers, along with quality inputs and finally buy back the produce from farmers.   Therefore, in this paper, an attempt is made to study the impact of corporate entry into agricultural markets.

Objectives

The main objective of the paper is to observe through a case study how corporates have entered agricultural markets to capitalize on opportunities such as marketing of agricultural produce. These companies have linkages with small and large farmers to source the produce from fields and also provide them with extension services. The paper will therefore compare sale of agricultural produce by a corporate and that through the traditional method. While sale in the traditional method is mainly through auction method, in case of corporate entry, the produce is lifted from the field of the farmers. In addition extension services are also provided by corporates to farmers so that they can improve the quality of the produce. After comparison between the two marketing channels and observing the conclusions, the paper aims at making appropriate policy implications.

Methodology

The study is based mainly on primary data. The corporate selected for our study is Deepak Fertilizers and Petro Chemicals Ltd. (DFPCL) and the crop is pomegranate. The primary data is collected from Nasik District in the state of Maharashtra. The state of Maharashtra is located in the west coast of India and Nasik district is in the Northwest part of Maharashtra. Agriculture is the most important economic activity in the district with about 61 percent of workforce in agriculture. Horticulture crops are also gaining importance in the district.

In order to observe the supply chain of the regulated market or traditional channel and the corporate, primary data was collected from the following respondents in 2009 to whom a detailed questionnaire was addressed:

Farmers

Intermediaries

Retailers

Consumers

Market Committee Members

In the traditional channel the questionnaire was addressed to 35 farmers while in case of corporate the sample was restricted to only 5 farmers due to certain limitations. This is because changes in legislation with respect to marketing of agricultural produce had just been implemented in 2006 and corporate entry was fairly at an infant stage. Further, there purchase operations of corporates are spread over several centres in the country but our sample was confined to one district in the state so as to make comparison with traditional or regulated market channel more comparable. Only the farmers who had sold their produce to DFPCL and received extension services from the corporate were addressed with the questionnaire. The questionnaire addressed to farmers had details on their marketing costs and price received as well as their post harvest losses.

A focus group discussion with the Committee members of regulated markets was also conducted, in order to get a clear picture of market charges, market practices, etc. In case of data collection for the corporate, while its structure and functioning was obtained from its head office, a visit was also made to its extension centres.

In case of pomegranate, marketing in the regulated markets or the traditional method takes place through auction method in the Agricultural Produce Markets and the following marketing channels were observed for sale of pomegranates:

Channel- I : **Farmer** → **Commission Agent** → **Wholesaler** → **Retailer** → **Consumer**

Channel- II : **Farmer** → **Commission Agent** → **Wholesaler (local market)** → **Wholesaler (distance market)** → **Retailer** → **Consumer**

Channel- III : **Farmer** → **Commission Agent** → **Company Representative** → **Consumer**

In our paper however we have considered only channel I, where only one wholesaler was present in the regulated market during the auction. The distant wholesaler is normally in another market and hence could not be traced. It was through our discussions with market committee officials and intermediaries that marketing channels II and III were revealed. Pomegranate is a crop grown largely in the state of Maharashtra but has demand in several states. Hence the local wholesaler often sells the produce to another wholesaler in a distant market. The wholesaler in the distant market the supplies the produce to retailers. Thus two wholesalers may be involved in the supply chain. Further, in certain cases this horticultural crop is processed by agro-processing companies and hence the wholesaler may supply the produce to a representative of the company which after processing the produce will sell to the consumer.

In case of corporates however the marketing system is different as auctions do not take place but the representative of the company directly buys from farmers and supplies the produce to organized retail. In some cases the corporate may even export the produce. After discussing with officials in DFPCL, their personnel in service centres and also the farmers who had availed of their extension and marketing services, the following marketing channels were observed.

Farmer → **DFPLC** → **MALL**

Farmer → **DFPLC** (through Saarrthie service centre) → **Overseas Buyers**

DFPCL through its service centres located at different regions, aims at providing total agri solutions through soil, water, plant testing facilities along with complete crop nutritional management, using its range of plant nutrient products which include micronutrients. These centres also provide marketing linkage to the farmers for his farm produce with product buyback and retailing. The main aim is to provide a complete basket of solutions and techno-commercial services to ensure higher yields and thus higher net returns to farmers. Each extension centre operates from a centrally located office in a potential area/market place. Each centre is managed by an Agronomist who is assisted by a team of supervisors and technical assistants. DFPCL also helps farmers to obtain Global Gap Certification so that they can capitalize on the opportunity to export to the high valued European and US markets.

After collecting data on the marketing channels of regulated markets and DFPCL from farmers and intermediaries, the data was tabulated. The price spread in the supply chain and the net returns to farmers were observed which were used as a criteria for comparing the two marketing channels, viz regulated traditional markets and corporate.

Key Findings

A comparison of sale of agricultural produce, i.e pomegranate, through regulated markets or the traditional method with sale through corporate (DFPCL) is indicated in Table 1 and the price spread and marketing costs of pomegranate are indicated. In case of sales through regulated market, it can be observed that sample farmers had to incur marketing costs of $7.05/- per quintal, and hence the farmers' net price was $6.52/- per quintal which was reduced by 9 percent from auction price. In case of pomegranates and other fruits, the commission charges to be paid to the agent is 8 percent which is double that for other agricultural commodities. This is mainly because the risk is higher in case of fruits. Discussion with commission agents in Agricultural Produce Markets where the farmers sold the pomegranate revealed that the commission agent passes on two percent of his commission to the wholesaler who buys the produce from the farmer which serves as a discount given for bulk purchase. Thus per quintal, the farmers had to bear commission charges of $ 6.52/- The wholesalers have to bear the market fee which is used for the development of regulated markets. The purchase price of wholesaler including marketing costs and margins was $ 117.5/- per quintal. When the produce reaches the retailer, marketing costs and margins to the tune of $42.7/- were incurred. The sale price of the retailer was $160/- per quintal. Overall, in the traditional marketing channel or sale through regulated markets, it can be observed that the share of farmer in retailer's price was 46.5 percent, marketing costs as percentage of retail price was 20.43 and marketing margins as percentage of retail price was 33.

With respect to sales through DFPCL, it can be observed that the net price received by sample farmers was $130.34/- per quintal which was 75 percent higher than traditional channel. This huge difference in price received by farmers who sold through the corporate can be largely explained by two reasons. First of all, the produce purchased by the agents of the corporate is very limited and of very superior quality. The weight of the fruit purchased by them is at least 200 gms , free of defects and the general appearance is good. Further, since it is picked up from their field, the farmer does not have to bear transport or any marketing costs. In contrast, in case of sales to regulated markets, all produce irrespective of quality is sold through auction. Low quality produce is auctioned at a very low price, while better quality produce fetches a higher price. Again, when the farmers take their produce to the regulated market, they have to incur marketing costs. In case of fruits, the commission charges paid by the farmer are double that of other commodities as the risk is higher. Hence, due to these reasons, the farmers who sell through DFPCL received much higher prices than those who sell through traditional method. In case of the corporate, the produce from the farmer's field reaches the retail outlet and the role of wholesalers is eliminated. The retail price for pomegranates through sales by DFPCL was $ 181.62/- per quintal. The share of farmer in retailer's price was as high as 71.76 percent which was much higher than that under traditional channel (46.5 percent). Since the supply chain is also shorter incase of sales to DFPCL, the marketing costs are only 3.36 percent of retail price. In traditional channel however, there are cases when there are two wholesalers – one wholesaler is from the local market who participates in the auction and then transports the produce to another wholesaler in a distant market. Thus more intermediaries will obviously increase the mark-up at each level, thereby increasing marketing costs and margins. However, this is bound to happen in case of commodities which are produced in a particular region but demand is throughout the country. For example about 70 percent production of pomegranate is in Maharashtra but demand for pomegranates is also in other states of India where the crop is not cultivated. This increases marketing costs and margins.

It can be noted that wastage in case of sales to corporates is much lower than that in traditional channel. This is obvious, because the corporates purchase only selected fruits which have minimal or no defect. The retailer's margins are higher in case of sales through corporates as compared to traditional channel and while retailer's margin is $ 25.34/- in traditional channel the margin is $45.2/- under corporate sales, which means that retail margin is about 1.8 times that of traditional channel. It may be noted that from the retailer's margin about 28 percent is the share of DFPCL for its services provided to the retail outlet. The marketing margins as a percentage of retail price is 24.88 percent in case of DFPCL, while it was 33 percent in case of regulated market channel.

It was also observed that pomegranate crop is subject to huge post harvest losses. This crop is highly susceptible to oily spot or bacterial blight disease. This disease has become a serious threat for pomegranate growers. Oily spot is basically an air borne disease and therefore spreads very rapidly. Often the entire plant is affected by the disease and hence farmers have to uproot their entire orchard. This disease causes black spots on the fruit which splits the fruit, resulting in enormous yield losses. The prevalence of this disease leads to a severe supply constraint on the crop and consequent rise in prices. No commercial pomegranate cultivar has been found to show any resistance to oily spot. Besides oily spot disease, there is damage to the produce due to bore and anthracnose which causes huge losses. On the field, scorching heat also causes cracking of the fruit. After harvest, the crop is normally traded in the regulated markets, where the farmers bring the produce in crates of 20 kilograms each. The traders who buy the produce from the farmer often transport it to distant markets. This crop is mainly grown in Maharashtra, but there is huge demand throughout the country as well as in international markets due to nutritive and medicinal properties contained in the fruit. During transport, there is injury to the crop due to friction, and also secondary infection of the fruit, which leads to rotting of the fruit causing huge post harvest loss.

However, when farmers sell their produce to the agent of the company as in case of sale to DFPCL, the storage structures are of better quality and hence there is less decay in the produce. Corporates also have better transport and packaging facilities which reduce postharvest loss. The post harvest losses during storage and transport respectively is therefore about 50 percent less and 66 percent less in case of sales to corporate, as was observed in the field survey. Further, since corporates like DFPCL provide technical knowhow to farmers, the fruit produced is of superior quality and subject to minimal damage. Farmers therefore benefit greatly through backward linkage in terms of appropriate extension services.

Conclusions and Recommendations

The organized agri-retail sector is making attempts to expand, although it is still at an infant stage. A number of factors such as urbanization and rising per capita incomes are encouraging corporate entry into organized retail. Customers mainly from upper middle and high income categories prefer supermarkets because there are several potential benefits associated with purchasing from these markets. Malls and supermarkets are a self service store offering a wide variety of fresh produce which adds to the convenience of customers. The basic appeal of a super market is also the availability of products at competitive prices and stores being open till late hours so that customers have easy access to these markets. These markets also advertise their products in newspapers so that customers are aware of discount offers. Further, fruits and vegetables are graded, sorted, labeled and well packed which adds to the convenience of customers. Some consumers feel that super markets comply with all standards which suit their requirements and they can also make payment through credit card and facility is available to park their vehicles.

In view of the above benefits which customers tend to benefit from organized retail, entry of corporates like DFPCL is useful. The following policy implications need to be addressed.

1. India is a leading country in fruits and vegetables but only a negligible portion of superior quality production is purchased by organized retail. DFPCL provides extension services to member farmers who have greatly benefited and realized better yields. The customized fertilizers manufactured by the company and advisory services, had great influence on the flowering and there was increase in fruit size, juice percentage of the fruit leading to very high quality produce. The farmers who availed the diagnostic facilities and other inputs in case of pomegranates revealed that the average fruit weight per tree increased by 10 percent and yield per tree increased by 11.27 percent more as compared to Agricultural University recommendation. The scale of operations of companies such as DFPCL must therefore be increased so that more farmers can benefit from cost effective solutions and complete agronomic advisory service.

2. With respect to sales through corporates, the main constraint was that they purchased limited quantity and only superior quality produce. Such corporates have to therefore increase the scale of its operations to serve as a competitor to regulated markets and so that more farmers benefit by selling through this channel. In this case while farmers receive much higher price by selling their produce to DFPCL, their entire production is not lifted as the company does sorting by only lifting the fruit which satisfies its criteria in term of size, color, shape, etc. Discussions

with the farmers revealed that the inferior quality was sold by them in regulated markets or to local traders at a much lower price. Corporates such as DFPCL must therefore increase the scale of their extension services so that more farmers can benefit from cost effective solutions, complete agronomic advisory service, pre and post-harvest technology dissemination and all round efforts to make the Indian farmer competitive. In case of farmers who are already taking their advisory services, the corporate must ensure through its field level officials that the entire produce of the farmer is of superior quality, so that the farmer is able to dispose off the entire produce to the corporate and does not have to depend upon other markets for its inferior produce.

3. In case of marketing through traditional channel, it was observed that internal roads were poor and conditions in the market were unhygienic. Infact, some traders indicated that despite them paying market fee for development of the regulated markets, facilities were very poor. There was also no provision for covered sales and in the event of sudden rain, the produce gets damaged and losses are incurred by farmers as well as traders. Thus all round efforts should be made by Agricultural Produce Market Committees to improve marketing facilities such as display of prices, good quality roads, provision for covered sales, etc.

4. The secretary of the Agricultural Produce Committee revealed that the trader has to give a bank guarantee according to his limit of purchase. In some cases however, the trader exceeds his limit and buys more than his entitlement. In such cases if he does not pay the farmer for produce purchased from him, then it is difficult for the Market Committee to settle this issue through legal methods. Legislation is weak on this point and suitable amendments are required. There were also instances when payment made by traders to the farmers was delayed. Further, the Market Committee authorities also stated that the receipt given by the wholesaler does not have any legal stand and policy must be addressed to this issue.

5. Farmers felt that in case of fruits, the commission charges of 8 percent were very high and this reduced their net returns. In case of onions, the farmers complained that the commission agent as a regular practice deducted the price of 2 kg for ever quintal sold on grounds of it being wastage. Such deductions reduced their net returns. Therefore, such unhealthy practices should not be encouraged

Overall, the study concluded that farmers have benefitted by selling their produce through corporates in case of pomegranates mainly because they did not have to bear marketing costs. However, the marketing operations of corporates are very limited and restricted to purchase of superior quality produce which enables farmers to secure higher price. Further, these operations by and large reach farmers who have availed of the farm advisory services of DFPCL through expert advice, field visits and crop guidance. Obviously, since corporate entry is still in an early stage, it will take time for private sector to expand the scale of its operations and emerge as a major marketing channel.

Thus, expansion of organized retail along with extension support will promote agricultural marketing, reduce post harvest losses and finally benefit the producer as well as consumer. Increasing the scalability of operations of corporates will benefit the farmer as well as consumer as the quality of produce of the farmer will improve and it will a fetch a higher price and consumers can access it easily at a competitive price. However, till these corporates make their presence felt in a big way, the traditional regulated market will continue to play the dominant role. Hence it is important to upgrade and strengthen the infrastructure in these regulated markets so that farmers can benefit from orderly marketing.

Table 1 Price Spread and Marketing Costs for Pomegranate ($ per quintal or 100 kilograms)

Sr. No.	Price Spread	Regulated Market	DFPCL (corporate)
I	Price received by farmer	81	130
II	Total Marketing costs of farmer	7.05	-
	(a) transport to regulated market, loading & unloading, etc	0.53	-
	(b) commission	6.52	-
	Net Price received by farmer	74.55	130.34
	Net Profit (Net price received- Paid Out cost)	51.88	116.24
III	Marketing Costs and margins of wholesaler	35.92	-
	(a) market fee	0.82	-
	(b) wastage during transport	5.2	-
	(c) transport to terminal market	2.2	-
	(d) wholesaler's margin	27.6	-
	Purchase price of wholesaler plus marketing costs & margins	117.5	-
IV	Marketing cost and margins of Retailer	42.7	51.28
	(a) Labor from point of purchase to tempo, transport to retail outlet, cess, etc	0.30	4.6
	(d) Wastage	17	1.5
	(e) Retailer's margin	25.34	45.2
	(f) sale price of retailer	160	181.62
V	Share of farmer (%) in retailer's price	46.5	71.76
VI	Marketing Costs as % of retailer's price	20.43	3.36
VII	Marketing margins as % of retailer's price	33	24.88

Source: computed from field survey data

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