Fresh Food Supermarkets in the Indian Punjab: Organisation and Impacts

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Linking primary producers with global and national markets through modern corporate food retail supermarkets and other linkages is seen as one of the innovative ways to improve the livelihoods of small producers in developing countries. But, value chains driven by food supermarkets everywhere are, generally, found to exclude small farmers for various reasons. In this context, this paper examines the inclusiveness and effectiveness of fresh food supermarkets in linking farmers with end markets with the help of a case study of two major supermarkets in Punjab viz. Easy Day and Reliance Fresh based on a primary survey of growers of two major crops each. Using the evidence and inference from this study, a number of policy suggestions are proposed for better leveraging of food supermarket linkage for achieving smallholder inclusive crop diversification in Punjab.

1. Introduction

Modern food supermarket retail is a new phenomenon in South Asia including India. About 92 percent of retailing in India is unorganised (India Retail Report, 2013). It takes place through counter-stores, mom and pop stores, street markets, 'hole in the wall' shops and roadside peddlers (Thathoo and Kacheria, 2007). But, retailing in India contributes about 22 percent to GDP and 8 percent to employment (FICCI, 2012) making it the second largest employer next only to the farm sector (Kumar et al., 2008). Food accounts for 70 percent of Indian retail (A T Kearney, 2011). The share of organised (modern) food retailing was only about 1.4 percent of food retailing during 2008-09 (NABARD, 2011).

Nilgiris, established in 1905 as a dairy farm near Ooty in South India could perhaps be the first organised food supermarket in India. It opened another store in Bangalore in 1936 and in Erode (Tamil Nadu) in 1962. It initially focused on dairy products, bakery and chocolates, but in 1945 expanded its range of produce to include grocery and other food items. By 2010, it had more than 90 stores under the brand name "Nilgiris 1905". Safal stores established in Delhi in 1988 by the National Dairy Development Board

(NDDB), were the first organised retailing stores for fruits and vegetables (F&Vs). Establishment and expansion of the "Food World" outlets by the RPG Group starting with the first outlet in Chennai in 1996 further led to enhanced corporate interest in food retailing (Sulaiman et al., 2010).

The past decade has also seen the entry of major Indian corporations like Reliance Retail, Bharti Retail, Indian Tobacco Company (ITC), Aditya Birla, Pantaloon, Namdhari Seeds etc. in the organised retailing of fresh fruits and vegetables (FFVs). As the share of organised retail increases, the sector is likely to experience major consolidation, with large retailers and processors taking over smaller players or joining hands with other large retailers to experience greater economies of scale. In 2007, Reliance took over Adani Retail in Gujarat; and Trinethra stores were bought by the retail segment of the Aditya Birla group under the banner More. Also, Mumbai based Spinach retail stores took over Delhi's Sabka Bazaar and Home Store (Reardon and Gulati, 2008). The permission for 51 percent Foreign Direct Investment (FDI) in multi-brand retail in India is expected to further spur the food supermarket growth (Singh, 2012).

The issue of organised retail is linked to the improvement in the efficiency of the Indian agricultural marketing system which suffers from inefficiency, fragmented marketing channels, poor infrastructure, and policy distortions (Chand, 2012). This not only leads to high and fluctuating consumer prices, but also to a small proportion of the consumer rupee reaching the farmers besides wastage of fresh produce (Singh, 2012). This is true across most states of India with even Green Revolution regions like Punjab being no exception though some of them have better agricultural marketing infrastructure especially for foodgrains (Chand, 2012). But, the traditional marketing of F&Vs even in Punjab primarily takes place through the unregulated F&V markets. Little attention is paid to grading, sorting and storage of the produce. Most of the produce is disposed off through commission agents and wholesalers (Sidhu et al., 2010). Undue deductions, malpractices, delayed payments etc. are also quite common in these local markets. Though, Punjab government levies market fee on the market arrivals of farm produce and a part of this fee is used for creating necessary market infrastructure and facilities, basic facilities like pre-cooling, cold storages or refrigerated vans are still lacking in most of the fresh and perishable produce markets. Grading is done manually. There is no modern system of packing and processing of F&Vs in any market of the state (Sekhon and Rangi, 2007). On the other hand, modern fresh food supermarkets are expected to be investing at all levels from the farm to the fork and in many cases buy F&Vs directly from the farmers for their retail stores and lead to lower wastage, lower food prices and more employment and it is on these grounds that FDI in retail was permitted (Singh, 2010).

This paper examines the role of FFV supermarkets in linking primary producers with end markets with the help of studies of two major supermarkets—Reliance Fresh (RF) and Easy Day (ED) in Punjab in the

context of need for crop diversification in Punjab and the role of FDI in food sector in general in India. The next section reviews the relevant literature on role of modern food supermarkets, followed by methodology adopted in section 3. The paper examines retailing and procurement operations of the supermarkets and their impacts on farmer's income in section 4. The role of fresh food supermarkets in agricultural diversification towards high value crops is the subject of discussion in section 5. The perceptions of supplying farmers regarding major benefits and problems in linking with supermarkets are analysed in section 6. The paper concludes in section 7 by drawing lessons for agribusiness policy for it to play an effective role for agricultural development in the state.

2. Fresh Food Supermarkets and Primary Producers in Developing Countries: A Review

The fresh food supermarket procurement channels differ across countries and markets. They procured F&Vs from a few dedicated wholesalers in Guatemala (Hernandez et al., 2007), directly from contract farmers through their own distribution centres in Mexico (Schwentesius and Gomez, 2002), through contract farming with farmers organizations in Vietnam (Moustier et al., 2010), centralised procurement system by establishing their own preferred suppliers and private standards in Indonesia (Chowdhury et al., 2005), and collection centres supplied by the farmers and vegetable collectors in Sri Lanka (Perera et al., 2004). The supermarket contracts varied from unwritten (in case of Hortico in Zimbabwe), to contracts with weekly price negotiations in case of Alice in South Africa, and price and volume arrangements in case of Thai Fresh United in Thailand (Boselie et al., 2003).

Farmers supplying to Hero supermarket in Indonesia and supermarkets in Honduras, Sri Lanka and Kenya received higher prices than the spot markets (Blandon et al., 2008; Chowdhury et al., 2005; Neven et al., 2009; Perera et al., 2004). In Vietnam, farmers appreciated the greater degree of price stability compared to the traditional markets (Moustier et al., 2010). Supermarket supplying farmers in Guatemala, China and Kenya had higher yields compared to the traditional market supplying farmers (Hernandez et al., 2007; Miyata et al., 2009; Neven et al., 2009). In Guatemala and Kenya, average land holding size and area under irrigation was higher in case of the supermarket supplying farmers (9.3 ha and 9-18 ha respectively) than the traditional market supplying farmers (7.8 ha and 1.6-2.4 ha respectively) (Hernandez et al., 2007; Neven et al., 2009). However, some of the supermarkets such as Hortico in Zimbabwe, TOPS in Thailand and SPAR in Thailand and South Africa sourced the produce mainly from small producers as these supermarkets found that small producers had lower costs, lower rejection rates and delivered produce in small quantities which ensured produce freshness (Boselie et al., 2003; Louw et al., 2006).

The input companies in Guatemala provided technical support to the producers (Hernandez et al., 2007). Hortico in Zimbabwe provided inputs on credit (Boselie et al., 2003). SPAR in South Africa gave interest-free production loans up to three months to growers which were deducted at the time of delivery of the produce (Louw et al., 2006). In Mexico, though supermarkets paid their suppliers higher prices than did other traditional buyers, the net benefit to the producer was somewhat diminished by the strict quality standards and practices, making the organisation of the process complicated for the producer (Schwentesius and Gomez, 2002).

In India, most of the food supermarkets work with primary producers through 'contact' (not contract) farming. The former only refers to having registered farmers without any commitment to buy or sell from either side unlike contract farming wherein there is written or contract with pre-agreed price and quality specifications (Pritchard et al., 2010; Singh and Singla, 2011). Most of the supermarkets are not willing to share the risk of the producers. The oral and informal system of procurement put the financial risks solely on the producers/suppliers and the supermarkets need to maintain no stocks, carry no price risk, and have no purchase commitments. But, they still have control over production and its traceability; they enjoy reduced risk of low-quality produce; and they pay lower prices as there are no intermediaries (Singh, 2010). Several studies on FFV supermarkets in India revealed that though cost of production was higher among farmers supplying to supermarkets such as Mother Dairy Fruit and Vegetable Ltd. (MDFVL) (Alam and Verma, 2007; Joseph et al., 2008), lower transaction costs in supermarkets such as Spencer's and Namdhari Fresh in Karnataka had resulted into higher profits for supermarket supplying farmers compared to those supplying in the traditional markets (Dhananjaya and Rao, 2009; Mangala and Chengappa, 2008). Yields of MDFVL tomato farmers were lower compared to those for non-supermarket farmers in Uttaranchal but higher in case of Spencer's farmers in Karnataka (Alam and Verma, 2007; Mangala and Chengappa, 2008). MDFVL spinach supplying farmers in Haryana and cauliflower supplying farmers to a supermarket in Bangalore realised 8 percent and 12 percent higher prices respectively compared to those by *mandi* supplying farmers (Birthal et al., 2005; Joseph et al., 2008). The weighted average price paid by the RF supermarket in Karnataka as proportion of that paid in *mandi* was 293 percent and 142 percent higher in cauliflower and tomato respectively in Kolar, and 151 percent higher in tomato in Belgaum (Pritchard et al., 2010). Organized retailers in Vontimamidi (a vegetable growing region near Hyderabad) procured about 25 per cent of the total F&Vs produced in the area. 95 per cent of farmers had gained by selling through the organised retailers. For about 62 per cent of the producers, gain was 25 to 75 per cent more than what they got from selling in the *mandi*. The major reasons to sell to organised retailers were: higher price, use of electronic weighing scales, savings from commission charges (4-10 per cent) payable at the local *mandi* etc. (Sulaiman et al., 2010). Further, by and large, supermarkets do not work with

smallholders due to higher transaction costs. In India, these chains have, so far, not made any difference to the share of the producer in the consumer's rupee, other than lowering cost of marketing, as these have Collection Centres (CCs) in producing areas unlike the Agricultural Produce Marketing Committee (APMC) *mandis* which are located in distant cities (Singh and Singla, 2011). The improvement in supply chain efficiency is altogether absent in the supermarkets. It is evident from their performance as most of the supermarkets are either closed down or are scaling down their store and procurement operations. Subhiksha has closed down its operations, Spencer's has moved out of Gujarat, ITC has shut shop in Chandigarh and Birla's More is also reported to have wound up its operations in Gujarat (Singh, 2010).

In the context of Punjab, sufficient literature on corporate and state-led diversification attempts exist which examines farmer linkages with new marketing channels through contract farming (Kumar, 2006; Singh, 2005; Singh, 2005a; Singh, 2012a). However, little empirical evidence is available in terms of linkages between producers and fresh food supermarkets. There has been only one such study which has analysed the procurement operations of ITC's Choupal Fresh in Punjab and Haryana and its impact on farmers. The study found that the Choupal Fresh worked with relatively large farmers and procured only a limited proportion of the growers' crops. The chain was not able to make any impact on the growers as it was procuring too little because it was not able to sell the procured produce in the market, where it faced stiff competition from other retail chains, local vendors and farmer's market (Singh and Singla, 2010). Thus, the present paper fills a gap in the literature by examining the farmer interface of the two modern food supermarkets in Punjab.

3. Methodology

Two separate schedules were designed and pre-tested each for farmers and supermarket managers. The retailing and processing operations and supply chain management were the subject of discussions with the ED and RF management; and the procurement effectiveness, costs and returns, diversification attempts, problems and benefits of the supermarket linkage for the farmer interviews. The primary survey of farmers was carried out in Malerkotla tehsil in Sangrur district and Jandiala block in Amritsar district of Punjab during 2010-11. Both the locations were chosen as ED as well as RF had established their Collection Centres (CCs) at these locations (ED at Malerkotla and RF at Jandiala) as a part of their back-end operations to procure F&Vs directly from farmers. A complete list of farmers was prepared with the help of supermarket officials. ED in Malerkotla and RF in Jandiala sourced vegetables from about 150 and 125 farmers respectively. Stratified random sampling technique was followed to select farmers whose population was divided into farmer category strata. From each stratum, sample was taken in such a way that proportion of farmers in each farmer category in the sample

was similar to that in the population. Thus, a sample of 25 cauliflower and okra supplying farmers each in case of ED, and 25 cauliflower and cabbage supplying farmers each in case of RF was taken as these were the major vegetables being procured by the supermarkets in terms of volumes and number of supplying farmers. Another similar sample of 25 cauliflower and okra farmers each in the vicinity of ED supermarket sourcing area, and 25 cauliflower and cabbage farmers each in the vicinity of RF sourcing area, selling in the traditional market (*mandi*) was also selected based on the proportion of farmers in each category in each location through stratified random sampling. Thus, the study sample consisted of 100 supermarket and 100 non-supermarket supplying farmers comprising a sample of 200 farmers.

4. Retailing and Procurement operations of Supermarkets and farmer interface

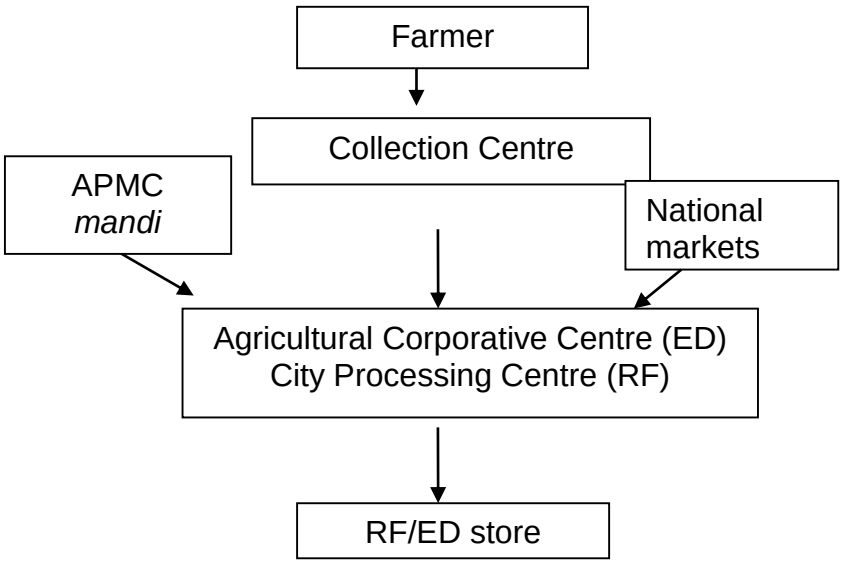
Bharti Retail, the retail arm of Bharti Enterprises, opened the first front-end convenience 'Easy Day' store in Ludhiana in April, 2008. Since then, Bharti Retail has more than 250 stores in India including 43 ED convenience stores in Punjab and two hypermarket stores called 'ED Market' in Punjab, one each in Ludhiana and Jalandhar. Ludhiana and Jalandhar have the maximum number of ED retail stores in Punjab, with six and five stores, respectively. On the other hand, RF, a wholly owned subsidiary of Reliance Retail Limited (RRL) started on 3rd November, 2006 with its first store in Hyderabad. At the end of March 2013, RF operated over 1,450 stores in 129 cities across India. Besides, RRL is also operating 32 cash and carry stores under the store name 'Reliance Market' and 30 hypermarkets under the store name 'Reliance Mart' (Sarkar, 2014). The first RF store in Punjab was opened in Jalandhar in 2008. RF has around 40 stores in Punjab. The size of retail store across the two supermarkets varied between 3000 to 5000 sq.ft. Number of F&V stock keeping units (SKUs) per store varied between 40-60, occupying about 10-15 percent of store space. The average quantity of F&V sold at each store was around three quintal in case of ED and five quintal in case of RF. The employees at RF store trained specifically for F&Vs were called the 'F&V champions'. RF and ED stores also stocked their own private label in staples and food under 'Reliance Select' and 'Great Value' label respectively and contributed about 15-40 percent profits to each RF and ED store. In case of ED, front-end operations were managed by Bharti Retail, while backend operations were managed by the Bharti-Wal Mart. RF managed its entire operations of procurement and distribution.

The processing and distribution of F&Vs to the stores was done through the Agricultural Corporative Centre (ACC) in case of ED and City Processing Centre (CPC) in case of RF located in Sirhind. The major activities carried out at ACC and CPC were: receiving, sorting, grading, allocation and dispatch of the produce. All city indents are consolidated and demands placed by the ACC and CPC to the CC. The ACC and CPC had an area of 40,000 sq. ft. and

50,000 sq. ft. respectively. All ED and RF stores were supplied F&Vs around 2 am-3 am through the ACC and CPC respectively only. Some of the vegetables like potato and onion were procured from Agra and Nasik *mandis* respectively. Fruits were mainly procured from the Azadpur *mandi* in Delhi. Some of the vegetables like capsicum, French bean, *arbi* and *palak* were bought from Ludhiana and Chandigarh *mandis*. Wastages at ACC and CPC were around 2-3 percent.

The procurement of F&Vs directly from the farmers was done through collection centre (CC) located at Jamalpur near Malerkotla in case of ED and Jandiala near Amritsar in case of RF. Both supermarkets procured F&Vs through individual, oral and non-registered 'contacts'. Farmers were informed about the indent of each vegetable for a particular day by phone or personally. Of the total procurement of F&Vs, procurement from national sources accounted for 20 percent, directly from farmers 70 percent and the rest 10 percent was sourced from APMC *mandis*. The produce was graded at CC before delivering to the ACC and CPC. Only A and B grade produce was procured by the supermarkets. The average F&Vs procured at each CC was about 4-5 tonnes/day delivered by about 25-30 regular farmers. The price was paid in cash to the farmers on the basis of daily morning *mandi* price. RF had also opened the zero balance accounts with the HDFC Bank and farmers' payments were directly credited in their saving accounts. RF farmers had to deliver F&Vs of their own at CC, whereas ED picked up from their fields. RF had the APMC wholesaler license to buy directly from *mandi* where they paid 2 percent market fee. RF also had some vendors in Vallah *mandi* in Amritsar who procured on behalf of RF and supplied to the chain at CPC. The produce was transported from CC in refrigerated trucks to the ACC and CPC (Figure 1). RF used the same refrigerated trucks which were used to supply F&Vs to the retail stores. These trucks picked the produce from CC after delivering the produce at the retail stores. Bharti Retail had value chain partnership with Bayer Crop Science (BCS) to provide farmers training on producing good quality and healthy vegetables that meet the specifications set by Bharti Retail.

Figure 1: Procurement and distribution operations of ED and RF in Punjab



The quality of the F&Vs was checked manually first at CC and then again at ACC and CPC. Both ED and RF had specified quality norms for each F&V procured. These procured only A and B grades of vegetables for their retail stores. RF called these grades as Reliance Retail (RR) grades. ED procured 3-4 inch long okra as A grade and 2-3 inch as B grade. In okra, rejection rate was around 3 percent. ED and RF in cauliflower preferred white, compact, disease and insect free, medium to large-sized curds without brown spots and exposure to sun light. ED procured 500-700 gm curd as A grade and 200-300 gm curd as B grade. The cauliflower and okra supplied to ED were packed in crates which were provided free of cost by it. The rejection rate in cauliflower at CC was 4-5 percent. In cabbage also, RF preferred medium to large size curds, without any cuts and disease and insect-pest attack. The heads were to be harvested when they were solid (firm to hand pressure) and before they cracked or split. The leaves were to be unexpanded, crispy and tightly packed. In cabbage, harvesting could be delayed by 1-2 days even after maturity which gave farmers extra time to decide where to sell the produce. Initially, rejection rates both at CC and ACC/CPC were higher but overtime, the farmers became aware of the quality norms set by the supermarkets and the rejection rates came down, and ranged between only 3-4 percent. Initially, rejection rates were about 25 percent in cauliflower, 20 percent in cabbage, 10 percent each in tomato and okra etc.

4.1 Socio-Economic Profile of Supplying Farmers

Table 1 and 2 show that average size of the operational land holding was lower among RF and ED farmers as compared to the non-supermarket farmers. The average size of land holding in each category except medium RF farmers was higher among ED and RF farmers than that among non-ED and non-RF farmers. The average size of land holding had turned lower in ED and RF farmers due to the presence of 72 percent small and marginal farmers in ED and 52 percent small and marginal farmers in RF compared to that only 34 percent amongst non-ED and 38 percent amongst non-RF farmers. Also, ED supermarket did not have any larger farmers to work with. It is also evident from the fact that the proportion of small operators was also higher among the super market supplying farmers (72 percent in ED and 52 percent in RF) compared with the proportion of small and marginal holders in the Punjab state (31.6 percent). The average operated area of around 6 acres each in case of ED and RF farmers was also lower than the average size of the operational holding of 9.76 acres at the state level during 2005-06 (GoI, 2010). Further, land leasing-in general was higher among ED and RF supplying farmers than that among non-supermarket supplying farmers. Leasing-in practice declined with increase in size of the land holding. Another recent study had also revealed that vegetable growers in Punjab leased-in large chunk of land to increase their operational area in order to improve their economies of scale. The proportion of leased-in area was about 35 percent for onion and 27 percent for cauliflower cultivators (Sidhu et al., 2010). On the other hand, leasing-out practice was higher among non-supermarket (24 percent in non-ED and 21 percent in non-RF) farmers in comparison to the supermarket (9 percent in ED and 11 percent in RF) farmers. Thus, it is evident from the above analysis that ED and RF farmers were the largest practitioners of the leasing-in, while the non-supermarket farmers were the largest practitioners of the leasing-out of land.

Table 1: Category-wise distribution of ED and non-ED farmers by land holding

Category	Channel	No. of farmers	Land owned (in acres)	Leased-in land* (in acres)	Operated land (in acres)	Leased -in land as %age of operated area	Leased- out land as %age of land owned
Marginal	ED	12 (24)	1.52	0.45(0.15)	1.82	24.7	9.9
	Non-ED	6 (12)	1.75	0.25(0.37)	1.63	15.3	21.1
Small	ED	24 (48)	4	1.08(0.33)	4.75	22.7	8.3
	Non-ED	11 (22)	3.97	0.57(0.62)	3.92	14.5	15.6

Semi-medium	ED	8 (16)	8.25	1.25(0.65)	8.85	14.1	7.9
	Non-ED	18 (36)	8.75	0.95(2.36)	7.34	12.9	27
Medium	ED	6 (12)	17.33	1.85(1.54)	17.64	10.5	8.9
	Non-ED	13 (26)	17	1.8(4.3)	14.5	12.4	25.3
Large	Non-ED	2 (4)	34	- (8)	26	-	23.5
All	ED	50 (100)	5.68	1.05(0.48)	6.25	16.8	8.5
	Non-ED	50 (100)	10.15	0.84(2.46)	8.53	9.9	24.3

Table 2: Category-wise distribution of RF and non-RF farmers by land holding

Category	**Channel**	**No. of farmers**	**Land owned (in acres)**	**Leased -in land* (in acres)**	**Operated land (in acres)**	**Leased - in land as %age of operated area**	**Leased-out land as %age of land owned**
Marginal	RF	10(20)	1.4	0.42 (0.04)	1.78	23.6	2.9
	Non-RF	6 (12)	1.9	0.20 (0.40)	1.7	11.8	21.1
Small	RF	16(32)	2.92	0.90 (0.18)	3.64	24.7	6.2
	Non-RF	13(26)	3.75	0.48 (0.91)	3.32	14.5	24.3
Semi-medium	RF	15(30)	6.25	1.08 (0.89)	6.44	16.8	14.2
	Non-RF	19(38)	7.95	0.70 (2.25)	6.4	10.9	28.3
Medium	RF	8 (16)	12.32	1.65 (1.47)	12.5	13.2	11.9
	Non-RF	11(22)	16.41	1.68 (2.59)	15.5	10.8	15.8
Large	RF	1 (2)	38	2.00 (4.00)	36	5.6	10.5
	Non-RF	1 (2)	39	2.00 (6.00)	35	5.7	15.4
All	RF	50 (100)	5.82	1.00 (0.65)	6.17	16.2	11.1
	Non-RF	50 (100)	8.61	0.82 (1.83)	7.61	10.8	21.2

Note: *Figures in parentheses are for leased-out land in acres.

Source: Primary Survey

The proportion of farm workers in the family was higher among ED farmers (78 percent) than that among non-ED farmers (59 percent). It was similar across RF and non-RF farmers. Family labour use for farm operations was more among the ED farmers than the non-ED farmers. Though proportion of farmers with milch animals was similar across both supermarket and non-supermarket farmers, but average monthly income from dairying was higher among non-supermarket farmers than that among supermarket farmers. Average off-farm income per month per person was also higher among non-supermarket farmers than that among supermarket farmers. It was mainly due to higher illiteracy among supermarket farmers than that among non-supermarket farmers. Tractor ownership was also higher among non-supermarket farmers in comparison to the supermarket farmers. Thus, both ED and RF farmers were poor in the ownership of farm assets in comparison with the non-supermarket farmers (Table 3 and 4).

Table 3: Category-wise distribution of ED and non-ED farmers by socio-economic characteristics

Category	Channel	Family Size*	% of farmers with milch animals**	% of households with off farm income†	Illiterates (%)	Tractor ownership (%)
Marginal	ED	9.1 (82)	92 (1250)	33 (1165)	25	25
	Non-ED	8.3 (66)	100 (1630)	50 (1640)	17	50
Small	ED	9.3 (79)	86 (1721)	42 (1535)	21	33
	Non-ED	8.8 (59)	91 (2440)	64 (1843)	9	36
Semi-medium	ED	8.6 (76)	75 (2435)	25 (2427)	25	63
	Non-ED	8.2 (59)	83 (3200)	28 (2784)	17	61
Medium	ED	8.5 (68)	67 (3745)	17 (2955)	17	83
	Non-ED	8.5 (58)	77 (3765)	23 (2980)	15	85
Large	Non-ED	8.7 (47)	100 (4190)	50 (3244)	-	100
All	ED	9.0 (78)	84 (1965)	34 (1759)	22	42
	Non-ED	8.5 (59)	86 (2959)	38 (2451)	14	62

Note: *Figures in parenthesis are % of farm workers in the family, ** Figures in parenthesis are average income from dairying, † Figures in parenthesis are average off farm income per month per person.
Source: Primary Survey

Table 4: Category-wise distribution of RF and non-RF farmers by socio-economic characteristics

Category	Channel	Family Size*	% of farmers with milch animals**	% of households with off farm income†	Illiterates (%)	Tractor ownership (%)
Marginal	RF	8.6 (86)	90 (1455)	40 (1120)	40	20
	Non-RF	8.2 (82)	83 (1730)	33 (1442)	33	33
Small	RF	8.5 (85)	88 (1872)	38 (1366)	38	31
	Non-RF	8.2 (84)	85 (2700)	31 (1573)	31	39
Semi-medium	RF	8.8 (76)	93 (2623)	53 (1954)	33	53
	Non-RF	8.5 (71)	90 (3650)	37 (2258)	26	68
Medium	RF	8.4 (69)	100 (2941)	63 (2253)	25	63
	Non-RF	8.4 (60)	100 (3472)	46 (2339)	18	64
Large	RF	8.4 (60)	100 (3267)	100 (2400)	-	100
	Non-RF	8.6 (63)	100 (4654)	100 (2976)	-	100
All	RF	8.6 (74)	92 (2213)	48 (1656)	34	42
	Non-RF	8.4 (73)	90 (3153)	38 (2014)	26	56

Note: *Figures in parenthesis are % of farm workers in the family, ** Figures in parenthesis are average income from dairying, † Figures in parenthesis are average off farm income per month per person.
Source: Primary Survey

4.2 Impact on Farmer Income

The costs of crop production were higher in ED and RF farmers than that in non-supermarket supplying farmers. The yields of ED and RF farmers were also higher than the non-supermarket farmers. The procurement of vegetables was 20 percent in case of ED and 25 percent in case of RF. Thus, the farmers had to sell the remaining produce in the local traditional market. For A and B grades, farmers received higher price than the traditional market price. It is also evident that even for remaining produce sold in the traditional market, ED and RF farmers received higher prices compared to the prices for the entire produce in the *mandi* by the non-supermarket farmers. Thus, quality of the produce was better in case of supermarket farmers than that in case of non-supermarket farmers. Marketing costs of ED and RF farmers were reduced as ED farm pick the produce while RF farmers delivered vegetables at the CC located near to their fields. Still, the total marketing costs for ED and RF farmers were higher than non-supermarket farmers as ED and RF farmers being poor in the ownership of transport vehicle; had to hire some vehicle to sell rest of the produce in the local market. The net returns were higher amongst ED and RF farmers than the returns amongst non-supermarkets, mainly on account higher yields and higher price realisation in the traditional market by ED and RF farmers as the supermarkets procured only 20-25 percent of the produce of the farmers.

5. Role of food supermarket linkage in Crop Diversification

Agricultural diversification is one of the several pathways for agricultural development. The demand for high value crops has been increasing rapidly in the domestic and global markets. Further, diversification-led growth is expected to generate enormous income and employment opportunities for the farmers, especially smallholders (Birthal et al., 2006). Fresh vegetables are the only alternative having profitability higher than wheat and paddy, implying that diversification with vegetable crops would result in increase in income. Shifting of 1 percent area from wheat-paddy to vegetable cultivation would result in 170 percent increase in output (Chand, 1999). Thus, linking farmers, especially smallholders to modern food supermarkets may cause a shift in the cropping pattern toward F&Vs, and thus, may result in diversification away from traditional crops like wheat and paddy in Punjab which the state has been desperately trying unsuccessfully since the last three decades (Singh, 2004; Singh, 2012a). Table 5 points that both ED and RF supplying farmers had higher area under vegetables compared to the traditional market supplying farmers. The area under vegetables was 73 percent in case of ED and 69 percent in case of RF farmers compared to that only 38 percent in case of non-ED and 48 percent in case of non-RF farmers. The percentage area under vegetables was higher among marginal and small farmers. It declined with increase in size of the operational holdings. The cropping intensities were also higher among ED and RF farmers than that among traditional market supplying farmers. Thus, ED and RF farmers were intensive vegetable cultivators.

Since at the time of study, the supermarkets had presence for three years, the farmers were asked about the percentage change in area under vegetables during that period. The increase in area under vegetables was higher amongst ED and RF farmers except large non-RF farmers in comparison with non-supermarket farmers. The increase in area under vegetables was higher among the marginal and small farmers and it declined with increase in size of the operational holding (Table 6).

Table 5: Category-and chain-wise area under vegetables and cropping intensity (CI)

Category	ED		Non-ED		RF		Non-RF	
	Area (%)	CI	Area (%)	CI	Area (%)	CI	Area (%)	CI
Marginal	80	218	68	212	82	217	62	181
Small	75	213	65	205	79	214	56	181
Semi-medi	75	193	48	181	71	216	45	181
Medium	66	192	33	185	61	187	49	178

Large	-	-	20	184	55	185	44	177
All	73	203	38	185	69	202	48	179

Source: Primary Survey

Table 6: Category-and chain-wise increase in area under vegetables in last 3 years (%)

Category	ED	Non-ED	RF	Non-RF
Marginal	15.4	7.1	13.4	5.3
Small	12.1	7.4	16.1	3.9
Semi-medium	8.9	4.3	11.3	7.9
Medium	9.2	3.8	9.5	8.9
Large	-	2	8.5	17.6
All	12	5.1	12.9	6.9

Source: Primary Survey

ED and RF farmers were also asked about the reasons for increase in area under vegetables. About 58-59 percent of ED and RF farmers each reported that they started growing vegetables due to higher income from latter. 44 percent RF farmer were of the view that demand for vegetables had increased. Decline in profits in crops such as wheat and paddy and lack of farm machinery resources prompted 49 percent and 41 percent ED farmers each to grow vegetables. Regular flow of income from vegetables and lack of hired labour for wheat and paddy was also reported by both ED and RF farmers. An important point which emerges was the role of organised supermarkets in diversifying to vegetables. About 15 percent ED and 11 percent RF farmers opined that they switched to grow vegetables due to the emergence of organised supermarkets which buy F&Vs directly from the farmers (Table 7).

Table 7: Reasons for increasing area under vegetables (multiple responses)

Responses	ED	RF
Higher income	59	58
Increase in demand for vegetables	N.R.	44
Decline in profits in wheat and paddy	49	N.R.
Lack of resources like farm machinery	41	N.R.
Regular flow of income	28	25
Lack of hired labour for wheat and paddy	18	36
Emergence of organised supermarkets	15	11
Availability of subsidies for vegetables	10	N.R.

Note: N.R.- not reported
Source: Primary Survey

In the production of vegetables, ED and RF farmers relied mainly on their own decisions. Some of the farmers took the advice of other fellow farmers in the village for vegetable production. Only about 5 percent ED and 3 percent RF farmers posited that they received the guidance from the supermarkets for production of vegetables. A few were dependent on commission agents, wholesalers, relatives etc. (Table 8). Thus, it can be inferred from the above analysis that supermarkets did not play any role in providing the extension and training for cultivation of vegetables. Further, although ED has tied up with BCS to provide agri-inputs and trainings to farmers, however aim of BCS remain to enhance its sales rather than to benefit the farmers. At the same time, it also needs to mention the poor role played by the agriculture department in dissemination of new technologies to the vegetable cultivators in the state.

Table 8: Distribution of ED and RF farmers by source of advice for production of vegetables (%)

Source of Advice	ED	RF
Own decisions	39.0	31.6
Fellow farmers	22.0	26.3
Agri-input dealers	14.6	18.4
Agriculture department officials	9.8	7.9
Media (Newspaper, TV, Radio etc.)	7.3	7.9
Supermarkets	4.9	2.6
Commission agents/wholesalers	2.4	5.3

Source: Primary Survey

6. Reasons for supermarket linkage and issues

More than 84 percent of farmers in each supermarket channel reported that they sold vegetables to the supermarket as it resulted in their time saving in selling the produce. Saving in transport costs resulting from farm pick of the produce was reported by about 76 percent ED farmers. For 78 percent RF farmers, linking with latter result in reduction of transportation costs as CC of RF was located near their fields. ED farmers were also provided with packing material such as crates. Thus, 68 percent ED farmers reported reduction of packing costs. 60 percent of ED and RF farmers each also pointed out the proper weighing by the supermarkets. Timely payment was also one of major reasons for 54 percent RF farmers to supply to RF. Saving of meal expenses in

the market, reasonable price, lower wastages, fixed price, higher income etc. were also some of the other reasons for linking with the supermarkets (Table 9).

Table 9: Distribution of farmers by reasons for linking with the supermarkets (multiple responses in %)

Reasons	ED	RF
Time saving in selling the produce	84	86
No/reduced transportation costs	76	78
Reduction of packing costs	68	NR
Proper weighing	60	60
Timely payment	N.R.	54
Saving of meal expenses in local market	36	NR
Reasonable price for the produce	NR	32
Lower wastages on the way	24	20
Fixed price for the day	24	44
Higher income	18	18
Reduced dependence on commission agents and wholesalers	NR	24
Reduction of undue loading and unloading charges	10	NR
Knowledge of price in advance in supermarket channel	10	NR
Free of cost extension services	10	NR
Strict quality norms resulting in better quality produce	8	14

Note: N.R.- not reported
Source: Primary Survey

Farmers were also asked about the major problems in supermarket linkage. 88 percent ED and 77 percent RF farmers opined lower indent of the supermarkets as a major problem. Due to lower indent, farmers had to sell the remaining produce in the local markets. Purchase of only A and B grade quality produce was also pointed by about 81 percent ED and 67 percent RF farmers. Lower prices for A and B quality produce were reported by 62 percent ED and 54 percent RF farmers. 57 percent farmers pointed that ED did not provide any compensation during glut in the market. Higher price of agri-inputs provided by ED and lack of formal contract were also the problems pointed by ED farmers. 49 percent RF farmers reported that RF did not provide any crates to pack the vegetables. Other problems reported in supermarket linkage are given in Table 10.

Table 10: Distribution of farmers by major problems faced in supermarket linkage (multiple responses in %)

Problems	**ED**	**RF**
Lower indent	88	77
Purchase of only A and B grade only	81	67
Lower price for A and B quality produce	62	54
No compensation during glut in market	57	N.R.
Providing agri-inputs at higher cost	52	N.R.
No formal contract	50	N.R.
No provision of crates	N.R.	49
Lower price of remaining produce in local market	43	N.R.
Absence of farm picking	N.R.	41
Giving less time to harvest after informing the indent	33	N.R.
Wilfully higher rejections to curb supply	N.R.	33
Irregular indent	26	N.R.
Higher quality norms	21	N.R.
No compensation during crop failure	12	26
No provision of any agri-input	N.R.	21
Delay in picking the produce	7	N.R.
Lack of any advance payment	N.R.	13

Note: N.R.- Not Reported
Source: Primary Survey

7. Conclusion and Policy Implications

The above analysis of Easy Day and Reliance Fresh operations in Punjab reveal that these supermarkets are creating alternative F&V supply chains and marketing channels for farmers that are different from the existing traditional vegetable supply chains. They have acquired the necessary economies of scale to adopt a vegetable supply chain of their own, where they buy directly from the farmers by either setting up collection centres near the farmers' field or picking the produce from farms; and sell directly to the consumers with agricultural corporative centres/distribution centres and the retail stores. Such supply chains are efficient and effective compared to traditional vegetable supply chains in terms of paying a higher price, higher degree of transparency in the transaction, presence of quality consciousness and accountability throughout the supply chain, less number of intermediaries involved in the supply chain and occurrence of comparatively low wastages/spoilages on the way. Therefore, such organised supply chains can result in increase in bargaining power of the farmers to sell the produce. However, the benefits of the higher price offered by the supermarkets are not actually realised by the farmers since the supermarkets procured only a part of the produce and the remaining has to sell in *mandi*. The supermarket farmers realise higher profits compared to non-supermarket farmers as they are intensive vegetable

cultivators with higher yields and higher price realisation for the remaining produce in traditional markets due to better quality produce. Though the supermarkets provided price premiums for A and B grade produce than the *mandi* price, but 62 percent ED and 54 percent RF farmers reported that supermarket prices are lower given the quality of the produce. The vulnerability of the growers due to fluctuations in market prices needs to be reduced by making supermarkets offer minimum purchase prices, not market-price-based premiums..

Since supermarkets procure vegetables through informal 'contact' without any contract or commitment to buy regularly, it is evident that the supermarkets are not willing to share the risk of the producers and thus, putting the marketing risk solely on producers. Thus, supermarkets need to establish contract farming linkage with the farmers and need to procure entire quality produce of the farmers. Punjab government has recently enacted Punjab Contract Farming Act, 2013 without amending the APMC act. The Act has legalised contract farming in Punjab. But, two other major aspects of model APMC Act i.e. direct purchase from farmers and the setting up of private wholesale markets to give a choice to farmers sell wherever and whoever they would like to, have been left out as APMC is not amended (Singh, 2013). Since supermarkets did not decide the procurement region randomly, but choose the more productive regions and farmers first, supermarkets have not played much role in diversification.

The supermarkets should also take the responsibility of providing agri-inputs, training and credit facilities to these resource poor farmers. The supermarkets can bulk buy the agri inputs and sell to the growers directly or through the involvement of cooperatives. Training can be provided directly by the supermarkets or through the involvement of state government agencies. Although Easy Day has tied up with Bayer Crop Science (BCS) to provide agri-inputs and training to farmers, however aim of BCS remain to enhance its sales as more than 52 percent of Easy Day farmers reported the high cost of agri-inputs provided by the BCS. Since supermarket farmers have to sell 75-80 percent of produce in *mandi*, it indicates that they are still dependent on commission agents for their credit requirements. The adoption of open auction to discover price in the APMC markets is also very uncommon. Thus, much potential for gain in market efficiency has not been realised. The efficiency and effectiveness of the traditional marketing channels such as *mandis* needs to be enhanced through wide and necessary adoption of open auctions, increase in the number of buyers and sellers in the market, and improving transparency through supervision to provide an effective alternative to farmers.

Further, recent 51 percent foreign equity in multi brand retail trade may also make the supermarket procurement more competitive and may also result into the dissemination of new technologies to the farmers. The supermarkets may provide the extension services, quality seeds, pesticides etc. at the door step of the farmers. Reliance Fresh in Gujarat has brought quality consciousness, introduced exotic vegetables and package of practices for

certain vegetables like cucumber and long melon, while Aditya Birla's More in Gujarat provided extension on crop variety and cultivation practices which led to new ways of growing bottle gourd known as 'telephone system' where in now it was raised above the ground unlike the earlier practice. Similarly, it introduced golden variety in cabbage (Singh and Singla, 2011). Thus, it is evident that quantity and quality of the produce may differ in the presence of the food supermarkets in India.

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