Chapter 9
Summary and Conclusions

9.1 Introduction
Horticulture contributes about 25.9 per cent to the value of output from Agriculture (GoI, 2010a). According to planning commission, horticulture is the key driver for higher value addition, and it must grow at about 6 per cent per annum for overall agricultural growth to reach 4 per cent (GoI, 2010c). Traditional production and marketing of fruits and vegetables (F&Vs) in India is characterized by low crop productivity, limited irrigation facilities, numerous intermediaries, lack of transparency in pricing, lack of infrastructure for grading/sorting, nonexistent cold chain, poor linkages in marketing channel, mismatch between demand and supply leading to high price fluctuations (Punjabi and Sardana, 2007a; Mittal, 2007). In contrast to fragmented supply chains of traditional markets of FFVs, the organized retail chains are developing well coordinated supply chains and in some cases, procuring F&Vs directly from farmers through farm to fork model. Sometimes, the retail chains are also ensuring the availability of inputs and credit to farmers by working with input suppliers. In such a situation, it becomes important to understand the weaknesses of the traditional marketing systems of F&Vs, and to see how the organized retail chains can help to overcome these weaknesses (Punjabi and Sardana, 2007b).

Retailing in India is essentially “unorganized”. 97 per cent of the retail industry is made up of counter-stores, street markets, ‘hole in the wall’ shops and roadside peddlers (Thathoo and Kacheria, 2007). Thus, only about 3 per cent of the retailing is organized. Retailing presently contributes about 10 per cent of India’s GDP and 6-7 per cent of employment (Kalhan, 2007), and is the second largest employer in the country, next to the farming sector (Kumar et al, 2008). Safal established in 1988 by the National Dairy Development Board (NDDB), was the first organised retailing venture for F&Vs in Delhi (Sulaiman et al, 2010). Past few years has seen the entry of major Indian corporates like Reliance Retail, ITC, Aditya Birla, Pantaloon, Namdhari Seeds etc. in the organized retailing of FFVs. Most of the retail giants are planning to expand the share of organized retail from the current 3 per cent to approximately 15-20 per cent by investing more than $ 25 billion (excluding real estate investment). Of
the proposed investment, 60-65 per cent will go towards setting up the supply chain for food and groceries (Kalhan, 2007). It is evident that future of F&V marketing in India will be different from the past with the presence of retail chains.

Punjab is a relatively minor producer of F&Vs producing about 1.18 million tonnes of fruits and 3.41 million tonnes of vegetables during 2008-09, which is only about 2.3 per cent of the 197.5 million tonnes of F&Vs produced in the country. The major marketing channels for F&Vs prevalent in Punjab are:

a) Vegetables:
- Channel-I: Producer–Commission agent/Wholesaler–Retailer–Consumer
- Channel-II: Producer–Retailer–Consumer
- Channel-III: Producer–Consumer (Source: Sidhu et al, 2010)

b) Fruits:
- Channel-I: Producer–Commission agent–Retailer–Consumer

Undue deductions, malpractices, delayed payments to farmers, lack of cold storage facilities, lack of proper grading, packing and processing of F&Vs etc. are quite common in these local markets. Grading is done manually (Sekhon and Rangi, 2007; and Sidhu et al, 2010). Apni mandis established in 1987 by Punjab State Agricultural Marketing Board to eliminate the middlemen and sell directly to the consumers also suffered from: overcharging, tampering with weights, no say of the farmers in the management of the apni mandis and in the fixing of the price of the F&Vs (The Tribune, 2003, 6th November). Over a period of time, wholesalers and commission agents also started to sell and transact in these mandis. Thus, the whole concept of the apni mandis for the farmers is violated. Farmers participating in the various contract farming schemes in Punjab with and without state intervention reported: undue quality cut on produce, higher rejections by firms, delayed deliveries at the factory, delayed payments, lower price, working of firms mostly with large and medium farmers, breach of contracts etc. (Singh, 2005).
Fresh F&V retail chains are emerging quite fast in urban and semi-urban areas of Punjab. Bharti Retail’s Easy day and Reliance Retail’s Reliance Fresh are the major retail chains present in Punjab. Both the retail chains entered in the market in 2008. Aditya’s Birla’s More, Spencer and Big Bazaar are the other retail chains having presence in Punjab. Since both Easy day and Reliance Fresh has the largest presence in Punjab and are procuring directly from farmers, both the retail chains were selected for study with the following specific objectives:

9.2 Objectives

1. To identify emerging models in organized retail sector for fresh fruits and vegetables,
2. To compare the socio-economic characteristics of retail chain supplying (RC farmers) and traditional market supplying (non-RC) farmers,
3. To measure diversification attempts across RC and non-RC farmers by comparing the cropping pattern and cropping intensity,
4. To analyse the costs and returns of farmers across RC and non-RC channels,
5. To measure the technical efficiency in production among RC and non-RC farmers,
6. To study perceptions of farmers regarding the supply chain improvements in retail chains, and
7. To suggest possible policy and regulatory provisions to protect and promote the livelihoods of primary producers in the presence of retail chains in Punjab.

9.3 Review of Literature

9.3.1 International Experiences: Supermarkets procured F&Vs through partnerships with intermediate collective organizations in Switzerland, from a few dedicated wholesalers in Guatemala, directly from contract farmers through their own distribution centres in Mexico, contract farming with farmer organizations in Vietnam, centralized procurement system by establishing its own preferred suppliers and private standards in Indonesia, through vegetable collection centres in Sri Lanka without any formal and verbal contract with the farmers etc. (Reviron and Chappuis, 2005; Schwentesius and Go’mez, 2002; Hernandez et al, 2007; Moustier et al, 2009; and Chowdhury et al, 2005; 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 the produce to Hero in Indonesia, and a supermarket in Honduras and Kenya received higher prices than the spot markets (Chowdhury et al., 2005, Blandon et al., 2008 and Neven et al., 2009). In Vietnam, main advantage of supermarket interface appreciated by the farmers was the greater degree of stability of prices compared to the traditional markets (Mouster et al., 2009). Supermarket supplying growers in Guatemala, China and Kenya had higher yields compared to the traditional market supplying farmers (Hernandez et al., 2007, Miyata et al., 2009 and Neven et al., 2009). In Guatemala and Kenya, average land holding size was larger 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). Irrigation facilities were also higher among supermarket supplying farmers than that among traditional market supplying farmers (Hernandez et al., 2007 and Neven et al., 2009). However, some of the supermarkets such as Hortico in Zimbabwe, TOPS in Thailand and SPAR in South Africa sourced the produce mainly from small producers as these supermarkets opined that small producers had lower costs, lower rejection rates and delivered produce in small quantities which ensured freshness of the produce (Boselie et al., 2003 and Louw et al., 2006).

The intermediate companies or external collective organizations in Switzerland and input companies in Guatemala provided the technical support to the producers (Reviron and Chappius, 2005 and Hernandez et al., 2007). Hortico in Zimbabwe provided pre-weighted quantities of inputs on credit. If the value of the delivered produce was less than the input costs, the producer was given an interest free loan for an agreed payback period (Boselie et al., 2003). SPAR in South Africa provided interest-free production loans up to three months to growers upon presentation and approval of a business plan which were deducted at the time of delivery of produce (Louw et al., 2006). Producers in Switzerland were tied to higher standards but these standards that were initially earning a premium tended to become conventional and the minimum point of entry to the supermarket shelves (Reviron and Chappuis, 2005). In Mexico, though supermarkets paid their suppliers higher prices than did other
buyers (such as the traditional wholesalers who operate in the public wholesale markets-CEDAs), the net benefit to the producer was somewhat diminished by the strict quality standards and practices, making the organization of the process complicated for the producer (Schwentesius and Go´mez, 2002). Lack of coordination in supply schedules according to the SPAR supermarket and giving payments to the producers on Fridays by the supermarket sometimes resulted into oversupply of the produce (Louw et al, 2006).

9.3.2 Indian Experiences: The cost of production of vegetables was higher among farmers supplying to retail chains such as Mother Dairy Fruit and Vegetable Ltd. (MDFVL) (Joseph et al, 2008; and Alam and Verma, 2007), however, lower transaction costs in retail chains such as Spencer’s and Namdhari Fresh in Karnataka resulted into higher profits for retail chain supplying farmers compared to those supplying in the traditional markets. The prices paid to the producers were also higher in retail chain channels compared to that in mandi channels (Mangala and Chengappa, 2008; and Dhananjaya and Rao, 2009). MDFVL spinach supplying farmers in Haryana and cauliflower supplying farmers to a supermarket in Bangalore realized 8 per cent and 12 per cent higher prices compared to those by mandi supplying farmers (Birthal et al, 2005; and Joseph et al, 2008). In case of ITC Choupal Fresh, cauliflower and bottle gourd farmers realised Rs.5.5/kg and Rs. 4.2/kg compared to the respective prices Rs. 5.1-5.4/kg and Rs. 4/kg in mandi (Singh and Singla, 2011). Yields of farmers supplying vegetables to the retail chain were lower compared to those for non-retail chain farmers in case of tomato supplying MDFVL farmers in Uttaranchal but higher in case of Spencer’s farmers (Alam and Verma, 2007; Mangala and Chengappa, 2008).

Further, retail chains worked mainly with the large farmers as operational land holding size of farmers supplying to retail chains was 4.42 acres (through consolidator) and 9.38 acres [directly at Collection Centre (CC)] in case of a supermarket in Bangalore compared to those supplying to commission agents (4.39 acres), wholesalers (2.31 acres) and Shandies/local villagers (3.75 acres), 3.25 acres in case of MDFVL in Uttaranchal compared to 2.8 acres in non-retail channel and 6 acres in Spencer’s compared to just two acres in non-retail channel (Joseph et al, 2008; Mangala and Chengappa, 2008; Alam and Verma, 2007). The average operated
area of ITC Choupal Fresh farmers in Punjab and Haryana was 9.91 acres compared
to that at state level (9.36 acres in Punjab and 5.26 acres in Haryana) (Singh and
Singla, 2011). In the initial stages of establishment of Spencer’s in Karnataka and
ABRL in Gujarat, rejection rate was higher but over time, it reduced to 8 per cent in
case of Spencer’s and 2.5 per cent in case of ABRL (Mangala and Chengappa, 2008;
Singh and Singla, 2011).

9.4 Research Methodology

The primary survey of farmers was carried out in Malerkotla in Sangrur district and
Jandiala in Amritsar district of Punjab during 2010-11. Both the locations were
chosen as Easy Day as well as Reliance Fresh retail chains have established their CCs
at these locations (Easy Day at Malerkotla and Reliance Fresh at Jandiala) as a part of
their back-end operations to procure F&Vs directly from farmers. Two separate
schedules were designed and pre-tested each for farmers and retail chain managers.
The retailing and processing operations and supply chain management were the
subject of discussions with the Easy Day and Reliance Fresh management; and the
procurement effectiveness, costs and returns, diversification attempts, efficiency in
production, problems and benefits of the retail chain linkage with the farmers. A
complete list of farmers was prepared with the help of organized retail chain officials.
Thus, it was found that Easy Day in Malerkotla and Reliance Fresh in Jandiala
sourced vegetables from about 150 and 125 farmers respectively. Stratified random
sampling technique was followed across both the retail chains. Farmer’s 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 Easy Day, and 25 cauliflower and cabbage supplying farmers each in
case of Reliance Fresh was taken as these were the major vegetables being procured
by the retail chains in terms of volumes and number of supplying farmers. Another
similar sample of 25 cauliflower and okra farmers each in the vicinity of Easy Day
retail chain, and 25 cauliflower and cabbage farmers each in the vicinity of Reliance
Fresh selling in the traditional market (mandi) was also taken based on the proportion
of farmers in each category in each location through stratified random sampling.
Thus, the study was carried with 100 retail chain and 100 non-retail chain farmers
comprising a sample of 200 farmers.
The data was analysed using simple descriptive statistical tools and techniques like mean, percentage, standard deviation, coefficient of variation, etc. supplemented by qualitative observations and field based insights into the operations and impacts of fresh food retail chains on farmers. Technical efficiency (TE) was also measured and compared across RC and non-RC farmers. TE measures success of the firm in producing maximal output with a given set of inputs. TE scores were compared across RC and non-RC farmers using the Data Envelopment Analysis (DEA) program, DEAP Version 2.1 developed and described by Coelli in 1996.

9.5 Results and Discussion

9.5.1 Profile and Organization of Fresh Food Retail chains:
Bharti retail, the retail arm of Bharti enterprises opened ‘Easy Day’ stores in Punjab. The first store was opened in 2008 in Ludhiana. Now, Easy Day has 43 supermarket stores and 2 hypermarket stores in Punjab. Each store is handled by 8 employees and a store manager. Two employees are dedicated to F&Vs in each store. About 10 per cent store space was allocated to F&Vs. F&V sales share in total sales was only 5 per cent. Ludhiana and Jallandhar had maximum number of stores (6 and 5 respectively). Each store also sold Private label- ‘Great Value’ which constitute 15 per cent of the sales revenue. Processing and distribution of F&Vs is carried out at Distribution Centre. Easy day called it as “Agricultural Corporative Centre (ACC). Its size was around 40,000 sq.ft. The main purpose of the ACC is random sample checking of arrival of F&Vs (around 15 tonnes/day) and allocate to different stores. About two tonnes was procured directly from farmers. The produce was supplied from the ACC only once at 2 a.m. ACC had three employees on the retail chain’s pay rolls namely, Regional Head (F&V), Warehouse Manager and Quality Executive. 18-20 labourers were working on third party pay roll. F&Vs were farm picked up through oral, informal, non-registered ‘contract’ and assembled at CC located in Malerkotla. Prices were paid in cash daily based on the morning mandi price. Easy Day also had tie up with Bayer Crop Science to provide agri-inputs to the farmers. Easy Day procured only A and B grades of the produce only. Farmers were informed about the F&V requirement either telephonically or personally visiting each farm. The Easy Day retail chain specified the quality for different F&Vs. In case of bhindi, retail chain preferred greenish, erect, rough hairy surfaced, bigger, non-curved and without borer attacked bhindi. Generally, 3-4 inch long bhindi was considered for A, 2-3 inch for B
and below 2 inch for C grade. In cauliflower, it preferred white, compact, disease and insect free, medium sized curds without any brown spots and exposure to sun light.

Reliance Retail Ltd. (RRL), a subsidiary of Reliance Industries Ltd. (RIL) opened the Reliance Fresh (henceforth, RF) stores in India. The first outlet in India was opened in November, 2006 at Hyderabad. RF opened first store in Punjab at Jallandhar in 2008. Currently, RF has more than 700 stores in India, out of which around 40 are in Punjab. The size of each store varied between 3000-5000 sq.ft. The number of F&Vs Stock Keeping Units (SKU)s in each store were around 50-60, occupying 10-15 per cent of store space. F&V sales share in total sales in each store was around 2.5 per cent. Each store on an average sold 7.5 qtl. F&Vs/day. Processing and distribution of F&Vs was carried out at City Processing Centre (CPC) located at Sirhind. The size of the CPC was around 50,000 sq. ft. The major activities at CPC include: receiving, sorting, grading, allocation and dispatch of the produce. CPC was managed by 6 supervisors for three shifts. Around 20 casual workers also worked per shift. CPC had controlled atmosphere facility only for some imported F&Vs. It had capacity to handle 50-60 tonnes of F&Vs/day. F&Vs were delivered to the stores only once during the early morning between 2 am to 3 am. RF procured vegetables directly from farmers through oral, informal and non-registered ‘contract’ at CC in Jandiala. Same four wheeler which was used to distribute F&Vs to stores, was used to pick F&Vs from CC and deliver at CPC. Some of the vegetables were also purchased through the vendor located in ‘Vallah mandi’ in Amritsar. Farmers had to deliver the vegetables at CC through their own sources. On an average, about 5 tonnes of F&Vs were procured at CC. In cauliflower, RF preferred medium (500-700 gms.), white, compact curds; without insect pest attack and without any exposure to sun-light. The quality of the vegetables was checked manually first at CC and then again at CPC. The retail chain procured only the Reliance Retail (RR) grade (A and B grades only) produce. Thus, farmers had to sell the rejected produce in the local market. In cabbage also, it preferred medium to large size flowers, without any cuts and disease and insect-pest attack. The heads were to be harvested when they were solid (firm to hand pressure) but before they cracked or split. The leaves should be unexpanded, crispy and tightly packed.
9.5.2 Socio Economic Characteristics of Retail Chain and non-Retail Chain farmers:

In case of Easy Day, average size of operational land holdings was 6.25 acres compared to 8.53 acres in case of non-RC farmers, 8.32 acres in Malerkotla, 10.67 acres in Sangrur and 9.76 acres at state level. Further, in case of Easy Day, about 72 per cent of farmers were small and marginal compared to only 34 per cent in case of non-RC farmers, 35.6 per cent in Malerkotla, 24.7 per cent in Sangrur district and 31.6 per cent in the state. The proportion of leased in land in operational holding was around 17 per cent in case of Easy Day farmers compared to only 10 per cent in case of non-RC farmers. However, leased out land as proportion of owned land was higher among non-RC farmers (24 per cent) than that among Easy Day farmers (8.5 per cent). The ownership of farm machinery such as tractor, trailer, combine harvester, diesel engine, cultivator etc. was higher among non-RC farmers as compared to the Easy Day farmers. The average family size and proportion of farm family workers was higher among Easy Day farmers (9 and 78 per cent respectively) than that among non-RC farmers (8.5 and 59 per cent respectively). Milch animal ownership, average number of milch animal and income from milch animal was higher in case of non-RC farmers (86 per cent, 5.5 and Rs.2959/month respectively) than the Easy Day farmers (84 per cent, 3.9 and Rs. 1965/month respectively). The households with off farm income sources, number of adults per family with off farm income sources and average off farm income were also higher among the non-RC farmers (38 per cent, 0.14 and Rs. 2451/month/person) compared to the Easy Day farmers (34 per cent, 0.18 and Rs.1759/month/person respectively). Further, illiterates were 22 per cent in case of the Easy Day farmers in comparison to only 14 per cent in case of the non-RC farmers. The average age of the decision maker in the farming was about 42 among Easy Day farmers compared to 36 among non-RC farmers.

In case of RF farmers, average size of operational land holdings was 6.17 acres compared to 7.61 acres in case of non-RC farmers, 7.58 acres in Amritsar and 9.76 acres at state level. Further, the proportion of small and marginal farmers was higher in case of RF (52 per cent) compared to about 38 per cent in case of non-RC farmers, 37 per cent in Amritsar district and 31.6 per cent in the state. The share of leased in land in operational holding was around 16 per cent in case of RF farmers compared to 11 per cent in case of non-RC farmers. The leased out land as proportion of owned
land was higher among non-RC farmers (21 per cent) than that among RF farmers (11 per cent). The ownership of farm machinery was higher among non-RC farmers as compared to the RF farmers. The average family size and proportion of farm family workers was higher among RF farmers (8.6 and 74 per cent respectively) than that among non-RC farmers (8.4 and 73 per cent respectively). Though milch animal ownership was slightly higher among RF farmers (92 per cent) than that among non-RC farmers (90 per cent), but, the average number of milch animal and income from milch animals was higher in case of non-RC farmers (5.6 and Rs. 2958/month respectively) than the RF farmers (4.6 and Rs. 2213/month respectively). The households with off farm income sources and number of adults per family with off farm income sources were higher in case of RF farmers (48 per cent and 0.20 respectively) than that in case of non-RC farmers (38 per cent and 0.18 respectively). However, average off farm income was higher among the non-RC farmers (Rs. 2014/month/person) compared to the RF farmers (Rs. 1656/month/person respectively). Further, illiterates were 34 per cent in case of the RF farmers in comparison to 26 per cent in case of the non-RC farmers. The average age of the decision maker in the farming was similar across both RC and non-RC farmers (42-43 years). Thus, it can be inferred that RC farmers across both chains were poor in the ownership of farm assets compared to the non-RC farmers.

9.5.3 Diversification across Fresh Food RC vis-à-vis non-RC farmers:

Easy Day retail chain farmers had about 19 per cent Gross Cropped Area (hereafter, GCA) under cauliflower, 13 per cent GCA under okra, 10 per cent GCA under cabbage, and 73 per cent GCA under all vegetables compared to the respective figures of only 10 per cent, 7 per cent, 6 per cent and 38 per cent in case of non-retail chain supplying farmers. Non-retail chain farmers had higher proportion of GCA under wheat (30 per cent), and paddy (26 per cent) compared to the figures of 11 per cent and 7.5 per cent respectively in case of Easy Day farmers. The cropping intensity was also higher in case of the Easy Day farmers (203) compared to that in case of non-RC farmers (185). Since Easy Day has the presence in Punjab for the last 3 years, per cent age change in area was also calculated across Easy Day and non-retail chain supplying farmers during these last 3 years. The percentage increase in area among Easy Day RC farmers was the highest in case of okra and cauliflower (20 per cent each) and cabbage (12 per cent). The percentage increase in area in case of non-RC...
farmers was only 10 per cent in cauliflower, 9 per cent in okra and 6 per cent in cabbage. Thus, overall increase in area under vegetables was higher in case of Easy Day farmers (12 per cent) than the non-RC farmers (5 per cent). About 59 per cent Easy day farmers attributed their shift towards vegetables to higher income, 49 per cent to decline in profits in wheat-paddy, 41 per cent to lack of farm assets, 28 per cent to regular flow of income from vegetables, 18 per cent to lack of hired labour for wheat and paddy; and only 15 per cent attributed to emergence of the organized retail players.

In case of RF, retail chain farmers had about 17 per cent GCA under cauliflower, 13 per cent GCA under cabbage, 12 per cent GCA under potato, 9 per cent GCA under cucumber and 69 per cent GCA under all vegetables compared to the respective figures of only 8 per cent, 7 per cent, 20 per cent, 3 per cent and 48 per cent in case of non-retail chain supplying farmers. Non-retail chain farmers had higher proportion of GCA under wheat (24 per cent), paddy and potato (20 per cent each) compared to the respective figures of 14 per cent, 11 per cent and 12 per cent respectively in case of RF farmers. Thus, potato was a major vegetable predominantly grown by the non-RC farmers. The cropping intensity was also higher in case of the RF farmers (202) compared to that in case of non-RC farmers (179). In case of RF also, percentage change in area was calculated across RF and non-retail chain supplying farmers during the last 3 years as RF has the presence in Punjab for the last 3 years only. The percentage increase in area under vegetables among RF farmers was 23 per cent in case of cauliflower, 19 per cent in case of cabbage, 12 per cent in case of potato, and 15 per cent in case of cucumber compared to the respective of only 5 per cent, 5 per cent, 10 per cent and 2 per cent in case of non-RC farmers. Thus, overall increase in area under vegetables during last three years was higher in case of RF farmers (13 per cent) than the non-RC farmers (7 per cent). About 58 per cent RF farmers attributed their shift towards vegetables to higher income, 44 per cent to increase in demand for vegetables, 36 per cent to lack of hired labour, 25 per cent to regular flow of income from vegetables, 22 per cent each to suitability of land to vegetables and reduction in operational land holding size; and only 11 per cent attributed their shift to emergence of the organized retail chains.
9.5.4 Impact of Retail Chains on Income of the Farmers:

The cost of production of cauliflower and okra was higher in case of Easy Day RC farmers (Rs. 35200/acre and Rs. 25225/acre respectively) than that in case of non-RC farmers (Rs. 32550/acre and Rs. 23535/acre respectively), but, the yields were higher in case of Easy Day farmers (90 qtl/acre and 40 qtl./acre respectively) compared to those in case of non-RC farmers (85 qtl./acre and 37.6 qtl./acre respectively). Easy day procured only ‘A’ and ‘B’ grade produce only. In case of cauliflower and okra, Easy day RC paid higher price for A (Rs. 8/kg and Rs. 14.3/kg respectively) and B grade (Rs. 7.0/kg and Rs. 12.6/kg respectively) produce compared to the price realized by the RC farmers for rest of the produce in mandi (Rs. 7.6/kg and Rs. 11/kg respectively) and non-RC farmers for the entire produce in the mandi (Rs. 7.4/kg and Rs. 10.7/kg respectively). Since the retail chain procured only- 20 per cent of the produce of the RC farmers directly from the farm, the Easy Day farmers had to sell 80 per cent of the produce in mandi. The marketing costs to sell cauliflower and okra in the mandi were higher in case of RC farmers (Re. 0.3/kg and Re. 0.35/kg respectively) than that in case of non-RC farmers (Re. 0.25/kg and Re. 0.3/kg respectively) as the RC farmers were poor in the ownership of farm assets such tractor, trailer etc. The net returns/acre [and net returns per kg.] in case of cauliflower and okra were higher in case of Easy Day farmers (Rs. 31040 and Rs. 28225 respectively) [Rs. 3.45/kg and Rs. 4.83/kg respectively] than that in case of non-RC farmers (Rs. 28225 and Rs. 15569 respectively) [Rs. 3.32/kg and Rs. 4.14/kg respectively]. Average prices for four months i.e. October, 2010 to January, 2011 in case of cauliflower and May, 2010 to August, 2010 in case of okra revealed that prices in Easy Day RC were 6 per cent to 26 per cent higher across months and two vegetables than the mandi prices. Further, coefficient of variation in cauliflower and okra prices across months was lower in Easy Day RC than that in non-RC (mandi), indicating Easy Day prices were more stable than the mandi prices.

In case of RF, though the cost of production of cauliflower and cabbage was found to be higher in case of RF farmers (Rs. 34444/acre and Rs. 32418/acre respectively) than that in case of non-RC farmers (Rs. 30497/acre and Rs. 29376/acre respectively), the yields were higher in case of RF supplying farmers (92 qtl/acre and 94.5 qtl./acre respectively) compared to those in case of non-RC farmers (86.75 qtl./acre and 90 qtl./acre respectively). RF also procured only ‘A’ and ‘B’ grade (Reliance Retail
(RR) grades} produce only. In case of cauliflower and cabbage, RF paid higher price for A (Rs. 8/kg and Rs. 7.25/kg respectively) and B grade (Rs. 7/kg and Rs. 6.35/kg respectively) produce compared to the price realized by the RF farmers for rest of the produce in mandi (Rs. 7.4/kg and Rs. 6.35/kg respectively) and by non-RC farmers for the entire produce in the mandi (Rs. 7.2/kg and Rs. 6/kg respectively). As the RF procured only 25 per cent of the produce of its farmers, farmers had to sell 75 per cent of the produce in mandi. The marketing costs in case of RF farmers were Re. 0.19/kg in retail channel and Re. 0.36/kg in mandi each for cauliflower and cabbage, compared to Re. 0.30/kg each in the mandi in case of non-RC farmers. The net returns/acre [and net returns per kg.] in case of cauliflower and cabbage was turned out to be higher in case of RF farmers (Rs. 31175 and Rs. 26007 respectively) [Rs. 3.39/kg and Rs. 2.80/kg respectively] than that in case of non-RC farmers (Rs. 28910 and Rs. 21924 respectively) [Rs. 3.33/kg and Rs. 2.4/kg respectively]. Average prices for four months i.e. October, 2010 to January, 2011 in case of cauliflower and cabbage revealed that prices in RF were 7 per cent to 15 per cent higher across months and two vegetables than the mandi prices. The coefficient of variation in cauliflower and cabbage prices across months was lower in RF channel than that in non-RC (mandi), which indicated RF prices was more stable than the prices in the mandi.

9.5.5 Retail Chain Farmers’ Perceptions on Supply Chain Improvement:
84 per cent Easy Day farmers attributed their retail chain linkage to time saving in selling the vegetables to the retail chain, 76 per cent to absence of transportation costs as Easy Day picked the produce from the farm, 68 per cent to reduction in packing costs as Easy Day provided the crates free of cost to its farmers, 60 per cent to proper weighing, 36 per cent to saving of meal expenses in local market, 24 per cent each to reduction in wastages, and fixed price during the day by the RC. About 84 per cent Easy Day farmers also faced the problems in linking with Easy Day. The major problems reported by the Easy Day farmers were: lower indent of the retail chain (88 per cent), procurement of A and B grade produce (81 per cent), lower price for A and B grade produce (62 per cent), lack of any compensation during glut in the market (57 per cent), providing agri-inputs at higher cost (52 per cent), no formal contract with the farmers (50 per cent) etc. About 44 per cent of the Easy Day farmers opined to the possible role of government for making retail chain procurement more effective. The
major opinions were: fixation of F&V prices (32 per cent), opening of more retail chains (23 per cent), regulation of mandi prices (18 per cent) etc. Procurement of all the produce and grades, intensive training to the vegetable cultivators and opening of more retail outlets were opinions of the Easy day farmers on the possible roles that needs to be played by the retail chain to make linkage more effective.

In case of RF, the major reasons to the sell the F&V to RF were: time saving (86 per cent), reduced transportation costs (78 per cent), proper weighing of the F&Vs (60 per cent), timely payment (54 per cent), fixed price during the day (44 per cent) etc. Amongst RF supplying farmers, 78 per cent faced the problems in linking with the RF. The major problems faced were: lower indent (77 per cent), procurement of A and B grade produce only (67 per cent), lower price for these grades (54 per cent), no crates provided to pack vegetables (49 per cent), absence of farm picking (41 per cent) etc. About 58 per cent RF farmers responded to the possible role of the government to make the retail linkage more effective. Of these, 65 per cent wanted regulation of F&V prices, 58 per cent opening of more retail chains, 46 per cent removal of malpractices of commission agents and wholesalers in mandi, 42 per cent improving the marketing infrastructure etc. About 80 per cent also opined about role of the role chains to make this linkage more effective. Major opinions were: procurement of all the produce and grades (62 per cent), opening of more retail outlets (47 per cent), providing crates to pack vegetables (40 per cent), higher price for A and B grades (35 per cent) etc.

9.5.6 Technical Efficiency in Production across RC and non-RC farmers:
In case of Easy Day as well as RF farmers, technical efficiency (TE) measured under constant return to scale (CRS) [called as overall technical efficiency, (OTE)] and variable returns to scale [called pure technical efficiency, (PTE)] was higher among Easy Day (0.77 and 0.90 respectively in case of cauliflower; and 0.79 and 0.91 in case of okra) and RF farmers (0.77 and 0.91 respectively in cauliflower; and 0.82 and 0.92 respectively in cabbage) than that among non-Easy Day (0.68 and 0.81 respectively in case of cauliflower; and 0.82 and 0.92 respectively in case of okra) and non-RF farmers (0.72 and 0.84 respectively in cauliflower; and 0.75 and 0.88 respectively in cabbage). The fully technically efficient farmers were also higher among Easy Day (16 per cent under OTE and 32 per cent under PTE in cauliflower; and 12 per cent
under OTE and 24 per cent under PTE in okra) and RF farmers (12 per cent under OTE and 20 per cent under PTE in cauliflower; and 12 per cent under OTE and 32 per cent under PTE in cabbage) than that among non-Easy Day (8 per cent under OTE and 12 per cent under PTE in cauliflower; and 4 per cent under OTE and 12 per cent under PTE in okra) and non-RF farmers (8 per cent under OTE and 12 per cent under PTE in cauliflower; and 4 per cent under OTE and 12 per cent under PTE in cabbage).

The TE scores were also consistent in case of Easy and RF farmers than that in case of non-RC farmers evident from the lower coefficient of variation in TE scores across Easy Day and RF farmers than that across non-RC farmers. Scale Efficiency (SE) which is the ability of the farmer to choose the optimum scale of production that will attain the expected production level, was also measured across RC and non-RC farmers. The proportion of farmers having sub-optimal (increasing) returns to scale was higher in case of non-RC farmers (80 per cent in cauliflower and 92 per cent in okra in case of non-Easy Day farmers; 76 per cent in cauliflower and 88 per cent in cabbage in case of non-RF farmers) compared to that in case of RC farmers (68 per cent in cauliflower and 76 per cent in okra in case of Easy Day; and 60 per cent in cauliflower and 64 per cent in cabbage in case of RF). This indicates farmers’ experiencing increasing returns to scale (also known as economies of scale) had smaller proportion of the area under cauliflower and okra in case of non-Easy Day, and cauliflower and cabbage in case of non-RF farmers. Thus, inefficiency among non-RC farmers existed due to the lower area under the vegetables relative to the Easy Day and RF farmers. Further, 8 per cent cauliflower and 4 per cent okra growers in Easy Day and 16 per cent cauliflower and 12 per cent cabbage growers in RF realized supra-optimal (decreasing) returns to scale. Thus, scale of production is too large to take full advantage of scale for these RC farmers. None of the non-RC farmers, except 8 per cent non-RF cauliflower farmers experienced supra-optimal returns to the scale. Furthermore, scale efficient farmers were also higher in case of RC farmers (24 per cent across cauliflower and 20 per cent across okra growing Easy Day farmers; and 24 per cent each across cauliflower and cabbage growing RF farmers) compared to that in case of non-RC farmers (20 per cent across cauliflower and 8 per cent across okra growing non-Easy Day farmers; and 16 per cent across cauliflower and 12 per cent across cabbage growing non-RF farmers).
9.6 Conclusions and Policy Suggestions

Thus, the in-depth analysis of ‘Easy Day’ and ‘RF’ retail chain operations in Punjab reveals that the emergence of fresh food retail chains is creating alternative F&V supply chains and marketing channels for farmers that are different from the existing traditional vegetable supply chains. As the number of organised retail outlets increases, they acquire the necessary economies of scale to adopt a vegetable supply chain of their own, where they buy directly from the farmers and sell directly to the consumers by either setting up CCs near the farmers’ field or farm picking the produce; and ACCs/DCs near 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, quality signals being passed down, less number of intermediaries involved in the supply chain and occurrence of comparatively low wastages/spoilages on the way. Such organized supply chains have also reduced the level of monopsony in traditional vegetable supply chains by creating an alternative market for farm produce. It allows farmers to sell the superior portion of their harvest at a higher price. However, the benefits of the higher price offered by the retail chains are not actually realized by the farmers since the retail chains procured only a part of the produce and the remaining has to sell in mandi. Thus, neither price nor quality signals are passed down to farmers. The study proposes the following policy suggestions to improve the livelihoods of the farmers in the presence of the retail chains in Punjab:

I. Developing the contract farming linkage between farmers and retail chains:

Since both the retail chains-Easy Day and Reliance Fresh-procure vegetables through informal ‘contact’ without any contract or commitment to buy regularly, it is evident that the retail chains are not willing to share the risk of the producers and thus putting the marketing risk solely on producers. Thus, retail chains need to establish contract farming linkage with the farmers and need to procure entire produce of the farmers. Contract farming linkage should also address issue of compensation in case of crop failure or glut in the market, and formal remedies for arbitration at a state government level, if any breach of contract recorded. Clear-cut (formal or otherwise) terms and conditions are required for contract relationships to evolve over time. Legal protection for contract growers as a group must be considered to shield them from ill-effects of
contracting. Though the retail chains provided price premiums for A and B grade produce than the mandi price, but 62 per cent Easy Day and 54 per cent RF farmers reported that retail chain prices were 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 (Singh, 2010).

II. Provision of agri inputs, training and credit facilities for the retail chain farmers:
About 72 per cent farmers across Easy Day and 52 per cent across RF were small and marginal. The RC farmers were also poor in the ownership of farm assets and education than the non-RC farmers. Thus, retail chains should also take the responsibility of providing agri-inputs, training and credit facilities to these resource poor farmers. The retail chains can bulk buy the agri inputs and sell to the growers directly or through the involvement of cooperatives. Yields of the RC vegetable growers can be further increased if they are provided with package of practices of vegetables. Training can be provided directly by the retail chain 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 per cent of Easy Day farmers reported the high cost of agri inputs provided by the BCS. Since retail chain farmers has to sell 75-80 per cent of produce in mandi, it indicates that they are still dependent on commission agents for their credit requirements. Retail chains can also take the role of ‘credit agency’ and provide short term crop loans at lower rate of interest. Thus, the provision of agri inputs, training, and credit for the farmers will make the RC-farmers interface more effective.

III. Opening of more retail chains through liberal policy of FDI in food retailing:
According to Economic Survey 2010-11, “Permitting FDI in retail in a phased manner beginning with metros and incentivising the existing retail shops to modernise could help address the concerns of farmers and consumers. FDI in retail may also help bring in technical know how to set up efficient supply chains which could act as models of development” (page 246). It could enable farmers to get higher price and
consumers to pay less. Currently, only 51 per cent FDI is allowed in single brand retailing. Allowing FDI in food retailing will spur the growth of retail chains, and thus, demand for F&Vs will increase further which will create an alternative marketing channels for farmers. At present, most of the retail chains are sourcing F&Vs directly from farmers by developing the back-end linkages with the farmers. Thus, it will result into the shrinkage of food supply chain with the elimination of one or two intermediaries. It may also result in increase in producer’s share in the consumer’s rupee. The study has also shown that producer’s share in consumer rupee is higher across different vegetables in retail chain channel than that in non-RC channel. Further, it has also been argued that growth of food retailing may result into the dissemination of new technologies to the farmers. Many of the retail chains will try to procure quality produce to compete in the market and hence, retail chains 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, chain introduced golden variety in cabbage (Singh and Singla, 2011). Thus, it is evident that quantity and quality of the produce may differ with the presence of the food retail chains in India.

IV. Developing the Existing Market Infrastructure:

The existing marketing infrastructure is far from adequate. Grading at primary market level is grossly inadequate. Only around seven per cent of the total quantity sold by farmers is graded before sale. The scientific storage capacity is only 30 per cent of the required capacity. Cold storage facility is available for only 10 per cent of F&Vs. Most of the rural periodic markets have no infrastructure. Due to lack of proper handling (cleaning, sorting, grading and packaging) at the village level, 30 per cent of F&Vs are lost before reaching the market (Acharya, 2005). Public policies should focus on reducing transaction costs by creating public investment in the rural infrastructure. The focus of the government should shift from regulation to facilitation (Sharma and Singh, 2007). Public-private partnerships can play a complementary role in linking small holders with high value markets. Public sector can develop roads,
ports, storage facilities etc. while processing, storage and logistic facilities can be provided through private sector. It will reduce the distribution costs to remain competitive in the market (Narrod et al, 2009). Thus, improved infrastructure would assist in reducing seasonal price variability and open new markets (domestic and export) to produce from Punjab. In China, 2 × 100 Markets Upgrading Program was launched in 2006 by the Ministry of Commerce targeted the 100 leading wholesale markets and coupled them with 100 leading food firms (including foreign firms like Metro) to act as “modernization anchors” in the wholesale market by improving the physical premises and the logistics of the wholesale markets to make them more efficient for the retail sector and more accessible to farmers (Reardon et al, 2010). Such programs need to be stimulated in Punjab as well.

V. Regulation of the Traditional Markets:
Lack of transparency, lack of competition, and exploitation of the farmers in the traditional markets are the common problems faced by the farmers. It is difficult to justify the high margins of the commission agents given the limited number of services that they provide (i.e. all price risks and transportation losses before the auction are borne by the farmer). Although the APMC Act states that it is the buyer that pays for the market fees and the commission rates, this is not the case in practice and even if this would be the case, these costs are, eventually, partly passed on to the farmer in terms of a lower farm gate price (ADB and IFPRI, 2009). The adoption of open auctions in the markets is also very low. Thus, much potential for gain in market efficiency has not been realized. 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 the number of buyers and sellers in the market, and improving transparency through supervision.