Linking primary producers with global and national markets through fresh fruit and vegetable (FFV) retail chains is seen as one of the ways to improve rural livelihoods. But, given smallholder dominance of farming in India, it is important to consider the implications of corporate linkage for small holders involved/proposed to be involved in the chains i.e. primary producers, so that the process is not exclusionary in nature, and becomes a win-win situation for most of the participants in the supply/value chain. Several studies, which study the operations of the fresh food retail chains and their linkage with farmers in the global and the Indian context, are reviewed as under.

### 2.1 Fresh Fruit and Vegetable Retail Chains and Primary Producers—Global Experiences

#### 2.1.1 Procurement System

In Sri Lanka, large supermarkets had developed vegetable collecting centres where the vegetables were delivered by both farmers and vegetable collectors. Supermarkets did not have any formal or verbal contract agreements with the farmers. Prices paid to the farmers were higher in supermarket than that in traditional vegetable supply chains. Vegetables were transported in freezer trucks to the Central Processing Unit from which they were transported to the outlets (Perera et al., 2004). In Guatemala, supermarkets procured from a few specialized wholesalers which were partly “dedicated” to them. The specialized wholesalers supplied the commercial grade quality tomatoes that the retailers required by sorting, grading and delivering to the chain’s DC, and supplied other grades to traditional retailers. The supermarkets procured through this system to: (1) assure quality and consistency of delivery of produce year-round, which the dedicated wholesalers could do as they had a large network of agents and “one-stop shop” which could supply several types of produce at once, (2) reduce coordination costs as supermarkets had to deal with few intermediaries (Hernandez et al., 2007).

In China, only 0.3 per cent of produce in tomato villages and 0.1 per cent of produce in cucumber villages was sold to the supermarkets during 2005. Only 3.6 per cent of
the produce was sold to supermarkets in Beijing wholesale market during 2000, which increased to 9.3 per cent during 2005. Supermarkets procured about 43 per cent vegetables through direct purchases from small farm product delivery companies, 22 per cent from large farm product delivery companies, 20 per cent from wholesalers, 12 per cent directly from farmers without any contract through formerly small traders, only 2 per cent directly from farmers with contracts and 1 per cent from chain’s own production base (Wang et al, 2009).

Supermarkets in Mexico procured directly from producers through their own DCs and contractual arrangements with growers to ensure economies of scale, to reduce the costs of intermediation, to add value by packing produce and reduce losses in handling by transporting through specialized refrigerated trucks, and provided a more efficient inventory management system via bar-code scanners. Supermarkets imposed their own quality standards and practices for FFV procurement such as: (1) delivery in consistent volumes and quality (consistency in terms of colour and size); (2) deliveries of moderate volumes but continuous throughout the year; (3) allowing only up to 10 per cent of damaged produce; (4) refrigerated transport for the produce; (5) product packing in cardboard boxes rather than loose; (6) receipt of produce only before noon; (7) payment only after 8 to 45 days after delivery-depending on the product; (8) discount to cover the supermarket’s putting the product on sale (promotion). But, still supermarkets bought 10 per cent to 100 per cent of FFVs via the CEDAs (traditional wholesale markets) across products and supermarkets. The quality requirements imposed for FFVs were similar to those required to export FFVs. This lead to the emergence of new wholesalers-cum-growers-cum-exporters who not only displaced the traditional wholesalers, but also guaranteed quality, appearance/presentation, and delivered the produce all round the year. There were new F&V wholesalers in the Mexico City CEDA, who supplied the supermarket chains direct from the growing areas, without having to pass physically through the CEDA and the DC (Schwentesius and Go’mez, 2002).

The supermarkets in Kenya had agreements with vegetable growers regarding price, physical quality, hygiene, and consistency and regularity in supply. Payments were made before delivery, usually only once a week or every two weeks; and prices were relatively stable. All agreements were verbal without any written contract. Strict
supply requirements by supermarkets had led to specialization among the traders (Rao and Qaim, 2011). The supply chains of five supermarkets for FFVs in Africa and Asia i.e. Alice in South Africa, TOPS in Thailand, Thai Fresh United in Thailand, Hortico in Zimbabwe and Homegrown in Kenya were found to be shorter, condensed, streamlined and involve direct delivery to centralized DCs in contrast with traditional multilevel fragmented marketing systems. The supermarkets had contracts with the producers in the range of modalities; from unwritten (in case of Hortico), to contracts with weekly price negotiations in case of Alice; and price and volume arrangements per cropping cycle in the case of Thai Fresh United. Growers performing more functions as wholesalers were eliminated. Small producers were compliant as a result of public and private partnerships that included significant support to small suppliers in each of the five cases (Boselie et al., 2003). Supermarkets in Switzerland tended to build partnerships with intermediate companies or external collective organizations that had the responsibility for organizing the commercial transactions with the growers. The Valais region was characterized by the presence of a high number of intermediates (packers, wholesalers) and a poorly organized supply chain with no marketing plan and quality management. However, within four years, under the aegis of Migros and Coop, co-operatives and independent packers built two regional commercial groups: La Montagne and Alpfruits who invested in quality management and quality control to ensure food safety and quality and developed a commercial strategy to offer “normed” products and good services to the supermarkets (Reviron and Chappuis, 2005).

In South Africa, SPAR supermarket procured fresh produce from the surrounding area, as compared to the centralized fresh product procurement and distributions systems of local competitors and other major retailer groups in South Africa. Commercial farmers supplied most (70 per cent) of the store’s needs for fresh produce. Emerging farmers accounted for the rest. The emerging farmers did not have any cold chain facilities but still supermarket procured from the small-scale farmers as they made deliveries in frequent small volumes and fresh produce was moved very fast in the store. The pricing of produce was calculated through negotiations that were based on market prices, quality delivered and the supply and demand prevailing in the market at that stage (Louw et al., 2006).
TOPS in Thailand procured through a system of preferred suppliers around the ‘World Fresh’ central distribution systems (Figure 2.1). These procurement channels were not uniform and highly variable. Five alternative procurement channels used by the World Fresh were: (1) direct purchase from the farmers; (2) wholesaler linked to farmers that deliver products; (3) local supplying companies that buy products at wholesale market; (4) importing products from abroad; and (5) direct purchase at wholesale market.

![Diagram: Supply chain cost analysis of cabbage from Chiang Mai (Baht/kg)]

Source: Ruben et al., 2007

Five large vegetable suppliers supplied around 60 per cent of the total turnover, while only 20 per cent of turnover was supplied by 57 per cent of small suppliers. Since fixed costs on purchase of refrigerated trucks, standard crates, etc. constituted 35 per cent of the total purchasing costs, and thus economies of scale were achieved by procuring from larger suppliers instead of small-scale farmers. It resulted in reduction in the distribution costs up to 50 per cent, and savings up to 2.5-5 per cent in total chain costs. The total number of suppliers of perishables was reduced to only 60 growers from over 250 overtime (Ruben et al., 2007).

Huacheng Supermarket in Nanjing, China sourced vegetables through: (1) Baiyunting wholesale market which supplied about 70 per cent of vegetables for the supermarket; (2) through contractual arrangements with Chaoda, an integrated vegetable company, and (3) Jiangxizhou, a local farmers’ organisation. Approximately a quarter of Huacheng’s supermarket purchase was procured from Jiangxizhou, a small agricultural island located in Nanjing City. The latter share was gradually increasing,
since Huacheng signed a delivery contract with the producers in Jiangxinzhou village
where the farmers took charge of pre-selection of the vegetable produce and the
transport of the vegetables to Huacheng processing centre. Vegetables procured from
all three suppliers were directly delivered at the processing centre, which handled the
first stage of vegetable processing, taking care of washing, cutting, grading and
packing. Then, the produce was transported to the shops in cooled trucks (Figure 2.2)
(Ruben et al, 2007).

Figure 2.2: Supply chain cost analysis of tomato from Nanjing (Yuan/kg)
Source: Ruben et al, 2007

Packers in China contracted small farmers in China the help of local village leaders
with, and supplied to supermarkets. All packers studied had minimum farm size
requirements, but the minimum was quite small (0.13 to 0.20 ha) (Miyata et al, 2009).
In Vietnam, farmer organizations had written contract with the supermarkets
(Moustier et al, 2010). Local supermarkets in Madagascar procured F&Vs mostly
from local, informal, suppliers rather than from companies selling high standard
vegetables. Local supermarkets did not value quality and standards sufficiently and
were hesitant to engage in contracts which were needed for producing such standards.
Thus, the high standards suppliers found the modern retail chains in Madagascar not
(yet?) interested in their products (Minten et al, 2009). Hero, a large supermarket
chain in Indonesia procured F&Vs through centralized procurement system and
established its own preferred suppliers and private standards. Small-scale farmers,
especially those with low levels of human and financial capital, supplied to such
chains only when they were linked to preferred suppliers who in turn ensured supermarket’s standards. Otherwise, small-scale farmers supplied part of their produce to relatively small domestically-owned chains, albeit at a low price (Chowdhury et al, 2005).

In Central America, supermarkets procured FFVs through following five modes:

(1) Traditional wholesalers delivering to individual stores:
All the independent supermarkets and, a few small chains such as Unisuper in Guatemala and La Colonia in Nicaragua procured through traditional wholesalers who delivered FFVs to each individual store. Quality standards were low and control was based on rejecting high proportions of wasted FFV after it can no longer be sold.

(2) Outsourced and decentralized procurement system:
Some small-medium chains, such as Megasuper and PriceSmart in Costa Rica relied on one or two specialized wholesalers, who in turn sourced mostly from the central wholesale markets and, in some FFVs, from individual growers. Quality standards were higher since the chains were larger, focused on middle to high income customers and specialized wholesalers had fully formal firms.

(3) Decentralized mixed procurement system:
It was found in chains which were about to make switch to a centralized procurement system. SuperSelectos in El Salvador was largely relying on one or two specialized wholesalers. It received about 70 per cent of produce from one wholesaler who bought through preferred suppliers in Guatemala, from the wholesale market and other specialized wholesalers. The chain bought exported fruit from Chile and US through another wholesaler. However, chain also had a significant complement of direct sourcing from individual growers and from preferred wholesalers/suppliers in the central wholesale markets. Relying on more than one supplier gave more leverage to the chain to demand higher quality and lower price from the main specialized wholesaler.

(4) Centralized passive procurement system:
In this system, retail chains enforced much stricter quality standards. La Fragua retail chain in Guatemala centralized FFV procurement through its subsidiary “Disfruve”. Disfruve procured FFVs directly from farmers and then distributed to the stores. The retail chain conferred safety seal on producers who agreed to sell with the seal only to La Fragua, and passed third-party certification. Producers with the highest rates of
compliance were rewarded with orders for increased volumes of FFVs. It was called a passive procurement system because it was up to the producer to meet quality norms set by the retail chain.

(5) Centralized proactive procurement system:
In this system, supermarket chain provided technical assistance and training program to producers to get high quality produce. CSU supermarket in Costa Rica relied on a specialized, dedicated wholesaler, Hortifruti, for its FFV procurement and sold nearly all FFVs under the Hortifruti label. Hortifruti had a network of about 200 preferred suppliers. The growers received higher prices than that in wholesale market, plus technical assistance, and input credit for the small farmers. The technical assistance and quality assurance system with preferred suppliers resulted in 40 per cent cost savings for Hortifruti (Berdegué et al, 2005).

2.1.2. Farmer Profile
In Kenya, supermarket suppliers had more land, were more specialized in vegetable production, were better educated, had more participation in off farm employment, had more means of transportation, and access to public transportation as compared to the traditional market supplying farmers (Rao and Qaim, 2011). Another study also in Kenya also revealed that supermarket channel farms were on average five times larger, in overall farm size, than traditional channel farms (9–18 ha vs. 1.6–2.4 ha per farm depending on the crop). Moreover, supermarket channel kale farmers had 75 per cent under irrigation as compared to 18 per cent in case of traditional channel kale supplying farmers. The supermarket channel farmers were also more diversified—producing twice the variety of horticultural crops compared to the traditional farmers, helping them to manage risk and reduce transaction costs for supermarkets to deal with them (“one stop shopping”). All the supermarket supplying farmers had cell phones as compared to only 30 per cent in case of traditional channel supplying farmers. The supermarket farmers used more of hired labour than the traditionally growing farmers as evident from the fact that in case of kale production, 79 per cent of the permanent farm workers on traditional channel farms were family members, while for supermarket channel farms, 79 per cent were hired employees. Further, traditional farmers had only the primary education while the supermarket farmers had a secondary education. If farmers had drip/overhead irrigation, then it increased the probability of participation in supermarket channel by 46 per cent (Neven et al, 2009).
In China, 53 per cent farmers contracted with supermarket due to the stable or guaranteed fixed price and another 24 per cent due to higher price offered by the packers. Access to information on improving quality and better access to inputs were also reported by 10 per cent and 3 per cent farmers respectively (Miyata et al, 2009).

Supermarket supplying tomato farmers in Guatemala had higher farm size (9.3 ha) and cultivated area (4.6 ha) as compared to the traditional market supplying farmers (7.8 ha and 2.5 ha respectively). Supermarket-channel farmers were more specialized in production of tomato than the traditional-channel farmers as the supermarket channel farmers had about 91 per cent area under tomato compared to only 68 per cent in case of traditional growers. Further, about 50 per cent of the supermarket-channel producers were much more specialized in horticultural crops than the traditional channel producers (19 per cent). 77 per cent of the traditional channel farmers grew grain crops compared with 61 per cent of supermarket producers. Furthermore, 80 per cent of the supermarket channel farmers had assured irrigation compared to that only among 35 per cent of the traditional channel farmers. The irrigation coverage was higher among the supermarket channel farmers (50 per cent of total area) than that among the traditional channel farmers (15 per cent). 74 per cent of the supermarket farmers cultivated the crop twice a year compared to that by only 20 per cent of the traditional channel farmers (Hernandez et al, 2007).

2.1.3 Costs and Returns
The supermarket supplying contracted apple growers in China had 28 per cent higher yields, 35 per cent higher family labor productivity, and 28 per cent higher per capita income compared to independent apple growers. However, in case of green onions, contract growers had somewhat larger farms and more irrigated land (both differences were small but statistically significant at 5 per cent level) than the non-contract growers. The yield difference was not statistically significant. The contract farmers earned 2.4 times as much from green onion production compared to non-contract growers. The total and per capita household income of the contract green onion growers was 32 per cent greater than that of non-contract growers. When farmers asked how their income had changed since they began contract farming, majority of farmers reported that their income had increased: 51 per cent reported small increase, 25 per cent perceived a large increase, 21 per cent said no change and only 3 per cent
reported small decrease (Miyata et al., 2009). Supermarket supplying tomato farmers in Guatemala had 20 per cent higher yield and 24 per cent higher gross income/hectare compared with that of the traditional farmers but 36 per cent higher costs in supermarket-channel resulted into slightly lower net income (0.4 per cent) than that in the traditional channel. Farmers preferred to sell to wholesalers due to: procurement of all quantities and grades all round the year; low transaction costs and risk; and quick payment (Hernandez et al., 2007).

In Vietnam, members of farmer organizations supplying supermarkets were paid higher prices per kg than the non-member farmers (43 per cent higher for rice, 33 per cent for litchis and 67 per cent for tomatoes). Although the production costs were slightly higher in case of member farmers (18 per cent for rice, 2 per cent for litchi, and 67 per cent for tomatoes), but the profits per kg of produce sold to supermarkets were also higher among the member farmers (65 per cent for rice, 38 per cent for litchi and 400 per cent for tomatoes). Further, in addition to higher prices, the main advantage of supermarket interface appreciated by the farmers was the greater degree of stability of prices compared to the traditional markets (Moustier et al., 2010). In Kenya, average land productivity and average labor productivity were 59 per cent and 73 per cent higher for supermarket channel kale farmers than for traditional channel farmers respectively. Supermarkets paid the highest wholesale price for kale in the market (about 10–20 per cent higher than traditional retailers). Only 34 per cent of the supermarket channel farmers reported the higher price as the key reason for selling to supermarkets. 46 per cent also reported lower transaction costs and lower market risks in the supermarket channel as compared to the traditional market channel (Neven et al., 2009). Another recent study also reveals that participation in supermarket channel increased the per capita household income by 48 per cent. Simulations demonstrated that poverty rates among supermarket suppliers were 20 per cent lower than they would be were there no supermarkets (Rao and Qaim, 2011).

More than 90 per cent farmers in Madagascar, contracted with Lecofruit, an exporter company to Europe, as it changed the way of cultivation of off-season vegetables. Farmers started to use compost with inputs which they were not using earlier which resulted in increase in yield of off-season vegetables from 3.6 to 6 tonne/hectare. The rice productivity was 64 per cent higher on the plots with contract compared to plots
without contract. Thus, the spillovers were significant higher due contract farming in
the production of rice. Further, the estimated length of the lean period reduced of the
contract farmers reduced to 1.7 months which was about 3.7 months before the
contract with the firm and 4.4 months in the study as a whole. 61 per cent farmers also
reported that price in the contract, on average, was higher than the local market.
About three quarters of farmers stated that access to a source of income during the
lean period was main reason for signing the contract. 66 per cent farmers found it
better on stable income round the year. Access to inputs on credit and learning of new
technologies was also reported by 60 per cent and 55 per cent farmers respectively
(Minten et al, 2000).

The average prices received for six vegetables, namely: cabbage, carrot, chili-pepper,
potato, shallot, and tomato in traditional value chain by farmers was 35.4 per cent of
consumer price compared to only 26 per cent in the supermarket chain, Hero in
Indonesia. However, the absolute prices received by the farmers for vegetables were
higher in modern value chain compared to that in the traditional value chain (69.8 per
cent of the modern value chain price). But, supermarkets and vendors had higher
share of value in modern chain channel (53 and 21 per cent respectively) compared
with distribution of this value across many players in traditional chain which resulted
in lower relative share for primary producers (Chowdhury et al, 2005).

In Honduras, 57 per cent of the farmers supplying the supermarket channel received
higher price than the spot markets, compared to only 26 per cent of farmers supplying
the spot market. Farmers participating in the supermarket, on an average, sold 21.4
per cent of the produce in spot markets. 96 per cent of the farmers supplying the
supermarket channel were members of a farmer organization, compared with only 56
per cent of farmers supplying the spot markets (Blandon et al, 2008). Though the
retail chains initially offered higher prices to producers than those offered by
traditional channels, farmers also incurred extra costs like processing and packaging,
marketing, transport, and other transaction costs unlike their counterparts in
traditional channels (Cadilhon et al, 2006).
2.1.4. Producer Support

The supply chain development (sub-contracting, training, credit access, and improvement of organizational structure) by supermarkets led to increase in relative productivity in developing countries from an initial level of 33 per cent to 40 per cent after 25 years compared to 30 per cent in a scenario without skill upgrading of farmers. It strengthened the linkage between supermarkets and commercial agriculture, and contributed to the growth out of the low productivity trap (Stokke, 2009). The intermediate companies or external collective organizations in Switzerland had lowered costs and had improved technical support to producers and promoted the introduction of new high quality varieties (apricots) and new products (plums, grapes) with better added value to the producers (Reviron and Chappuis, 2005). In Guatemala, percentage of growers provided inputs on credit by input companies was higher in case of the supermarket channel (83 per cent) compared to that in case of traditional channel (71 per cent). 81 per cent of the supermarket channel farmers also obtained technical assistance from the input companies compared to 62 per cent of the traditional channel farmers (Hernandez et al, 2007).

Global retail company, Lecofruit which exported most of the vegetables from Madagascar to European supermarkets had written agreement with the farmers and provided seeds, fertilizers and pesticides as a part of the contract. The company deducted the cost of the inputs in kind through the crop sale proceeds (Minten et al, 2009). SPAR retailer 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. Growers’ farms were visited by SPAR technical personnel to ensure product quality standards. Further, supermarket initiated to require progress report from the farmers to enable SPAR personnel to provide management support. The supermarket developed a strong trust with farmers though had only a verbal contract with the producers (Louw et al, 2006).

Hortico provided inputs in pre-weighted quantities on credit, which was funded in part by a revolving fund. 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). In case of TOPS in Thailand, World Fresh trained the growers at farm level in applying Good Agricultural Practices (hereafter, GAP) and agents at
other levels in the supply chain implemented HACCP principles. Suppliers who failed to deliver 100 per cent of the order had to pay for the short delivery of the produce against purchasing costs. Detection of excessive residue levels by the ‘World Fresh’ laboratory could result in rejection of the produce and recurrent default led to exclusion. Upon default of residue levels, suppliers were forced to prove the quality of their next shipment with laboratory tests for which they had to bear the costs (Ruben et al, 2007).

2.1.5. Problems Faced in Retail Chain Linkage
Small producers in Thai Fresh United were required to change long standing production practices; grow to precise quality standards and implement specific production practices which sometimes resulted into higher rejection rates. Homegrown required that all its suppliers should have toilet and washing facilities, a pesticide store, spraying equipment and waste pesticide disposal facilities. For small producers with little or no access to credit, such an investment might be impractical and/or not economically viable. Furthermore, risks to small producers of producing to strict quality requirements were considerable. In case of Hortico in Zimbabwe, 40 per cent of small growers incurred a loss on their first crop which however reduced to 15 per cent during second planting as most growers adapted very quickly (Boselie et al, 2003). In Guatemala, more capitalized tier of small farmers enjoyed advantages with the supermarket channel, but also incurred some entry costs that the traditional farmers did not face (Hernandez et al, 2007).

In case of SPAR retailer in South Africa, farmers did not coordinate their supply schedules which sometimes resulted in delivering the produce at the same time and oversupply on a specific day. The glut of the produce forced the supermarket to buy it at lower prices to ensure the clearance of the stock. These lower prices did not please the farmers. Another problem was that the store was making payments on weekly basis on Friday afternoons irrespective of which day the delivery were made. The often-cash constrained emergent farmers started to make all the deliveries on Fridays, resulting in the oversupply. The retailer also secured loan repayment on these Fridays by subtracting the amounts owed from the farmers’ earnings (Louw et al, 2006).
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 supplier was somewhat diminished by the strict quality standards and practices, making the organization of the process complicated for the supplier (Schwentesius and Go´mez, 2002). Small suppliers in case of TOPS in Thailand delivered the produce in small lots, often in non-refrigerated trucks, with high variation in quality and quantity. Due to this variability, the reception of F&Vs and quality control took a long time and led to high costs which led to high ordering and invoice costs. Further, delivery was unreliable, leading to out-of-stock and as a consequence missed sales in stores. Stores had to maintain high stocks as buffers, leading to additional costs. The delivery of the produce was made in non-standardized crates, resulting in high handling costs for transferring the produce to standardized crates. Tracking and tracing of produce were very difficult. There were also frequent price changes which sometime led to mistake in price determination (Ruben et al, 2007).

In China, Huacheng Supermarket in Nanjing, used cooled vehicles to deliver vegetables to supermarkets, leading to an increase in transport costs. Labour costs were the major costs for both production and marketing of tomatoes. Due to poor transport conditions-most farmers used bicycles or tricycles-direct delivery costs were low, but farmers incurred high tomato losses. Long distance transport also resulted in poor quality. In processing, labour costs were again a major component (60 per cent); the remainder was made up by transport costs (15 per cent), water and electricity (15 per cent) and rent fees (10 per cent). Apart from problems with quality standards, unstable supply, low turnover and high operational costs represent major limitations for Huacheng supermarkets. The mandatory 11 per cent value added tax made prices less competitive and profit margins lower compared to the wet market (Ruben et al, 2007). In Switzerland, producers had to ensure the product quality. However, despite the major change in the organization, costly investments in quality control and storage facilities, and Eurep-gap certification, the risks for the packers and the producers remained very high. The price paid was indexed on the conventional market price; not on the production costs. The producers had less means to find other partners than the retailers and did not have the benefit of long-term contracts. Thus, producers 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).

When the retail chains in Malaysia started to deal with growers directly, these employed the following malpractices: (i) delayed payments, despite regulations to pay within a week, (ii) lowering prices at the last minute when supplier has no alternative, (iii) changing quantity and quality standards without notice and support, (iv) just-in-time systems to avoid storage and inventory costs, (v) removing suppliers from list without good reason, (vi) charging high interest on credit, and (vii) using contracts that cannot be enforced by suppliers (Stichele et al, 2006).

2.1.6 Quality Parameters
In order to ensure quality, Alice in South Africa had provided written product specifications to producers. In case of Homegrown, producers had to comply with a written code of practice that specified equipment, production practices, record-keeping, use of child labour etc. (Boselie et al, 2003). World Fresh, a leading supplier to TOPS in Thailand started a preferred supplier program to improve the consistency of timing and quality of deliveries by reducing the number of suppliers and streamlining the supply chain. The principal characteristics of these arrangements were:

i) long term delivery contracts based on quality, quantity and prices;
ii) using the standardized crates and-if required-refrigerated transport;
iii) value added activities such as cutting, trimming, grading and packing;
iv) backward chain control to track and trace the produce (Ruben et al, 2007).

2.1.7 Inclusion of Small Farmers
SPAR supermarket in South Africa procured produce from emerging small farmers as these delivered produce in smaller quantities, thus ensuring produce freshness. This helped the supermarket to build rapport among the farming community (Louw et al, 2006). Hortico supermarket in Zimbabwe had a supply base of more than 4,000 small producers with an average farm size of around two hectares. It had designed and operated the supply chain with a view to integrate small producers. Small producers could provide the required care and had lower costs than larger growers. Furthermore,
small producers had lower rejection rates for certain non-traditional vegetables than the large-scale growers. Hortico responded to changes in quantities demanded at short notice without any wastage since their supply base was spread over a large number of small suppliers organized into relatively small CCs. In Thailand, TOPS had found that small producers were able to adapt to organic production methods since practices like crop rotation and selection of resistant varieties were long established elements of traditional production system. The strategies were aimed at including small producers in supermarket supply chain involving partnerships between public and private sector stakeholders (Boselie et al., 2003).

2.1.8 Front-end Retailing
SPAR retailer in South Africa opened its first store in June 2002 in Thohoyandou. When the store initially opened, the retail market was dominated by Shoprite. However, the SPAR caused a dramatic shift in the market shares to a position of dominance at 66 per cent, followed by Shoprite at 28 per cent and Score (a Pick’n Pay brand) with a 6 per cent market share. Addressing the needs of the local emerging market and a high level of community involvement were the major reasons for its success. The supermarket also fulfilled the fresh produce requirement of the store’s customers. The daily fresh produce sales at the SPAR supermarket reached 3700 cabbages, 1500 spinach bunches, 1500 beetroot bunches, 2700 carrot bunches and 4000 apple pre-packs (Louw et al., 2006).

In Mexico, FFV played an important role in supermarket marketing strategies, as they represented 8-12 per cent of sales and 25-32 per cent of profits. Many supermarkets, therefore, had ongoing programmes of weekly FFV ‘specials’ and one day a week to offer more FFV variety mid-week plus various discounts on non-FFV products – but not on FFVs. This was to attract customers to the store in general, and away from the plaza market and tianguis mid-week. The supermarkets also fought the low-price attractiveness of the tianguis by packaging and fresh-cuts (ready-to-eat or cook) and by emphasizing quality (Schwentesius and Go´mez, 2002).

2.1.9 Malpractices and Cost-Cutting
There have been a large number of supermarket malpractices in the UK and France due to the buyer power they possess. These include (i) payment to be on the supplier
list (listing fees), (ii) threats of delisting if supplier price is not low enough, (iii) payment from producers for various promotions and opening of new stores, (iv) rebate from producers as a percentage of their supermarket sales, and (v) minus margins whereby suppliers are not allowed to supply at prices higher than the competitor price (Chen et al., 2005; and Stichele et al., 2006).

In case retail chains deal with growers directly, malpractices employed by them are (i) delayed payments, despite regulations to pay within a week in countries like Malaysia, (ii) lowering prices at the last minute when supplier has no alternative, (iii) changing quantity and quality standards without notice and support, (iv) just-in-time systems to avoid storage and inventory costs, (v) removing suppliers from list without good reason, (vi) charging high interest on credit, and (vii) using contracts that cannot be enforced by suppliers (Stichele et al., 2006).

Even in Asian developing countries, supermarket supplies suffer from the following: (i) supermarket orders can go up and down dramatically as there are no long-term commitments or written contracts, (ii) purchase prices are often negotiated for a fixed period, such as a week, but are renegotiated (only downwards) by supermarkets if market prices decline during that period, (iii) promotion fees are charged from suppliers where a product or range of fresh produce is featured in an in-store promotion, (iv) discounts for new stores, and (v) penalties are invariably levied for failing to supply agreed quantities. These practices hamper upgrading of suppliers into better producers and into processing and marketing (Singh, 2010).

2.2 Fresh Fruit and Vegetable Retail Chains and Primary Producers—Indian Experiences

2.2.1 Procurement System

Horticultural Producers’ Co-operative Marketing and Processing Society (hereafter, HOPCOMS) in Karnataka procured F&Vs both from the farmers (members as well as non-members) and the open market. On receiving the indent from HOPCOMS, producers brought their produce on their own either at CC or directly at the Distribution-cum-Collection Centre (DC-cum-CC) (Figure 2.3) (Subrahmanyam and Gajanana, 2000).
The HOPCOMS bore the unloading charges and made payment to the producers immediately after procurement up to Rs. 5000 in cash and, if it exceeded Rs. 5000, then by cheque (Kolady et al 2007). For transporting the produce to CC-cum-DC, the HOPCOMS charged a transport cost of Re. 0.1-0.2 per kg. of produce (Subrahmanyam and Gajanana, 2000). Since HOPCOMS had weigh-bridges at each CC, farmers were assured of correct weighment. HOPCOMS also had infrastructure facilities like cold storage and godowns to store the produce. The CCs also had some space where the farmers could keep their produce (watermelons) and sell directly to consumers (Premchander, 2002).

ITC Choupal Fresh procured in Mohali (Punjab) and Ambala (Haryana) through a consolidator based on fixed commission (Re.0.37/kg) and transport cost reimbursement (Rs.700/day). ITC procured about 23 per cent of cauliflower and bottle gourd each from leasee migrant farmers compared to only 15.5 per cent of cauliflower and bottle gourd each in case of local farmers. The consolidator had formal contract with the retail chain and an informal one with the supplying farmers.
He had 40 listed farmers of whom 20 were suppliers and 10 of them did daily supply. The chain also provided one extension officer to the consolidator. The supervisor was consolidator’s employee but paid by the ITC. The chain had no involvement with the farmers either in input supply or output purchase. All the FFVs were sold loose and there was no processing facility other than back yard of the store which was used to receive, grade and dispatch F&Vs. The major vegetables procured were potato, tomato, cauliflower, cabbage, carrot, radish, spinach, okra, bottle gourd, pumpkin, and beans and major fruits include kinnow, pear, and guava. The orders were placed with the farmers at 9 a.m; procurement was carried out between 10 to 12 noon, and by 2 to 3 p.m, vegetables were dispatched to the store. Thus, produce reached the store by 5 p.m. Therefore, the chain sold the produce at 6 p.m. under the label ‘Today’s Harvest’. Direct procurement from farmers was 40 per cent of the total (Figure 2.4) (Singh and Singla, 2010).

![Diagram of Choupal Fresh vegetable procurement system in Punjab/Haryana](source: Singh and Singla (2010))

**Figure 2.4: Choupal Fresh vegetable procurement system in Punjab/Haryana**  
Source: Singh and Singla (2010)

The Spencer’s procured about 163 locally grown vegetables at CC located in Hoskote from farmers located at a distances of 50-80 km. Spencers adopted ‘Ready to Retail’ concept, in which F&Vs were graded and packed in the required form by the suppliers (farmers). CC handled around 20 tonnes of F&Vs per day. 70 per cent of F&Vs were procured from farmers, and the remaining 30 percent from the Modern Auction System (MAS) market, established by the NDDB through a consolidator. The CC
followed the ‘Vendor Development’ model, i.e. the farmers themselves were the preferred suppliers. Registered farmers were known as ‘vendors’, and under each vendor a group (usually 10) of farmer members (independently) cultivated and supplied F&Vs. The relationships with farmers was informal, with no written contracts, but were based on oral confirmations of volumes to be delivered. Farmers should have assured irrigation facilities to register with the CC. Vendor selection was determined by their business management skills. The registered farmer-vendors collected the produce from other farmer-members and delivered it to the CC; quality controls in production and packaging being the responsibility of farmer-vendors. At the CC, packed produce was bar coded and transported to the central warehouse in Bangalore, from where it was further transported to retail outlets in Bangalore, Chennai, Hyderabad, and Thiruvanthapuram (Mangala and Chengappa, 2008).

The Mother Dairy Fruit and Vegetable Ltd. (hereafter, MDFVL) in Uttarakhand set up the supply chain by organizing the farmers in federations with help of a Non-Government Organisation (hereafter, NGO). The tomatoes were harvested by farmers according to production plans prepared by the federations and accepted by MDFVL. These were then brought by farmers to designated CCs managed by employee of the federation. Grading was done by the farmers at the CC according to the quality parameters provided by MDFVL. After grading, tomatoes were packed in plastic crates provided either by the MDFVL or the federations and loaded into trucks and transported to MDFVL’s Central Distribution Facility (CDF) in New Delhi. On arrival at CDF, the tomatoes were again checked for quality. Based on the quality of a sample of tomatoes, the whole truck was either accepted or rejected. If accepted, the whole truck was sent to the retail outlets. If rejected, the tomatoes were graded again at CDF. Although the farmers’ federations and MDFVL had a legal relationship, the farmers were not contractually obliged to sell to MDFVL. In fact, many farmers sold to both MDFVL and private buyers. Farmers sold only 30 percent of the tomatoes to MDFVL. Similarly, MDFVL was not obliged to buy a fixed quantity of tomatoes from the farmers. The quantity to be purchased was determined every year through negotiations between the federations and MDFVL (Alam and Verma, 2007).

The CC of ABRL in Prantij (near Ahmedabad) in Gujarat had 125 registered farmers, of which 100 supplied at CC on a regular basis. About 12-15 delivered the produce
daily at CC. Potato, cabbage, brinjal, cauliflower, tomato, bitter gourd, okra, chilli were the major vegetable crops delivered at CC. The total daily requirement of vegetables at CC was between 3.5 to 4.0 tonnes which was brought by around 15 farmers each with one SKU. The CC was comprised of a staff of 2 managers (CC incharge and field officer) and 4-5 laborers. The laborers did unloading, weighing, grading and sorting of the produce. The CC incharge was on the retail chain’s pay roll while the field incharge and laborers were hired by Global Agri. Pvt. Ltd. ABRL procured from the farmers through individual, oral and non-registered contact. There was no contract between the retail chain and the farmers. The vegetables were procured on the basis of their indent requirement. Only in exotic crops like broccoli and cherry tomato there was assured buy back and these were mostly grown by large farmers. The chain also bought from APMC market through vendor and purchased apples from Adani Agri-Fresh through a vendor. The procurement cost including transport cost was Re.0.85 /kg. ABRL bought only A grade produce. The CC contributed 25-40 per cent of the total procurement depending upon the season (Singh and Singla, 2011).

Organized retailers (More, Reliance Fresh, ITC Choupal Fresh, Spencers) in Vontimamidi (a vegetable growing region near Hyderabad) procured about 25 per cent of the total F&Vs produced in the area. The average procurement per day in each retail chain varied between 4-14 tonnes during week days and reached upto 7-17 tonnes during week-ends. Procurement prices were based on the prices prevailing each day for each F&V at the Bowenpally market in Secunderabad and were generally set higher than the prices prevailing at the Bowenpally market. Heritage’s Fresh@ worked with 187 farmers spread around 4 clusters (each cluster comprises 12-13 villages). Out of this, 131 were designated as “custom farmers” who were its preferred producers. About 180 farmers supplied vegetables such as carrots, cauliflowers, gourds, chillies and capsicum to the pack house regularly. More than 52 varieties of F&Vs including Green leafy vegetables were handled. Heritage Fresh@ sourced about 26-30 tonnes of vegetables during week-days which increased to 42-45 during week-ends from Vontimamidi. On an average about 50 farmers supplied the vegetables daily (Sulaiman et al, 2010).
Subhiksha followed a three-tier model of procurement in the food and grocery category: (a) direct procurement from the supply source when volume requirements were large; (b) through consolidators for small volumes in locations where the number of stores did not justify bulk purchase; and (c) through mandis, predominantly via APMC licensing and commission agents. Mangoes were directly procured from the orchard growers. The retail chain had its CCs at specific mango growing clusters. It directly procured fresh produce such as greens, coriander leaves, cabbage, bhindi, and spinach from nearly 120 farmers through a consolidator or aggregator. Pricing of fresh produce was negotiated everyday based on prevailing mandi prices. By directly going to the farmers, the chain saved around 15-20 per cent of which a portion was passed on to consumers in the form of a discount. Wastage at the store level was around 8-10 per cent every day which was then sold to hawkers (Joseph et al, 2008).

Namdhari Fresh (NF), a leading F&V retail chain in Karnataka practiced both captive farming by leasing on land and contract farming in the ratio of 20:80 on 1500 acres of land. Over 1200 farmers were involved in contract farming, contributed 110 tonnes (70 per cent) of total production (160 tonnes per week) in 2008. The land was located in Bangalore Rural, Ramanagara, Koppal and Tumkur Districts of Karnataka, and in a few small pockets elsewhere in the state. NF also started production in Ooty in Tamil Nadu and in some villages near Ludhiana in Punjab. Positive attitudes towards farming, willingness to work hard and a good reputation in the village were the main considerations while selecting contract farmers. NF planned production to match the daily demand fresh produce and to avoid overproduction. Farmers were informed about the production plan, and the sowing and harvesting dates were given in advance. The produce was weighted in the presence of the farmer, and was then transported to the packing house through its own refrigerated trucks (Singh and Singla, 2011).

Spencer’s in Gujarat procured FFVs from farmers at CC through ‘contact farming’. The retail chain only provided specifications to farmers and there was no written agreement. Most of the vegetables were retail priced 40 per cent above the Spencer’s procurement price. The retail chain procured less than 5 per cent of the supplying farmer’s total production. The rejected produce sold in the local market constituted about 4 per cent of the produce bought to the CC. The price given to the Spencer’s
farmers was based on previous day *mandi* price, less the transport cost to Ahmedabad. The actual payments were made to the farmers by a farmer-vendor who was appointed by Spencer’s. They were relatively large farmers, and they invest between Rs. 5-6 lakhs of their own money in order to provide this service. They were paid a 3 per cent commission on the value of the materials for which they pay, as remuneration for this service. The farmer-vendor also supplied his own produce to Spencer’s and was paid commission on these supplies well. The DC checked the quality, and allocating and dispatching the materials to the stores. The rejections at the DC were around 10 per cent, and a further 2-3 per cent was rejected from the farmer-vendors. The Spencer’s farmers benefited from having an assured market, lower transportation cost, lower labor cost, timely payment and fair weight. The farmers were also not compelled to sell to Spencer’s. The retail chain saved the *mandi* commission by procuring directly from farmers, and it got better quality of produce with lower losses. About a quarter of the farmers who delivered at Spencer’s also supplied to Reliance Fresh and Shubhiksha which had CCs in the same area. Only the farmer-vendors were exclusive to Spencer’s (Singh, 2009).

RF in Karnataka operated through three CCs which acted as delivery and dispatch stations servicing up to 200 farmer suppliers, and as a hub to a major DCs on the outskirts of Bangalore. RF neither established any institutional mechanisms of governance (such as written contracts) in its areas of procurement nor possessed the market power to impose dependent relations on farmers. Deliveries at CCs were subjected only to visual tests (checking for damage from insects, disease, etc.) and the requirement that produce met the criterion of uniformity of size. Thus, as at present, the role of quality parameters in supermarket procurement remained quite rudimentary (Pritchard *et al*, 2010).

### 2.2.2 Farmer Profile

Farmers supplying to the organized outlets either indirectly (through consolidator) or directly to CC owned larger land holdings (9.38 acres, and 4.42 acres respectively) than those owned by those supplying to commission agents (4.39 acres), wholesalers (2.31 acres) and Shandies/local villagers (3.75 acres). Farmers supplying to CC and consolidators had higher proportion of irrigated land (77 per cent and 61 per cent) as compared to those of farmers delivering to other channels (42-60 per cent) though 80
per cent of operated land of farmers delivering to wholesalers was irrigated (Joseph et al, 2008). Similarly, farmers supplying to MDFVL had larger landholdings (3.25 acres) than the non-retail chain farmers (2.8 acres). Again, while 17 per cent of the MDFVL farmers had more than 5.5 acres, only 5 per cent of the non-MDFVL farmers had more than 5.5 acres (Alam and Verma, 2007). In case of Spencer’s, the average land holding of the farmers delivering vegetables at CC was 6 acres compared with just two acres in case of traditional market farmers although percentage of irrigated area was same (75 per cent) across both categories. Of the total farmers studied, about 47 per cent and 37 per cent of the farmers associated with Spencer’s were small and medium respectively and only 16 per cent were marginal as compared with high proportion of marginal (93 per cent) and small proportion of small farmers (7 per cent) supplying produce in traditional markets. Thus, though the paper states the retail chain model was suited for small farmers, the field data used by the authors shows that the retail chain worked with relatively larger farmers, both in terms of local land holding size as well as standard definition of small farmer in India (upto 5 acres) (Mangala and Chengappa, 2008).

More than half of the farmers (54 per cent) were associated with ITC for 1-2 years. Some of the farmers were even linked for more than two years (27 per cent). Only very few (18 per cent) were associated with the chain for less than one year. The average operated area of ITC retail chain farmers (9.91 acres altogether) and of the leasee and local farmers separately (8 and 11.5 acres respectively) which were higher than the average size of the operational holding at the state level -Punjab 9.36 acres and Haryana 5.26 acres. Thus, all these studies reveal that food retail chains worked with relatively larger landholders who were resource rich as well (Singh and Singla, 2010).

About 77 per cent of the farmers working with HOPCOMS were marginal or small as compared to 69 per cent of the total farmers in south Karnataka region being so. However, about 22 per cent of the HOPCOMS farmers were semi-medium and only one per cent large; lower than the overall average for south Karnataka (29 per cent and 1.7 per cent respectively). Thus, HOPCOMS not only included small and marginal farmers but had their over-representation compared with the south Karnataka context. The average cultivated area was higher in case of non-HOPCOMS
farmers (4.8 acres) as against HOPCOMS farmers (4.5 acres). Furthermore, HOPCOMS farmers delivering the produce at the CCs were located at an average distance of only 27.2 kms. compared to the higher distance of mandi in case of non-HOPCOMS farmers (43.1 kms.) (Kolady et al, 2007). Further, 65 per cent of farmers working with the retail chains in Vontimamidi near Hyderabad were small and marginal farmers (Sulaiman et al, 2010). The operational holdings of RF farmers in Karnataka were much smaller holdings in Kolar (2.5 ha) than those in Bijapur (8.2 ha) and Belgaum (9.3 ha). Across the three areas, irrigated land (mainly through bore wells) accounted for only 48 per cent of the cultivated area (Pritchard et al, 2010).

Fresh produce tends to be predominantly produced by small farmers because they can undertake labor intensive production of produce on small plots and earn substantially more per unit of land than they earn with basic grains. However, in a number of horticulture zones, where small farmers dominate in numbers, medium and even large farmers have a majority of the volume of sales in supplying the produce to supermarket. Processes of land consolidation and rental market development seem to be underway and are leading to a differentiated farm sector. Even where small-holders dominate there is substantial differentiation in holdings of non-land assets. Supermarket chains thus have a choice over farm size and asset strata in sourcing the fresh produce. Supermarkets CCs in India sourced disproportionately from medium/large farmers, except in the few cases in which effective marketing cooperatives were organized by or for the small farmers, often with NGOs help. Asset poor farmers may pose a challenge in supplying to supermarkets given their requirements in terms of quality, consistency, and volume (Reardon et al, 2010).

2.2.3 Costs and Returns

Several studies on FFV retail chains in India compare the yields and costs of production and marketing of vegetables in both retail chain and traditional market channels. One such study on cauliflower in Hoskote, Bangalore found that the retail chain farmers had considerably lower transaction costs (Re. 0.7/head in CC and Re. 0.6/head for consolidator) than that in mandi (Rs. 1.1/head for commission agent and Re. 0.9/head for wholesaler) although the cost of production of retail chain farmers was higher -irrespective of the fact whether they sold directly to CC (Rs. 30,325/acre) or through the consolidator (Rs. 39,850/acre) -than those selling in mandi (Rs. 30,325/acre) (R.
Average prices and net returns for these two types of cauliflower farmers selling to organized retail (directly and through consolidator) were about 12 per cent and 27 per cent (prices) and 31 per cent and 43 per cent (returns) higher respectively than that from sale in mandi. The difference was even larger when the amount charged by the commission agent (usually 10 per cent of sale price) in the mandi was taken into account (Joseph et al., 2008).

A similar study on major vegetables - cabbage, cauliflower and tomato - in the case of Spencer’s found that the food retail chain farmers attained higher respective yields (33, 12.5 and 30 tonnes/acre) than that for non-retail chain farmers (30, 12, 25 tonnes/acre). The retail chain farmers had marginally lower yield in carrot (12 tonnes/acre) than that for non-retail chain farmers (13 tonnes/acre) but, in all crops, retail chain farmers had considerably lower transaction costs than the non-retail chain farmers: cabbage Rs.180/tonne and Rs.700/tonne, cauliflower Rs.189/tonne and Rs.1200/tonne, carrot Rs.775/tonne and Rs.1905/tonne and tomato Rs.640/tonne and Rs.1000/tonne. The food retail chain farmers received higher prices for cabbage (Rs.3.5/kg), cauliflower (Rs.8.4/kg), carrot (Rs.15.5/kg) and tomato (Rs.6.5/kg), as compared to respective prices of Rs.3/kg, Rs.7/kg, Rs.14/kg, Rs.5.5/kg received by farmers selling in traditional market. The percentage increase in net profits of food retail chain farmers over non-food retail chain farmers in cabbage, cauliflower, tomato, and carrot was 48, 40, 34 and 18 respectively. The young farmers preferred to sell Spencer’s than the traditional channel. Further, the farmers having owned transport vehicle influenced to sell through retail chain (Mangala and Chengappa, 2008). Similarly, NF provided higher prices for baby corn (Rs.7/kg) and bhindi (Rs.9/kg) at farm gate itself as compared to only Rs.4/kg each for the two crops in mandi (Dhananjaya and Rao, 2009).

In case of MDFVL run procurement operation for spinach in Haryana, contract farmers received 8 per cent higher prices than those received by non-contract farmers, mainly for better quality and as an incentive for ensuring a regular supply. Contract farmers obtained substantially higher net profits (78 per cent) than that obtained by non-contract farmers (Birthal et al., 2005). The farmers supplying tomatoes to this chain in Uttarakhand had lower yields (11 tonnes/acre) and higher costs of production (Rs.2.8/kg) compared with 13.6 tonnes/acre and Rs.2.6/kg for those selling to private
traders, but reduced transaction costs (Re.0.14/kg) compared to Rs.1.83/kg for farmers selling to traders. There was higher profit of Rs.2.75/kg for MDFVL farmers in comparison with Rs.1.5/kg for farmers selling to traders. But, the retail chain farmers incurred higher costs on pesticides and fungicides to meet quality specifications demanded by MDFVL (Alam and Verma, 2007).

The HOPCOMS farmers did not pay any commission while non-HOPCOMS farmers, on an average, had to pay about 9.4 per cent commission in mandi. Further, about 72 per cent of the HOPCOMS farmers were satisfied with the working of the HOPCOMS (Kolady et al, 2007). Further, in case of banana (variety Ney-poovan), the post-harvest losses were as high as 28.84 per cent in the non-HOPCOMS (wholesale) channel (regulated banana market at Binny Mills, Bangalore) compared to that only 18.31 per cent in HOPCOMS channel. The marketing cost was higher in the wholesale channel (Rs 4.36/kg) compared to only Rs 1.30/kg in the HOPCOMS. Further, the percentage share of the marketing cost in the consumers’ rupee was only 10 in case of HOPCOMS as compared to 27.5 per cent in case of the wholesale channel. In the conventional method, net price realized by the banana farmers was higher in case of HOPCOMS (Rs.8.68/kg) than that in the wholesale channel (Rs.8.36/kg). The producers’ share in the consumer’s rupee stood at 61.23 per cent in HOPCOMS while it was only 48.61 per cent in the wholesale channel, after accounting for the losses in both the channels. The marketing efficiency was also higher in the HOPCOMS channel than that in the wholesale channel both before and after the separation of losses, mainly due to the higher price realization by farmers in HOPCOMS as a result of the lower marketing costs (Murthy et al, 2007).

The average yields were higher in case of leasee migrant ITC farmers (85 qtls. in cauliflower and 104 qtls. in bottle gourd) than that in case of local ITC farmers (81.11 qtls in cauliflower and 97.8 qtls. in bottle gourd). The farmers realized somewhat higher price in ITC channel (about Rs.5.5/kg in cauliflower and Rs.4.2/kg in bottle gourd) compared to that in mandi channel (Rs.5.1-5.4/kg in cauliflower and Rs.3.9-4/kg in bottle gourd). Thus, both categories of farmers realized same price in ITC. However, leasee migrant farmers realized lower price in mandi as compared to that realized by local farmers. The average cost of production was higher among local farmers (Rs.3.89/kg) compared to that in case of leasee migrant farmers (Rs.3.35/kg).
The farmers did not incur any marketing cost (except the packing cost in polythene for bottle guard) since the produce was picked from farm itself compared to that in mandi. The net income for each crop in each channel was higher for leasee migrant farmers than that for local farmers. The farmers found it beneficial to supply to ITC’s Choupal Fresh because of farm pick up, on the spot cash payment, fair weight and no labor and marketing costs unlike those in mandi (Singh and Singla, 2010). ITC’s price discovery system was based on the local market prices, but because the crops were graded, the producers were guaranteed a minimum price, and since there was less need for handling and multiple intermediaries, farmers earned higher returns. The farmers earned 15 per cent more than local market price on grade A produce, and grade B produce was bought at local market rates. This, on an average, increased the farmers’ net income by one-third (Misra, 2009).

In Vontimamidi near Hyderabad, 95 per cent of farmers had gained by selling through the organised retailers. 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 organised retailers were: higher price, use of electronic weighing scales, savings from commission charges (4-10 per cent) payable at the local mandi (Sulaiman et al, 2010). Although RF farmers in Karnataka were ‘registered suppliers’ to retail chain but the retail chain procured only 24.8 per cent by volume (and 32.3 per cent by value) of the output as compared to 39 per cent by volume and 47.6 per cent (by value) in Bijapur and only 7.6 per cent by volume and 19.5 per cent (by value) in Belgaum, which indicated that farmers had to sell majority of the produce to traders in mandi. In Bijapur, respondents 43 per cent of grape growers supplied grapes to RF only, 38 per cent to both RF and local traders, and 19 per cent sold their entire crop to traders only. A comparative study of vegetable procurement in the Mysore region estimated that transaction costs for farmers in the supermarket trade were significantly less than those for farmers selling to traders, namely, 76 per cent for tomatoes, 37 per cent for carrots, 28 per cent for cabbage, and only 16 per cent for cauliflower (Pritchard et al, 2010).

2.2.4 Producer Support

The decentralized CCs established by HOPCOMS also acted as outlets for agri-inputs like manure, fertilizers, hybrid seeds, fungicides etc. (Kolady et al, 2007). Growth-
oriented Micro Enterprise Development (GMED), India of the USAID implemented by ACDI-VOCA in collaboration with the ITC attempted an intervention in fresh produce to involve small-holders as suppliers to organized retail. GMED and ITC started their operations in Malerkotla, Punjab by offering free extension services. Initially, farmers started with growing vegetables only on one half of their farms. Gradually, after realizing higher returns and constant technical support, they started to switch their entire holdings to vegetable production. GMED introduced simple but effective changes in production techniques such as tray nurseries to ensure uniform crop, and raised beds and shade nets for crops such as tomatoes and cucumber. They cut the cost of operations by one-third by training the farmers on how to use the expensive inputs. For example, farmers sowed 900 gm of cucumber seed per acre, at a price of Rs.12,000 per kg, while the recommended seed rate was only 300 gm. per acre. The farmers also used twice as much fertilizer as was needed. They used more irrigation water than was necessary, thus wasted electricity and labor, and used more pesticides than required. GMED and ITC also helped farmers to grade the tomatoes in three categories A, B and C to realize better prices. ITC regularly bought the top two grades while the grade C could be sold in mandi. As the farmers realized which grade fetched highest prices, they made greater efforts to bring quality of their produce up to that level. Farmers, who had started with only 30 per cent of their produce in grade A, reached a level of 90 per cent after following GMED extension staff advice. ITC provided color-coded crates to farmers to segregate produce by grade, which facilitated grading and tracing of the crops. The chain also organized transport, storage and distribution, thus integrated all the functions of the value chain (Misra, 2009).

ITC had also established a two acre crop nursery cum demonstration farm at Vontimammadi to test new varieties of vegetables and the site was also used as a training centre. The Agricultural Extension Officer of ITC assisted by two local technical assistants undertook regular field visits and provided technical guidance to ITC’s contact farmers. The major responsibilities of the team were: (1) Identifying vegetables growing village clusters; (2) Studying the cropping pattern, seasonality, quantity, duration and availability of the crop within the village; (3) Identifying the nodal farmers; (4) Developing the CCs and finalizing the quality parameters; (5) Introducing new varieties; and (6) Demonstrating new technologies and advise on
field problems. Recently 24 farmers were selected and trained to comply with Global GAP certificate (Sulaiman et al, 2010).

The Spencer’s in Hoskote provided farmers a package of GAPs which ensured the optimum use of resources with emphasis on minimum use of pesticides. Although the chain did not provide any production inputs but it helped the farmers in procuring inputs from suppliers at reduced rates. However, chain provided the technical guidance on aspects like the time of planting, crop production and management, harvest time, quantity to be harvested per acre, etc., to ensure quality and marketability of the produce (Mangala and Chengappa, 2008). MDFVL in Uttarakhand provided plastic crates to farmers to reduce losses during transportation and bring down the high costs and difficulties associated with the use of wooden boxes. The use of plastic crates reduced the cost of packaging by 70 per cent. The federations organized by MDFVL and NGO helped the farmers to: (1) prepare annual production plans and negotiate the supply targets with MDFVL, (2) organize procurement of vegetables at their CCs, (3) monitor the grading of produce before packing (4) mediate between farmers and MDFVL, (5) provide packaging crates on rent, (6) sell agro inputs to members, (7) receive payment from MDFVL and distribute it to farmers, (8) arrange for farmers’ training, (9) sell farmers’ surplus produce to private dealers when MDFVL unable to purchase during peak season, and (10) set up a relief fund to compensate farmers in case of losses due to natural causes such as landslides on the road. The federations charged Rs 2/10 kg of produce sold through them for the relief fund. The technical support provided by government agencies, NGOs and MDFVL increased the yield of tomato to 20 tonne/ha from 8 tonnes/ha. 82 per cent of farmers revealed that their farm income had increased due to the technical supports provided to them (Alam and Verma, 2007).

The CC established by ABRL in Gujarat provided extension on crop variety and cultivation practices which had 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). Heritage had also established a nursery-cum-demonstration farm near its pack house in Vontimamidi near Hyderabad. Senior Manager (Production and Procurement) headed the Extension team. Technical support to farmers was provided
by an experienced agronomist. The production operations were coordinated by a
production manager. Field level operations are managed by 15 production and
procurement assistants working in the field. Every month in the first week training
classes for the technical staff were conducted by outside experts on production and
plant protection aspects who in turn trained the custom and registered farmers.
Initially, village meetings were conducted and the services of the firm were explained.
Interested farmers could register by filling an agreement form and such farmers would
be provided a code and an identity card. Some of the custom farmers who were
willing to invest on poly houses were encouraged to grow exotic vegetables such as
yellow and red capsicum, broccoli, red cabbage, china cabbage, etc. which were
procured by the retail chain (Sulaiman et al, 2010). NF farmers in Karnataka also
received technical guidance. The cost of inputs was initially borne by the chain but
deducted when the farmers were paid. To build the long term bond between the chain
and the farmers, chain provided the interest free loans to help the farmers to improve
their irrigation facilities (Dhananjaya and Rao, 2009).

RF farmers in Karnataka were free to grow what they want, and to sell their output on
whatever terms, and to whom, they wish. Although the retail chain claimed that it
invited ‘registered’ farmers to facilitate farmer dealings with recommended seed and
chemicals suppliers. However, farmers used their traditional agrarian axioms of ‘past
experience’ and ‘advice from neighbours’ for input use. Farmer respondents did not
regard supermarket chains as important sources of advice (Pritchard et al, 2010).

2.2.5 Pricing and Quality Parameters
The HOPCOMS announced the procurement prices for the day based on the
prevailing market prices that morning at four or five reference mandis (Kolady et al,
2007) and an additional half rupee/kg was added to the weighted price. Further,
HOPCOMS paid 70-75 per cent of the consumers’ price to the growers as compared
to 43 per cent paid by regulated/wholesale markets. The price paid to the farmers in
general was 10-15 per cent higher than the open market prices. Further, during
distress sales, HOPCOMS assured a minimum support price for the produce
(Premchandar, 2002). Though HOPCOMS did not classify F&Vs into grades, it
maintained quality by accepting only good quality produce from the growers. It
rejected injured, damaged and diseased fruits. In banana, HOPCOMS rejected the
rotten fruits and fruits with bruises and rough handling. Cracked and blackened fruits due to over-ripening were also rejected (Murthy et al., 2007). Earlier, HOPCOMS deducted 20-30 per cent of the produce of the growers towards driage and wastage while making payments. By 2000, the practice of physical quantity deduction was completely stopped. In case of cabbage, payment was made only after the entire quantity was sold so as to account for the loss in quantity due to driage (Subrahmanyam and Gajanana, 2000). Driage and wastage was around 4-5 per cent of the total procurement of the produce. However, it reduced to 1.85 per cent in 2000-01 (Premchander, 2002). However, another recent study, revealed that proportion of produce rejected at HOPCOMS was 4.39 per cent; the maximum being as high as 66 per cent and minimum being nil (Kolady et al., 2007). 77.1 per cent of the HOPCOMS farmers reported that they sold the rejected the produce elsewhere at lower price, 11.4 per cent each either threw away the rejected produce or HOPCOMS discarded it (Kolady et al., 2007).

ITC Choupal Fresh in Punjab and Haryana paid market price based price to the supplying farmers in cash through the consolidator who got an advance for the same from the retail chain. Both quality and price were determined by ITC. The farmer price was nothing but closest reference market price of the day minus transport cost. But, the farmers were paid 10 per cent premium on this price for ITC grade material which was the only grade, the retail chain bought. The quality premium for lower quality produce was reduced from 10 per cent to 5 per cent. There were daily negotiations on SKU prices with farmers, if market price fluctuated. All the grading was done manually and material from the farmers’ filed is brought in crates. Only 5 per cent variation in quality was allowed. The quality of vegetables was determined by manual checking of size, color, shape, freshness and ripeness. The first weighing of the produce was done at the farmers’ field with a scale in the vehicle. The second weighing was done at the CC with an electronic weigh scale which was considered final for farmer payment. The third and last weighing was done at the store which was final for payment to the consolidator. The consolidator could supply poor quality produce only upto 0.5 per cent of the total delivered. The rejection rate in ITC was only 2 per cent (Singh and Singla, 2010).
The Spencer’s in Hoskote maintained the quality of produce at three levels, referred to as QG (Quality Grading) (Quality Logistics), QC1 (Quality Control) and QC2 (Quality Care). The QG was the concern of the CC, the QC1 was the maintenance of quality of packed F&Vs till it reached the retail outlets, i.e. in loading, transporting and unloading of the produce. The QC2 referred to the quality to be maintained at the display of F&Vs at the retail outlets. F&Vs were graded based on uniformity of size, maturity and colour, physical appearance and freshness. CC provided the packaging material to the farmers. Farmers themselves carried out grading and packing. Each packed product was labeled with details like product name, weight and price; some of them were bar-coded, also. In the initial stages of establishment of supply chain operation, rejection rate in food retail chain (Spencer’s) farmers was higher but over time, it reduced to 8 per cent. The farmer price was based on prices prevailing in modern auction system of NDDB’s Safal market, HOPCOMS and K.R. wholesale market in Bangalore. Spencer’s also ensured support price even in case of glut in the market, so that the farmers did not incur losses (Mangala and Chengappa, 2008).

In case of MDFVL, rejection rates for some federations supplying to the retail chain were as high as 50-60 per cent due to small size of fruit and pest infection, and long distance transport of produce to CDF in Delhi. Besides, poor grading by farmers deliberately and lack of supervision led to higher rejections although it was also stated that, sometime, rejections were deliberate to avoid oversupply (Alam and Verma, 2007). The supermarkets procured graded produce, which caused two problems for the farmers: (1) farmer was still dependent on the local trader to sell the rest of her crop; and (2) in selling all her produce to the local trader, she would get a higher average price. The retail chain procured only high quality produce (about 30 per cent of total production), for which she obtained a higher price. However, the price obtained for the rest of the produce was lower than average (Punjabi and Sardana, 2006).

ABRL in Gujarat did the quality check manually at CC through the CC incharge. The previous day mandi price was the farmer price for the next day. The farmers were paid in cash only and payment was made through CMS (Cash Management Services) of ICICI Bank, the next day. Four copies of purchase receipt were made one each for the farmer, the bank, the CC and the DC and had details of farmer quantity bought,
price and type of vegetable. The prices could vary across days widely as they were linked to mandi prices e.g. price of giloda varied from Rs. 4.5-17/kg across seven lots giving an average price of Rs.9.19/kg. Farmer’s price for the day was not lowered but was revised upwards if needed. In cabbage, retail chain preferred curds having weight between 400-800 gms, while in case of potato, diameter should be 40-65 mm. The quality specifications cauliflower were: white, compact, medium to large size of curds (generally 500-800 gm) without any insect-pest and disease attack. Yellow curds highly exposed to sunlight were rejected. For tomatoes, the retail chain preferred bigger size, red coloured, shiny, matured tomatoes; free from insect-pest and disease attack. Pressed and exposed to sunlight tomatoes were not preferred. In one kg, there should be around 8-10 tomatoes. ABRL paid a single price for the crop as it purchased only A grade produce. Initially, when the ABRL started the operations in the area, the rejection rates were as high as 10 per cent but, overtime as farmers became aware of the quality standards of ABRL, the rejection rated reduced to 2.5 per cent. The rejected vegetables by the retail chain were sold to the Jamalpur mandi at very low price. After sorting and grading at CC before purchase, another quality check was carried out at DC level where rejections were amounted to 0.5 per cent (Singh and Singla, 2011).

Since NF in Karnataka procured only young tender produce, the farmers could get 3 to 4 crops in a year. The procured only ‘A’ grade produce which was usually not available in traditional market. Farmers graded it themselves on the farm as per NF’s standards. Farmers had to market the lower-grade produce on their own in the open market. NF’s system of payment by cheque was not only transparent but had helped the farmers to save money/earnings and increased their creditworthiness with the banks. Partial crop insurance scheme and pre-fixed prices gave farmers confidence while planning their crops (Dhananjaya and Rao, 2009).

RF in Karnataka procured F&Vs of ‘A Grade’ only. It paid higher price at their dispatch-door in return for better quality, but, with efficiencies in logistics and handling, the effect of these cost imposts on final (supermarket shelf) prices was discounted (vis-à-vis the fragmented transactional arrangements of wet markets). Thus, the retail chain had a competitive advantage (vis-à-vis wet markets) in ‘quality and assured’ segments of F&V demand. The transparency in offered price along with
their positive reputation for prompt payment (cash or cheque on day of delivery)—
provided a strong element of certainty to farmers, in contrast to the situation when
farmers had to sell to traders, which was dependent on bargaining, and thus entailed
considerable uncertainty. About 89 per cent RF farmers in Kolar, 96 per cent in
Bijapur and 96 per cent in Belgaum that prices paid by the retail chain were fair.
Spencer’s farmers in Mysore in Karnataka also reported that the prices paid were 10-
20 per cent higher than those received through traditional trading arrangements
(Pritchard et al, 2010).

2.2.6 Front-end Retailing
HOPCOMS accounted for 6-10 per cent of the horticulture trade in Bangalore
(Kolady et al, 2007). The retailing of the F&Vs was carried out through the 504 retail
outlets, of which 231 were in different localities of urban Bangalore, 114 in rural
Bangalore, and the rest in other districts of Karnataka. The quantity of F&Vs sold/day
was over 500 metric tonnes (Premchander, 2002). These outlets were run by the
salesmen of HOPCOMS who got a commission of 3.7 per cent from it
(Subrahmanyam and Gajanana, 2000). On an average, the number of employees per
retail outlet was two; one of them was a permanent employee and other being an
assistant on temporary roll. The outlets worked between 10.30 am and 8 pm with a
break in the afternoon. Most of the HOPCOMS outlets were owned (Kolady et al,
2007). The F&Vs constituted 91 per cent of the total sales while the agri-inputs
accounted for 8-10 per cent of the total sales of HOPCOMS (Subrahmanyam and
Gajanana, 2000; Premchander, 2002). The daily operating expenses of HOPCOMS
were around Rs.10 lakh and cash handled was of the order of Rs.20 lakh a day,
including all other operating expenses like transport cost etc. (Premchander, 2002).

The Bangalore HOPCOMS sold about 71 per cent of vegetables and 79 per cent of
fruits though the retail outlets. Further, about 80 per cent of vegetables like cowpea,
_bhindi_, knolkhol and _tondecai_ (coccinea) and over 60 per cent of tomato and brinjal
were sold through these retail outlets. As regards fruits, around 95 per cent of sapota,
papaya, pomegranate, pineapple and banana (_velakki_) and over 65 per cent of orange,
grape and banana reached the consumers through these outlets. The profit earned by
HOPCOMS was Rs. 2.84/kg in 2000-01. HOPCOMS also sold F&Vs in bulk to
certain ‘institutions’ like government hospitals, hostels, factories and also to
processors like Kissan and Karnataka Agro Fruits. Normally, HOPCOMS supplied F&Vs on credit basis and charged Re. 0.4-0.5/kg. of vegetables higher than the retail price when vegetables were sold to the factories as transport cost was added to the price of the vegetables. This, perhaps, was the reason for the higher price that HOPCOMS realized for vegetables like tomato, bhindi, cucumber, onion etc. when it sold them to the bulk consumers (Subrahmanyam and Gajanana, 2000). The retail price of HOPCOMS outlet’s was a fixed mark-up on the procurement price and was same across all the outlets (Kolady et al, 2007). HOPCOMS had an approved policy of fixing the procurement price slightly higher than the prevailing wholesale price and retail price at a slightly lower level than the ruling retail price so as to maintain a margin of 25 per cent. The HOPCOMS retail prices were 18 per cent lower than that of the other traditional shops. The supplies to the retail outlets were made through the 19 owned and 40 hired vehicles. The mobile sale of F&Vs was also done at places where the HOPCOMS did not have any retail outlet (Subrahmanyam and Gajanana, 2000).

The average area of the ITC Choupal Fresh store was 2500 sq. ft. More than 70 per cent of the store area was devoted to F&Vs. A store had one manager and more than 10 shop floor employees. The store did not sell any product by unit price but by weight only. There was total wastage of 4 per cent including 2 per cent dump at the end of the day. The average footfalls in the store were 160 on week-days and 200 on week-ends resulting in sales of one tonne and 1.5 tonne per day respectively. The store did not do any home delivery. ITC leveraged its market prices on a 10 per cent commission that it saved by directly procuring from farmers. Besides, the retail chain also benefited by offering quality product and building its brand in the long term. On the promotion front, the retail chain had printed and dispatched tailor made invitation cards and held cookery sessions and fruit festivals during which it gave one kg of fruit free for every kg bought. It also maintained direct customer contact through Brochure Mailing Services (BMS). 75 per cent of the sales of the ITC were institutional -mainly wholesale and the rest 25 per cent at the store (Singh and Singla, 2010).

The ABRL’s supermarket store space in Ahmedabad ranged from 2000 to 3000 sq. ft. and that of hypermarket around 75000 sq. ft. All outlets were owned by the retail chain. The number of SKUs at the store varied between 2500-3000. The average
number of employees per store was 14 including one manager and assistant manager. The average footfalls were around 300 during week-days and ranged 450-600 during week-ends. All stores sold F&Vs. 22 tonnes of F&Vs were sold daily with each store selling about 0.6 tonnes. The dry SKUs like onion and tomato account for 70 per cent F&V sales. The wastage at the retail store was around 10 per cent. The consumer price was benchmarked against another retailers and purchase price. There was no price change in store during the day. The store devoted 25 per cent space to F&V and the share of profit from FFVs in total profit in the store was ranged between 18-19 per cent. Two employees were deployed to look after F&Vs. The stores sold F&Vs in loose form only. The cut and pack FFVs comprised of 0.5 per cent of the total FFVs at the store (Singh and Singla, 2011).

2.2.7 Major Problems Faced in Retail Chain Linkage

About 17.5 per cent farmers reported that HOPCOMS procured only limited quantity of F&Vs due its lower indent, 11.25 per cent reported high quality standards maintained by it, 6.25 per cent reported the lack of the proper weighing machines and 2.5 per cent reported that all the crops were not accepted and large scale farmers were treated better (Kolady et al, 2007). About 77 per cent farmers were not satisfied in linking with ITC. The major problems faced were: low volumes procured and low price overtime. On the role of government/policy on F&V retail, 32 per cent farmers opined that government should promote retailing which would lead to higher demand for FFVs. About 73 per cent of farmers suggested that retail chain should procure higher quantities of F&Vs (Singh and Singla, 2010). MDFVL farmers in Uttarakhand faced the higher rejection rates due to longer distance to the Delhi, poor road conditions and lack of cold chain facilities in transporting vehicle. Moreover, the farmers were paid according to the quality checks carried out at CDF at Delhi. The most common suggestions reported to remove some of the problems faced were: MDFVL should fix the price in advance (39 per cent); the grading norms should be relaxed to reduce rejection rates (35 per cent); and MDFVL should purchase all the produce (34 per cent) (Alam and Verma, 2007).

About 50 per cent of the ABRL farmers in Gujarat reported the lower indent of the retail chain as the major problem. 43 per cent ABRL farmers argued that retail chain procured only A grade produce due to which they fetched the lower price for the
remaining produce in the *mandi*. Absence of farm picking, lack of compensation during glut in the market, lack of input arrangement and formal contract with the farmers were some of the other problems faced by the ABRL farmers. In case of RF farmers in Gujarat, lower indent and higher rejection rates were the major problems. In NF retail chain linkage in Karnataka, about 63 per cent farmers reported that chain paid lower price than the market price and did not revise price according to market price i.e. gave very little price hike if the price in market was higher. 50 per cent NF farmers highlighted the problem of timely supply and poor quality of agri-inputs. Some of the other problems faced by the farmers were: lack of adequate compensation during crop failure, delay in picking the produce, poor extension services etc. More than 60 per cent ABRL farmers associated with the retail chain faced various problems in working with the retail channel. Of these, 60 per cent faced high rejection rate, 40 per cent grading difficulty, 30 per cent each lower price for A grade and low price in general (Singh and Singla, 2011).

The analysis of above reviews reveal that fresh F&V retail chains are much developed and organized in developed countries compared that in India. The retail chains in developed countries shifted FFV procurement from traditional wholesalers to centralized procurement. The operations of F&V retail chains in India have, so far, not made any difference to the share of the producer in the consumer’s rupee, other than lowering the cost of marketing of the producer, as retail chains have CCs in producing areas unlike the APMC *mandis* which are located in distant cities. The retail chains, however, buy only “A” grade produce and only a part of the farmers’ output, even if all of it is “A” grade. The farmers end up going to the APMC *mandi* to sell the remaining or rejected produce. Most of the retail chains (with the exception of one or two) procured from relatively resourceful “contact” farmers without any contract or commitment to buy regularly. The retail chains were unable to share the risk of the growers. The supermarket chains gave market-price-based prices to their supplying “contact farmers”. Thus, there was little involvement on the part of retail chains with the producers and improvement in supply chain efficiency was absent, which was also reflected in the performance of these chains.