The results of the vegetable marketing survey presented in the previous chapter are discussed in this chapter under the following headings.

**5.1 Vegetable production, marketing status and exiting marketing system in the study area**

Vegetable production in U.S. Nagar and Nainital district is mainly dealt with irrigation through ponds, shallow well and sometimes flood diversion especially to vegetables where oversupply of harvested products is the main characteristics. The nature of the product on the one hand and the lack of organized marketing system, on the other have resulted in low producer’s price. There are production and marketing problems challenging vegetable development in the both the districts.

The vegetable is traded through regional marketing system in Uttarakhand. The town and villages in the producing area serve as assembly markets. The markets of production area feed the markets of consumption area. Haldwani, Nainital and Ramnagar from Nainital district and Rudrapur, Bajpur, khatima, Pantnagar and Kashipur from U.S. Nagar districts are the largest vegetable-consuming cities for the vegetable produced in Kuamon division of Uttarakahnd. A wide variety of marketing agency ie contractor (village level commission agent), wholesalers, retailers, brokers and others operate at various stages of vegetable marketing. These markets can be distinguished on the basis of market place and the nature of the trade activities.

The average production volume of different vegetables in the selected region of Nainital districts and other details of production and post harvest processes has shown that primary post harvest
operations are being carried out at wholesale and retail level and
due to which there are huge post harvest losses from farm to retail
level (around 10% in pea, 12% in cabbage and 11% in tomato). In
U.S. Nagar post harvest losses were low from farm to retail level
(around 6.5% in pea, 9% in cabbage and 7.5% in tomato). The
reason behind is better packing and much better transport facility
and infrastructure as compare to Nainital.

5.2 Comparative role played by the intermediaries in the different
channels of the VSC

In the two formats of the VSC viz., Channel I and II. The
intermediaries were involved in channel I and had a better relationship
with the farmers for procuring the produces by providing an advice
about the time of planting and varieties to be planted (50%). However,
storage facility was not provided by the intermediaries, but provided
transport service facility (100%), grading service facility and packing
service (50%). In the VSC channel II, the cooperative/local market
retailers having a meager relationship with the farmers and provided
25 per cent services about the time of planting and varieties to be
planted. In case of other services, such as transport facility was 75%,
grading and storage service facility (25%) and packing services (50%)
in Nainital district (Table 4.9).

In U.S. Nagar district, in the VSC channel I, intermediaries were
involved and had a meager relationship (only 20%) with the farmers for
procuring the produces by providing an advice about the time of
planting and varieties to be planted. However, storage facility was not
provided by the intermediaries, but provided transport service, grading
service and packing service (75%). In the VSC channel II, the
cooperative/local market retailers having no relationship with the
farmers about the time of planting and varieties to be planted. In case
of some services, such as transport service facility (50%), grading
services facility (25%), packing services (50%) and storage services facilities were not provided (Table 4.9).

Hence, it can be see that higher percentage of functions were performed in VSC channel I in Nainital district compared to U.S. Nagar. It may be because of better network with farmers. In VSC channel II, the functions performed were less in both the district because it covers less number of clients because of small size of its business in vegetable marketing as compared to channel I.

5.3 Vegetable marketing cost, marketing margin, marketing efficiency and producer’s share in consumer’s rupee in the different channels of VSC

5.3.1 Material used for packing vegetables in the VSC

In case of channel I in Nainital district, the VSC except for tomato majority of the farmers (100%) used the gunny bags for packing vegetables such as pea, cabbage and potato which might be due to loose organization of VSC. Whereas, 90% farmers used plastic boxes for tomato because of high perishability as compared to other vegetables. In the channel II of VSC for pea, cabbage and potato 100 per cent of the farmers used gunny bags, because of supply of gunny bags by cooperatives/local retailers, while 55 and 45 per cent farmers used plastic and wooden boxes for tomato respectively because of the less access of farmers to these packaging materials. In the channel III of VSC, for all the vegetables such as tomato, cabbage, pea and potato, on an average almost 50 per cent of the farmers used gunny bags and rest of 50 per cent used loose format to sell their vegetable in Nainital district due to loose organization of VSC.

In U.S. Nagar district, the channel I of VSC for pea, cabbage and potato, 100 per cent of the farmers used gunny bags. While 95% of farmers used plastic boxes for tomato because of its high perishable nature as compared to other vegetables. In the channel II of VSC for
pea, cabbage and potato 75 per cent of the farmers used gunny bags, because of plentiful supply of gunny bags by local retailers. While 75 per cent farmers used plastic boxes in case of tomato due to less transportation. The consumers/retailer directly purchases tomato from the producers. In the channel III of VSC, for the vegetable such as cabbage, pea and potato on an average 60 per cent of the farmers used gunny bags and rest of 40 per cent used to sell their vegetable in loose format, while 60 per cent of farmers used wooden boxes for selling tomato. Considering, its delicacy in transportation as well as less transportation.

(Table 4.10) most of the farmers of both the districts were using the packing plastic trays and wooden boxes which reduced the physical and mechanical damages during transport of this highly perishable produce and used gunny bags for low-perishable produce.

5.3.2 Physical losses in the vegetable supply channel I, II and III

5.3.2.1 Physical losses at the wholesaler level in the VSC channel I

Total quantity at aggregate average of vegetable handled by the wholesaler was 3325 Kgs daily and out of which on an aggregate average 104.5 kg was lost per day because of high perishable nature of vegetables and loose organized management of VSC as well as losses during transportation and loading and unloading levels were more in channel I of VSC. Hence, there was a loss of 3.5 per cent of wastage to the total quantity procured in Nainital (Table 4.11).

On other hand in U.S. Nagar district, the total quantity at aggregate average of vegetable handled by the wholesaler was 3487.5 kgs daily and out of which on an aggregate average 97.25 kg was lost per day because of high perishable nature of vegetables and loose organized management of VSC as well as losses loading and unloading levels were more in channel I of VSC. Hence, there was a loss of 2.86 per
cent of wastage to the total quantity procured. It may be seen from the table 4.11 that the total percentage of wastage to the total quantity handled is less in U.S. Nagar as compare to Nainital. It may be due to easy transportation, infrastructure and vegetable market availability.

5.3.2.2. Physical losses occurred at the retailer level in VSC channel I

In Nainital district, total quantity handled by the retailer at aggregate overall average was 25 kg per day out of which an aggregate average loss was 1.27 kg and it accounted for 5.92 per cent of the total quantity handled per day which was mainly due to high perishable nature of vegetable and losses during transportation, loading and unloading and also during storage which was highest in channel I and II VSC management and less in channel III VSC management (Table 4.12).

Whereas in U.S. Nagar districts, the total quantity handled by the retailer at aggregate overall average was 31.75 kg per day, out of which average loss was 1.07 kg and it accounted for 3.84 per cent of the total quantity handled per day which was mainly due to high perishable nature of vegetable and losses during transportation, loading and unloading and also during storage which was smallest of channel II and higher than channel III of VSC while it was highest in Channel II (Table 4.12).

5.3.2.3 Physical losses occurred at the retailer level in the VSC channel II

On an aggregate average, in the channel II, the retailers losses occurred 2.48 kg per day for the total quantity handled i.e., 40.5 kg per day and it accounts for 6.03 per cent, which was highest percentage of wastage compared to all other chains. The wastage was due to losses during transportation and loading and unloading which had to spoilage of the vegetables as well as loose organized VSC mana-
gement and performing functions in Nainital district.

On the other hand in U.S. Nagar district, highest percentage of retailers was less (5.18) in the channel II compared to all other chains. The wastage was due to handling losses during transportation, loading and unloading as the vegetable are more delicate and prone to spoiling under improper handling. Loose organized VSC management and improper functioning also accounted for the retailers losses (Table 4.13.)

5.3.2.4 Physical losses occurred at the producers (retailers) level in the VSC channel III

The total quantity handled at aggregate average, in the producers (retailer) level in VSC channel III was comparatively less (4.72 per cent of the total quantity handled per day) which might be because of better handling of vegetables as there was direct supply of vegetables to the consumer that too without packaging and transportation in Nainital district (Table 4.14).

In U.S. Nagar district, the wastage at the producers (retailer) level in VSC channel II was 3.23 per cent of the total quantity handled per day which is the lowest percentage of wastage compared to all other chains. This might be direct supply of vegetables to the consumer without packaging and transportation (Table 4.14).

5.3.2.5 Physical losses occurred at different levels in the different vegetable supply channels

In Nainital district, the physical losses occurred at various levels (wholesaler and retailer) in VSC channel I was highest (9.44%) because of the fact that the vegetable were handled by various intermediaries. This was also due to less sophisticated packing materials used, poor methods of transportation, loading and unloading in the chain as compared to other channels of vegetable supply (Table 4.15). But in
In the case of channel II of VSC, only at the retailer level due to absence of intermediaries, the wastage was less (6.03%). There were no intermediaries in channel III, hence, the losses were minimized.

In U.S. Nagar, the physical losses occurred at various level in VSC channel I were highest (6.71%) due to involvement of more intermediaries. But in case of channel II of VSC, the physical loss was compared less (5.18%) only at the retailer level due to absence of intermediaries. There were no intermediary in channel III, hence, the least percentage of wastage to total quantity procured was noticed.

This may be seen from the table 4.15 that the total percentage of wastage to the total quantity handled is less in U.S. Nagar as compare to Nainital. It may be due to easy transportation, infrastructure and nearness to vegetable market availability.

### 5.3.3 Cost incurred in the VSC

#### 5.3.3.1 Cost of marketing vegetables by farmers in the VSC channel I

In both the districts, (Nainital and U.S. Nagar), the cost of marketing vegetables by farmers in channel I of VSC was mainly contributed by commission charge (8%) which was paid to commission agent. It was the main reason for lower price at farmer’s level in the supply chain (Table 4.16). The next major contribution to cost was transportation and packing charges. The inefficient use of means of transportation, packing material and long distance covered might have influenced the cost and expenditure which was incurred by farmers. These result corroborate with the findings of Gupta and Rathore (1999).

#### 5.3.3.2 Cost of marketing vegetables by farmers in the VSC channel II

The transportation cost was the major contributor to marketing cost of the farmers in the channel II of VSC. The next major components were
the packaging, loading and unloading charges. The cost incurred by producer seller in the channel II VSC was lower as compared to channel I VSC (Table 4.17). This was mainly due to no commission charges in cooperative society as compared to channel I of VSC where the commission charges were to the extent of 8 per cent of the value of goods. This indicated relatively more efficient performance of channel II of VSC over channel I. The similar opinion was also of the Hugar (1980).

5.3.3.4 Cost of marketing vegetables by farmers in the VSC channel III

(Table 4.18) For Nainital districts, the marketing cost of farmers in VSC channel III, was mainly due to labour charges followed by packing and transportation cost due to poor facilities in hilly region. The farmers have to pay high labour cost to transport the vegetables from village the road head. On the other hand in U.S. Nagar district, the marketing cost of farmers in channel III of VSC, labour charges were minimized due to better transport facility available right from the farmer’s vegetable farm to the destination. The marketing cost incurred in U.S. Nagar was less compared to Nainital district. This had to higher price to growers and lesser price to consumers in this supply chain in U.S. Nagar. Which corroborating with work done by Lokanadhan (2007).

5.3.3.5 Aggregate average cost of marketing vegetables by farmers per day per farmer under different vegetable supply channel

In Nainital district the highest marketing cost was incurred by farmers in channel I of VSC followed by channel III and II. Also the highest price received by farmers was through channel III and channel I as compared to channel II. The highest quantities of vegetables was sold by channel I and channel II, due to long distance covered during transportation, expenditure on the packaging material, commission
charges paid by the farmer and also due to spoilage occurred during marketing of their produce made to incur high cost by farmers in channel I of VSC (Table 4.19).

In U.S. Nagar district the highest marketing cost was incurred by farmers in channel I of VSC followed by channel II and III but the highest price received by them was by channel III and I as compared to channel II (Table 4.19). The highest quantity of vegetable was sold through by channel I and II, due to easy availability of during transportation, less expenditure on the packaging material, less commission charges paid by the farmer and also due to chances of more spoilage occurred during marketing of their produce made to incur high cost by farmers in channel I VSC.

5.3.4 Cost and return in the VSC

5.3.4.1 Cost and return in vegetable marketing by commission agent in the vegetable supply channel -I

The cost of vegetable marketing incurred by the commission agent in the VSC channel I in Nainital district was found to be Rs. 6.61 per quintal and in U.S. Nagar it was 6.45 per quintal (Table 4.20). This was mainly because the commission agents have to pay marketing fee, licence fee, electricity, shop rent, maintenance charge and labour charges invested. The commission received after the sale of producer by the farmer would become income to the commission agent. Since they did not incurred any transportation cost, packaging cost or any value incurred on spoilage of produce handled, the net returns per quintal was Rs. 39.50 in Nainital and Rs. 36.70 per quintal in U.S. Nagar with commission charges at 8 per cent.

5.3.4.2 Cost and returns in vegetable marketing by wholesaler in vegetable supply channel I

The cost incurred by wholesaler was Rs. 23.24 per quintal in Nainital and Rs. 23.39 per quintal in U.S. Nagar district which included the
costs like market fee, licence fee, shop rent, electricity charges, and also the total value spoiled during marketing. It was seen from the table 4.21 that the vegetable purchase price and the sale price in Nainital was Rs. 493.75 and Rs. 641.88 per quintal, while in U.S. Nagar it was Rs. 458.75 and 596.38 respectively. Hence with high prices and less cost they incurred, the net return worked out was Rs. 88.24 per quintal per day in Nainital and Rs. 87.60 per quintal per day in U.S. Nagar with an aggregate average quantity handled per day of 34.64 quintal and 39.50 quintal respectively, in Nainital and U.S. Nagar.

5.3.4.3 Cost and returns in vegetable marketing by retailer in vegetable supply channel I

The costs and returns in channel I of VSC in Nainital district, indicated that for retailer’s format, the quantity handled was 20.38 kg per day and the purchase price was Rs. 6.42. However, due to high cost of marketing the net returns realized by the retailer was Rs. 3.94 per kg which was higher as compared to channel II and lower as compared to channel III. In U.S. Nagar, the cost and returns of retailer’s format indicated that the quantity handled (24.88 kg per day) and the purchase price (Rs. 5.96) led to a return of Rs. 3.8 kg was for channel I which was higher than for channel II. The net return was highest for channel III compared to remaining channels. The loss of marketing in case of channel III was least compared to remaining channels which led to higher return of channel III.

5.3.4.4 Cost and return in vegetable marketing by retailer in vegetable supply channel II

The quantity handled on an aggregate average by channel II was 24.25 kg per day which was higher as compared to other formats of the supply chain. The purchase price was Rs. 4.56 per kg and it procured
directly from their main producers. Therefore, it incurred less cost for procurement and also costs incurred by the retail outlets in marketing vegetables were comparatively less. The quantity sold was 22.05 kg per day and selling price was Rs. 10.13 per kg. The quantity sold was less than quantity handled because of physical losses in the chain. The net return was Rs. 2.56 per kg which was found to be lower as compared to all other retailer formats of the VSC, in Nainital district.

Whereas in the U.S. Nagar district, the quantity handled on an aggregate average by channel II was 23 kg per day which was higher as compared to channel III and lower to channel I. The purchase price was Rs.4.14 per kg and it procured directly from their main producers. Therefore it incurred less cost for procurement and also cost incurred by the retail outlets in marketing vegetables were also comparatively less. The quantity sold was 20.70 kg per day and selling price was Rs. 9.38 per kg. The quantity sold was less than quantity handled because of physical losses in the chain. This situation led to the net return (Rs. 3.01) per kg which was found to be lower as compared to all other retail formats of the VSC.

5.3.4.5 Cost and return in vegetable marketing by producer (retailer) in vegetable supply channel III

In Nainital district, on an aggregate average, the quantity handled by retailers was 10.50 kg per day. Its procurement price was Rs. 5.25 per kg and procured directly from their own farms as well as from the relatives. It incurred less physical losses due to self management as compared to channel I and channels II of VSC. The total cost incurred was Rs. 1.75 per kg, The selling price was Rs. 10.50 per kg and earned a net return of Rs. 2.97 per kg which was second highest in all the supply chains (Table 4.24).

On other hand in U.S. Nagar, on an aggregate average, the quantity handled by retailers (Producers) was 11.13 kg per day. Its
procurement price was Rs. 5.25 per kg. It incurred less physical losses due to self management as compared to channel I and II of VSC. The total cost incurred was Rs. 0.81 per kg, The selling price was Rs. 10.57 per kg and earned a net returns of Rs. 4.04 per kg which was higher than all other supply chains. The above results may be seen from the Table 4.24.

5.3.4.6 Aggregate average cost and return in vegetable marketing under different vegetable supply channels

In Nainital district, the aggregate average quantity handled was higher in channel II as compared to channel I and III in retailer formats of the VSC. This may be because of cooperative/retailers got the vegetables from the local vegetable grower and they had a large local network of retail outlets within the district with a convenient distance to the consumer. Therefore large quantity of vegetables handling was made possible for the channel II compared to other retailers formats. The purchase price was low in channel II compared to channel III and channel I, may be because of large number of farmer of the area are selling their produce which leads to monopoly of wholesaler/retailers in fixing price of farmers level. Hence retailer outlets/cooperatives receive the vegetables at a cheaper price. Higher purchase price higher in channel I, might be due to purchases from the wholesalers of commission agents. Similarly, purchase price was also higher in channel III formats which might be due to insistence of better quality and fresh vegetables purchased from the farmers and farmer has to deliver it to their premises by paying higher labour cost, they also paid higher price to farmers. But due to high labour cost paid by farmers they unable to get their own amount. The retail price of vegetables was lower in channel II as compared to other retail formats owing to lower purchase price as compared to other retail formats of the VSC.
The total cost of marketing per kg of vegetables handled was lower in channel I in retail format of VSC (Rs. 1.28 per kg) as compared to channel II (Rs.1.99 per kg). This lower cost may be due to low labour cost and very low physical losses (Table 4.25) in the VSC when compared to other retailer formats.

The net returns obtained in the different formats showed that the net return per kg of vegetables was highest in channel I retail format (Rs. 3.94/kg) as compared to channel III (Rs. 2.97/kg) and channel II (Rs. 2.56/kg). This higher net returns per kg of vegetables in the channel I retailer format was because of higher purchase price of vegetables or little losses of vegetables when handled.

Whereas in U.S. Nagar district, the aggregate average quantity handled was higher in channel I as compared to channel II and III retailer formats of the VSC. This might be because retailers got the vegetables from the local mandis with remunerative price and they had a large network of retail outlets/growers in the district with a convenient distance to the consumer. The purchase price was low in channel II compared to channel III and I, may be because of large farmer selling their produce in the local market/hatt and cooperative yards directly without any intermediaries. Hence retailer outlets receive the vegetables at a cheaper price. However higher purchase price in channel I, may be due to purchases from the wholesalers of commission agents, Similarly, purchase price was also higher in channel III formats which might be due insistence of better quality and fresh vegetables purchased from the farmers/grown himself and farmer has to deliver it to their premises. The retail price of vegetables was lower in channel II as compared to other retail formats owing to lower purchase price as compared to other retail formats.

The total cost of marketing per kg of vegetables handled was lower in channel III retailer format of VSC (Rs. 0.81/kg) as compared to
channel I (Rs.1.21/kg) and channel II (1.29/kg). This lower cost may be due to very less physical losses in the VSC when compared to other retail formats of the VSC.

The net returns obtained in the different formats showed that, the net returns per kg of vegetables was higher in channel III retail format (Rs. 4.04/kg) as compared to channel I (Rs. 3.80/kg) and channel II (Rs. 3.01/kg). This higher net return per kg of vegetables in the channel III retail format was mainly because of higher purchase price of vegetables or little quantity of vegetables was wasted in handling.

5.3.5 Marketing cost, margins and producer's share in the consumer's rupee under different vegetable supply channel I, II and III

Broadly, speaking, two factors contribute towards the widening of the gap between first, costs incurred by the farmers and cost incurred by retail formats. Secondly, the margin of profits obtained by the retail formats. The producer share in the consumer rupee is to be increased, the cost of marketing needs to be cut down on the one hand and reduce profit margins of retailer formats on the other through achieving an efficiency in performance of the functions in the VSC.

As could be seen in Table 4.26 the cost incurred by the farmer varied between different formats of the VSC, because of quantity sold, cost incurred on the various functions, place where it was sold and agency whom it was sold influenced the variations in the cost. In Nainital district, the cost incurred by the farmer was higher in channel I of VSC because the chain was lengthy as compared to the channel II and III of the VSC. But the cost incurred by the retailer was lowest in channel I of supply chain because of low labour cost included as compared to channel II and III of the VSC.

The difference in the purchase price of vegetable supply channel III and I with the gross price received by the farmer was due to purchases
from wholesalers, commission agent and farmers in combination.

Marketing margin as percentage of consumer price was found to be less in channel III of VSC (1.92%) as compared to channel I (1.96%) and in channel II (1.99%) because of high gross marketing margin in channel I and III as compared to channel II of the VSC.

The producers share in the consumer rupee was higher in channel III VSC (42.80%) compared to channel II (39.85%) and channel I (31.85%). This was mainly because of difference in the consumer price obtained that is Rs. 10.13/kg in channel II, Rs. 10.50/kg in channel III and Rs. 12.25/kg in channel I of VSC.

Channel III of VSC was found to be the most efficient as indicated by the highest index of marketing efficiency (0.96) when compared to other formats of the VSC. It is because of more producers’ net price to the total gross marketing margin. Similarly, this is followed by channel II of VSC where index of marketing efficiency was 0.90 (Table 4.26) because of higher producer’s net price to total gross marketing margins. However, this index is low (0.79) in channel I VSC because of cost incurred by the farmers is higher and also received low price as compared to other VSC. It is advisable to the farmers to sell their produce through channel II and III of VSC. Similar inferences have been made by Hugar (1980) and Biradar (1996). Therefore, farmers should sell more and more vegetables through channel II and III and should be encouraged to provide vegetables to consumers in the Nainital region.

On other hand in U.S. Nagar district, the cost incurred by the farmer was higher in channel I of VSC because length of the chain was more as compared to the channel II and III of the VSC. The cost incurred by the retailer was lowest in channel III of supply chain because of low
labour cost included as compared to channel II and I of the VSC.

The difference in the purchase price of vegetable supply channel III and channel I with the gross price received by the farmer is due to purchases from wholesalers, commission agent and farmers in combination.

Marketing margin as percentage of consumer price was found to be less in channel II of VSC (1.97%) as compared to channel I (1.99%) and in channel III (2.06%) because of low net returns (table 4.26).

The producers share in the consumer rupee was found to be highest in channel III of VSC (46.50%) compared to channel II (39.28%) and channel I of VSC (31.37%). This was mainly because of difference in the consumer price obtained that is Rs. 10.63/kg in channel III, Rs. 10.63/kg in channel II and Rs. 11.75/kg in channel I of VSC.

Channel III of VSC merged out as the most efficient as indicated by index of marketing efficiency (1.02) when compared to other formats of the VSC. It is because of producers’ more net price to the total gross marketing margin. Similarly, this is followed by channel II of VSC where index of marketing efficiency was 0.89 because of higher producer’s net price to total gross marketing margins. However, this index was low (0.78) in channel I of VSC because of cost incurred by the farmers is higher and also received low price as compared to other VSC. It is advisable to the farmers to sell their produce through channel II VSC and channel III VSC. The results may have seen from Table 4.26.

**5.4 Factors, affecting vegetable production and marketing and effectiveness of VSC.**

Through the direct observation and discussion with the farmers of both the districts, the factors affecting vegetable production and
marketing have been discussed in previous chapter 4. (See Fig-5 in chapter 4 results)

5.4.1 Disposal pattern and reasons for sale of the vegetables to a particular format by the farmers in the VSC

5.4.1.1 Disposal pattern of produce by the farmers in the VSC
The results of the analysis in Nainital district indicated that, the frequency of sale of vegetables by farmers in VSC channel I varied depending on the vegetables because to make up the transportation cost, depending on the availability of packaging materials, distant market and to some extent depending on harvesting of their produce (Table 4.27). But in channel II and III of VSC, the frequency was almost 70-80% daily because they transported their produce to consolidation centre of the cooperative units and nearby outlet retailer shop on regular basis.

In U.S. Nagar district the results of the analysis as shown Table 4.28 and indicated that, the frequency of sale of vegetables by farmers in VSC channel I varied depending on the vegetables because to make up the transportation cost, depending on the availability of packaging materials and to some extent depending on harvesting of their produce. But in channel II and III of VSC, the frequency was almost 65-75 % daily because they transported their produce to consolidation centre of the nearby outlet retailers shop on regular basis.

5.4.1.2 Reason for the sale of produce by farmers to a particular format in the VSC
The study revealed that among different factors influencing the farmers to sell their vegetables to particular format in the VSC was due to the spot payment, correct weight, proximity and remunerative price which were found to be major factors.

However, if it is seen from the Table 4.29, in both of district the farmers sell their vegetables to the vegetable supply channel I which
was mainly because of spot payment, correct weight, remunerative price and proximity of buyers. Similarly, in case of channel II, the farmers sell their vegetables mainly because of absence of middlemen, spot payments, correct weight, remunerative price, proximity, less charges, better services rendered by them, provision for technical guidance and less charges for the services. The farmers mainly sell the vegetables to the channel III of vegetable supply formats mainly because of the absence of middlemen, spot payments, correct weight, remunerative price, proximity and less charge for the services.

5.4.2 Pattern of purchases, buying management and sales pattern by different formats in the VSC

5.4.2.1 Pattern of purchases of vegetables per day by different retail formats

In this section a comparative account of the pattern of purchases by retailer formats per day in channel I, II and III of VSC is presented. In Nainital district, the retail format of channel I purchased 20.38 kg per day with a total value of Rs. 128.89, channel II retail format purchased 24.50 kg per day with a total value of Rs. 109.91 and channel III retail format purchased 10.50 kg per day with a total value of Rs. 55.50 (Table 4.30). It could be visualized that the quantity of vegetables purchased by channel II retail format was higher than channel I and III retail formats. This was mainly because of higher network of retail business of vegetables in the village by channel II as compared to other formats, purchased large quantities from vegetable growers and availability of vegetables at a cheaper price. The retail of channel III and channel I purchased the vegetables as per the requirement respective of the local market conditions and consumers’ demand.

In U.S. Nagar district, the retail format of channel I purchased 24.88 kg per day with a total value of Rs. 149.56, channel II retail format purchased 23.00 kg per day with a total value of Rs. 91.50 and
channel III retail format purchased 11.13 kg per day with a total value of Rs. 61.00. Thus the quantity of vegetables purchased by channel I retail format was higher than channel II and III retail format. This was mainly because of higher network of retail trade of vegetables in the village by channel I as compared to other formats. The retailers of channel II and III purchased the vegetables as per the requirement is respective of the local market conditions.

5.4.2.2 Buying management by consumer in different formats of the VSC

As vegetable is a perishable commodity it was purchased daily and also it was having daily demand. But buying the same quantity every time was seen only in channel I and II retail format to the extent of 100 per cent in channel I retail format and 40 per cent in channel II retail format. It was not followed in channel III retail format. The retail formats buying based on previous day/weeks/months sale was only to the extent of 40 per cent, 60 per cent and 100 per cent in case of channel I, II and III retail formats respectively. This difference was due to dependence on the quantity of sale made in previous week or month or the left over stock in previous day’s sale they purchased the vegetables. The retail formats buying based on coming days/weeks/months expected demand was highest in channel III retail format (60 per cent). However, in channel II and III retail format it was only about 20 per cent, this may be because of purchase made every day in same quantity in Nainital district (Table 4.31).

On the other hand in U.S. Nagar district buying the same quantity every time was seen only in channel I and II retail format to the extent of 80 per cent in channel I retail format and 40 per cent in channel II and III retail formats. The retail formats buying based on previous day/weeks/months sale was only to the extent of 40 per cent, 80 per cent and 80 per cent in case of channel I, II and III retail formats
respectively (Table 4.31). Thus every day buying is dependent on the quantity of sale made in previous week or month or the left over stock in previous day’s sale. The retail formats buying based on coming days/weeks/months expected demand was highest in channel III retail format that is 40 per cent. However, in channel II it was only about 20 per cent and for channel III retail format it was absent, which might be because of purchase made every day with the same quantity.

In both of district the quantity of buying from a particular agency indicated that 100 per cent of channel I and II retail formats requirements brought from retailers. Whereas, in channel III retail formats, 100 per cent procurement was directly from the local farmers as they were having their sub units for purchase of produce at different villages.

5.4.2.3 Pattern of sale of vegetables by different retail formats per day

In Nainital district the channel I retail formats sold 19.36 kg per day with a total sale value of Rs. 242.50, in channel II retail format sold 22.05 kg which accounts sale value of Rs. 241.03 and in channel III retail format it sold 9.98 kg having a sale value of Rs. 105.45 per day (Table 4.32). It could be seen from the above result that quantity of vegetables sold by retail format was higher in channel II format which was followed by channel III and I retail formats. This is because of the reason that the price at which they sell to the consumers, cost incurred by the retail formats in marketing their produce, packaging facility and wide range of products with its quality and capacity to buy and sell which were good in channel II of VSC.

While in U.S. Nagar district the channel I retail formats sold 23.31 kg per day with a total sale value of Rs. 297.95, in channel II retail format sold 20.70 kg which accounted sale value of Rs. 204.30 and in
channel III retail format sold 10.56 kg having a sale value of Rs. 118.46 per day. It could be seen from the above discussion that quantity of vegetables sold by retail format was higher in channel I format which followed by channel II and III retail formats. This was due to the price at which they sell to the consumers, cost incurred by the retail formats in marketing their produce, packaging facility and wide range of products with its quality and capacity to buy and sell.

5.4.3 Buying pattern and reasons for buying vegetables from a particular formats by the consumers in the VSC

5.4.3.1 Buying pattern of consumers in the different formats in the VSC in each purchase

In the Nainital district, the consumers buying pattern of vegetables in aggregate average in each purchase showed that highest quantity purchased was 0.83 kg in channel I format followed by channel II and III formats of the VSC 0.82 kg and 0.80 kg respectively. This depends on type of customer comes to the shop and purchase. At the same time the quantity purchased depends on the value of the vegetables and frequency of purchase of consumers. The frequency of purchase, by consumers in channel I VSC was due to higher percentage of consumers visited thrice a week (40.00%) followed by alternate day (30.00%), daily (20.00%) and once a week (10.00%). In case of channel II of VSC, highest percentage of consumes visited daily (45.00%) followed by thrice a week (30.00%), alternate day (20.00%) and once a week (5.00%). Similarly, in the channel III of VSC the highest percentage of consumers visited daily (40.00%) followed by alternate day (30.00%), thrice a week (20.00%) and once a week (10.00%) (Table 4.33).

While in U.S. Nagar district the consumers buying pattern of vegetables in aggregate average in each purchase indicated that highest quantity purchased was 0.88 kg in channel III format followed
by channel I (0.83 kg) and II (0.76 kg) formats of the VSC. This depends on type of customer comes to the shop. At the same time the quantity purchased depends on the value of the vegetables and frequency of purchase of consumers. The frequency of purchase, by consumers in channel I of VSC, similar percentage of consumers (30%) visited thrice a week, alternate day, daily and once a week. In case of channel II of VSC, highest percentage of consumes visited daily (40.00%) followed by thrice a week and alternate day (30.00%) and once a week (5.00%). Similarly, in the channel III of VSC the highest percentage of consumers visited daily (45.00%) followed by alternate day (30.00%), thrice a week (15.00%) and once a week (10.00%) (Table 4.33).

On an average in both of districts, a more or less the buying pattern of consumers was same irrespective of the VSC formats. The majority of consumers visited daily and alternate day for purchase of vegetables. The higher appropriate quantity purchased with respect of price was in channel II format followed by channel III and I.

**5.4.3.2 Reasons for purchase of vegetables from the particular formats by the consumers in the VSC**

Channel I format of the VSC Nainital district indicated that the consumers were influenced mainly because of better suited time, proximity, hygieniness of outlets, quality of produce, good services rendered by the outlets, timely availability, reasonable price and getting fresh vegetable which were also the factors in the same order considered by the consumers to purchase from channel I vegetable retail format. In the channel II of VSC, majority of the consumers were influenced mainly because of better suit time, reasonable price, getting fresh vegetable, quality of produce, proximity, time availability, good services rendered by the outlets and hygienicness of outlets. In the channel III of VSC, the consumers were influenced by home delivery
provided by producers, getting fresh vegetable, time availability, proximity, quality of produce and reasonable price in the same order to purchase from channel III vegetable retail format (Table 4.34).

The consumers were influenced mainly because of proximity, timely availability, quality of produce, better suited time, good services rendered by the outlets, getting fresh vegetable, hygieniness of outlets and reasonable price in the channel I format of the VSC of U.S. Nagar district. There were the factors in the same order considered by the consumers to purchase from channel I vegetable retail format. In the channel II of VSC, majority of the consumers were influenced mainly because of better suit time, time availability, proximity, hygienicness of outlets, getting fresh vegetable, reasonable price, quality of produce and good services rendered by the outlets. In the channel III of VSC, the consumers were influenced by home delivery provided by producers, getting fresh vegetable, reasonable price, quality of produce, proximity and time availability in the same order to purchase from channel III vegetable retail format (Table 4.34).

5.5 Comparison of price received by the farmer’s vis-à-vis price paid by the consumers
The aggregate average of price spread, which refers to difference between the price paid by the consumer and price received by the farmer.

In Nainital district indicated that the price spread was highest in channel III of VSC (Rs. 7.31 per kg) followed by Rs. 5.56 and Rs. 5.25 per kg in channel II and III of VSC. In U.S. Nagar district the price spread was almost similar to that in Nainital district except that channel III of VSC showed second highest spread than channel II. The chain having the smallest price spread is most efficient. Therefore, the efficiency of the chain was assessed by taking the comparative price
difference for vegetables. Hence, it can be concluded that channel III and channel II of VSC were the most efficient in both of the districts as compared to channel I of VSC whose price spread is more than the price spread of channel III and channel II VSC. This was mainly because of lengthy chain in channel I format (Table 4.35).

5.6 Problems and expectations of farmers, retailers and consumers in the VSC

5.6.1 Problems faced by farmers in selling the vegetables in different VSC and their expectations

It was evident from the results in Nainital district (Table 4.36) that were malpractices of buyers, lack of transportation facility, costly packing material, far off location of selling and lack of storage facility the main problems faced by farmers, in the Channel I VSC. These were due to large number of intermediaries and malpractices of buyers. Hence farmers expected proper regulation of market to avoid the malpractices, provide the market facilities farmer door steps and good storage facility at the farm level and in market. The results are in conformity with Gopalan and Gopalan (1991).

In the channel II of VSC, the main problems faced by the farmers were financial assistance from the market and lack of contracting agencies. The cooperative provided all the services to the farmers but credit facility was not given. Hence, the financial assistance in the channel II format may be created by contract farming activities.

In the channel III of VSC, the farmers selling their produce with the problems such as lack of market information and problems of high labour charge to bring up the vegetables (on the road head). Hence, the farmers may need to update the market information by reading newspaper, watching TV news, radio and contacting local retail about the ongoing price.
In U.S. Nagar district the Channel I of VSC, major problems faced were malpractices of buyers, lack of financial assistance from market and to be congested and unhygienic market yard. These were due to large number of intermediaries and malpractices of buyers. Hence farmers expected proper regulation of market to avoid the malpractices, provide the market facilities farmer door steps and financial assistance market in market.

In the channel II VSC, the problems faced by the farmers mainly the financial assistance from the market, lack of costly packaging material and lack of storage/cold storage facility. This may be due to the reason that even the cooperative provided all the services to the farmers, but no credit facility. Hence, the financial assistance in the channel II formats may be created by having contract farming activities.

In the channel III VSC, the major problem to sell produce in the market was lack of market information. Hence, the farmers need to update the market information by reading news paper, watching TV news, radio and contacting local retail about the vegetable price (Table 4.36).

5.6.2 Problems faced by retail outlets and in marketing of vegetables in different supply chain and expectation by retail outlets

The main problems faced by retail outlets, in Nainital and U.S. Nagar districts channel I of VSC, were inadequate physical facility for the shop, lack of transportation facility, price fluctuation, failing in assessment of demand, more physical losses of produce/storage loss, competitors in the market. Respective problems were due to less amount for investment, inadequate transportation facility which is costlier too, high price fluctuation which depends on arrival and season for that vegetables, no proper planning for assessment of demand, improper handling and no proper storage facility leading to
physical loss of produce and high competition from the outside markets. Hence they expected an adequate physical shop facilities and guidance to cope with the problems by providing training in retailing activities in the mountainous areas.

In the channel II VSC in both of district, the retail outlets faced major problems such as price fluctuations, more physical losses of produce, failing in assessment of demand and procurement problems. The problems were due to high price fluctuation which depends on the arrival and season of vegetables, due to improper handling and spoilage of vegetables, no proper planning for assessment of demand and no proper planning for procurement respectively. Hence it was expected to build the capacity with the cooperatives to lessen the price fluctuation with proper planning for procurement, less physical losses of produce with proper handling and storage facility, assessing the demand at right time and proper planning of procurement respectively.

In modern supply chain the retail outlets, faced the major problems such as price fluctuation, absence of wide range of products, failing in assessment of demand, procurement problems and timely availability of produce in the same order. Therefore the modern retail formats also need to be developing the capacity to cope with price fluctuation and extending wide contractual arrangement for varied products regularly by better planning (Table 4.37).

5.6.3 Problems faced by consumers in buying the vegetables in different supply chain and their expectation

The problems as opined by the consumers in buying the vegetables in Nainital and U.S. Nagar districts Table 4.38 showed that, in channel I and II of VSC, the retail formats faced the major problems such as majority were of the opinion that there is unhygienic condition, no proper storing, no proper packing, very high prices in the same order. Respective problems faced by consumers were due to no proper
cleanliness maintained in retail outlet, no proper packing facility adopted by them and to make up the high cost incurred by them in the long channel of trade. Hence the consumers expected hygienic condition by maintaining cleanliness in the market, good storing and good packing need to be adopted in order to influence the quantity purchased by the farmers. In channel III of VSC, the major problem faced by the consumers is timings of the producers/retailers only which were not convenient to consumers and consumers expected to extended the timings by the channel III retail formats in both of district.