A comparative study of the structure and performance of two major fruits and vegetables markets under Uttarakhand APMC

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Abstract

Background/ Objectives: The study was conducted to compare the structure of two principal markets of fruits and vegetables in Uttarakhand and to assess the marketing efficiency, price spread and farmer's share in consumer's rupee for sample commodities arriving in these markets.

Methods/Statistical analysis: Out of total 16 functional fruits and vegetables markets of Uttarakhand, two principal markets i.e. Haldwani from Kumaon and Dehradun from Garhwal were selected for the study. Major fruits and vegetables were selected on the basis of quantity of arrival and continuity of arrival throughout the year. Performances of markets were compared on the basis of marketing cost, marketing margins, marketing efficiency index, Price spread and Producer's share in consumer's rupee.

Findings: The proportion of marketing costs incurred by producers ranged between 38 to 58 per cent of the total marketing costs of different commodities. Considering marketing efficiency index, Dehradun was found more efficient in marketing potato, tomato and cabbage while Haldwani market was more efficient in apple marketing. The price spread in case of apple was very high (105 to 116%), while it was lowest in case of potato. The producer's share in consumer's rupee varied between 32 to 59 per cent for selected commodities and was highest for potato (about 58.81%) in Dehradun market. On the other hand the producer's share in consumer's rupee in case of apple was lowest in Dehradun market.

Application/Improvements: There existed wide variations in the share of producer in consumer's rupee (38 to 59%) as well as high Price spread. Therefore, there is need to regularize the activities of marketing middlemen so that these can be minimised.

Keywords: Producer's share, consumer rupee, marketing efficiency, marketing cost, performance.

1. Introduction

Market plays an important role not only in stimulating production and consumption but also in accelerating the pace of economic development. With the gradual displacement of subsistence farming by commercial agriculture, marketing of agricultural produce has assumed greater importance in recent years. Agricultural Markets in most parts of the country are established and regulated under the State Agricultural Produce Marketing (APMC) Act. The main objective of this act is to ensure that farmers gets proper price for his produce and to stop traders & brokers from freely exploiting producers by buying their produce at a lower price. Regulated markets are the very first step to improve the marketing efficiency [1], [2] and [3].

Uttarakhand is a newly formed state of which 64% area is hilly. The state is endowed with versatile agro-climatic conditions that favour the production of almost all type of vegetables. The production of most of vegetables being seasonal and highly localized poses several problems on production as well as on marketing of horticultural produce. In Uttarakhand more than 70 per cent farmers are marginal or small and usually have small marketable surpluses & are subject to more exploitation by intermediaries [4], [5]. Over a period of time these markets have, however, acquired the status of restrictive and monopolistic markets, providing no help in direct and free marketing, organized retailing, smooth raw material supplies to agro – processing, competitive trading, information exchange and adoption of innovative marketing systems and technologies [6],[7].

1.1 UKUMP (Uttarakhand Agricultural Produce Marketing Board)

Uttarakhand Agriculture Produce Marketing Board – (UKUMP) came into existence w.e.f 27-12-2000 to implement Uttar Pradesh Mandi Adhiniyam 1964[8]. Head office of the Uttarakhand Krishi Utpadan Mandi Parishad is situated in Rudarpur, Udham Singh Nagar. At present, Uttarakhand has 25 mandis out of which 21 mandis are functional. There are eleven regulated markets in Kumaon division and ten regulated markets in Garhwal division of the state.Though, the entire hill region is covered under the provision of Agricultural Produce Market Act, 1964, the provisions of the regulation are yet to be effectively implemented in four districts of the region namely in Almora, Pithoragarh, Tehri and Uttarkashi as these markets are still non-functional [9], [10].

Despite expansion in the number of regulated markets, the area served per market yard is quite high. The national average is 454 square km and for Uttatrakhand, it is 962.84 square km per market, hence market access is a limiting factor. Thus, the farmers have to bear high transportation cost to reach a market place with small surplus to sell. Though there are 54 regulated markets and sub-yards in operation which is very less as recommended are 711. The pace of development of market varied across the market and regions of the state.

Though regulated markets helped to reduce multiple charges to the producer-seller up to some extent, the system failed to check trade malpractices, making such markets highly restrictive, inefficient and dominated by traders [11], [12].

Considering these facts present paper is an attempt to examine the structure of two principal markets of fruits and vegetables in Uttarakhand and compare the marketing efficiency, price spread and farmer's share in consumer's rupee for sample commodities arriving in these markets.

2. Materials and Methods
2.1 Selection of principal markets and major fruit and vegetable crops

Uttarakhand have 16 functional fruits and vegetables principal regulated markets, out of which Haldwani and Ramnagar are major markets in Kumaon region, Dehradun and Haridwar are major market in Garhwal region. Of these, two principal fruits and vegetables markets i.e. Haldwani from Kumaon and Dehradun from Garhwal were selected.

Major fruits and vegetables were selected on the basis of quantity of arrival and continuity of arrival during the whole year. According to data collected on arrival of fruits and vegetable, arrival of fruits was very less i.e. only 7% of total horticultural arrival. Potato, tomato and cauliflower were major vegetables and available almost throughout the year, which corresponds to an Ethiopian study as well [13]. Apple was one of the major fruit and available throughout the year. So these three vegetables and apple were taken under study.

2.2 Database

The required primary data for the study were collected from selected farmers for the agricultural year 2013-14. To study the various aspects of marketing on the part of farmer such as marketing costs and problems related to marketing 7 farmers for each crop were selected from each market. Overall 56 farmers were selected, while to study the various aspects of marketing such as marketing costs, marketing margins, efficiencies and problems related to marketing a sample of 15 market functionaries consisting of commission agent-cum-wholesalers and retailers was randomly drawn from the each selected markets. Total 30 market functionaries were selected.The Table 1 represents market functionaries selected market wise.

The requisite secondary data were collected from various published records of government offices such as Mandi Bhawan, Mandi Head Offices, Mandi reports, official websites of UK mandi and Agmarknet and other related sources.

Table 1. Market wise selected market functionaries

Mandi	Wholesaler cum commission agent	Retailer	Total
Haldwani	10	5	15
Dehradun	10	5	15
Total	20	10	30

2.3: Analytical Framework

To examine the structure of sample fruits and vegetables APMC tabular analysis was done and averages, ratios, percentages were worked out. Coefficient of variation was calculated to examine the variation in arrival of commodities.

To assess marketing efficiency, price spread and farmer's share in consumer's rupee following formulas were used:

2.3.1 Marketing Cost

The total cost incurred on marketing either in cash or in kind by the producer/seller and by various traders involved in the sale and purchase of the vegetables till these reach the ultimate consumer, was computed by using the following formula:

$$TC = Cp + \sum_{i=1}^{n} MC$$

Where,

TC = Total cost of marketing, C_p = Cost incurred by the producers in marketing of the produce , MC = Cost incurred by the trader

2.3.2 Marketing margins

The total marketing margins were computed by using the following formula:

$$Mr = \sum_{i=1}^{n} (Si- Pi)$$

Where,

Mr = Total marketing margin, S_i= Sale price of ith crop, P_i =Purchase price of ith crop, n = No. of traders involved in marketing channel

Absolute market margin of the middle man was estimated by employing $Am = Pm - (P_p + MC)$ formula.

Where,

Am = Absolute margin of middlemen/trader,   Pm = Selling price of trader, P_p = Purchase price of trader,   MC = Marketing costs of trader

2.3.3 Marketing efficiency index

Marketing efficiency of different marketing channels was worked out by using Acharya's modified efficiency index [14]:

$$MME = \frac{RP}{(MC + MM)}$$

Where,

MME = Modified Marketing efficiency, RP = Price paid by consumer or retail price, MC = Total marketing cost, MM = Net marketing margin.

2.3.4 Price Spread

Following formula was used to calculate percent price spread:

$$PS = \frac{(RP-FP)}{FP} * 100$$

Where,

PS= Price spread in percentage,RP=Retail price,FP=Price received by farmer.

2.3.5 Farmer's Share in consumer's rupee

Following formula was used to calculate farmer's share:

$$FS = \frac{FP}{RP} *100$$

FS = Farmer's share in consumer's rupee, FP = price received by farmer, RP= retail price of commodity.

3. Results and Discussions

3.1 Structure of the sample markets

The primary information about sample markets is given in Table 2. As can be seen from the table, Dehradun market was the older market than Haldwani market and both the markets were regulated. Haldwani market had the higher yard area (43.59 acre) and covered 363 villages while Dehradun market (13.69 acre yard area) covered 137 villages. The approximate number of producers annually coming to market varied between 120,000 (Dehradun market) to 200,000 (Haldwani market). The number of commodities notified under regulation was 93 in both the markets. The rate of commission charged was 3 per cent in both the markets and additional 2 per cent of the total value of the produce was charged as market fee by market authorities.

Table 2. Salient features of sample markets

S. no	Particular	Haldwani	Dehradun
1	Year of establishment	1982	1969
2	Regulated/Unregulated	Regulated	Regulated
3	Year of regulation	1971	1969
4	No. of shops	450	156
5	Location of market	Town	Town
6	Distance from national highway (km)	Adjoining	Adjoining
7	Distance from nearest city (Km)	2	3
8	Distance from bank branch (Km)	within market	within market
9	Distance from post office (Km)	1	1
10	Distance from other competing market (Km)	15	40
11	Coverage of market/ radius (acre)	43.59	13.69
12	Geographical area served by market (no. of villages)	363	137
13	No of producers coming to the market per annum (No.)	2,00,000	1,20,000
14	Commission (%)	3%	3%
15	Market fee (%)	2.00	2.00
16	Weighment (Rs/qlt)	2.00	2.00
17	Number of commodities notified under regulation	93	93
18	License fee (Rs.)	250.00	250.00
19	Renewal period	1 year	1 year

Source: www.agmarknet.nic.in

The Table 3 and 4 give the overview of infrastructural facilities available in the sample markets. These facilities have been divided in two categories i.e. marketing infrastructure and supporting infrastructure. It is evident from the table that basic facilities like internal roads, parking, water supply and electricity were present in both the sample markets. However, information notice board, public address system, auction platform, canteen and toilet facilities were available in both sample markets, markets were lacking in the facilities like mechanical graders and cold storage facility.

The Table 5shows various market functionaries operating in the sample markets and various commodities with which they dealt. Dehradun market was having higher number of market functionaries (1601), out of which 946 were commission agents. Both markets had more than 500 wholesalers cum commission agents. As the markets were of permanent kind, functionaries in these markets dealt in the marketing of all kinds of fruits and vegetables throughout the year.

Table 3. Marketing infrastructure facilities in sample markets

Sr. no	Particulars	Markets	
		Haldwani	**Dehradun**
1.	Information notice board/ Electric display board	Available	Available
2.	Auction platform	Available	Available
3.	Mechanical graders	Not Available	Available
4.	Cold storage facility	Not Available	Not Available
5.	Mechanical weighing	Available	Available
6.	Information unit	Not Available	Not Available
7.	Extension unit	Not Available	Not Available
8.	Market office building	Available	Not Available

Source: www.agmarknet.nic.in, Mandi committee office

Table 4. Supporting infrastructure facilities in selected markets

S. no	Particulars	Markrts	
		Haldwani	**Dehradun**
1.	Public address system	Available	Available
2.	Canteen	Available	Available
3.	Restaurant	Not Available	Not Available
4.	Toilets	Available	Available
5.	Internal roads	Available	Available
6.	Parking	Available	Available
7.	Fencing	Available	Available
8.	Post office	Not Available	Not Available
9.	Bank branch	Available	Available
10.	Rest house for farmers	Available	Available
11.	Adequate and drinking water supply	Available	Available
12.	Electricity	Available	Available

Source: www.agmarknet.nic.in, Mandi committee office

Table 5. Market functionaries in selected markets

S.no	Functionary	Haldwani		Dehradun	
		Numbers	Commodities dealt	Numbers	Commodities dealt
1	Wholesalers cum Commission agents	745	onion, cabbage, mango, plum, tomato, banana, pear, apple, potato, peach etc	946	Potato, mango, pea, apple, ginger, tomato, litchi, cabbage, French bean
2	Wholesalers	106	onion, cabbage, mango, plum, tomato, banana, pear, apple, potato, peach etc	183	Potato, mango, pea, apple, ginger, tomato, litchi, cabbage, French bean
3	Retailers	267	onion, cabbage, mango, plum, tomato, banana, pear, apple, potato, peach etc	362	Potato, mango, pea, apple, ginger, tomato, litchi, cabbage, French bean
4	Processors	95	Potato, wheat, apple etc	30	Potato, pea, apple, wheat etc
5	Others	35	onion, cabbage, mango, plum, tomato, banana, pear, apple, potato, peach etc	84	Potato, mango, pea, apple, ginger, tomato, litchi, cabbage, French bean

Source: Mandi office

3.2. Performance of selected markets

Results regarding marketing costs, marketing margins, producer's share in consumer's rupee, price spread and marketing efficiency in marketing of selected commodities in study area are discussed hereunder. Though there were many channels of produce disposal such as through processors but very less amount about 5-10% was disposed from channels other than producer → commission agent cum wholesaler → retailer → consumers. So only this channel had been taken under study.

3.2.1: Average quantity sold and price received by growers

The average prices received by the households for different vegetables and fruits in all the selected markets are given in Table 6. Perusal of the table shows that the producers received higher prices for potato (709.45rs/q) in Dehradun market than Haldwani market. Same was observed for cabbage (504.23/q) and tomato (710.39) whereas; the price for apple was higher in Haldwani market than Dehradun market. The average price received by producer for apple in Haldwani market 2417.1rs/q.

Table 6. Average quantity marketed and prices received by each sample grower

Vegetable and fruits	Haldwani		Dehradun	
	Average qnty marketed (Qtl)	Average price received (Rs/qtl)	Average qunty marketed (Qtl)	Average price received (Rs/qtl)
Potato	81.42	686.16	89.28	709.45
Tomato	40.71	644.48	32.00	710.39
Cabbage	31.00	326.00	33.43	504.23
Apple	15.67	2417.1	14.98	2073.62

3.2.2. Marketed surplus sold/handled by different market functionaries

I) Producers

The proportion of surplus sold by producers in Haldwani market in different marketing seasons is depicted in Table 7. In Haldwani market, 50 to 70 per cent of the total marketed surplus of all the vegetables was sold in peak harvest season. During mid season, the proportion of total marketed surplus sold by producers varied between 17 to 27 per cent for all the sample commodities. While only 7 to 12 per cent of total marketed surplus was sold in mild season. Maximum prices for all vegetables were received when the marketed surplus was lowest i.e. in mild season (Table 8).

In Dehradun market also the similar pattern was observed for the volume of surplus sold and the price received by the producers. In mild season only 6 to 12 per cent of the surplus of all sample commodities was marketed by the producers while in mid season 10 to 20 per cent of the surplus was marketed (Table 9). The prices received in mild season were quite higher than those received in peak harvest season and mid season (Table 10).

Table 7. Average quantity sold by each producer in different seasons in Haldwani market (2013-14) (qtls)

Sr. no	Vegetables/fruits	Peak season	Mid season	Mild season	Total
1	Potato	52.40 (64.36)	19.02 (23.36)	10.00 (12.28)	81.42 (100.00)
2	Tomato	26.51 (65.12)	11.05 (27.14)	3.15 (7.74)	40.71 (100.00)
3	Cabbage	20.17 (65.06)	6.82 (22.00)	4.01 (12.94)	31.00 (100.00)
4	Apple	11.24 (71.73)	2.75 (17.56)	1.68 (10.71)	15.67 (100.00)

Note: Figures in parentheses indicate percentages of total volume handled

Table 8. Average price received by each producer in different seasons in Haldwani market (2013-14) (Rs)

Sr. no	Vegetables/fruits	Peak season	Mid season	Mild season	Total
1	Potato	559.29	691.16	808.03	686.16
2	Tomato	474.32	713.96	745.16	644.48
3	Cabbage	266.36	301.35	408.83	326.00
4	Apple	1705.87	2415.69	3130.22	2417.26

Table 9. Average quantity sold by each producer in different seasons in Dehradun market (2013-14) (qtls)

Sr. no	Vegetables/fruits	Peak season	Mid season	Mild season	Total
1	Potato	69.80 (78.18)	13.82 (15.48)	5.66 (6.34)	89.28 (100.00)
2	Tomato	26.14 (81.68)	3.29 (10.29)	2.57 (8.03)	32.00 (100.00)
3	Cabbage	26.83 (80.27)	4.71 (14.10)	1.89 (5.63)	33.43 (100.00)
4	Apple	10.22 (68.23)	2.99 (19.58)	1.77 (12.19)	14.98 (100.00)

Note: Figures in parentheses indicate percentages of total volume handled

Table 10. Average price received by each producer in different seasons in Dehradun market (2013-14) (Rs)

Sr. no	Vegetables/fruits	Peak season	Mid season	Mild season	Total
1	Potato	505.18	736.50	886.67	709.45
2	Tomato	506.11	805.02	820.04	710.39
3	Cabbage	381.44	552.50	578.75	504.23
4	Apple	1617.33	2180.49	2636.78	2144.87

II) Quantity of vegetables handled by commission agent-cum-wholesalers

Commission agent-cum-wholesalers are those who operate in the wholesale markets and act as the representative of either a seller or a buyer. In the study area, they were the most predominant functionaries.

The Table 11 represents the volume of major vegetables handled by commission agent-cum-wholesalers in Haldwani market in different harvest seasons. It is clear from the table that only 8 to 11 per cent of the total volume of all the sample commodities was handled by commission agent-cum-wholesalers in mild season while 58 to 66 per cent was handled in peak harvest season. The prices received by commission agent-cum-wholesalers were highest in mild season and lowest in peak season.

The volume of marketed surplus of major vegetables handled by commission agent-cum-wholesalers in Dehradun market is presented in Table 12. It can be seen from the table that the highest proportion i.e. 68 to 85 per cent of total marketed surplus of all the vegetables in Dehradun market was handled in peak marketing season.

Table 11. Average quantity handled by each sample commission agent-cum-wholesaler in Haldwani market (2013-14) (qtls)

Sr.no	Seasons	Potato	Tomato	Cabbage	Apple
1	Peak	672.00 (59.90)	404.02 (66.35)	179.89 (57.98)	116.27 (64.65)
2	Mid	351.48 (31.33)	139.26 (22.87)	95.40 (30.75)	43.67 (24.28)
3	Mild	98.38 (8.77)	65.64 (10.77)	34.97 (11.27)	19.91 (11.07)
4	Total	1121.86 (100.00)	608.92 (100.00)	310.26 (100.00)	179.85 (100.00)

Note: Figures in parentheses indicate percentages of total volume handled

Table 12. Average quantity handled by each sample commission agent-cum-wholesaler in Dehradun market (2013-14) (qtls)

Sr.no	Seasons	Potato	Tomato	Cabbage	Apple
1	Peak	701.07 (68.23)	436.56 (78.82)	389.18 (85.28)	132.22 (78.36)
2	Mid	248.55 (24.19)	80.37 (14.51)	56.50 (12.38)	28.43 (16.85)
3	Mild	77.89 (7.58)	36.94 (6.67)	10.68 (2.34)	8.08 (4.79)
4	Total	1027.51 (100.00)	553.87 (100.00)	456.36 (100.00)	168.73 (100.00)

Note: Figures in parentheses indicate percentages of total volume handled

III) Volume of fruits and vegetables handled by retailer

The daily volume of vegetables handled by retailer in different seasons in Haldwani market is given in Table 13. It can be observed from the table that 44 to 55 per cent of the total produce sold of all the vegetables was handled by retailer in peak season.

In case of Dehradun market 32 to 35 per cent of total volume was handled in mid season and 12 to 23 per cent in mild season (Table 14).

Table 13. Average quantity handled by each sample retailer in
Haldwani market (2013-14) (qtls)

Seasons	Potato	Tomato	Cabbage	Apple
Peak	303.83 (53.78)	89.96 (43.95)	67.01 (48.48)	47.65 (54.59)
Mid	139.43 (24.68)	70.18 (34.29)	44.86 (32.45)	26.35 (30.19)
Mild	121.69 (21.54)	44.54 (21.76)	26.36 (19.07)	13.29 (15.22)
Total	564.95 (100.00)	204.68 (100.00)	138.23 (100.00)	87.29 (100.00)

Note: Figures in parentheses indicate percentages of total volume handled

Table 14. Average quantity handled by each sample retailer in
Dehradun market (2013-14) (qtls)

Seasons	Potato	Tomato	Cabbage	Apple
Peak	308.09 (47.05)	98.39 (49.56)	80.58 (51.43)	51.13 (62.25)
Mid	195.59 (29.87)	54.45 (27.43)	43.21 (27.58)	21.45 (26.12)
Mild	151.14 (23.08)	45.70 (23.01)	32.88 (20.99)	9.55 (11.63)
Total	654.82 (100.00)	198.54 (100.00)	156.67 (100.00)	82.13 (100.00)

Note: Figures in parentheses indicate percentages of total volume handled

3.2.3. Marketing costs and margins

I) Marketing cost of producer

The Table15reveals the structure and composition of marketing cost per quintal of produce incurred by producer in marketing of vegetables and apple in Haldwani market. The marketing cost incurred by producer in the marketing of vegetables varied from Rs. 95 per quintal for cabbage to Rs.107.67 per quintal for tomato. Among various components of marketing cost, the transportation charges, assembling charges, packaging cost and storage and losses were prominent. In case of cabbage, potato and tomato the transportation cost accounted for nearly 29 to 50 per cent of total marketing cost. The marketing cost was highest for apple (Rs 628.7 per quintal). In case of apple highest component of cost was packaging (60.03 per cent).

Table 15. Marketing cost incurred by producer in Haldwani market (2013-14) (Rs. per qtl)

Sr. no	Particulars	Potato	Tomato	Cabbage	Apple
1	Assembling charges	4.50 (4.44)	10.00 (9.29)	6.00 (6.32)	17.25 (2.74)
2	Cleaning	12.00 (11.83)	10.25 (9.52)	8.00 (8.42)	10.00 (1.59)
3	Grading/sorting	-	15.10 (14.02)	-	12.00 (1.91)
4	Packaging	30.00 (29.57)	14.80 (13.75)	15.20 (16.00)	377.40 (60.03)
5	Transportation	29.76 (29.33)	34.72 (32.25)	48.00 (50.53)	137.85 (21.93)
6	Loading/unloading	2.00 (1.96)	5.00 (4.64)	6.00 (6.31)	15.45 (2.46)
7	Storage and losses	23.26 (22.87)	17.80 (16.53)	11.80 (12.42)	58.75 (9.34)
8	Total	101.46 (100.00)	107.67 (100.00)	95.00 (100.00)	628.70 (100.00)

Note: Figures in parentheses indicate percentages to total cost

The total cost of marketing incurred by producer in Dehradun market is presented in Table 16. The transportation cost formed the major part i.e. 33 to 45 per cent of total cost of marketing in all the vegetables. In case of apple packaging (61.59%) was a major part of marketing cost. Reason behind the high packaging cost of apple is that farmers used wooden packaging material. Other major items of cost were cost of packaging (13% to 36%) and storage and losses (8% to 15%).

Table 16. Marketing cost incurred by producer in Dehradun market (2013-14) (Rs. per qtl)

Sr. no	Particulars	Potato	Tomato	Cabbage	Apple
1	Assembling charges	5.75 (6.33)	12.17 (10.55)	7.86 (7.91)	15.75 (2.54)
2	Cleaning	12.00 (13.21)	11.30 (9.79)	10.64 (10.71)	10.00 (1.61)
3	Grading/sorting	-	17.10 (14.82)	-	13.25 (2.14)
4	Packaging	28.50 (31.37)	14.62 (12.67)	17.25 (17.36)	381.60 (61.59)
5	Transportation	30.00 (33.02)	39.00 (33.79)	45.00 (45.29)	129.74 (20.94)
6	Loading/unloading	3.00 (3.30)	4.00 (3.47)	6.00 (6.05)	14.89 (2.40)
7	Storage and losses	11.60 (12.77)	17.20 (14.91)	12.60 (12.68)	54.37 (8.78)
8	Total	90.85 (100.00)	115.39 (100.00)	99.35 (100.00)	619.60 (100.00)

Note: Figures in parentheses indicate percentages to total cost

II) Marketing cost incurred by commission agent-cum-wholesaler

The Table 17 presents the marketing cost incurred by commission agent-cum-wholesaler in Haldwani market. The table reveals that the marketing cost incurred by commission agent-cum-wholesaler varied from Rs.60.82/q to Rs.83.13/q from potato to cabbage. In case of apple the marketing cost was 274.07/q. The high marketing cost in case of tomato and apple was due to high losses during storage and transit.

In Dehradun market, the total cost of marketing incurred by commission agent-cum-wholesaler was Rs.65.05 per quintal for potato, Rs.70.57 per quintal for cabbage, Rs. 80.02/q for tomato and 244.1 for apple (Table 18). In case of apple major component was storage and losses (62.62%).

Table 17. Marketing cost incurred by commission agent-cum-wholesaler in Haldwani market

Sr. no	Particulars	Potato	Tomato	Cabbage	Apple
1	Packaging	23.00 (37.82)	28.00 (33.68)	31.25 (45.29)	26.50 (9.67)
2	Loading/unloading	4.00 (6.58)	5.00 (6.01)	10.00 (14.49)	10.50 (3.83)
3	Storage and losses	16.67 (27.41)	34.02 (40.92)	19.60 (28.41)	176.65 (64.45)
4	Market fee	17.15 (28.20)	16.11 (19.38)	8.15 (11.81)	60.42 (22.05)
5	Total	60.82 (100.00)	83.13 (100.00)	69.00 (100.00)	274.07 (100.00)

Note: Figures in parentheses indicate percentages to total cost

Table 18. Marketing cost incurred by commission agent-cum-wholesaler in Dehradun market

Sr. no	Particulars	Potato	Tomato	Cabbage	Apple
1	Packaging	22.00 (33.82)	27.20 (33.99)	28.12 (39.85)	27.12 (11.11)
2	Loading/unloading	4.00 (6.15)	5.00 (6.25)	10.00 (14.17)	10.50 (4.30)
3	Storage and losses	21.32 (32.77)	30.06 (37.57)	19.84 (28.11)	152.86 (62.62)
4	Market fee	17.73 (27.26)	17.76 (22.19)	12.61 (17.87)	53.62 (21.97)
5	Total	65.05 (100.00)	80.02 (100.00)	70.57 (100.00)	244.10 (100.00)

Note: Figures in parentheses indicate percentages to total cost.

III) Marketing cost incurred by retailer

The marketing cost incurred by retailer for different vegetables in Haldwani market is shown in Table 19. The table reveals that in all the vegetables the maximum share in total marketing cost was that of storage and losses (48 to 70%) and minimum share was that of charges on account of loading/unloading (2 to 5%).

In Dehradun market, the retailer incurred the maximum cost of Rs.91.95 per quintal in case of potato followed by tomato (Rs.88.46/q) and cabbage (Rs.69.69/q) (Table 20). In case of apple total marketing cost was Rs 302.45/q. In this market also storage and losses was prominent component of marketing cost and contributed about 44 to 65 per cent of the total marketing cost.

Table 19. Marketing cost incurred by retailer in Haldwani market (2013-14) (Rs per qtl)

Sr. no	Particulars	Potato	Tomato	Cabbage	Apple
1	Packaging	12.65 (13.19)	15.20 (16.46)	14.15 (19.81)	121.3 (37.73)
2	Loading/unloading	4.00 (4.17)	5.00 (5.41)	5.00 (7.00)	10.50 (3.26)
3	Storage and losses	65.27 (68.07)	54.32 (58.81)	32.65 (45.71)	158.50 (49.30)
4	Transportation	13.97 (14.57)	17.84 (19.32)	19.63 (27.48)	31.20 (9.70)
5	Total	95.89 (100.00)	92.36 (100.00)	71.43 (100.00)	321.5 (100.00)

Note: Figures in parentheses indicate percentages to total cost

Table 20. Marketing cost incurred by retailer in Dehradun market (2013-14) (Rs. Per qtl)

Sr. no	Particulars	Potato	Tomato	Cabbage	Apple
1	Packaging	12.65 (13.76)	14.36 (16.24)	13.50 (19.37)	115.25 (38.11)
2	Loading/unloading	4.00 (4.35)	5.00 (5.65)	5.00 (7.17)	10.50 (3.47)
3	Storage and losses	59.54 (64.75)	49.25 (55.67)	30.54 (43.83)	145.50 (48.10)
4	Transportation	15.76 (17.14)	19.85 (22.44)	20.65 (29.63)	31.20 (10.32)
5	Total	91.95 (100.00)	88.46 (100.00)	69.69 (100.00)	302.45 (100.00)

3.2.4 Composition of marketing cost

The Table 21 and 22 present the distribution of marketing cost of producers and different intermediaries in Haldwani market and Dehradoon market respectively. The tables highlight that the marketing cost borne by the producers in all the four crops were higher than any other intermediaries.

Table 21. Distribution of marketing cost among producer and intermediaries in Haldwani market (2013-14) (per cent)

Sr. no	Particulars	Potato	Tomato	Cabbage	Apple
1	Marketing cost borne by producer	39.30	38.02	40.35	51.35
2	Marketing cost borne by wholesaler	23.56	29.36	29.31	22.39
3	Marketing cost borne by retailer	37.14	32.62	30.34	26.26
4	Total	100.00 (258.17)	100.00 (283.16)	100.00 (235.43)	100.00 (1224.27)

Table 22. Distribution of marketing cost among producer and intermediaries in Dehradun market (2013-14) (per cent)

Sr. no	Particulars	Potato	Tomato	Cabbage	Apple
1	Marketing cost borne by producer	36.66	40.65	41.46	53.13
2	Marketing cost borne by wholesaler	26.25	28.19	29.45	20.93
3	Marketing cost borne by retailer	37.10	31.16	29.08	25.94
4	Total	100.00 (247.85)	100.00 (283.87)	100.00 (239.61)	100.00 (1166.15)

3.2.5: Distribution of marketing margins

The Table 23 shows the percentage distribution of total margins between intermediaries in Haldwani market. The total margins were found maximum in case of tomato (Rs. 193.03/q) followed by potato (Rs. 170.53/q) and cabbage (Rs. 143.03/q) for vegetables.

In Dehradun market retailer's the total margin was found maximum for apple (Rs. 1860.25/q) and minimum from cabbage (Rs. 162.92/q) in Dehradun market (Table 24).

Table 23. Distribution of marketing margins among intermediaries in Haldwani market (2013-14)

Sr. no	Particulars	Potato	Tomato	Cabbage	Apple
1	Wholesaler's margin	41.17 (24.14)	38.67 (20.03)	19.56 (13.68)	145.04 (7.45)
2	Retailer's margin	129.36 (75.86)	154.36 (79.97)	123.47 (86.32)	1800.95 (92.55)
3	Total (1+2)	170.53 (100.00)	193.03 (100.00)	143.03 (100.00)	1945.99 (100.00)

Note: Figures in parentheses indicate total margin in rupees per quintal

Table 24. Distribution of marketing margins among intermediaries in Dehradun market (2013-14)

Sr. no	Particulars	Potato	Tomato	Cabbage	Apple
1	Wholesaler's margin	42.57 (22.95)	42.63 (21.72)	30.25 (18.57)	128.69 (6.92)
2	Retailer's margin	142.90 (77.05)	153.65 (78.28)	132.67 (81.43)	1731.56 (93.08)
3	Total (1+2)	185.47 (100.00)	196.28 (100.00)	162.92 (100.00)	1860.25 (100.00)

Note: Figures in parentheses indicate total margin in rupees per quintal

3.2.6 Producer's share and price spread

The Table 25 shows the commodity wise producer's share and marketing margins expressed as percentage of consumer's rupee in Haldwani market. The consumer's prices were in the range of Rs. 609/q to Rs. 4958.66/q and it was found highest in case of apple and lowest in case of cabbage. The producer's share ranged from 36 per cent to 57.72 per cent in different vegetables. The producer's got the maximum share of consumer's rupee (more than 50%) in potato and tomato. The price spread in Haldwani market was highest for apple (105%).

As shown in Table 26 in Dehradun market, the consumer's price was highest in case of apple for all the sample commodities (Rs. 4480.42/q) followed by tomato (Rs. 1075.15/q), potato (1051.92/q) and cabbage (Rs. 807.41/q). The producer's share in consumer's rupee was estimated to be more than 50 per cent in all the vegetables while, for apple it was 32.45%.

Table 25. Marketing costs (Rs/qtl) and producer's share in consumer's rupee in Haldwani market

Functionaries	Particulars	Potato	Tomato	Cabbage	Apple
Producer	Price received	686.16	644.48	326.00	2417.10
	Marketing cost	101.46	107.67	95.00	628.70
	Net price	584.70	536.81	231.00	1788.40
Commission agent cum wholesaler	Price paid	686.16	644.48	326.00	2417.10
	Marketing cost	60.82	83.13	69.00	274.07
	Margin	41.17	38.67	19.56	145.04
	Price received	788.15	766.28	414.56	2836.21
Retailer	Price paid	788.15	766.28	414.56	2836.21
	Marketing cost	95.89	92.36	71.43	321.5
	Margin	129.36	154.36	123.47	1800.95
	Price received	1013.40	1013.00	609.46	4958.66
Consumer	Price paid	1013.40	1013.00	609.46	4958.66
Producer's share (%)		57.70	52.99	37.90	36.07
Price spread (%)		47.69	57.18	86.95	105.15

Table 26. Marketing costs (Rs/qtl) and producer's share in consumer's rupee in Dehradun market

Functionaries	Particulars	Potato	Tomato	Cabbage	Apple
Producer	Price received	709.45	710.39	504.23	2073.62
	Marketing cost	90.85	115.39	99.35	619.60
	Net price	618.60	595.00	404.88	1454.02
Commission agent cum wholesaler	Price paid	709.45	710.39	504.23	2073.62
	Marketing cost	65.05	80.02	70.57	244.10
	Margin	42.57	42.63	30.25	128.69
	Price received	817.07	833.04	605.05	2446.41
Retailer	Price paid	817.07	833.04	605.05	2446.41
	Marketing cost	91.95	88.46	69.69	302.45
	Margin	142.90	153.65	132.67	1731.56
	Price received	1051.92	1075.15	807.41	4480.42
Consumer	Price paid	1051.92	1075.15	807.41	4480.42
Producer's share (%)		58.81	55.35	50.15	32.45
Price spread (%)		48.27	51.35	60.13	116.07

3.2.7 Marketing efficiency

The Table 27 shows the efficiency indices of different vegetables and fruits in sample markets. For the marketing of potato Dehradun market emerged out to be the more efficient as compared to Haldwani market, as marketing efficiency index was high (2.43). In the marketing of cabbage and tomato, the efficiency was higher in Dehradun market with indices 2.01 and 2.24. For apple Haldwani market was more efficient than Dehradun market. The analysis clearly reveals that the marketing efficiency decreased with increase in the marketing costs and margins of intermediaries and the prices of vegetables also influenced the value of indices of marketing efficiency.

Table 27. Marketing efficiency of different selected commodities

in selected markets

Sr. no.	Market	Potato	Tomato	Cabbage	Apple
1	Haldwani	2.36	2.13	1.61	1.56
2	Dehradun	2.43	2.24	2.01	1.48

4. Conclusion

Haldwani was larger market than Dehradun, but the number of markets functionarieswas higher in Dehradun (1623) market than Haldwani market (1248). Both the markets were of permanent nature so functionaries in these markets dealt with the marketing of all kinds of fruits and vegetables round the year.The average price received by the farmers were higher in Dehradun market than Haldwani market except for apples and ranged from686.16 to 709.45rs/quintal, 644.48 to 710.39rs/quintal, 326 to 504.23/quintal and 2073.62 to 2417.1rs/quintal for potato, tomato, cabbage and apple respectively in the selected markets.

The proportion of marketing costs incurred by producers ranged between 38 to 58 per cent of the total marketing costs of different commodities in selected markets.The marketing margins were highest in case of apple. Retailer's margin was more than 3 times of wholesaler's margin in case of all selected commodities.The producer's share in consumer's rupee varied between 32 to 59 per cent in case of selected commodities in selected markets. It was found to be highest in case of potato (about 58.81%) in Dehradun market. On the other hand the producer's share in consumer's rupee in case of apple was lowest in Dehradun market. The price spread in case of apple was very high (105 to 116%), while it was lowest in case of potato. In selected vegetables highest price spread was of cabbage (60 to 87%). [15], [16], [17].

On the basis of marketing efficiency index Dehradun emerged as more efficient market for the marketing of potato, tomato and cabbage. The efficiency index for apple was higher in Haldwani market as compared to Dehradun market.

There were wide variations in the share of producer in consumer's rupee (38 to 59%) in selected markets for selected commodities. Therefore, there is a need to regularize the activities of marketing middlemen, so that the producer's share in consumer's rupee can be increased [18]. Price spread in case of apple was very high (105 to 116%). Therefore there is need to regulate the marketing margins of retailer, so that price spread can be decreased [19], [20].

5. References

1. V.M. Kadrolkar. Role of Agricultural Produce Marketing Committee (APMC). Tumkur University Karnataka. 2010.
2. H. A. Ramakrishna. Problems and Prospects of Agricultural Produce Marketing Committees (APMC) In India: A Case Study of APMC Bellary, Karnataka.*South Asian Journal of Marketing &Management Research.* 2013;3(1), 17-42.
3. Y. Thippeswamy, V.Sharada. Performance of Regulated Markets in Karnataka: A case study of Chitradurga district. *International Journal of Humanities and Social Science Invention.* 2014; 3(9), 12-15.
4. A. Kotnala, Economics of production and marketing of major vegetables in Nainital district of Uttarakhand. Thesis. G.B.P.U.A.T. Pantnagar. 2010
5. Economic Survey 2013-14: Full text - The Hindu. http://www.thehindu.com/News/Resources. Date accessed: 22/07/2014.
6. Neha Tomar. Apmc Act in India: Rising Food Inflation A Decade Story. *International Journal of Social Science & Interdisciplinary Research.* 2013;2 (7), 38-49.
7. Vasant P. Gandhi, N. V. Namboodiri.Fruit and Vegetable Marketing and its Efficiency in India: A Study of Wholesale Markets in the Ahmedabad Area. Abstract. IIM Ahmedabad. 2002.
8. Uttarakhand Agriculture Produce Marketing Board.www.ukmandi.in. Date accessed: 10/09/2013.
9. Market Profile of Uttarakhand. www.agmarknet.nic.inDate accessed: 12/11/2013
10. Regulated markets in Uttarakhand.http://www.agropedia.iitk.ac.in/ Blogs*.* Date accessed: 20/12/ 2013
11. K. Chand, M. B. Dastagiri, B. L. Gajja, B. L. Jangid. Price spread, marketing efficiency and constraints of carrot marketing in Rajasthan. *Indian Journal of Agricultural Marketing.* 2010; 24(3): 131-142.
12. M. B. Dastagiri, G.B Kumar. Estimation of marketing efficiency of horticultural commodities under different supply chains in india. ICAR, NCAP. 2010.
13. M. Yohanes. Performance and challenges of vegetable market: The case of Kombolcha district, East Hararghe zone, Oromia National Regional State, Ethiopia M.Sc. Thesis. Haramaya University. 2015.

14. S.S.Acharya, N. L. Agarwal.Agricultural Marketing in India. Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi. 2004;380 p.

15. Wisdom Madede Nzima, Joseph Dzanja and Bonnet Kamwana. Structure, conduct and performance of groundnuts markets in northern and central Malawi: case studies of Mzimba and Kasungu districts. *International Journal of Business and Social Science.* 2014; 5(6), 130-139.

16. M.R.K. Murthy, G.P. Reddy, K.H. Rao. Retail marketing of fruits & vegetables in India: A case study on export of grapes from Andhra Pradesh, India. *European Journal of Logistics Purchasing and Supply Chain Management.* 2014; 2(1), 62-70.

17. R. Kumar.An economic analysis of production and marketing of onion in Haryana, Haryana Agricultural University, Hisar. Abstract. *Indian Journal of Economics and Development*. 2016; 12(1), 201-201.

18. Bhavani Devi, M. Srikala, T. Ananda. Price volatility in major chilli markets of India. *Indian Journal of Economics and Development,* 2015; 3(3), 194-198.

19. Jairath.Some aspects of operational efficiency in fruits and vegetable markets in arid india. *The Bihar Journalof Agricultural Marketing.* 1997;5(4), 391-406.

20. K. A. Khunt, S. B. Vekariya, Gajipara. Performance and regulated markets in Gujrat. *IndianJournal of Agricultural Marketing.* 2008; 22(1), 82-98.