

Research Article

A Comparative Analysis of Managerial Approach in Small and Large Apple Orchards of Himachal Pradesh and Jammu & Kashmir States of India – an Economic Perspective

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Abstract

The study was conducted to analyze the managerial approach of apple orchardists in Kullu district of Himachal Pradesh and Baramulla district of Jammu & Kashmir, selected purposively on the basis of having maximum area and production under apple crop and also being famous for producing world class apples. A sample of 80 growers from each district was selected randomly from each state. The respondents were selected by using multistage sampling technique. The respondents having less than 225 bearing plants were classified as small orchardists, whereas, those having 225 and more plants were designated as large orchardists. The study revealed that out of total geographical area of Kullu district, 72.25 per cent comprise of net sown area as against 61.11 per cent in Baramulla. It was observed that the marginal and small farmers of Baramulla districts jointly accounted for 92.62 per cent of total holdings while as those of Kullu district jointly accounted for 92.12 per cent of total holdings. The study also showed that the maximum number of small and large orchardists were in the MSI range of 200-150, in both the states.

Nearly 20.93 and 18.64 per cent per cent of small orchardists and 24.32 and 28.57 per cent of large orchardists in Himachal Pradesh and Jammu & Kashmir respectively, were found to have higher managerial index. The average value of MSI was significantly different; in the range of 250-200 and 100-50 between the two states, depicting that nearly 35 percent of orchardists in Jammu & Kashmir showed significantly different managerial ability over the Himachal Pradesh farmers.

Keywords: Practice of management, Small and Large orchards, Apple

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Introduction

Fruit production in India, which is the second largest in the world (9 per cent), has been growing at a significant growth rate of 3.74 per cent per annum from 28.63 million tonnes in 1991-92 to 63.50 million tonnes in 2007-08. India produces all deciduous fruits including pome fruits (apple and pear) and stone fruits (peach, plum, apricot and cherry) in considerable quantity. Himachal Pradesh (HP) and Jammu and Kashmir (J&K) are the most important states together accounting for 81 per cent of the total area and 92.63 per cent of the production in the country. The area under fruits has increased significantly from 32,135 hectares to 9,18,44 hectares during 1973-74 to 2008-09 in HP and from 45,900 hectare to 1,11,814 hectares during the same period in J&K. The apple alone accounts for more than 46.50 percent of area and 73.77 percent of production of all fruits in the state of HP. In J&K apple occupied 44.10 percent of area and 90 percent of production of total fruits in the state, during 2007-08. Modern management approach has to constantly modify, adapt and orient its principles, practices and techniques to keep pace with the fast changing environment in the context of newly emerging technologies and application for the development of all sectors including agriculture. The present study is an attempt to measure the managerial ability of the orchardists in the study areas through a special index termed as managerial skill index. In view of this, a comparative study was undertaken with special reference to practices of management of apple orchards in HP and J&K.

Sampling Procedure

This study involves multistage random sampling technique for the selection of households in each selected district of Himachal Pradesh and Jammu & Kashmir States of India. A random sample of 80 growers from each district was drawn from each state. The orchardists having less than 225 bearing plants were classified as small; whereas those having 225 and more plants were designated as large, for the present study.

Multiple regression analysis

Category-wise multiple regression analysis was carried out to know the factors influencing the apple production and for evaluating the economic efficiency of resources.

Managerial skill index

Managerial skill index was used to measure the management capability of different orchardists. The formula to calculate the managerial skill index (MSI) (Timothy, O and Krishnamurthy S, 1990) is given as under:

$$MSI = \frac{M_i}{\bar{M}} \times 100$$

Where;

$$M_i = \frac{1M_1 + 2M_2 + 3M_3}{6}$$

- M_1 = Number of years of schooling
- M_2 = Years of experience in farming
- M_3 = Farm training undergone, if any

With,

- M_1 = 0 If illiterate
- 1 If upto school/literate
- 3 If college/college drop out
- M_2 = 0 If no experience of farming
- 1 If there is 1 to 10 years of experience in farming.
- 3 If there is more than 10 years of experience in farming.
- M_3 = 0 If no farm training undergone.
- 1 If once trained
- 3 If trained more than once.

Managerial skill index of each orchardist was estimated and grouped.

Results and Discussion

General background of study area

The states of Himachal Pradesh and Jammu and Kashmir are well known as apple states of India and offer ideal conditions for horticulture based economy because of their diversity in topography, altitude and agro-climate. There are 22 districts in Jammu & Kashmir, district Baramulla being one of the important producers of horticulture products and produces world class apples. In Himachal Pradesh, there are twelve districts and Kullu district is one of the major apple growing districts in the state. The information on the status of people and horticulture in the study districts is given as below.

Location and boundaries

Baramulla district of Jammu & Kashmir is located at 34° 12' to 34 2° north latitude and longitude 74° 20' E to 74.34° E. The district is bounded by Kupwara in the north and west, Budgam and Poonch districts in the south, Srinagar in

the east, Bandipora district in north-east. It has an average elevation of 1593 meters above mean sea level. Kullu district became a district of Himachal Pradesh on 1st November 1966, on reorganization of the states. Kullu district lies between latitude 31° 20' 25" to 32° 25' North latitude and longitude 76° 56' 30" to 77° 52' 20" east. The district is bounded on the north and east by Lahul & Spiti district, south east by Kinnaur district, on south by Shimla district, on the south-west and west by Mandi district and on the north-west by Kangra district. Beas and Satluj rivers are the main rivers of the district. The district has an average elevation of 1219 meters above main sea level.

Soil, Climate and Rainfall

Baramulla district has cold climate in winters and pleasant weather in summers. Each part of the district experiences snow fall during winters. The average rainfall in the district is about 1270 mm. This district is full of natural endowments, scenic splendour, snow-clad mountains, which attract the tourist adventurers, and trekkers from India and abroad. Minimum rainfall occurs in cold arid zone (556 mm) and maximum in temperate zone (1710 mm). The Kullu district forms the transitional zone between lesser and greater Himalayas and forms a typical rugged mountainous terrain with moderate to high altitude, which varies from 1200 meters to over 6000 meters. The climate of the district is cold and dry, markedly cold in winters. Its maximum and minimum temperatures range from 38.8°C in summers and 5.2°C in winters. The average rainfall is 80 cms. Snow fall occurs in December and January months mostly.

Area and Population

The district Baramulla is the largest district in the entire Kashmir valley both with reference to population and area. The district is spread over an area of 4588 sq. km. which accounts for 5.96 per cent of total geographical area of the state. As per 2001 census, the population of the district was 11.69 lakhs constituting 11.60 per cent of the state population. The district is very densely populated with a density of 254 persons per sq. km. About 83 per cent of total population lives in 660 villages. The average family size in Baramulla district is 7.24 persons which is much higher as compared to Kullu district. The proportion of literate persons in Baramulla district is 45.41 per cent, the rural literacy being 42.28 per cent. Of the total workers, cultivators comprise of 34.00 per cent; agricultural labourers 3.40 per cent; household workers 16.60 per cent and other workers comprise of 46 per cent. The average size of land holding in Baramulla works out to 0.72 hectares. The number of holdings in Baramulla district is more than two and half times to that of its counterpart district Kullu. The total area of the district Kullu is 5503 sq. km accounting for 9.88 per cent of the total area of the state (**Table 1**). The population of the district, according to 2001 census was 3.81 lakh, constituting 6.28 per cent of the total state population. Density of population of the district is 69 persons per sq. Km. as against 109 per sq. km. of the state. About 92 per cent of the total population in the district resides in 172 villages, and mainly depends on agriculture for their livelihood.

The average family size in Kullu district was 4.96, whereas in Himachal state it was 4.98 persons. The proportion of the literate persons in the district was 73.06 per cent of the total population. Rural literacy stood at 72.02 per cent. The percentage of cultivators to total workers in the district was 76.04 per cent. This indicates that in working population, there was predominance of cultivators. Land holding size stood at 0.78 hectares. The number of persons engaged in agriculture was more in Kullu district than Baramulla district.

Land use Pattern

The land use pattern in Kullu and Baramulla is presented in **Table 2**.

Out of total geographical area of Kullu district, 72.25 percent comprised of net sown area as against 61.11 per cent in Baramulla. Area under forests was reported nil in Kullu while in Baramulla; forests constitute 0.69 per cent of geographical area. The area not available for cultivation was 14.37 per cent in Kullu as against 16.67 per cent in Baramulla. The Baramulla district was having more than 8 times the uncultivable land as compared to Kullu district. The gross cropped area in Kullu and Baramulla was 60556 and 89550 hectares, giving a cropping intensity of 164.27 and 102.16 per cent, respectively. The percentage irrigated area to net sown area was more at 44.34 per cent in Baramulla district as compared to 8.20 per cent in Kullu district.

Table 1 Demographic features (area & population) of study area

Particulars	Kullu	Baramulla
1. Area in sq.km.	5503	4585
2. Human population.	3,81,571	1169780
3. Density of population (Per sq.km.)	69	254
4. Average family size	4.96	7.24
5. Villages (No)	172	660
6. Rural population (%)	90.35	83.22
7. Literates to total population (%)	73.06	45.41
8. Rural literacy	72.02	42.28
9. Total workers population	216513	371521
10. Total main workers	1,66,715	270992
a. Cultivators (%)	76.04	34.00
b. Agri. labourers (%)	2.58	3.40
c. Household workers (%)	1.26	16.60
d. Other workers (%)	20.11	46.00
e. Marginal Workers	49798	100529
f. Non – workers	165058	798259
11. Main workers to total population (%)	43.69	23.17

Source: Directorate of Land Records, HP Government and J & K Government.

Table 2 Land use statistics in Kullu and Baramulla districts (2009-10)

S. No.	Particulars	Area in 000' Hectares		
		Kullu	Baramulla	
1.	Total area according to village papers	50.10 (100.00)	144.00 (100.00)	
2.	Area under forests	Nil	1.00 (0.69)	
3.	Area not available for cultivation	Land put to non- agricultural uses	6.10 (12.17)	8.00 (5.55)
		Barren and Un- cultivable land	1.10 (2.20)	16.00 (11.11)
		Total	7.20 (14.37)	24.00 (16.67)
4.	Other un - cultivable land, excluding fallows	Permanent pastures and other grazing lands	Nil	13.00 (9.03)
		Land under miscellaneous tree crops not included in area sown	0.40 (0.80)	6.00 (4.17)
		Cultivable waste lands	2.90 (5.79)	7.00 (4.86)
		Total	3.30 (6.59)	26.00 (18.05)
5.	Fallow land	Fallow Land other than current fallows	Nil	1.00 (0.69)
		Current fallows	3.40 (6.78)	4.00 (2.78)
		Total	3.40 (6.78)	5.00 (3.47)
6.	Net area sown	36.20 (72.25)	88.00 (61.11)	
7.	Irrigated area (% of NSA)	8.20	44.34	

Note: Figures in parentheses denote percentages to total

Distribution of land holdings

Land is one of the most important factors for measuring the size of farm business. It is evident from **Table 3** that the distribution of operational holdings and operated area depict inequitable distribution of land and consequent concentration of economic power in the few hands in both the districts.

It may be observed that the marginal and small farmers of Baramulla districts jointly accounted for 92.62 per cent of total holdings. They, however, operated only about 69.99 per cent of the total area, while medium farmers group accounted for only 7.28 per cent rural farms and cultivated 28.56 per cent of total operated area in the district. The

largest size group of 10 hectares and above, which accounted only 0.06 per cent of total holdings, occupied 1.45 per cent of total area. This only shows that there are inequalities in the land distribution and bulk of farm holdings are marginal and small. All the same, lop sided distribution of land holdings is a symptom of serious supply-demand imbalances in our farm sector and influences the distribution of income, saving and assets. Unfortunately, with the passage of time, mainly because of the break-up of the traditional joint family system and the resulting sub – division of holdings, the number of small and marginal farmers is on the increase. The pattern of distribution of land holding was almost similar in Baramulla district as in Himachal Pradesh. It may also be observed that the marginal and small farmers of Kullu districts jointly accounted for 92.12 per cent of total holdings. They, however, operated only about 67.86 per cent of the total area, while medium farmers group accounted for only 7.85 per cent rural farms and cultivated 31.69 per cent of total operated area in the district. The largest size group of 10 hectares and above, which accounted only 0.3 per cent of total holdings, occupied 0.45 per cent of total area. The pattern of distribution of land holding was almost similar in Baramulla district as in Kullu district. The only difference was the total number of holdings and operational area was more than three times higher in Baramulla district of Jammu and Kashmir compared to Kullu district of Himachal Pradesh.

Table 3 Distribution of operational holdings according to size

Holding size (Hectares)	Baramulla district		Kullu district	
	No. of holdings	No. of holdings	No. of holdings	Area in hectares
< 1.00	144076 (78.47)	43296 (75.88)	43296 (75.88)	59956 (45.16)
1.00 – 2.00	25986 (14.15)	9268 (16.24)	9268 (16.24)	32958 (24.83)
2.00 -4.00	9986 (5.40)	3822 (6.70)	3822 (6.70)	27954 (21.06)
4.00 – 10.00	3456 (1.88)	658 (1.15)	658 (1.15)	9956 (7.50)
>10	108 (0.06)	17 (0.03)	17 (0.03)	1932 (1.45)
Total	183612 (100.00)	57061 (100.00)	57061 (100.00)	132756 (100.00)

Note: Figures in parentheses indicate percentage to total number / area
 Source: Report on Agricultural Census (1995-96), Directorate of Land records, Shimla and Srinagar (1999-00)

Maintenance Cost, yield & returns from apple orchards of Jammu and Kashmir

Table 4 reveals the condition of Kashmir Farms. The average production was found to vary from 38.09 quintals in initial stage to 108.09 kg during 17-21 years and finally decreased to 106.11 quintals in 22-40 year age group. Average cost per kg ranged between Rs. 4.07 and Rs. 9.35. The output-input ratio as previously revealed is an index of profitability. The index of profitability varied between 1.78 and 4.10 in various groups.

Maintenance cost, yield and returns from apple orchards are depicted in Table 4. **Table 5** reveals the situation of Himachal farms. The average production was found in the range of 36.90 quintals in initial stage that increased to 103.74 quintals during 17-21 years and finally decreased to 100.75 quintals in 22- 40 year age group. Average cost per kg ranged between Rs. 4.36 and Rs.9.85. The output- input ratio, an index of profitability, varied between 1.70 and 3.89 in various age groups. It was highest in 17-21 years group, followed by 32-40 year group and 14-16 years age group.

Management skill index of small farms category of HP vis-à-vis J&K

For small orchardist category, the detailed distribution of orchardists and average value of managerial skill index (MSI) is shown in **Table 6**. It was observed from the table that maximum number of small orchardists was in the MSI range of 200-150 followed by MSI range of 150-100 in both the states. Nearly 20.93 per cent of total small orchardists in HP and 18.64 per cent in J&K were found to have higher managerial index. In J&K more than 15 per cent small growers each, were in the MSI range of 150-100 and less than 50 respectively. In contrast to this in HP nearly 14 per cent orchardists fell in the MSI range of 100 –50 and about 9 percent in the MSI range of less than 50. With regard to average for the category, MSI was higher (161.24) in HP, as compared to (147.54) for J&K. It was further observed that average value of MSI for small category orchards was significantly different in MSI range of 250 -200 and 150- 100 between the two states.

Table 4 Maintenance cost, yield & returns from apple orchards during bearing stage in Jammu and Kashmir Farms Rs/100 trees

Items	Age of plantation in years				
	09-11	12-13	14-16	17-21	22-40
Overall farms					
Total cost. (Rs.)	35654.65	37977.08	40478.87	43984.47	43189.77
Average production (qt).	38.09	59.03	86.16	108.09	106.11
Gross return. (Rs.)	63676.80	99542.01	144021.83	172724.20	177313.83
Net return (Rs.)	28022.14	61564.93	103542.95	136619.65	133824.05
Average cost per kg.	9.35	6.37	4.69	4.07	4.09
Output/input ratio.	1.78	2.68	3.62	4.10	4.07

Table 5 Maintenance cost, yield and returns from apple orchards (bearing stage) in HP farms (Rs/100 trees)

Items	Age of plantation in years				
	09-11	12-13	14-16	17-21	22-40
Total cost. (Rs.)	36386.49	39032.22	41456.06	44794.87	44242.52
Average production (qt).	36.90	56.91	82.65	103.74	100.75
Gross return. (Rs.)	62018.63	95649.05	138902.66	174356.61	170108.22
Net return (Rs.)	25632.13	56675.05	97437.61	129562.01	125865.72
Average cost per kg.	9.85	6.84	5.01	4.31	4.36
Output/input ratio.	1.70	2.45	3.34	3.89	3.84

Table 6 Farmers' distribution and average value of Management Skill Index (MSI) on small farm category in Himachal Pradesh vis-à-vis Jammu & Kashmir

Range of MSI	Himachal Pradesh			Jammu & Kashmir		
	No. of orchardist	Avg. value of MSI	Std. dev.	No. of orchardist	Avg. value of MSI	Std. dev.
300-250	5 (11.63)	280.02	18.25	5 (8.47)	273.33 ^{NS}	14.90
250-200	4 (9.30)	189.17	9.61	6 (10.17)	238.89 ^{***}	8.60
200-150	14 (32.56)	175.02	14.24	16 (27.12)	175 ^{NS}	14.90
150-100	10 (23.25)	141.67	14.16	14 (23.73)	134.16 ^{***}	12.60
100-50	6 (13.95)	88.89	13.60	9 (15.25)	96.40 ^{NS}	7.12
< 50	4 (9.31)	41.66	16.66	9 (15.25)	38.90 ^{NS}	14.43
Total	43 (100.00)	161.24	68.89	59 (100.00)	147.54 ^{NS}	69.73

NS – Non significant

*** Significant at 1 % level of significance

Figures in parentheses indicate percentage to the total number

Management skill index of large farm category of HP vis-a-vis J and K

In case of large orchards, the detailed distribution of orchardists and average value of managerial skill index (MSI) is placed in **Table 7**. Table depicts that maximum number of large orchardists were falling in the MSI range of 200-150 followed by MSI range of 150-100 in both the states. MSI of 24.32 per cent of large orchardists in Himachal Pradesh and 28.57 per cent in Jammu & Kashmir were found to have higher managerial index. In Himachal Pradesh 27.02 per cent large growers were falling in the MSI range of 150-100 and only 8.10 per cent in MSI range of 100-50. In contrast to this, in Jammu & Kashmir about 23 per cent orchardists fell in the MSI range of 150-100 and about 14 percent in the MSI range of 100-50. None of the orchardists were falling in the MSI range of less than 50. With regard to average for the category, MSI of about (181) was same in both farm categories of Himachal Pradesh and Jammu & Kashmir. It is concluded that, among large orchardist category on the sample farms of both the states, there do not exist any significant difference in the managerial capabilities of apple growers falling in various ranges of MSI and on the average.

Table 7 Farmers' distribution and average value of Management Skill Index (MSI) on large farm category in Himachal Pradesh *vis-a-vis* Jammu & Kashmir

Range of MSI	Himachal Pradesh			Jammu & Kashmir		
	Number of Farmer	Average Value of MSI	Stand dev.	Number of orchardist	Average Value of MSI	Stand dev.
300-250	5 (13.51)	273.33	14.90	3 (14.29)	288.89 ^{NS}	19.24
250-200	4 (10.81)	237.50	8.33	3(14.29)	238.88 ^{NS}	9.62
200-150	15 (40.54)	178.92	16.02	7 (33.33)	176.19 ^{NS}	16.26
150-100	10 (27.03)	145.01	11.24	75 (23.80)	143.33 ^{NS}	9.12
100-50	3 (8.11)	83.50	16.66	3 (14.29)	88.89 ^{NS}	9.61
< than 50	-	-	-	-	-	-
Total	37 (100.00)	181.11	53.58	21 (100.00)	181.10 ^{NS}	53.57

NS – Non- significant
Figures in parentheses indicate percentages to the total number

Management skill index of overall farms of HP vis-a-vis. overall farms of J&K

Table 8 reveals detailed distribution of orchards and average value of managerial skill index (MSI) at overall level. It was observed that maximum number of orchardists was in the MSI range of 200-150 in both the states followed by number of farmers in MSI range of 150-100. About 21.25 per cent of orchardists in Jammu & Kashmir were found to have higher managerial index. In Himachal Pradesh 11.25 per cent large average growers were falling in the MSI range of 150-100 and only 5 per cent in MSI range of 50. In case of Jammu & Kashmir about 15 per cent orchardists fell in the MSI range of 150-100 and about 11.25 percent average growers were in the MSI of 50. At overall level in Himachal Pradesh, average value of MSI was 170.42, while in Jammu & Kashmir it was 160.02. It was further observed that average value of MSI was significantly different in MSI range of 250- 200 and 100-50 between the two states, indicating that nearly 35 per cent of orchardists in Jammu & Kashmir shows significantly different managerial ability over the Himachal farmers.

Table 8 Farmers' distribution and average value of Management Skill index (MSI) on overall farm category in Himachal Pradesh *vis-a-vis* Jammu & Kashmir

Range of MSI	Himachal Pradesh			Jammu & Kashmir		
	Number of orchardist	Average Value of MSI	Standard Deviation	Number of orchardist	Average Value of MSI	Stand dev.
300-250	10 (12.50)	276.91	16.70	8 (10.00)	277.41 ^{NS}	16.03
250-200	8 (10.00)	211.52	9.01	9 (11.25)	238.88 ^{***}	8.86
200-150	29 (36.25)	176.81	15.06	23 (28.25)	175.31 ^{NS}	15.25
150-100	20 (25.00)	143.21	12.80	19 (23.75)	135.66 [*]	11.36
100-50	9 (11.25)	86.39	15.01	12 (15.00)	94.42 ^{NS}	7.77
< than 50	4 (5.00)	41.66	16.66	9 (11.25)	38.90	14.43
Total	80 (100.00)	170.42	62.69	80 (100.00)	160.02 ^{NS}	64.46

*** Significant at 1 % level of significance; * Significant at 10 % level of significance
NS - Non-Significant; Figures in parentheses indicate percentages to the total number.

Summary and conclusion

Maintenance cost of bearing apple per hundred plants at overall level, in Himachal Pradesh ranged between Rs.36386.49 to Rs. 44794.87. Average production varied between 36.90 qt. and 103.74 qt. per 100 plants. Net return varied between Rs.25632 and Rs. 129562. Maintenance cost of bearing apple of Jammu and Kashmir varied from Rs.36554.65 to Rs.43984.17 in different age groups. Average production varied from 38.09 qt. and 108.09 qt. per 100 plants. Net returns varied from Rs. 28022 to Rs.136619 in different years. Inadequate market information and prevalence of malpractices in the market were some of the important marketing problems faced by the growers of the

study areas. Management is a continuous process through observing and conceiving ideas. At overall level, in Himachal Pradesh the average value of MSI was 170.42 while in Jammu & Kashmir it was 160.02. It was further observed that average value of MSI was significantly different in MSI range of 250- 200 and 100-50 between the two states, indicating that nearly 35 per cent of orchardists in Jammu & Kashmir shows significantly different managerial ability over their Himachal counterparts.

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