



OPPORTUNITIES AND CHALLENGES IN MARKETING OF HORTICULTURE PRODUCE IN HIMACHAL PRADESH

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Abstract: Apple being one of the largest produced horticulture crop in Himachal Pradesh attracts the research in its supply chain model used by the different growers. Horticulture drives the agricultural growth and provides high input-output ratio. There is a lacuna of having a proper marketing channel and inadequate grower's knowledge, which provides hindrance to the growth of this sector. The present research paper highlights the effective value chain analysis of Horticulture produce which will help in the integration of supply chain management for efficient and effective development. The study analyses the value addition distribution among the value chain actors including growers, traders and retailers. This study provides a regional as well as systematic analysis of the present value chain in the state in terms of price and journey of the material from production, trading, marketing and ultimately to the end consumer. The state is lacking behind in better marketing opportunities, inadequacy of processing centers and various underlying measures and techniques which have a serious impact on the value of the produce. Development of proper infrastructure such as connectivity through roads, spreading of adequate horticultural awareness at regular intervals is very critical for better productivity and production of horticulture crop in the region. Overall, value chain analysis will provide the knowledge about the problems related to the development of horticulture sector in the region. The present paper provides the futuristic vision for enhancing value chain efficiency of the horticulture products and gave reliable and scalable measures.

Index Terms - Constraints, Growers, Infrastructure, Horticulture Marketing, Supply Chain Management, Value Chain.

1. Introduction

The process or activities by which value can be added to any object/Product to get the best quality of the product at any phase of supply-chain that includes from procurement of raw material to the finished product is value chain process. Value chain helps in increasing the efficiency in a way that it helps acquiring more value at optimal possible cost. Michael porter in his book competitive advantage (1985) explains, how value chain helps in creating the best value for the consumer. Porters value chain model is the strategic management tool which enhances businesses. Elvira A. Zamora in her research work "Value Chain Analysis: A Brief Review" examined the interaction among different player's in an industry through value chain analysis. Value chain analysis provided the applications beyond the study of individual firms concerns. Stakeholders in the supply chain are assumed to provide value to the product-service to the consumer end, (Hellin and Meijer, 2006). Value chain provides disaggregation of business into major activities, allows to have a competitive advantage (Brown, 1997). Value chain provides the examination and evaluation of entire industry including industry clusters. Dr. Md. Mahbub Alam (2020) assessed in his work on "Value Chain Analysis of High Value Crop: Farm to Market", the supply chain of chilli and recognized the opportunities and constraints related to in the value chain of chilli. The estimated benefit cost ratio for chilli framing and value addition by the stakeholders along the value chain were analyzed. Food and Agriculture Organization defines value chain as "A value chain is the full range of activities, required to bring a product/service from origin, through the varying phases of production (involving a combination of physical transformation and the input of various producer services), delivery to end consumer." Apple being one of the largest produced horticulture crop in Himachal Pradesh attracts the research in its supply chain model used by the different Growers. This paper recognizes the supply chain of Apple, evaluates the prevailing practices and operational modes and finds the constraints and opportunities. The study provides the Financial benefit cost ratio for apple growers and analyses the value addition distribution among the value chain actors, including growers, traders and retailers.

PRIMARY ACTIVITIES	SUPPORT ACTIVITIES	VALUE ADDED PRICE
Inbound logistics from input suppliers	Procurement and technology development	The difference between the value and cost performing the value activities.
Outbound logistics	Human resource management	
Marketing and sales	Infrastructure	

Table 1.1, Framework for the value chain activities

2. Literature Review:

1. GL Kaul (1996) has suggested that cropping pattern should be diverse for better growth of horticulture sector. Horticulture drives the agricultural growth and provides high input to output ratio. There is a limitation of having a proper marketing channel and inadequate grower's knowledge, which provides hindrance to the growth of the sector.
2. Kirve et al. (2002) investigated that major constraint in efficient marketing in the fresh vegetable scenario in western part of Maharashtra by analyzing the high commission charges and number of intermediaries involved.
3. Collins (2003) studied Australian horticulture sector, the effective value chain helped in developing trust among consumers and also in the integration of chain management for efficient and effective development of the sector.
4. Lal and Sharma (2004) gave a major encumbrance in the economics of cultivation of horticulture crops in Himachal Pradesh is the absence of an efficient marketing channel as infrastructural connectivity is low and it also has almost monopoly in mandis. Also growers are getting only one fourth of end consumers money.
5. Singh et al. (2009) studied horticultural supply chain challenges by estimating the marketing costs and margins. Research was focused primarily on marketing barriers like commission agents, large number of intermediaries,
6. Kumar et al. (2012) [9] shines the light on commercial crops input cost in Himachal Pradesh. Share of the farmers is very low i.e. 20% of the total price. It highlights the two factors, firstly the input cost of the commercial crop was high, due to lack of proper knowledge to the growers and labor cost is also high. Secondly the poor marketing channel and presence of commission agents in between the supply chain.
7. Lakshman Chandra De (2017) highlights the potential of the sector in north east. The region has potential for vertical as well as horizontal growth. The area under horticulture is less and hence the productivity is not according to the potential.

3. Objectives of the study:

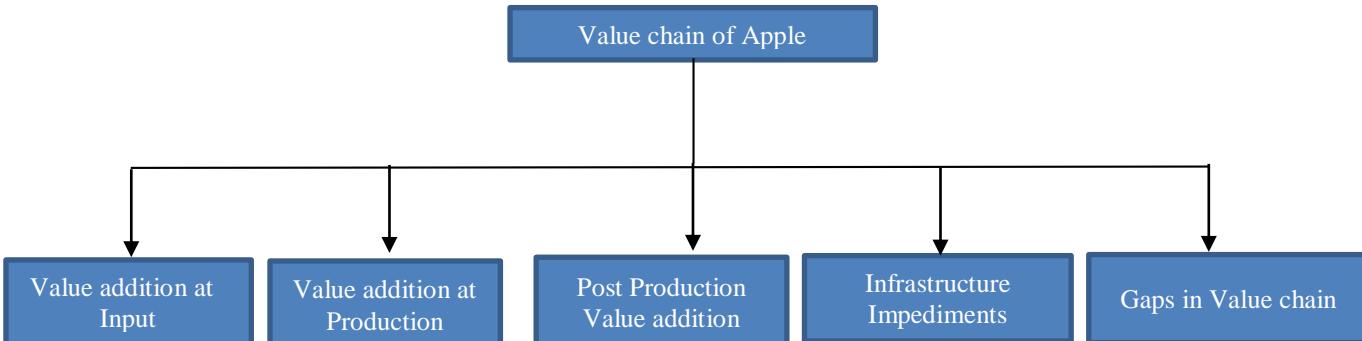
1. To explore the value chain of high value horticulture crop.
2. To provide a regional as well as systematic analysis of the present value chain in the state in terms of price and journey of the material from production, trading, marketing and ultimately to the end consumer.
3. To explore the present infrastructure availability in the assessment of horticultural development of the state.

4. Research Methodology:

Research methodology is considered to be the most important part of any research work. In the present research paper researcher collected the data through telephonic interviews and obtained details about horticulture value chain by visiting the markets and farms of the growers.

5. Theoretical framework

The Research work in value chain study of apple in Himachal Pradesh carried out into five broad areas,



In the above mentioned flow diagram, study of Value chain of Apple is divided into 5 categories

1. Value addition at input:

The growers of apple are opting for *spur* variety of apple or the varieties that can be grown in high density planting in comparison with other standard delicious varieties. Other varieties which are being preferred by the growers are *Top Red*, *Gale Gala*, *Super chief*, *Red Fuji*. Some Italian varieties are also considered like *Red Vlox*, *Redlam Gala*, *A E Fuji*. These Italian varieties were introduced by Dept. of

Horticulture (Himachal Pradesh). These Italian varieties are under the process of multiplication and thus only few number of plants are made available to the growers. Planting material is made available through govt. nurseries, private nurseries and tissue culture labs.

Fertilizers and pesticides also comes under the input category. Fertilizers are applied in December-January and March-April. These doses contain phosphorus, potash and nitrogen. Phosphorus and potash are given in full amount in December-January and Nitrogen is split into two amounts i.e. half in Dec-Jan and other half of nitrogen in March-April. The fertilizers are made available through Him-fed and local markets.

Attack of diseases on the crops is normal and to avoid these use of pesticides/fungicides is carried out. Use of these pesticides/fungicides is done on different growth stages i.e. *Tight Cluster Stage, Pink Bud Stage, Pea Stage, Walnut Stage, Fruit Development stage*. Drenching of soil also done by indulging diluted pesticides and fungicides at the base of plant. This drenching helps in avoiding the soil bone diseases. The pesticides/fungicides are being made available by horticulture dept. at subsidized rates and also by local markets.

2. Value addition at production:

Dr. Y S Parmar university of horticulture and forestry, solan provides recommendation for the transplantation of plants, where accurate space and basins are taken into consideration according to the spread of the plant. Horticulture is a labour intensive industry, labour charges are nearly about 450/day and for pruning the charges varies from Rs.600-700/day. Power tillers for making the basin of the plants are being used by some big farmers. Most important phase of apple cultivation starts with training and pruning. Training and pruning is important for good quality yield. Training and pruning requires knowledge of specifications which is very necessary to obtain and sustain good quality yield. Himachal Pradesh horticulture dept. and Dr. Y S Parmar university of hort. And forestry provides short course on training and pruning for the better yield and quality of apple. Training and pruning is done in Dec-Jan, which is done by the trained personals. Training provides strong frame work and mostly leader system for standard varieties and spindle bush system for spur variety. Pruning is the process of removing dead or unwanted branches and is done during dec-jan.

Pests and other diseases are very common during the production period, requires interventions in form of sprays. Mostly the growers face such problems and use various kind of spray as different stages of plant growth which is as follows;

Premature Leaf Fall stage:

1. Dodine spray @150g/200L water at Pea Stage
2. Mencozeb spray @ 600g/200L water at Walnut stage
3. Carbendazim spray@100g or Propinab spray @600g/200L water at fruit development stage
4. Chaubatia paste is used for the scratch and effected part during winter season.
5. Copper oxychloride spray @600g 200L water at post-harvest stage.

There are also two types rots i.e., Root rot and collar root.

Root rot:

1. Water drainage management is the field helps in dealing with root rot.
2. Carbendazim @200g or copper sulphate @ 100g/200L of water, are used for soil drenching.

Collar Rot:

1. Exposure of plant collar to sun during November-December.
2. Put the Chaubatia paste on the scratched portion of the plant.
3. Drenching with Mencozeb @600g/200L of water

3. Post production Value addition:

Post production value addition is studied under four stages i.e., cleaning, packing and sorting of apple, storage facilities, market linkage and processing.

Growers undertake post production operations at their own farm or at the facilities provided by HPMC or horticulture dept. Size and land holdings decides that which method is being adopted by the growers. If the farm is small or medium then manual method is used for cleaning and sorting, while in case of large farms mechanical method is used which costs around Rs. 150/box and Rs.165/box, respectively, including box cost and packing cost, however it doesn't cover fruit plucking cost. Common practice which is preferred by small and medium growers is to sell their produce directly to contractors as storage of the produce is not affordable by most of these growers. In-case of bigger farms or the growers who can afford to hold on to the produce till the price goes up, they make use of CA storage facilities available nearby. Three storage facilities near Shimla i.e., HPMC CA storage facility (oddi), Dev bhumi cold storage at Matiana and Adani agrifresh at Rewali. These stores have maximum capacity of 750 MT fruits. Dev bhumi cold store Matiana and Adani agrifresh cold stores buys fruits from the growers and sells directly in the distant markets during the high price tenure of apple.

Selling of the produce is done in the local and also at the distant markets. The use of Utility vehicles is made for the transportation. Chandigarh and Delhi are preferred by the large farmers while nearby mandis available are for the small and medium farmers. The fruit which are of good quality id made available to the actual consumer and the poor quality or C grade fruits are taken by HPMC and other food processing organizations.

4. Infrastructure Impediments:

- Availability of sufficient amount good quality Italian varieties is not there. There is a huge gap of having less number tissue culture labs and nurseries which is not meeting the demands of the growers for varieties having good quality.
- Irrigation water is not available which degrade the quality and productivity of fruits. Main source of irrigation is the rain. There is a requirement of good irrigation facility, micro irrigation systems need to be created which can solve the problem of irrigation.
- Trained labor is another area which can be taken into consideration as apple cropping requires specific knowledge about the process and requires maintenance of the crop at every growth stage for the sustainability for longer period and for providing good quality yield to the growers.
- Apple and most of horticulture crops are perishable and the storage facilities available in the state are not according the amount produced in the state, therefore there is a requirement of setting up of more CA storage facilities in the state.

5. Gaps in value chain:

- Government and private nurseries are not able to complete the huge demand of Italian and other good varieties of apple.
- Cultivation requires proper irrigation system and amount required for installation of irrigation system is very high. The crops are mostly rain-fed and get irrigated through rain water mostly.
- There is a problem in meeting the requirement of vermicomposting at the farms, as it provides decomposing process with the help of worms and other species.
- The demand of mulch material from the growers are very high and there is a lacuna of mulch material in meeting such huge demand.

Conclusion and recommendations:

Value addition in the quality and yield of apple cultivation starts from initial stage of procurement of seeds depending upon the variety of the plant demanded by the growers. Himachal Pradesh horticulture department has been providing the plants and also providing the training for pruning and training of apple plants which is helping the growers in getting the optimal value of their product and also helping in proving optimal price for the final produce to the growers of Himachal Pradesh. Growers provided some insights about the rate acquired by a particular plant from its plantation stage to fruit development stage is near about Rs.1000/plant (including whole value chain), other than this the cost associated with supply chain which includes delivery of the product through transportation and by all other actors such as wholesaler and retailers. Dr. Y S Parmar university of horticulture and forestry, Solan, is helping the growers by doing research in this area of value addition per plant. Also there is lacuna of meeting huge demand in the area of variety of plants available for the state which needs to be considered. There is scope of improving per plant price growers are getting by doing research in the area of supply chain of apple. Currently prices varies from Rs.800-3500 per box depending on the variety of apple, such as red gold, gala, royal, spur for Rs. 800, 1800, 2000, 3500 per box respectively. There is an involvement of middleman which cause huge price variation from growers to the end consumer. CA storage facilities should be made available to small and medium growers so that they can get better price for the quality product.

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