Journal of Tropical Agriculture 61(1): 14-19, 2023

Value chain and marketing practices for Pineapple (*Ananas comosus*) in Kerala

Apeksha K. Rai, Chitra Parayil* and Divya K.M.

Department of Agricultural Economics, College of Agriculture, Kerala Agricultural University, Thrissur 680 656, Kerala, India

Received 25 June 2022; received in revision form 05 April 2023; accepted on 09 May 2023

Abstract

The study analyses the value chain in pineapple and examines the degree of value addition among different value chain actors. Also finds the factors that affect the competitiveness of the value chain in the study area. The study was conducted in the Ernakulam district of Kerala. Simple statistical tools were used for the analysis of primary data collected from 120 respondents. The study revealed that marketing channels for fresh and processed pineapple were well established and were dominated by traders. Value chain analysis shows that value addition was least at the farm level and was highest at the processor stage. The factors affecting competitiveness were identified and strategies to upgrade the value chain were proposed. The study suggested that the adoption of good management practices and the provision of improved infrastructure facilities would enable farmers to fetch a higher price for their produce.

Keywords: Challenges, Marketing, Opportunities, Pineapple, Value chain analysis, Value addition

Introduction

Pineapple (*Ananas comosus*) is exhibiting increasing demand all over the world. India is the sixth largest producer of pineapple, contributing to more than eight percent of global production (GOI, 2018). Kerala has an exclusive advantage due to the favourable climate for the production of a wide variety of food, plantation, and other horticultural crops. Pineapple is one of the commercial fruits cultivated in large area inVazhakulam of Muvattupuzha which is known as the Pineapple city from where fruits are traded all over the country. In Kerala, about 69.72 thousand metric tonnes of pineapple were produced from an area of 8.22 thousand hectares with a productivity of 8.49 t/ha, but contribution towards export is less than one per cent (GOI, 2018). The state exports pineapple mainly to Middle-East countries like Saudi Arabia, Qatar, Oman, UAE etc. The pineapple grown in the Vazhakulam region has been listed under Geographical Indication registration (Joy, 2013).

Pineapple is a rich source of vitamins A, B, C, B_1, B_6, Copper, and dietary fiber. Enzymes present in pineapple help in treating rheumatoid arthritis and speedy repair of tissues caused by wounds, diabetic pustules, and common surgical treatment. It can be used to produce food articles such as jelly, squash, jam, pickle, candy, etc., which not only provide remunerative prices for the farming community in a sustainable manner but also create employment opportunities for the unemployed rural community (Joy, 2013).

Pineapple is largely grown by smallholders in the state and appropriate strategies for value addition would enhance the income of the farmers. To attract buyers' attention, proper delivery of quality pineapple to the market is important which can be achieved through proper post-harvest management. From the producer, most of the products change hands before reaching the final consumer, and value is added at each stage of the process. The value chain denotes the complete range of activities involved

*Author for Correspondences : Phone : 9496867932, Email: parayilchitra@gmail.com

in moving a product or service from input suppliers to the end users. Value chain analysis has assumed importance due to increasing urbanization and shift in dietary diversity to high value foods with the rise in income levels of people (Rai, 2020). Value chain analysis is a valuable tool to understand what generates the maximum potential value to the produce.

Kerala reported an increasing trend in pineapple productivity over years by adopting improved cultivation practices. Besides production, equal emphasis on the provision of marketing facilities is also required to enable farmers realize higher income. There exist wide variations in prices and huge wastage due to improper handling and lack of value addition resulting in income variability of farmers (Joy, 2013). The present paper discusses the value chain map of pineapple through commodity chain analysis along with the marketing performance of value chain players.

Materials and Methods

The study was conducted in Ernakulam district in Kerala as it accounts for about 60 per cent of the total pineapple production in the state. For the survey, Muvattupuzha and Pampakkuda blocks were selected as these two blocks reported more than 80 per cent pineapple production in the district (GOK, 2019). Random sampling technique was used and the sampling framework comprised of eighty farmers, five traders, ten processors, five retailers, and twenty consumers. The total sample size was 120. Hence, separate questionnaires were designed for the value chain players, viz. farmers, traders, processors, retailers, and consumers.

The commodity chain analysis was used to prepare the value chain map. It is a technique of separating and presenting the method of production which helps the researcher to define the relationships within the network of agricultural or agro-food systems (Bockel and Tallec, 2005). Construction of the commodity chain involves four steps, *viz.,* (i) Identification of value chain functions (ii) Identification of players in the chain (iii) Identification of the value chain facilitators, and (iv) Creating a flowchart for a commodity chain / Mapping of the chain.

The marketing chains for fresh and processed pineapple were identified to indicate the product flow from the farmers through the different marketing intermediaries to the consumers. The marketing cost, marketing margins, and degree of value addition were computed at different stages of the value chain.

Marketing cost is the cost incurred by the producers and other intermediaries to perform various functions in the marketing channel. Marketing margin is the profit earned by the marketing intermediaries in moving the commodity from producers to consumers while performing various marketing functions. The rank frequency method was used to rank enhancing and constraining factors affecting the value chain competitiveness. Factors were ranked based on frequency and factor containing the highest frequency will get rank one and so on. The factor with less frequency will get the least rank. Value addition is the difference between the price of the product and the cost involved in producing it. The magnitude or the percentage rise in the value of the good is referred as "the Degree of value addition" of that product.

Results and Discussion

1. Mapping of Pineapple value chain

The major functions and value chain players in the pineapple value chain were identified through the personnel interview method with stakeholders. Table 1 lists out the functions, players, and their respective activities in the marketing of pineapple. Figure 1 represents the map of the pineapple value chain in the study area.

The main functions involved in the pineapple value chain are input supply, production, collection,

Table 1. Functions, players and their activities in Pineapple value chain

Sl. No.	Functions	Players	Activities
1	Input supply	Input suppliers	They supply organic manure, agricultural equipments, planting materials, chemical fertilizers, plant protections, inputs, *etc*.
2	Production	Producers	They are either farmers, leased in contractors, farmer cum traders who are involved in pineapple cultivation.
3	Collection	Traders	Involved in trading activities. They procure pineapple directly from the farmers and distribute to wholesalers or processors or to distant market suppliers.
		Exporters	They export superior quality fruits to Middle-East countries by catering to their export specifications.
4	Wholesaling	Wholesalers	They procure pineapple directly from the producers or traders. They are the suppliers of both fresh fruit and processed products.
5	Processing	Processors	They convert the raw products into value added products such as pulp, jams, jellies, juices, pickles, candy, dried slices, and other canned products.
6	Retailing	Retailers	They are the retail shop owners, roadside vendors, and supermarkets from where the consumers buy fresh produce or value added products.
7	Consumption	Consumers	They are the end users in the value chain process. They purchase products based on their need from product providers.

wholesaling, processing, retailing, and consumption. The actors who actively participated in the value chain process were input suppliers, producers, traders, exporters, wholesalers, processors, retailers, and consumers. Once the activities and actors in the chain were identified, different facilitators/ service providers in the value chain process were identified. Major facilitators in the value chain include input dealers, Krishibhavans, Pineapple Research Station (KAU), Pineapple Farmers' Association, Pineapple Merchants' Association, financial institutions, etc. The value chain map was basically structured based on the data collected from the value chain actors and also information backed up from secondary sources.

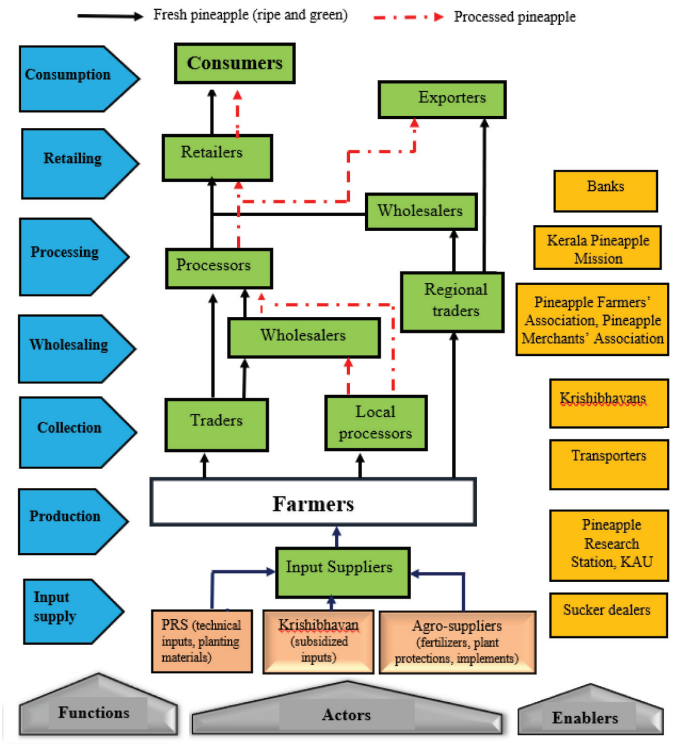

Figure 1. Value chain map of Pineapple

2. Marketing channels for Pineapple

The marketing channels are paths through which the produce moves from the producers to the final consumers. The major marketing channels identified for fresh and processed pineapple are as follows:

Fresh Pineapple:

Channel 1 - Farmer – Retailers – Consumers

Channel 2 - Farmers – Wholesalers – Retailers – Consumers

Channel 3 - Farmers – Traders – Wholesalers – Retailers – Consumers

Channel 4 - Farmers – Vazhakulam Wholesale Market – Consumers –

Processed Pineapple:

Channel 5 - Farmers – Processor – Retailers – Consumers

Channel 6 - Farmers – Processors – Distributors – Retailers – Consumers

Channel 7- Farmers – Traders – Processors – Retailers – Consumers

Among these channels, Channel 3 was considered as the most common channel for fresh pineapple and Channel 6 was common for processed pineapple. After the harvest, fruits were graded into Grades A, B and C. Grade A fruits were considered as special grade fruits.

Figure 2 represents the share of intermediaries in the marketing of pineapple. From the primary data (out of 80 farmers), it was estimated that the majority of the farmers (81.25%) sold their Grade A produce through traders. About 60 percent of the farmers sold their Grade B and C produce through traders and 27.5 per cent through processors (Figure 2). From this, we can say that all marketing channels were dominated by traders who get higher profit than the producers, hence the bargaining power of farmers was very less. Many of the farmers do not have direct contact with the marketing companies or wholesalers or processors and so they contact traders to sell their produce. On other side Pineapple Farmers Association, is not involved in direct marketing instead it promotes marketing and value addition. It helps producers to take monetary and technical support from government and non-government institutions. To the member farmers, it supplies good quality planting materials, fertilizers, plant protection chemicals, growth controllers, *etc.* at a subsidized rate.

3. Value chain actors and their cost-benefits in the study area

The marketing margins and profit percentage at different stages of the chain were computed (Table 2). It was found that traders and wholesalers incur maximum marketing costs for fresh pineapple while it was processors in case of processed pineapple. The marketing margin obtained by the traders and retailers was ₹ 6 per kg of fruit and that of processed pineapple was ₹ 21 per kg. Traders and retailers earn more profit in the fresh pineapple chain and processors in the processed pineapple chain.

The degree of value addition of fresh pineapple and processed pineapple is presented in Figure 3. It differs at each stage or actor in the chain and to estimate this, the price of the product was taken into account. By deducting the cost from the price change margin can be obtained. The margin attained was divided by the buying price to arrive at the figure of value addition and the figure was expressed

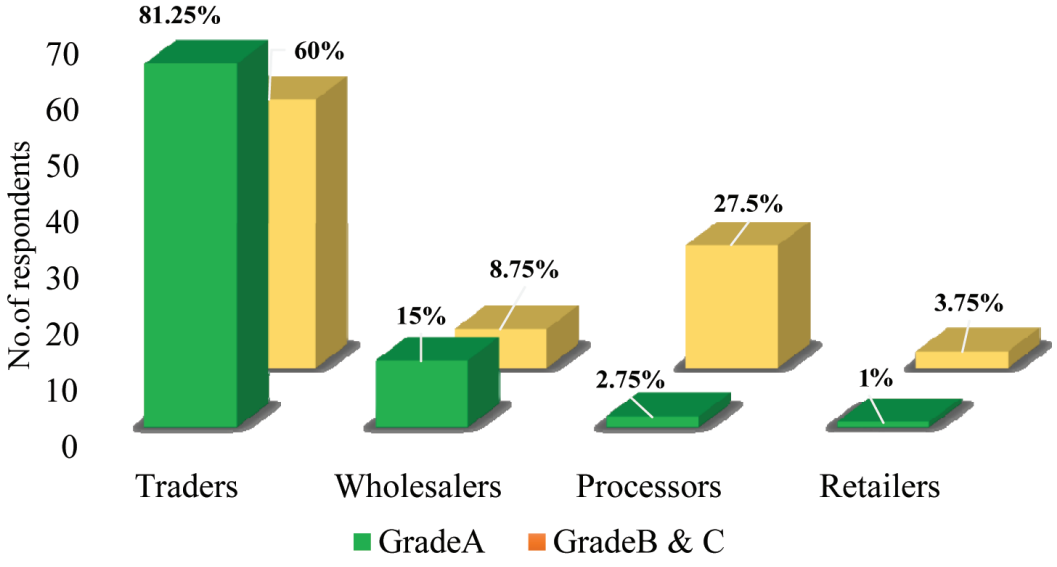

Figure 2. Share of intermediaries in the marketing of pineapple

Table 2. Average marketing costs and benefits of actors in pineapple value addition (₹/kg)

Particulars	Producers	Traders	Wholesalers/Distributors	Retailers	Processors
Purchase price(₹ /kg)	-	20	30	38	12
Marketing cost(₹ /kg)	-	4	4	1	20
Selling price (₹ /kg)	20	30	38	45	53
Marketing margin(₹ /kg)	3.5	6	4	6	21
Profit %	8.65	14.81	9.88	14.81	51.85

in percentage to arrive at the degree of value addition of the product.

In the study area, since traders and processors procure fruits directly from the farm gate, not much value was added at the farmer stage. Traders categorize fruits into different sizes after cleaning and here value increased by 20 per cent followed by 13.33 per cent at the wholesaler stage and 5.26 per cent at the retailer stage. Traders, wholesalers, and retailers add transportation before fixing the fruit price. At the processor stage, after procurement, fruits were cleaned and converted into different products according to its taste, juiciness, acid content, etc. At this stage, fruits completely change its form and the estimated degree of value addition was 150 per cent which was the maximum. So it is evident from the Figure 3 that, there was not much variation in the value of fresh pineapple whereas, much variation was observed in processed pineapple.

4. Challenges and opportunities to the competitiveness of the Pineapple value chain

Competitiveness can be defined as the set of institutions, policies, and factors that govern the level of a country's productivity. It can increase national income through the expansion of local industries and higher income for farmers involved in its production (Fawole, 2008).

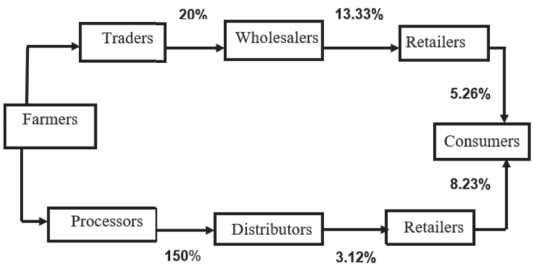

Figure 3. Degree of value addition at different stages of the value chain

The challenges faced by pineapple growers were lack of planting materials, lack of know-how to use new technology, post-harvest losses and other related factors combined together contributed to low productivity, less quality with high costs, and less competitiveness in the market. The factors enhancing competitiveness of the pineapple value chain and constraints were identified and ranked. The enhancing factors were institutional support, availability of inputs, market accessibility, technological services, and government policies. The challenges faced include high establishment costs, labour shortage, lack of storage facilities, lease land farming, non-availability of credit, and lack of market information.

The institutions significantly contributing towards the wide expansion of pineapple cultivation and value chain in the state include Pineapple Research Station, Kerala Agricultural University, Pineapple Farmers' Association, Kerala Pineapple Mission, Vazhakulam Agro and Fruit Processing Company (NAPCL), Vegetable and Fruit Promotion Council Keralam (VFPCK).

5. Strategies for up-gradation of the Pineapple value chain

The infrastructure and support services to facilitate the development of the pineapple value chain are not well developed. The processing segment is at an initial stage of development and substantial upgrading and innovations are required to create value addition. The poor cooperation between value chain stakeholders presents another crucial

challenge. The knowledge created, initiatives and activities undertaken were not widely disseminated among farmers. There is a growing demand for processed pineapple with nutritional quality worldwide, but its contribution to export is less than one percent mainly due to its shelf-life. Therefore, there is an urgent need to adopt and apply modern techniques and strategies in pineapple cultivation and value chain. The strategies suggested are presented as follows:

- **Input supply:** Input service providers should be trained on improved varieties and ensure timely supply of quality inputs to the farmers.
- **Production and output:** Good agricultural practices should be followed to produce export quality pineapple. Grading or value addition would help to fetch better price for the produce.
- **Infrastructure:** Market yards and storage facilities should be provided. Modern processing plants should be established and existing processing techniques should be upgraded.
- **Technical:** Research studies on value addition possibilities and improvement in fruit quality may be taken up.
- **Marketing**: Market information for commercialization of new and improved pineapple products and export promotion may be made available to the producers.

To conclude, the pineapple value chain is lacking in horizontal and vertical integration among the value chain actors. The small producer-farmers are not able to reach the final market directly as they are dominated by the extended value chain actors and this situation makes their position weak and helpless in the market with less bargaining power. The results of value chain analysis shows that farmers share of value added was the least, while the other players especially the processors realized a relatively higher share (150%). By increasing production, value addition, and better marketing, farmers' income can be enhanced. Being a major commercial fruit crop of the state, value addition and marketing of pineapple in Kerala needs urgent attention to improve the performance of various actors in the value chain.

References

Bockel, L. and Tallec, F. 2005. *Commodity Chain Analysis: Constructing the Commodity Chain Functional Analysis and Flow Charts*. Food and Agriculture Organization of the United Nations, 19p.

Fawole, O. P. 2008. Pineapple farmers' information sources and usage in Nigeria. *Bulg. J. Agric. Sci*. 14: 381-389.

GOI [Government of India]. 2018. *Horticultural Statistics at a Glance*. Ministry of Agriculture & Farmers' Welfare, Department of Agriculture, Cooperation & Farmers' Welfare, 458p.

GOK [Government of Kerala]. 2019. *Agricultural Statistics 2017-18.* Department of Economics and Statistics, Thiruvananthapuram, 67p.

Joy, P. P. 2013. Pineapple sector in Kerala: Status, opportunities, challenges and stakeholders. Pineapple Research Station (Kerala Agricultural University), Vazhakulam, Muvattupuzha, Ernakulam, Kerala, 8p.

Rai, A. 2020. Value chain analysis of Pineapple in Ernakulam district. M.Sc. (Agri.) Thesis, Kerala Agricultural University, Thrissur, 114p.