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RESEARCH PAPER

Marketing efficiency of tea under different supply chains - A study in Nilgiris district of Tamil Nadu

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ABSTRACT

In Tamil Nadu tea is mainly grown in Nilgiris district. Among the different channels, supply of tea through auction centre was prodominent. The rest of the supply was private estate cum processing units. A study was conducted to identify different supply chain and estimate cost and margins in each channel. An attempt was also made to analyze the supply of tea and channel consisted of tea producer-green tea leaves collectors/agents - through processors - retailer - consumer was found to be the most efficient channel when compare to other channels. The total marketing costs of tea producer, processor and retailer in this channel were found to be Rs. 28, Rs. 20 and Rs. 13.75, respectively. The marketing margins of these producer and intermediaries have been estimated and they were Rs. 52 for producer, Rs. 30 for processor and Rs. 30 for retailer. Similarly, marketing cost and margins for other channels have been estimated. In this channel, producer, processor and retailer were benefitted mainly because of high margin. The marketing efficiency has been found to be more in supply chain IV. In this channel number of intermediaries were less, hence retailer could directly place demand order to processor and processor supplied the same (demand based supply). In this channel only fine quality leaves are processed for direct retailing in domestic market (INDCO/Estate cum BLF). Hence, supply chain IV was found to be the most efficient.

KEY WORDS : Tea, Price spread, Marketing efficiency, Market intermediaries

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Tea is one of the most popular and widely consumed hot beverages worldwide. More than 30 countries grow tea. From official conferences to railway station, tea (chai) remains the favorite beverage among Indians (almost 85 per cent of the total households in the country consume about 81 per cent of the total tea produced). This sector is critical to Indian economy. The tea industry is one of the oldest organized firm sectors with a large network of tea producers, retailers, distributors, auctioneers, exporters and employees. The industry employs around 1.27 million at the plantation work and 2 million people indirectly, of which 50 per cent are women workers (second largest employer in the organized sector after Indian Railway).

Tea industry has seen a lot of changes in the past few years. The world's largest tea producer, India, lost its position to China for the first time, in the last 110 years. Despite its fluctuating position in the world market, India is a key source for tea as well as the largest market. There has been a decline in the prices of green tea leaves and made tea, which has affected the farm economics of tea growers in the country. There is a need to understand the factors, which influence the demand and supply scenario in the Indian tea industry, in order to facilitate, practitioners' ability to modify and adapt to the changing environment.

The tea supply chain comprises all the stages from green

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leaf production from the bushes to finished product and sale to the customers. Value is added to the tealeaves at each stage of the supply chain, each with associated cost. This includes the cost of plucking and sorting, factory packing, internal transportation, warehousing, sales changes (auction or direct sale), freight, insurance, interest, blending, packaging and retailers sales cost etc.

The available studies in the Indian context mainly focus on the impact of price issues relating to tea cultivation. In this, focus has been given on cultivation, processing, marketing and export performance of tea from Nilgiris. Kotler (2004) is of the opinion that supply chain management started earlier than physical distribution; attempted to procure the right inputs (raw materials, components, and capital equipment) and convert them efficiently into finished products; and dispatch them to the final destinations. According to Chase *et al.* (2005) supply chain management is a total system approach to manage the entire flow of information, materials, and services from raw-material suppliers through factories and warehouses to the end customer. Fantazy *et al.* (2010) defined supply chain management (SCM) as an integrated approach beginning with planning and control of materials, logistics, services, and information stream from suppliers to manufacturers or service providers to the end client and it also represents a most important change in business management practices.

The specific objective of the study were :

- To estimate the marketing cost and marketing margins of different functionaries for tea under various supply chains;
- To analyze the price spread, marketing efficiency and farmers share in consumer rupee in various supply chains;
- To identify the constraints perceived by various stakeholders;
- To suggest suitable strategies to enhance the efficiency for tea marketing.

METHODOLOGY

In Tamil Nadu, Nilgiris district plays a major role in tea production. It may be observed that both area and production is maximum in Nilgiris (Tea Board). Hence, Nilgiris district was purposively selected for the detailed study. The production, processing and marketing units were selected in Nilgiris district. To study the export aspects, the merchant exporters in Nilgiris and Coimbatore districts were selected for the study. There are four Panchayat unions in Nilgiris district. Among them based on the maximum area under tea production, three Panchayat unions *viz.*, Kotagiri, Ooty and Coonoor were selected. To study tea production in detail, sixty farmers were selected. The members involved in supply chain of tea such as green tea leaves collectors/agents (30), processors (10), auctioneers/brokers (20), wholesaler (30) and retailers (30) were identified randomly by adopting the method of probability proportion to size in term of quantity of tea handling. To assess the cost on exports, constraints and potential, samples of twenty exporters (merchant exporters) in Nilgiris and Coimbatore districts were selected purposively for the study, as tea auction are concentrated in these districts.

The information was collected from the selected farmers about their general characteristics with respect to age, educational status, occupational status, farming experience, size of land holding, irrigation source, etc., which will be helpful in understanding their decision making and practices followed by them. The data were collected from selected farmers, green tea leaves collectors/agents, processors, auctioneers, wholesaler, retailers and exporters about their cost of marketing of tea.

Price spread analysis :

Profits of the various market functionaries involved in moving the produce from the initial point of production till it reached the ultimate consumer were recorded. In general, Sum-of-average gross margin method was used in the estimation of price spread.

Sum of average gross margin method **:**

The average gross margins of all the intermediaries were added to obtain the total marketing margin as well as the break up of the consumer's rupee.

$$\mathbf{MT} = \frac{\sum_{i=1}^{N} [\{S_i - P_i\}]}{Q_i}$$

where,

MT = Total marketing margin

S_i = Sale value of a product for i^{th} intermediary

P_i = Purchase value paid by the i^{th} intermediary

Q_i = Quantity of the product handled by the i^{th} intermediary

i = 1, 2, 3 … N (Number of intermediaries involved in the supply chain)

Farmer's share in consumer rupee **:**

Further, the farmer's share in consumer rupee was calculated with the help of the following formula :

$$\mathbf{Fs} = \frac{\mathbf{Fp}}{\mathbf{Cp}} \times \mathbf{100}$$

where,

Fs = Farmer's share in consumer rupee (percentage)

Fp = Farmer's price

Cp= Consumer's price

Marketing efficiency :

Marketing efficiency was calculated by following methods.

Shepherd's formula :

EMC = [(V/I)-1]

where,

EMC = Index of Efficiency of market channel

V = Value of goods sold

I = Total marketing cost

Calkin's index :

$$\text{Marketing efficiency} = 1 - \left[\frac{\text{Sum of profit or margin}}{\text{Sum of marketing cost}}\right]$$

Acharya's approach :

ME = FP / (MC + MM)

where,

FP = Price received by tea producers

MC = Marketing cost

MM = Marketing margin

Garrett's ranking technique :

In the Garrett's scoring technique, the respondents are asked to rank the factors or problems and these ranks are converted into per cent position by using the formula :

$$\text{Per cent position} = \frac{100 \times [R_{ij} - 0.5]}{N_j}$$

where,

R_{ij} = Ranking given to the i^{th} attribute by the j^{th} individual

N_j = Number of attributes ranked by the j^{th} individual.

ANALYSIS AND DISCUSSION

The results obtained from the present investigation are presented below :

Profile of tea growers :

The study brought out that about 57 per cent of the selected farmers were in the age group of 30 to 50 years. About 12 per cent of the farmers were illiterate and 88 per cent were educated. Majority of the farmers (88 %) had more than 10 years experience in tea cultivation. The study revealed that average size of land holding of tea growers was medium (4-10 ha). Nearly 76 per cent of the sample farmers had agriculture as their only occupation.

Price spread of tea :

Price spread is the price paid by the consumer and the price received by the producer. Producers sold their green leaves through local green leaf collectors/agents to private brought leaf factories (BLF)/Estate cum BLF and co-operative factories (The Tamil Nadu Small Tea Growers' Industrial Co-operative, Tea Factories Federation Limited-INDCOSERVE). Marketing cost is considered in the study as all the costs incurred by an intermediary in moving the produce from one

Table 1 : Price spread for different supply chains

Sr. No.	Particulars	SC I		SC II		SC III		SC IV		SC V	
1.	Cultivation cost for 4 kgs of GTL	20	–	20	–	20	–	28	–	28	–
2.	Price received by the growers for 4 kgs of leaf	60	40.26	60	43.17	60	38.96	80	47.40	80	40.05
3.	Growers margin	40	–	40	–	40	–	52	–	52	–
4.	Processing cost including selling cost and brokerage	16	–	18	–	20	–	20	–	20	–
5.	Total cost for the processing unit	76	–	78	–	80	–	100	11.85	100	–
6.	Processors margin	4	–	2	–	5	–	30	–	30	–
7.	Auction price	80	13.43	80	14.38	85	16.23	–	–	130	25.03
8.	Wholesalers purchase price	80	–	80	–	85	–	–	–	–	–
9.	Wholesalers marketing cost	19.85	–	19.85	–	19.85	–	–	–	–	–
10.	Wholesalers margin	20	–	15	–	20	–	–	–	–	–
11.	Retailers purchase price	119.85	26.96	114.85	25.31	124.85	26.09	130	17.78	–	–
12.	Retailers marketing cost	8.75	–	8.75	–	8.75	–	13.75	–	–	–
13.	Retailers margin	20	19.35	15	17.14	20	18.72	20	22.97	–	–
14.	Exporters purchase price	–	–	–	–	–	–	–	–	130	25.03
15.	Exporters marketing cost	–	–	–	–	–	–	–	–	29.35	
16.	Exporters margin	–	–	–	–	–	–	–	–	40	34.92
17.	MRP	148.60	100.00	138.50	100.00	153.60	100.00	153.75	100.00	199.35	100.00

stage to another in the channel. Marketing margin is that part of income which is over and above the marketing cost of the functionary. As already discussed, in Tamil Nadu tea is mainly growing in Nilgiris districts. The price spread through five main supply chains of tea has been worked out in the study. From every four kgs of leaves one kg of made tea was produced. The price spread for different supply chain are presented in Table 1.

In supply chain I, a perusal of Table 1 revealed that producers sale price of tea was Rs. 60 for four kgs of leaves which was about 40.26 per cent of the consumers purchase price. The expenses borne by the producer were Rs. 20 for four kgs of leaves. The net price received by the producer was Rs. 40 for four kgs of leaves. The expenses borne by the processor, wholesaler and retailer were about 16, 19.85 and 8.75, respectively. The margin of the processor was about Rs. 4 whereas this figure was Rs. 20 for both wholesaler and retailer. The margin of processor was less on account of high volume of business as compared to the wholesaler and retailer who handles low volume of business.

In supply chain II, the expenses borne by the producer were Rs. 20 for four kgs of leaves. The net price received by the producer was Rs. 40 for four kgs of leaves. The expenses born by the processor, wholesaler and retailer were about 16, 19.85 and 8.75, respectively. The margin of the processor was about Rs. 2 whereas this figure was Rs. 15 for both wholesaler and retailer. The margin of all intermediaries was less in supply chain II mainly because of this channel was controlled by co-operative (INDCO).

In supply chain III, the producer's sale price of tea was Rs. 60 for four kgs of leaves, which was about 38.96 per cent of the consumers purchase price. The expenses borne by the producer were Rs. 20 for four kgs of leaves. The net price received by the producer was Rs. 40 for four kgs of leaves. The expenses borne by the processor, wholesaler and retailer were about 20, 19.85 and 8.75, respectively. The margin of the processor was about Rs. 5 whereas this figure was Rs.20 for both wholesaler and retailer. The margin of processor was high when compare to channel I and II because of private estate cum processing units using this channel.

In supply chain IV, the producer's sale price of tea was Rs. 80 for four kgs of leaves, which was about 47.40 per cent of the consumers purchase price. The margin of the processor was about Rs. 30 whereas this figure was Rs. 20 for retailer. The margin of processor was high mainly the processor had direct contact with retailers for their business.

In the supply chain V, it could be revealed that producers sale price of tea was Rs. 80 for four kgs of leaves which was about 40.05 per cent of the consumers purchase price. The expenses borne by the producer were Rs. 28 for four kgs of leaves. The margin of the processor was about Rs. 30 whereas this figure was Rs.40 for exporter. The margin of producer, processor and exporter was high mainly quality leaves only supply thro this channel.

Table 2 : Marketing efficiency of tea through different methods

Marketing efficiency of tea through Shepherd method

Sr. No.	Market channel	Value of goods sold	Total marketing cost	Marketing efficiency
1.	Supply chain I	148.60	64.75	1.30
2.	Supply chain II	138.60	66.75	1.08
3.	Supply chain III	153.60	69.00	1.23
4.	Supply chain IV	163.75	61.75	1.65
5.	Supply chain IV	199.75	77.35	1.58

Marketing efficiency of tea through Acharya's approach

Sr. No.	Market channel	Net price received by the farmer	Marketing cost + Marketing margin	Marketing efficiency
1.	Supply chain I	40	148.60	0.268
2.	Supply chain II	40	138.60	0.288
3.	Supply chain III	40	153.60	0.259
4.	Supply chain IV	52	163.75	0.317
5.	Supply chain V	52	199.35	0.261

Marketing efficiency of of tea through Calkin's index

Sr. No.	Market channel	Sum of profit or margin	Sum of marketing cost	Marketing efficiency
1.	Supply chain I	84	64.75	2.29
2.	Supply chain II	72	66.75	2.07
3.	Supply chain III	85	69.00	2.23
4.	Supply chain IV	102	61.75	2.65
5.	Supply chain V	122	77.35	2.53

Thus, the supply chain of tea was long and complex involving a number of intermediaries. Generally, the farmers get benefits, if the length of the channel is small. From the price spread analysis, channel IV was more efficient because of in channel IV, there was less number of intermediaries. But, in the case of tea, since the consumers were not purchasing directly from the auctions or the processing units, the margins were shared by the intermediaries.

Marketing efficiency :

The results of marketing efficiency analysis presented in Table 2, revealed that the marketing efficiency was relatively high for the supply chain IV. In supply chain IV number of intermediaries were less, hence retailer could directly place demand order to processor and processor supplied the same (demand based supply). In this channel only fine quality leaves are processed for direct retailing in domestic market (INDCO/Estate cum BLF). Hence, supply chain IV was found to be the most efficient.

Problems faced in tea cultivation by sample farmers :

The farmers were asked to rank the problems faced by them in cultivation of tea and the responses were analyzed using Garrett's ranking technique. The results are presented in Table 3.

The producers expressed that the high labour cost was the most important problem (61.53) followed by non-availability of labour during peak season (54.26). Other important problems were pest and disease attack (46.70) followed by cost of fertilizers and plant protection chemicals (35.40). Farmers must be trained on effective modern pest and disease management technologies. Education institutions can train and explain about modern technology and skills required for scientific management.

Problems faced in tea marketing by sample farmers :

The farmers were asked to rank the problems faced by them in marketing of tea and the responses were analyzed using Garrett's ranking technique. The results are presented in Table 4.

The farmers ranked low price as the most important problem followed by price fluctuation and late payment.

Problems faced by intermediaries :

The intermediaries were asked to rank the problems faced by them in tea marketing and the responses were analyzed using Garrett's ranking technique. The results are presented in Table 5.

The intermediaries expressed lack of quality as the most important problem (58.21) followed by lack of consistency in supply (51.89). The other problems were high handling cost (50.25), high transport cost (46.36) and poor storage facility (44.89). Training on good management practices along with economies of scale is required to overcome the problems. High handling cost was mainly because of repacking, grading and sorting.

Table 3 : Problems faced in tea cultivation by sample farmers

Sr. No.	Problems	Score	Rank
1.	High labour cost	61.53	I
2.	Non-availability of labour during peak season	54.26	III
3.	Pest and disease attack	46.70	II
4.	Cost of fertilizers and plant protection chemicals	35.40	IV

Table 4 : Problems faced in tea marketing by sample farmers

Sr. No.	Problems	Score	Rank
1.	Low price	55.70	I
2.	Price fluctuation	48.10	II
3.	Late payment	44.30	III

Table 5 : Problems faced by intermediaries

Sr. No.	Problems	Score	Rank
1.	Lack of quality	58.21	I
2.	Lack of consistency in supply	51.89	II
3.	High handling cost	50.25	III
4.	High transport cost	46.36	IV
5.	Poor storage facility	44.89	V

Conclusion :

The present study showed that the producers share in consumers rupee in tea trade varied between 38.96 per cent and 47.40 in different supply chains indicating that more than 50 per cent of the consumers rupee was cornered by market intermediaries in all channels. Market efficiency was highest in channel IV as the price received by the tea producers was the highest. In supply chain IV number of intermediaries was less, hence retailer could directly place demand order to processor and processor supplied the same (demand based supply). In this channel, only fine quality leaves are processed for direct retailing in domestic market (INDCO/Estate cum BLF). Despite higher market efficiency in channel IV, most of the producers not used this channel. Only those who produced quality leaves sold their green leaves through channel IV. It is not possible for the producers to sell their green leaves to end consumer. Therefore, market intermediaries are also necessary for supply of tea form point of origin to point of consumption. It is a well-known fact that business is always done for profit motive. The present study has also supported this fact because the processors, wholesalers, retailers and exporters have kept reasonable margin for themselves in the marketing of tea.

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