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A study on supply chain management of tea in Nilgiri's district of Tamil Nadu

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Abstract
Supply chain management is a critical aspect of the agribusiness sector as it plays a significant role in ensuring the effective and efficient movement of agricultural products from the farm to the consumer. The Tea supply chain in Tamil Nadu is no exception, and it faces several challenges that impact its overall performance. This study aimed to explore the supply chain management of Tea in Tamil Nadu, with a focus on identifying the key challenges and opportunities for improvement. The Tea industry is one of the most significant industries in India, with Tamil Nadu being one of the leading states in Tea production. Supply chain management plays a crucial role in the success of the Tea industry as it involves the coordination of activities between various players, from farmers to Tea co-operatives to end consumers. The aim of this study is to analyse the supply chain management practices of the Tea industry in Tamil Nadu and identify potential areas of improvement. The study utilizes a mixed-method approach consisting of both quantitative and qualitative data collection methods. The data collection includes a survey of Tea farmers and interviews with Tea co-operative representatives, wholesalers, and retailers. The study analyses the data using descriptive statistics and content analysis to identify the current practices and challenges in the Tea supply chain in Tamil Nadu. The findings indicate that the Tea supply chain in Tamil Nadu is characterized by various challenges such as lack of transparency, inadequate infrastructure, and insufficient coordination among players. The study further identifies several potential areas for improvement, including the use of technology for supply chain management, improving logistics and transportation infrastructure, and strengthening the coordination among different players in the supply chain. The study identified several opportunities for improving the Tea supply chain in Tamil Nadu, including the development of better storage facilities, improvement of road infrastructure, the establishment of information systems, and the development of direct linkages between farmers and consumers. The study also recommended the establishment of producer organizations to help farmers access credit, improve bargaining power, and enhance their engagement in the supply chain. The study contributes to the existing literature on supply chain management in the Tea industry by providing insights into the specific challenges and opportunities in Tamil Nadu. The findings of this study can be useful for policymakers, industry players, and other stakeholders to develop effective strategies for improving the Tea supply chain management in the state. Further research could investigate the implementation of proposed strategies and their impact on the Tea supply chain in Tamil Nadu.

Keywords: Supply chain management of tea, quantitative and qualitative, tea industry, tea industry representatives, descriptive statistics, content analysis

1. Introduction
Tea is one of the most popular and widely consumed beverages all over the world. Today cultivation of tea is spread over all the continents wherein more than 30 countries are into tea production. Over the years, both area and production has increased substantially along with global trade. Tea being an agricultural commodity, its production is bound to fluctuate due to vagaries of nature. Amongst all tea producing countries, the major producers are India, China, Sri Lanka, Kenya and Indonesia. These five countries contribute 77 per cent of the total word production and 80 per cent of global exports.
India exports tea to more than 25 countries throughout the world. Russia, Iran, UAE, USA, the UK, Germany, and China are some of the major importers of tea from India. During 2021-22 Russia, Ukraine and Kazakhstan imported 32.5 million kg, 1.68 million kg and 6.48 million kg of tea from India. The share of Indian exports to the CIS nations during that period was 21% (42.5 million kg) of the total exports. Iran, UAE and USA are among India's top tea export destinations. During 2021-22, the three countries imported 29.3 million kg, 23.3 million kg and 13.5 million kg of tea from India. The value of total exports to these countries combined was US$ 277.3 million during the same period.
During 2021-22, the exports to Germany, USA, UAE and Ireland increased by 14%, 12%,

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70% and 17% respectively over the previous year. Some of India's other tea export destinations are Poland, Canada, Saudi Arabia, Egypt, Afghanistan, Bangladesh, China, Singapore, Sri Lanka, Kenya, Japan, Pakistan and Australia, etc. All these countries combined accounted for US$ 116 million of tea exports from India contributing to 16% of the tea export revenue for the year 2021-22.

2. Research methodology
Research is all about addressing an issue or asking and answering a question or solving a problem. Research is a more formal way of going about asking questions in a structured way. This structure is called a methodology. Research comprises defining and redefining problems, formulating hypothesis or suggested solutions; collecting, organizing and evaluating data; making deduction and reaching conclusions; and at last carefully testing the conclusion to determine whether they fit the formulated hypothesis. It is a way to systematically solve the research problem. It may be assumed as science of studying how research is done scientifically. A project needs a plan and script that is to be followed to attain the objectives and to satisfy those objectives research is done that follows some requisite methodology. This chapter on methodology consists of the study area, sampling procedure, sources of data, analytical tools and techniques that are being used, etc. The chapter has the following major headings:

3. Sampling procedure
Stage -I Selection of District
Nilgiris district were initially selected for the study, since this district was the one of the major districts under Tea production in the Tamil nandu state during 2009.since this district had the highest area under Tea cultivation.

Stage –II Selection of Block
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.

Stage-III Selection of the village
From the office of sample mandals list of villages will be procured and such 5% of villages will be randomly selected.

Stage –IV Selection of Respondents
From selected blocks, 12% of the respondents, having carrot and chilli farms in the sample villages will be procured along with the size of there operation holding for these farmers were classified into 5 groups.
1. Marginal farmer - below 1ha
2. Small farmer - 1 -2 ha
3. Semi medium farmer - 2 – 4ha
4. Medium farmer - 4 – 10ha
5. Large farmer - above 10ha

Methods of data collection
Selected respondents were collected personally contacting them and interviewing with the help of scheduled questionnaires.

Primary Data
The study is entirely based on the primary data collected from the selected farmer and different market functionaries. Well-constructed and pre-tested questionnaire and scheduled (appendix) was used to collect the data on marketing. For collecting the data, personal interviews were arranged and reconnaissance study was also conducted to collect the data regarding company, variety, product and feedback etc. from growers, different market functionaries.

Secondary Data
Further the required secondary data to supplement the primary data and to support the study was collected from different sources like block office and district office Department of Agriculture in Nilgiris & journals etc.

Market functionaries/ intermediaries
The also intended to study market functionaries, intermediaries at various level of marketing costs and margins.

Nature and source of data
Period of study: The data was collected for the agriculture year 2021-2022.

Method of Primary data collection: The primary data has been collected by survey method through personal interview on well-structured and pre tested schedules.

Method of secondary data collection: The secondary data with respect to production and marketing of products has been collected from report and records of the firm plant and block headquarters.

Analytical tools and techniques
Identification of marketing channels:
There are different marketing channels identified in the Supply chain of tea in the study area, and there are different market intermediaries, middlemen and different agencies involved in the marketing channels.
Channel – 1: Producer-Commission agent -Processing unit -Wholesaler -Retailer -Consumer.
Channel – 2: Producer -Processing unit -Wholesaler – Retailer -consumer.

Marketing Margin
The term marketing margin refers to the different in prices for a commodity at different stages of the marketing system. In the widest sense marketing margin is the difference in price received by the producer and the price paid by ultimate consumer. Marketing margins include all cost of assembling processing, storage transportation, handling, wholesaling and retailing in the process of marketing moving of produce from the farmer to the ultimate consumer

Marketing Margin or selling price-Actual cost
Marketing efficiency
Marketing efficiency of any activity or process is defined as the ratio of input and output. It was measured by following equation;

MME (RP/(MC+MM)-1
Where,
ME-Measurement of marketing efficiency.
RP Retail price.
MC-Marketing cost.
MM = Marketing margins.

Table 1: Marketing efficiency of Tea:

S. N.	Particulars	Channels	Growers involved (nos)	Quantity sold (kg)
1.	Channel-I	Producer-Commission agent -Processing unit -Wholesaler-Retailer-Consumer	64 (71.10)	7,59,183 (54.10)
2.	Channel-II	Producer-Processing unit -Wholesaler – Retailer - consumer	26 (28.90)	6,44,907 (45.90)
		Total	90 (100.00)	14,04,090 (100.00)

Marketing efficiency is a crucial factor in determining the success of any product, including Tea. It plays a significant role in shaping the profitability and competitiveness of the sugar industry. To understand the marketing efficiency of Tea, we need to analyze the provided data, which consists of consumer purchase prices, total marketing costs and margins, and the corresponding marketing efficiency ratios for three different channels: Channel I and Channel II.

Table 1 reveals that the marketing channels it was observed that 64.00 per cent of the sampled respondents sold their produce through channel-I and the remaining 28.90 per cent sold though channel-II. Those respondents who owned transportation facilities sold their produce themselves directly to processing unit, while the rest sold through channel-I, where commission agent was involved. Similar studies were carried out by Sharma and Tungoe (2011).

Table 2: Marketing Margin of Tea

S. No	Channel	Marketing Margin of Tea Rs/kg
1	I	77.94
2	II	76.94

Table 2 reveals that the marketing margins of commission agents, processing unit, wholesalers and retailers had been calculated considering the value of 1 kg of green leaf till it reaches the consumers in processed form. Marketing margins for both the channels had been calculated separately. In channel 1, marketing margin for commission agent had been estimated as Rs 1 per kg of green leaf. After commission agent, the market intermediaries were same in both the channels. In both the channels, marketing margin obtained by the processing unit was Rs 52.14/- per kg of processed tea leaf. The marketing margin obtained by processing unit was high due to various value addition process carried out during processing. Average marketing margin for the wholesalers were obtained as Rs 16.13/- per kg of processed tea leaf which was higher than the marketing margin obtained by the retailers (Rs 8.67/- per kg). So, the total margin observed in Channel-I was Rs 77.94/-, which was slightly higher than Rs 76.94/- as obtained in Channel-II, respectively. Similar studies were in the line with Yadav *et al.,* (2018).

Table 3: Marketing cost incurred in different channels for 1 kg of tea leaf (Rs)

S. N.	Particulars	Channel-I	Channel-II
1.	**Cost incurred by producer**		
2.	Transportation cost	0.0	0.20
3.	Sub total	0.0	0.20
4.	**Cost incurred by commission agent**		
5.	a. Transportation cost	0.50	0.0
6.	b. Labour charge for loading and unloading	0.50	0.0
7.	Sub total	1.00	0.0
8.	**Cost incurred by processing unit**		
9.	a. Fuel(firewood)	0.82	0.82
10.	b. Power (electricity)	1.05	1.05
11.	c. wages	0.50	0.50
12.	d. Factory overheads	0.78	0.78
13.	e. General overheads	0.44	0.44
14.	f. Packing	0.26	0.26
15.	g. Tax	0.17	0.17
16.	h. Transportation	0.17	0.17
17.	Sub total	4.19	4.19
18.	**Cost incurred by wholesaler**		
19.	Transportation cost	0.86	0.86
20.	Sub total	0.86	0.86
21.	**Cost incurred by retailer**		
22.	Transportation cost	1.20	1.20
23.	Sub total	1.20	1.20
24.	Total marketing cost	7.25	6.45

Table 3 reveals that the activity wise marketing cost incurred at various steps of marketing channel was estimated. The total cost incurred for marketing 1 kg of green leaf through Channel-I and Channel-II. The only difference between the two channels is the presence of commission agent in Channel-I, while all the sampled respondents produce were found out to be processed in the same factory. Therefore, marketing cost of processing unit remains same in both the channels. After the green leaf is processed in the processing unit, it is being marketed through wholesalers and retailers, therefore, from the point of processing unit the marketing costs remain same in both the channels. Certain quantity of processed tea leaf from the studied processing unit were also auctioned at Nilgiris auction center,

however, it has been neglected in the marketing channel by the researcher due to time limitation.

Conclusion
In conclusion, the study provides valuable insights into the marketing of Tea in Nilgiri district and highlights the need for

policy interventions to improve the marketing system's efficiency and farmers' income and promote sustainable agriculture. The study's findings and recommendations highlight the need for a multi-stakeholder approach involving farmers, government agencies, non-governmental organizations, and other private actors to develop a more efficient and transparent Tea marketing system. Further research and analysis are also required to explore the feasibility and potential impact of these recommendations, especially in the context of changing market dynamics and consumer preferences. Ultimately, this study contributes to the existing literature on agricultural marketing and can serve as a valuable resource for scholars, policymakers, and practitioners working in this field.

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