A Comprehensive Mapping of the Coconut Value Chain actors in Western Tamil Nadu, India

ABSTRACT

The coconut industry in Western Tamil Nadu, India, epitomizes the intricate interplay of actors and activities within the agricultural value chain. Despite India's prominent stature as the leading coconut producer globally, challenges persist, including price disparities and limited value addition. This study investigates the coconut value chain in Western Tamil Nadu, mapping its actors and activities to elucidate opportunities for enhancing efficiency and sustainability. Employing a multi-stage sampling technique, data were collected from 300 coconut farmers and various stakeholders. Six value chains were identified, encompassing domestic, processing, and export markets. Primary actors, including farmers, harvest contractors, commission agents, wholesalers, retailers, processors, farmer producer companies (FPCs), and exporters, were analyzed in terms of their roles and activities. Results highlight the significance of value chain mapping in understanding market dynamics and optimizing resource allocation. Channel III, facilitated by FPCs, emerged as a promising avenue for reducing costs and enhancing market efficiency. This study underscores the importance of informed decision-making and strategic interventions for fostering a sustainable and vibrant coconut industry in Western Tamil Nadu and beyond.

Key words: *Actors; Efficiency; Intermediaries; Marketing; Value Chain*

1.INTRODUCTION

The coconut tree, hailed as the "Kalpavriksha" (Tree of Heaven) for its versatile nature and the myriad uses of its products, stands as a symbol of abundance and utility. Cultivated across more than 90 countries in the tropics and subtropics, coconut yields approximately 62.41 metric tonnes annually from a sprawling 12.96 million hectares, boasting an average productivity of 9687 nuts per hectare (CDB, 2023).India, endowed with rich coconut biodiversity, claims the title of the largest producer, contributing a hefty 33.02 percent to the world's coconut production, totaling a staggering 22167 million nuts. Leading the charge is Kerala, with a production of 7.63 billion nuts (35.69 percent) from 7.56 lakh hectares (34.74 percent). Karnataka follows suit, boasting 6.15 lakh hectares and clinching third place in production with 23.96 percent (5.123 billion nuts). Tamil Nadu emerges as the second-largest producer, accounting for 24.84 percent (5.31 billion nuts) and securing third place in terms of area, covering approximately 4.37 lakh hectares. Productivity-wise, Andhra Pradesh takes the lead with 13563 nuts per hectare, surpassing the average productivity by 172 percent, trailed closely by West Bengal with 12464 nuts and Tamil Nadu with 12144 nuts per hectare, marking 154 percent of the average productivity (IBEF, 2023).

However, the preceding year witnessed a sharp downturn in production and productivity, attributed to relentless cyclones ravaging coastal regions and significant pest and disease outbreaks in inland areas(PIB, 2019). Despite an increase in area from 18.24 lakh hectares in 2000-01 to 21.74 lakh hectares in 2018-19, production escalated from 12678.4 million nuts in 2000-01 to 21384.33 million nuts in 2018-19, and productivity soared from 6951 nuts per hectare in 2000-01 to 11350 nuts per hectare in 2017-18, only to plummet to 9346 nuts per hectare in 2022-23.

1.1 Need for Value Chain Analysis in Coconut Industry

The agricultural value chain, as described by Miller and Jones (2012), encompasses a comprehensive array of activities and participants involved in the journey of agricultural products from input suppliers to farmers' fields, and ultimately, to consumers. Each actor in the chain is interconnected, forming a cohesive and sustainable system. Strengthening the linkage between farmers and markets through efficient value chains holds the potential to reduce reliance on intermediaries, enhance value-adding activities through improved technology and inputs, and upgrade infrastructure and processing capabilities for exports.

Despite India's global dominance in coconut production, a disparity exists between production and consumption. The majority of coconuts produced are earmarked for domestic use, resulting in lower prices for farmers and heightened price volatility for consumers. In light of increasing competitiveness and globalization, there is a pressing need to deliver high-quality products(Kalidas, 2020). Achieving efficiency in both production and marketing stages is imperative for accessing domestic and global markets and commanding premium prices.

Evidently, only a meager 5.00 percent of the coconut produce in the country is transformed into value-added products (Sharma, 2019). Therefore, this study aims to elucidate the actors in the coconut value chain and map their roles within the context of Western Tamil Nadu, providing valuable insights for enhancing the efficiency and sustainability of the coconut industry.

2. METHODOLOGY

A multi-stage random sampling technique was employed to select the sample respondents based on the time and resource constraints of the investigator. In the first stage, among various districts in Tamil Nadu, Coimbatore, Tirupur, Erode and Namakkal were purposively selected based on the area and production of coconut. Among the 31 districts of Tamil Nadu, Coimbatore stands first in area and production, followed by Tirupur, Thanjavur, Dindigul and Kanyakumari, respectively. Coimbatore district accounts for 20.29 percent of total area, 13.80 percent in Tirupur district, 8.54 percent in Thanjavur, 6.68 percent in Dindigul in the year 2018-19 (CDB 2023). Among various districts of Tamil Nadu, the Western region of Tamil Nadu contributed to 39.26 percent (Coimbatore – 20.29 percent, Tirupur – 13.80 percent, Erode – 3.21 percent, Namakkal – 1.97 percent) of the total area under cultivation. Hence Western region of Tamil Nadu was purposively selected for the study

In the second stage, based on the area under coconut cultivation, three taluks in each district viz., Pollachi, Anaimalai and Kinathukadavu in Coimbatore district, Udumalpet, Dharapuram and Palladam in Tirupur district, Mohanur, ParamathiVelur, Kabilarmalai in Namakkal district were selected and due to wide spread area under coconut in Erode, five taluks viz., Perundurai, Gobichettipalayam, Sathyamangalam, Modakurichi and Kodumudi in Erode district were selected.

In the third stage, two villages were selected from each taluk based on the highest area under coconut cultivation and farmers were randomly selected from the selected villages. Twenty-five farmers from nine taluks i.e., Coimbatore (3 Taluks), Tirupur (3 Taluks) and Namakkal (3 Taluks) and fifteen farmers from five taluks of Erode district were selected with the total of 300 coconut farmers were selected randomly.

The farmers were contacted individually for collection of information on production, marketing, post-production activities, value chain of coconut with the help of a well-structured and pre-tested interview schedule. Based on the preliminary survey, the stakeholders in the value chain were identified. The participants were drawn from the supply chain, tracing from the origin (i.e.,) the farmers. Besides the sample farmers, 40 commission agents, 40 harvest contractors, 20 exporters, 20 processors, 40 wholesalers, 40 retailers and 80 consumers involved in the value chain were selected randomly.The primary data required for the study was collected through a personal interview with the help of a well-structured and pre-tested interview schedules. Five separate sets of interview schedules were prepared to collect details from farmers, intermediaries, processors, FPCs, and consumers.

2.1 Value chain structure and mapping

Mapping of value chain eases a clear understanding of the series of activities with main actors and relationships involved (Ahn, 2011)

. It provides tools and examples on how to capture the different dimension of a value chain. So, Value Chain Analysis (VCA) began with the process of mapping the value chain. Models, figures, diagrams and tables were used to understand the connections in the value chain and it was done using e-draw software(Gallardo, 2015). The following dimensions were considered for mapping and for providing an overview of the coconut value chains.

First, the core process in the value chain was identified. Secondly, efforts were taken to identify and map the key actors involved in these activities and their roles in the value chain were analyzed, followed by the classification of actors according to their occupational roles. Since the value chain was geographically spread over the locations, the location-specific process was included.

Consequently, the flow of products through the value chain were mapped. Finally, the value at different levels of the chain was mapped by measuring the cost, returns and margins per 1000 nuts.

3.RESULTS AND DISCUSSION

3.1 Mapping of value chain network for Coconuts in Western Tamil Nadu

The traditional value chain of coconut enhanced the local utility of matured nuts either for local consumption or social, religious and cultural functions and rituals throughout the country (Ahn 2011). In this study, the final products, i.e. the matured coconuts nuts sold in domestic markets, sold via exporter and sold to the processor, have been mapped and explained. Analysis of value chain is essential in the current scenario helps to know which part of the chain is competent or efficient so that it can be further strengthened or maintained and which part would be better if left outsourced. It also considers the role of intermediate market sequence between farms to final consumption, which tends to be imperfect. Lastly, it also explains the share of consumer rupee between value chain intermediaries in the global perspective (Kaplinsky and Morris 2008).

Contractors harvested the coconut from the orchard based on the duration of the previous harvest. The harvested coconuts (with husk) or dehusked coconuts was sold to the wholesalers based on the prefixed price. The husk was sold to the coir industry in the nearby area. On an average, three to five villages within a 10 km radius will be covered by the harvest contractors. Based on the regular requirement, the harvest contractors sold the coconuts to the wholesalers. Wholesalers facilitated the sale of coconuts while they took a margin of 8-10 percent of the sale value from the farmers. The wholesalers, in turn, sold the coconuts to the retailers or institutions on a wholesale rate. The method of sales to retailers was based on mutual negotiations providing the advantage for the wholesalers rather than the farmers. In India, 50 percent of the coconuts were marketed as coconut with tuft or coconut without tuft. The coconut with tuft is used for religious rituals and coconut without tuft is used for processing. During transportation to distant markets, the coconuts were packed in tightly packed sacks to reduce the transit losses. The value chain for coconut was drawn to indicate the movement of the coconut from the farmers through the different intermediaries to the consumers in South India.

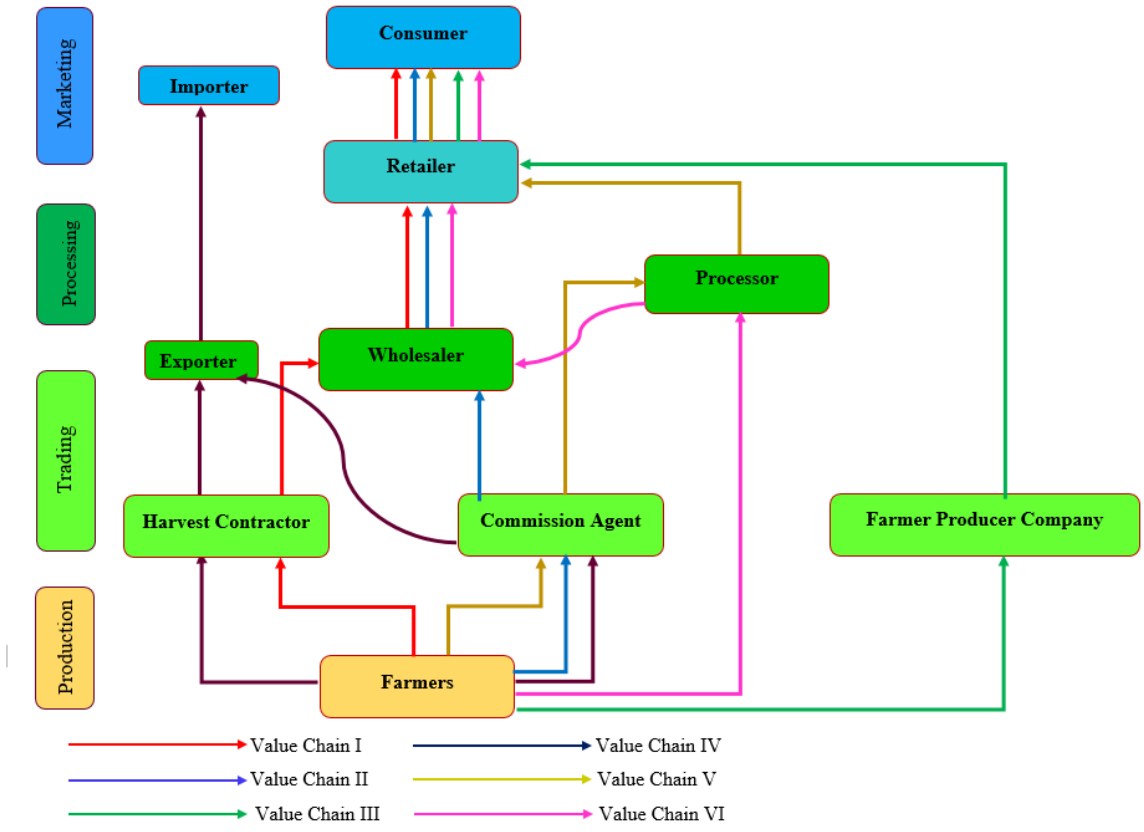

Fig .1 Coconut Value Chain Mapping in Western Tamil Nadu

The harvested nuts from the farm were sold in different marketing outlets such as harvest contractors, commission agents, exporters and Farmer Producer Companies. Six value chains were operated in Western Tamil Nadu; in that three chains are operated for the domestic market; two chains are operated for the processing chain and one chain for the export market.

3.2 Role of primary actors and their activities in Coconut Value Chain

Six coconut value chains were mapped and explained above, the primary role of value chain actors present in Western region of Tamil Nadu and their activities has been explained in the Table.

Table 1 :Role of primary actors and their activities in Coconut Value Chain in Western Tamil Nadu

Actors	Value Chain Activities
Farmer	The average farm size of coconut in the study region was about 2.5 – 5.0 acres. One acre of coconut farm accommodated about 70 trees. Coconut is one of the most important plantation crops which has high price sensitivity. During the peak season (February - April), the sale price is Rs. 8 per nut and during the lean season, the price goes up to Rs. 20-25 per nut. The marketing chain in the Western region of Tamil Nadu is through harvest contractors, commission agents, wholesalers and farmer producer companies. When the produce was sold to harvest contractors, the harvest charge was borne by the harvest contractors, but in the case of commission agents and intermediaries, the charge has to be borne by the farmer. Most of the farmers preferred harvest contractors because of the advance money given by the contractor and labour supply for harvesting. Most of the farmers were aware of the good agricultural and good management practices and are practiced by few farmers. The sale method adopted by the farmers was on tons basis instead of nut basis. The main advantage of selling the nuts by ton basis was that the intermediaries took all size nuts without any wastage. Most farmers had good knowledge about the current market price, hence they sold the produce at the maximum fair price.
Harvest Contractors (HC)	Harvest contractors (HC) were the assembling agents for coconut in Western Tamil Nadu; they assured farmers for buying of produce immediately after the harvest from the field itself. Most of the harvesting contractors purchased the nuts on ton basis. Nuts were dehusked in the filed or yard. Usually, harvest contractors entered into a contract by providing advance money, which was a kind of fixed deposit. Farmers used the advance for cultivation purposes / if they needed credit, they could get it from the harvest contractors. However, no written contract was signed with the harvest contractors; instead, they provided advance based on the previous harvest (50 – 75 percent was given as advance). Price fixation between the farmers and the harvest contractors was through negotiation. HC offered a 10-15 percent price less than the current market price, which was obtained from the buyer. In Western region of Tamil Nadu, most of the farmers preferred to sell the produce through this chain only because of zero marketing costs; the harvest team of harvest contractors took harvesting of coconut, the HC also borne the dehusking charges. HC reduced the harvesting charge from the selling price offered to the farmers. Transportation and transportation cost was also taken care of by the HC. HC offered price differed on a weekly basis, based on the market price and the price fixed by the buyer. Though HC was able to realize more profit through this system, it also involved a high degree of financial risk. The ownership of the produce lied with the farmer until the HC acquired it, but HC was committed to pay the fixed price to growers from whom the produce was sourced.
Commission Agents (CA)	Commission agents facilitated the sale of produce with the buyer and charged a fixed price of Rs.250 / tons (0.25 paisa per nut). In this method, the farmers harvested the produce with the help of locally available harvesters and stored the nuts in their yard. When the buyers approached the CA for coconuts, the commission agents, in turn, approached the farmers and fixed the price for the available nuts. Farmer either sold the green husked nuts or brown husked nuts. If the price was fixed, immediately after harvest the farmers sold the green nuts, or they stored the nuts until the husk turn brown. Usually, brown husked nuts fetched a higher price than the green nuts, but the price of the husk was lower than the green husk. CA facilitated in dehusking the nuts with the locally available

	dehuskerand dehusking charges were reduced from the selling price. Husk will be sold separately by the farmer to the coir industry with the help of the commission agents. Buyers for coconuts were either wholesalers or exporters or processors located in and around Kerala and Tamil Nadu. The buyers borne the marketing cost and the commission agents met the broking charges alone. In some cases, the commission agents paid the full amount for coconut and kept the stored nuts at the farmer's yard itself, when the price hiked, he in turn sold to the buyers for higher profit.
Wholesalers (WS)	Wholesalers was the major buyer for raw coconuts from the harvest contractors or commission agents. HC / CA after receiving the confirmation on load and price from the WS, sent the load to WS using hired transportation. Usually transportation charge was borne by the WS. Marketing costs like loading, unloading and other charges will be borne by the WS. He stored the produce in the yard and supplied the nuts to the retailer. He also played the role of bulk supplier especially to the institutions and also sold the nuts in retail. Grading and sorting was done based on the size, Smaller sized nuts are sold to retailer near temples and bigger sized nuts were supplied for consumption purposes. They usually charged 10-15 percent as margin.
Retailers	The retailers was the final point of contact with the consumer of the produce, when the produce was taken in retail (less), the retailer had to bear loading, and unloading and transportation charges. If the produce was taken in bulk, then the wholesaler with his own transportation delivered the produce to the retailer. If he stored for a long time, then he had to bear the risk of loss due to quality deterioration. Payment for the produce was to be made immediately or in week's interval.
Primary Processors (PP)	The farmers did primary processing activities in coconut by converting the coconut into copra. Farmers used the drying yard at their place, they dried the harvested nuts and also during the lean season, they procured the nuts from the commission agents and converted the coconut into copra. Copra was sold to the processors for secondary processing. Husk and shell were sold separately to the processors for manufacturing coir and activated carbon. The price received by the farmer /primary processor per nut was higher in this case. They used separate labours/family members for processing the nuts.
Processors (SP)	Raw dehusked coconuts from the harvest contractor's / commission agents were brought for processing. Processor, deshelled the nuts and manufactured value-added products from the coconut. In the case of coconut oil manufacturers, copra received from the primary processor was processed for manufacturing coconut oil. The purchase price of coconut varied based on the market rate and location. Usually, transportation charges was borne by the sellers; in some cases, the processors had their own transportation to transport the nuts.
Farmer Producer Company (FPC)	Farmer Producer Company is a legal entity registered under the Companies Act 2013 to empower the farmers and improve their livelihood. In Western Tamil Nadu, FPCs have been registered in the name of Coconut Producer Companies and took up activities in trading and processing of coconut. Trading was meant for procuring the coconuts directly from the farmers without any intermediaries and supply to the retailers in and around Tamil Nadu. For processing, FPCs established a unit with the support of the state Agricultural Engineering department. The primary processing activity done by the FPCs was coconut oil crushing. Coconut Oil was being sold to the shareholders/retailers and oil cake was sold to the dairy farmers and reaped good margin.
Exporters	Exporters played vital role in exporting the coconuts. Dehusked coconuts with tuft received from the harvest contractors or commission agents were packed in the polyethylene bags of 45 to 50 kg weight and were transported to the nearby ports. From there, the coconuts were shipped to the importing countries.

CONCLUSION

The comprehensive analysis of the coconut value chain in Western Tamil Nadu provides valuable insights into the dynamics of agricultural production, marketing, and distribution in the region.

Through rigorous mapping and examination of key actors and activities, this study has shed light on the diverse channels through which coconuts traverse from farm to consumer.The findings underscore the pivotal role played by various stakeholders, including farmers, harvest contractors, commission agents, wholesalers, retailers, processors, farmer producer companies (FPCs), and exporters, in shaping the coconut industry landscape. Each actor contributes distinctively to the value chain, facilitating the flow of coconuts from production hubs to end consumers.

Importantly, the identification of six distinct value chains—spanning domestic, processing, and export markets—reveals the intricate network of interactions and transactions that characterize the coconut industry in Western Tamil Nadu. Among these, Channel III, facilitated by FPCs, emerges as a promising model for reducing costs and enhancing market efficiency.

The implications of this research extend beyond the confines of Western Tamil Nadu, offering valuable lessons and strategies for optimizing value chains in coconut-producing regions worldwide. By leveraging these insights, policymakers, industry stakeholders, and farmers can collaborate to overcome challenges, foster innovation, and unlock the full potential of the coconut industry, driving economic growth, sustainability, and prosperity for all involved.

Moving forward, concerted efforts are needed to capitalize on the opportunities identified in this study, such as promoting farmer cooperatives, enhancing value addition, strengthening market linkages, and investing in infrastructure and technology. By doing so, we can chart a path towards a more resilient, inclusive, and sustainable coconut industry that benefits farmers, consumers, and the broader economy alike.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

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