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Cracking the value Chain: An analysis of coconut value addition in Pollachi, Tamil Nadu

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Abstract
This study provides an in-depth analysis of the coconut value chain in Pollachi, Tamil Nadu, with a focus on identifying the key challenges and opportunities that shape the industry's growth and profitability. The research reveals that the coconut value chain is characterized by inefficiencies, including the dominance of middlemen, price volatility, and limited market access, which significantly impact farmers' earnings and profitability. The study highlights the critical role of value addition in enhancing profit margins and competitiveness, but notes that small-scale farmers face significant barriers in accessing finance, technology, and infrastructure, which limits their ability to participate in value-added activities. The research also examines the impact of government support programs and initiatives aimed at promoting the coconut industry, and identifies areas for improvement, including increasing awareness and accessibility of support services. Furthermore, the study explores the potential of export markets for coconut products and identifies key challenges and opportunities, including logistical and certification issues that need to be addressed to enhance the industry's global competitiveness. Overall, the study provides valuable insights into the complexities of the coconut value chain and highlights the need for a multi-faceted approach to address the industry's challenges and unlock its growth potential.

Keywords: Value-chain, coconut, value addition

Introduction
The coconut industry in India is a vital component of the agricultural sector, providing livelihoods for millions of farmers and rural communities, and contributing significantly to the country's economy. However, the value chain is often characterized by inefficiencies and inequities, with farmers relying on indirect marketing channels that involve multiple intermediaries, resulting in reduced earnings and limited financial benefits for producers. This complex web of intermediaries not only dilutes farmers' profits but also limits their ability to invest in sustainable agricultural practices, improve their livelihoods, and respond to changing market demands. Furthermore, the lack of transparency and accountability in the value chain can lead to exploitation of farmers, perpetuating poverty and inequality. The situation is further exacerbated by the fact that coconut farmers in India often face significant challenges, including limited access to credit, technology, and market information, which hinders their ability to compete in the global market. In recent years, there has been a growing recognition of the need to reform the coconut value chain and promote more direct and sustainable marketing channels. The emergence of direct marketing channels, such as farm-to-consumer sales, digital platforms, and community-supported agriculture initiatives, offers a promising alternative, enabling farmers to sell their produce directly to consumers, increase their income, and adopt sustainable agricultural practices. This shift in marketing channels is also driven by changing consumer demand for sustainability, transparency, and eco-friendly practices, highlighting the need for a more nuanced understanding of the coconut value chain and the potential benefits of direct marketing for farmers, consumers, and the environment. By examining the dynamics of the coconut value chain and the impact of direct marketing on farmers' livelihoods, this study aims to contribute to the development of more equitable and sustainable agricultural systems that benefit all stakeholders involved. The study will investigate the current state of the coconut value chain, identify the challenges

and opportunities faced by farmers, and explore the potential of direct marketing channels to improve farmer livelihoods and promote sustainable agriculture. The findings of this research will have implications for policymakers, farmers, and consumers, and will inform strategies to promote sustainable agriculture, improve farmer livelihoods, and enhance the overall sustainability of the coconut industry. Ultimately, this study seeks to contribute to the development of a more sustainable and equitable coconut industry that benefits farmers, consumers, and the environment.

The coconut value chain involves 9 key actors.

1. **Farmers:** Grow and harvest coconuts, selling on a ton basis.
2. **Harvest Contractors:** Assemble coconuts, providing advance payments and handling logistics.
3. **Commission Agents:** Intermediaries between farmers and buyers, facilitating sales.
4. **Wholesalers:** Buy and grade coconuts, supplying to retailers or institutions.
5. **Retailers:** Sell coconuts directly to consumers.
6. **Primary Processors:** Convert coconuts into copra for secondary processing.
7. **Secondary Processors:** Create value-added products like coconut oil and activated carbon.
8. **Farmer Producer Companies:** Empower farmers, eliminating intermediaries and trading directly.
9. **Exporters:** Package and transport coconuts to international markets.

By understanding these factors, the coconut value chain in this region involves multiple intermediaries, including commission agents, wholesalers, and processors, which reduces farmers' direct earnings. Most farmers sell raw coconuts at lower farm gate prices, while intermediaries and processors capture higher margins through value-added products like copra, coconut oil, and coir-based items. This price spread limits farmers' profitability and sustainability. Enhancing value addition through direct processing, farmer cooperatives, and improved market linkages can significantly increase farmers' income by reducing intermediaries and ensuring better price realization.

Materials and Methods - Survey

The study follows a descriptive research design, aiming to analyze the coconut value chain and the influence of value addition in Pollachi, Tamil Nadu. This research design is appropriate as it helps in understanding the relationships between different stakeholders in the coconut value chain, market dynamics, and the impact of value-added products on profitability.

Sampling Technique

Data collection was conducted through telephonic interviews with respondents engaged in various stages of the coconut value chain including farmers, wholesalers, processors, retailers, and exporters in Pollachi, Tamilnadu. The structured questionnaire was designed to extract relevant insights regarding price spread, market challenges, and the role of value addition. The responses were documented systematically to ensure accuracy and consistency. The questionnaire was divided into five sections covering demographics, price spread analysis, value addition impact, infrastructure and policy support, and future market expansion.

Sample Size

The subset of the population selected for the study. Here, 43 respondents have been chosen to provide insights, ensuring diverse representation for accurate analysis of value chain dynamics.

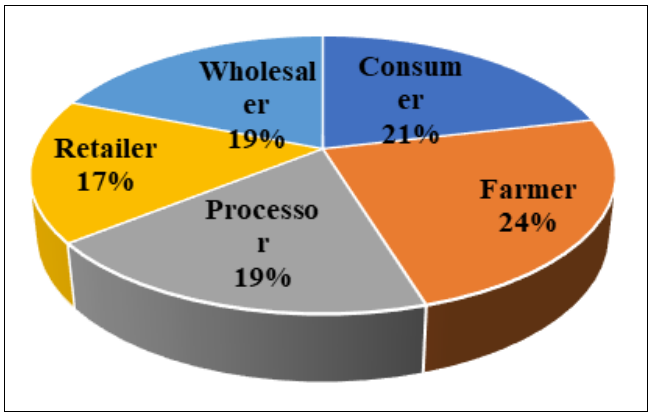
Statistical Analysis

Descriptive statistics was used to analysing the collected data. The findings are visually represented through pie charts and bar graphs, facilitating a clear understanding of the data distribution and trends.

Results

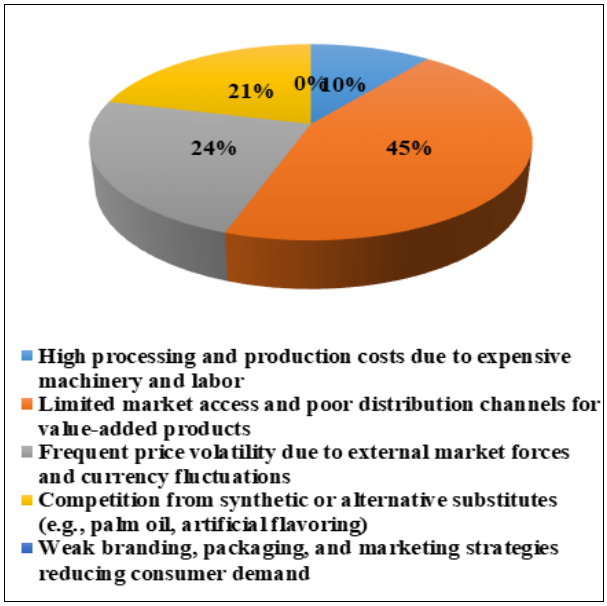
Primary role in the coconut value chain

Farmers (24%) - Farmers form the largest group in the value chain, indicating their significant role in coconut production. Their input is crucial for understanding the challenges in cultivation and the initial stages of the value chain. Consumers (21%) - Consumers represent the second-largest group, highlighting the importance of understanding demand, preferences, and perceptions of coconut products in the market. Wholesalers (19%) - Wholesalers play a key role in the distribution process, bridging the gap between producers and retailers. Their perspective provides insights into bulk trading and pricing dynamics. Processors (19%) - Processors are critical for adding value to raw coconuts, turning them into various products like coconut oil, milk, and coir. Their role indicates the significance of value addition in the supply chain. Retailers (17%) - Retailers, while the smallest group, are essential for delivering the final product to consumers. Their insights help understand consumer trends, pricing at the



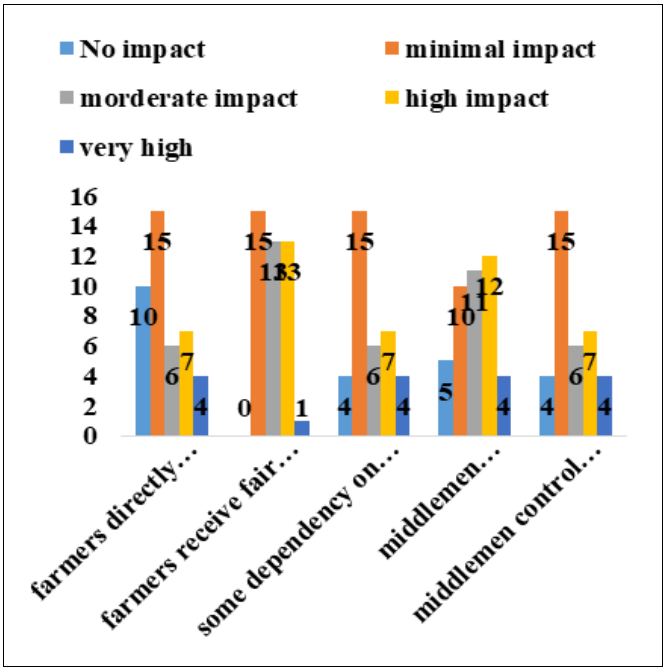
Factors Influencing Price Fluctuations

The key factors contributing to price fluctuations in the coconut market. Among these, seasonal yield variations and climatic conditions emerge as the most significant influences. This highlights the dependency of coconut farming on weather patterns, where droughts, excessive rainfall, or unexpected climatic changes impact production levels, leading to price volatility. Additionally, domestic and international demand shifts play a crucial role in price variations. Increased demand from export markets or domestic consumption spikes can drive prices upward, whereas periods of surplus production may lead to price declines. Supply chain inefficiencies, including transportation delays, storage limitations, and infrastructure challenges, further affect price stability. Other factors like market speculation and middlemen intervention indicate how price manipulation by traders and intermediaries can lead to artificial inflation or deflation in market prices. While government regulations, including price controls and import-export policies, have a relatively moderate influence, their impact can still be significant in stabilizing or disrupting price trends.



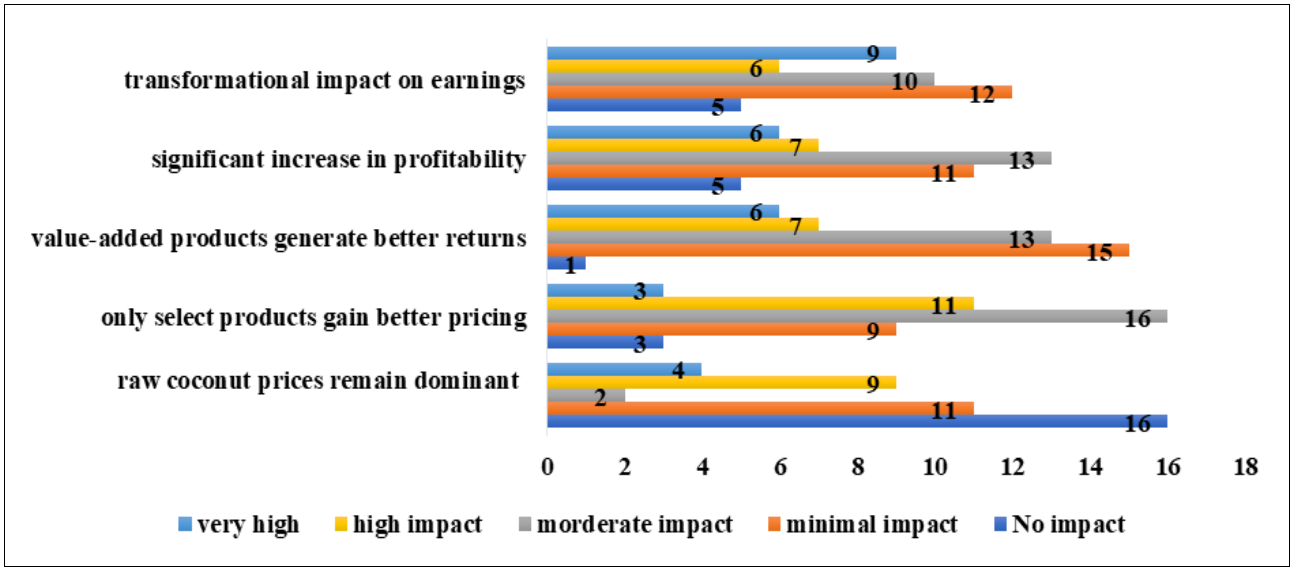
Impact of Middlemen on Price Spread

The graph highlights the significant role of middlemen in determining the price spread in the coconut market. A majority of farmers indicate a strong reliance on intermediaries, which results in them receiving a small share of the final consumer price. The presence of commission agents, wholesalers, and traders means that each intermediary adds a margin, increasing the cost for consumers while reducing the profit share for producers. This trend underscores the need for direct farmer-market linkages, such as farmer cooperatives, direct retail sales, and digital platforms that allow farmers to sell without depending on multiple intermediaries. Reducing reliance on middlemen could significantly improve farmers' profitability and ensure a more transparent pricing mechanism.

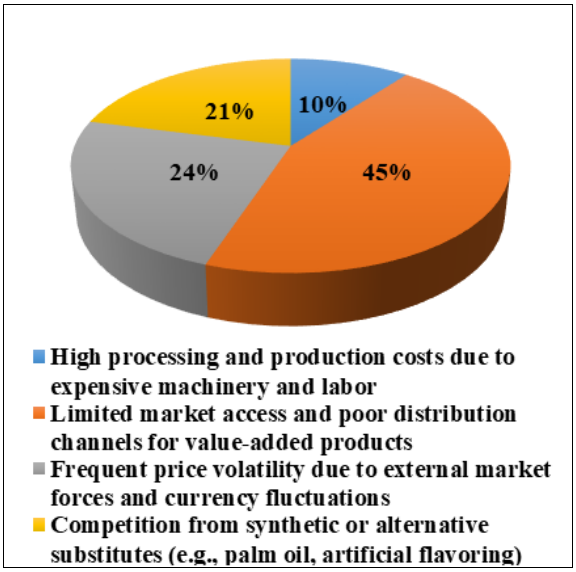


Value Addition's Impact on Price Realization for Coconut Products

This illustrates the impact of value addition on price realization in the coconut industry. The findings suggest that raw coconut sales yield lower profits, whereas value-added products such as virgin coconut oil, coconut milk, and activated carbon command significantly higher market prices. This demonstrates that processing and branding coconut-based products can lead to higher profitability and better market demand. However, many farmers and small-scale processors struggle to invest in value addition due to high initial costs, lack of machinery, and inadequate financial support. Government incentives and cooperative processing initiatives could help increase the adoption of value-added coconut products, thereby improving farmers' income levels.

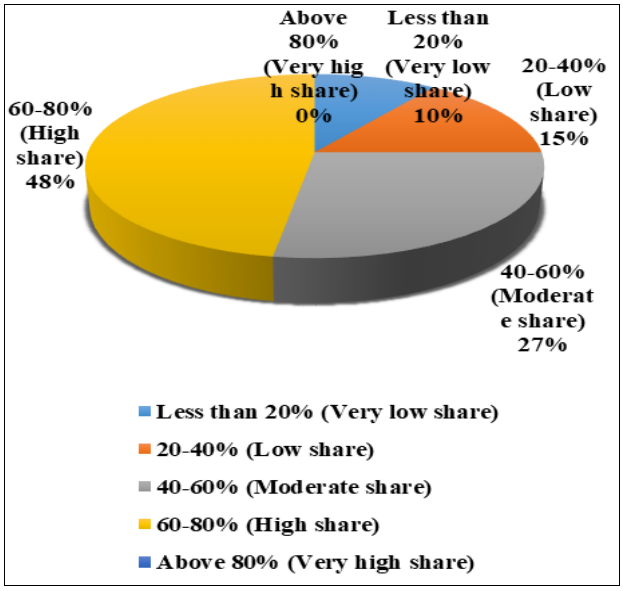


Challenges in Achieving Better Price Spread



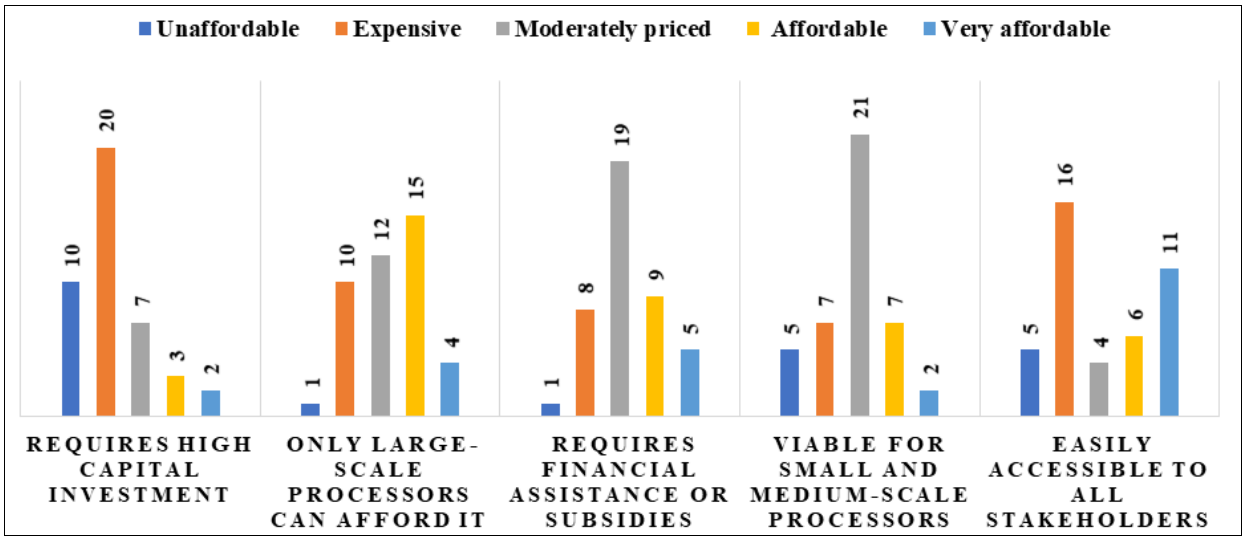
This identifies the major challenges preventing better price spread for coconut products. High processing costs and expensive machinery are cited as the most significant obstacles, making it difficult for small and medium-scale processors to engage in value addition. Other barriers include limited market access, where farmers and processors struggle to reach a wider audience due to weak marketing networks and distribution channels. Price volatility, caused by fluctuating demand and supply conditions, further affects profitability. Additionally, competition from synthetic alternatives, such as palm oil, reduces the market share of coconut-based products. To overcome these challenges, investments in processing infrastructure, financial assistance, and branding strategies are crucial for improving price realization and expanding market reach.

Farmers' Share of Final Consumer Price



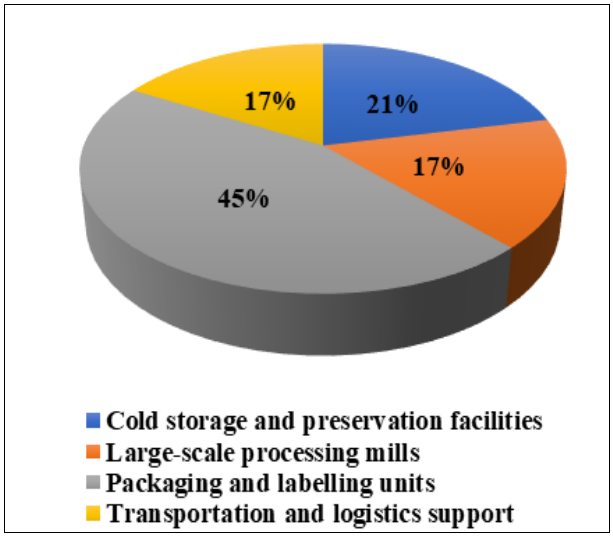
The reveals that most farmers receive less than 40% of the final consumer price, highlighting the low income share they earn despite being primary producers. Only a small fraction of farmers manage to secure a high share of 60% or more. This disparity indicates the strong influence of intermediaries, who absorb a significant portion of the price margin. Strategies such as direct farmer sales, cooperative processing units, and digital marketing platforms can help farmers retain a higher share of the consumer price.

Affordability of Processing Equipment: The below graph shows that processing equipment remains largely unaffordable for small and medium-scale stakeholders. Only large-scale processors can afford advanced machinery, while smaller players require financial assistance to invest in modern processing tools. This highlights the need for government subsidies, financial schemes, and low-interest loans to make coconut processing technology accessible to small and medium-scale entrepreneurs. Expanding financial support could boost value addition and improve profit margins for farmers.

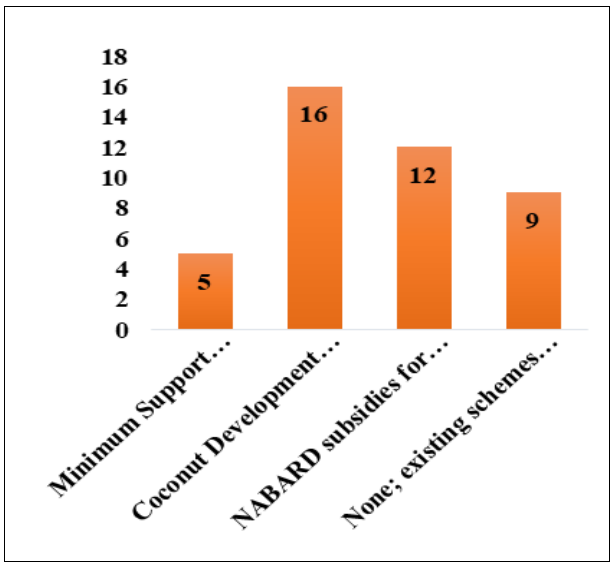


Lacking Processing Infrastructure

The Pie-chart indicates that cold storage and preservation facilities are the most lacking infrastructure in Pollachi. Additionally, the absence of large-scale processing mills restricts the scalability of value-added coconut production. Addressing these gaps through infrastructure investments and government-backed processing units can significantly enhance the shelf life and marketability of coconut products.



Effectiveness of Government Support Schemes



The above graph suggests that NABARD subsidies for small and medium enterprises are perceived as the most beneficial government support scheme. However, a significant portion of respondents indicate that existing schemes are insufficient and difficult to access. This underscores the need for more targeted financial aid, streamlined subsidy applications, and better awareness campaigns to ensure that government schemes effectively reach farmers and processors.

Conclusion

The study on the coconut value chain and the influence of value addition in Pollachi, Tamil Nadu, highlights significant challenges and opportunities within the sector. The research reveals that while coconut farming remains a vital source of income for thousands of farmers, inefficiencies in the value chain—mainly due to middlemen involvement, price volatility, and limited value addition infrastructure—result in reduced profitability for producers.

One of the major findings of this study is that farmers receive only a small percentage of the final consumer price due to multiple intermediaries such as traders, commission agents, and wholesalers controlling pricing and distribution. The correlation analysis further supports that higher intermediary involvement negatively impacts farmers' earnings, emphasizing the need for a more transparent and direct market system. Additionally, price fluctuations, largely influenced by seasonal yield variations, external market forces, and limited storage capacity, further add to the unpredictability of income for coconut farmers.

The study also finds that value addition has a significant impact on price realization. Processed products such as virgin coconut oil, coconut-based cosmetics, and coconut milk generate higher profit margins compared to raw coconut sales. However, most small and medium-scale farmers are unable to engage in value addition due to high processing costs, lack of affordable machinery, and inadequate financial support. The absence of cold storage, packaging units, and large-scale processing mills further restricts farmers and small processors from exploring high-value coconut products.

Government policies and support schemes, such as NABARD subsidies and initiatives by the Coconut Development Board, have played a role in improving the sector, but the findings indicate that these interventions remain moderately effective. Farmers and processors often struggle to access financial support, and the existing policies do not fully address market inefficiencies or infrastructure gaps. The study also highlights the importance of export markets in increasing the profitability of coconut-based products. While international demand for coconut-derived goods is rising, challenges such as high transportation costs,

stringent export quality standards, and limited branding efforts hinder Pollachi's coconut industry from fully capitalizing on these opportunities.

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