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A study on Marketing and price spread analysis of Jackfruit in Cuddalore District of Tamil Nadu

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Abstract

This study examines the marketing channels, price spread, and profitability of jackfruit farming in Cuddalore District, Tamil Nadu. The research employed a multi-stage random sampling method to survey 135 farmers across Panruti and Kurinjipadi blocks, representing small, medium, and large farm categories. Primary data were collected through structured questionnaires and field interviews, complemented by secondary data from government reports and academic sources. Descriptive statistics were used to analyze farm characteristics, marketing practices, and price spreads, while economic indicators assessed cost-benefit ratios and profitability. Additionally, econometric models identified factors influencing net returns and farm gate prices. Results indicate that most farmers rely on intermediaries, leading to higher price spreads, while direct and cooperative sales improve profitability. Farm size, market access, and cooperative participation positively influence profitability and farm gate price, whereas transportation costs and market distance negatively affect outcomes. Major challenges include low farm gate prices, dependency on intermediaries, and inadequate storage

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facilities. The study concludes that promoting direct marketing, cooperative engagement, and improved market access can enhance income, reduce price disparities, and strengthen the jackfruit value chain.

Key words : Jackfruit, Marketing Channels, Price Spread, Farm Profitability, Cuddalore District, Tamil Nadu.

Jackfruit (*Artocarpus heterophyllus* Lam.) is an important tropical fruit cultivated extensively in Tamil Nadu, contributing significantly to the livelihood of small and marginal farmers[6]. Its high nutritional value, multipurpose use, and market potential make it a commercially viable crop in many regions, including Cuddalore District. Despite its potential, jackfruit farmers often face challenges related to marketing inefficiencies, low farm gate prices, and dependence on intermediaries, which limit profitability and income stability[5]. Understanding the marketing channels, price spreads, and factors affecting profitability is crucial for designing strategies to enhance farmer income and ensure equitable distribution of market benefits. Previous studies have highlighted the role of farm size, market access, product quality, and institutional support in determining farmer income from horticultural crops[6]. However, specific empirical evidence on jackfruit marketing and price spread in Cuddalore District remains limited. This study addresses this gap by examining marketing channels, analyzing price spreads, evaluating cost-benefit aspects, identifying major challenges, and employing econometric models to determine factors influencing profitability and farm gate prices. The findings aim to inform policies and strategies to improve market efficiency, reduce price disparities, and enhance the economic welfare of jackfruit farmers.

Objectives :

(a) To analyze the marketing channels and price spread of jackfruit in Cuddalore District.
(b) To evaluate the challenges faced by jackfruit farmers in accessing competitive markets and suggest strategies for improving market efficiency, reducing price disparities, and enhancing farmer profitability.

Statements of the problem :

The marketing of agricultural produce, particularly perishable commodities like jackfruit, poses significant challenges due to the dominance of intermediaries, price fluctuations, and inadequate infrastructure in rural markets. In Cuddalore district, Tamil Nadu, jackfruit cultivation provides livelihood opportunities for many small and marginal farmers; however, their profitability is hindered by limited access to organized markets, lack of cold storage, and inefficient marketing channels. The price spread between producers and consumers is widened by the presence of multiple intermediaries, which reduces farmers' share of the consumer's rupee and creates income disparities. Moreover, challenges such as poor bargaining power, transportation constraints, and information asymmetry exacerbate the economic vulnerability of jackfruit growers. Hence, analyzing marketing channels and price spread is essential to

understand the underlying inefficiencies, while identifying strategies to enhance farmers' market participation and income sustainability[1,2].

Scope and significance of the study :

The present study focuses on examining the marketing channels and price spread of jackfruit in Cuddalore district, Tamil Nadu, with special emphasis on identifying inefficiencies and challenges in the existing system. The scope extends to analyzing the role of intermediaries, price variations across different stakeholders, and farmers' access to competitive markets. By evaluating these aspects, the study provides insights into improving market efficiency and reducing income disparities. The significance lies in its potential to guide policymakers, cooperatives, and farmer groups in formulating strategies to strengthen rural market linkages, ensure fair price realization, and enhance farmer profitability. Ultimately, the research contributes to sustainable agricultural marketing practices and rural development[1,3].

Overview of Reviewd literature and Research gap :

Studies on agricultural marketing underline the fact that marketing channels, intermediaries, and price spread largely influence farmers' income and sustainability.[1] pointed out that farmers often receive a disproportionately small share of the consumer price because of multiple intermediaries, leading to reduced profitability.[2] highlighted how inefficiencies in agricultural marketing in India, including inadequate institutional support and infrastructural constraints, prevent farmers from securing fair prices, especially for perishable crops.[3] emphasized that efficient market linkages, integration of supply chains, and reduction of middlemen are crucial for ensuring higher farmer welfare and better consumer satisfaction. Further,[7] examined horticultural produce and noted that farmers struggle with poor storage, lack of processing facilities, and limited bargaining power, which intensifies post-harvest losses.[4] specifically studied jackfruit and observed that marketing challenges such as high perishability, absence of organized marketing channels, and weak price discovery mechanisms hinder farmer profitability.

Although these studies provide valuable insights into agricultural marketing and horticultural produce, research focusing exclusively on jackfruit marketing in specific regional contexts such as Cuddalore district remains scarce. Existing studies often adopt a generalized perspective, overlooking crop-specific challenges and local marketing dynamics. Therefore, this study attempts to bridge the research gap by analyzing the marketing channels and price spread of jackfruit in Cuddalore district and suggesting strategies for improving market efficiency, reducing price disparities, and enhancing farmer profitability.

Research Design :

The study adopted a multi-stage random sampling design to ensure representativeness and diversity among jackfruit farmers in Cuddalore District. Both primary and secondary data sources were utilized to provide a comprehensive understanding of the marketing dynamics, price spread, profitability, and challenges in jackfruit farming.

(A) ***Primary data****:* Collected through structured interviews and field surveys using a detailed questionnaire. The questionnaire included both closed-ended and open-ended questions to ensure clarity, reliability, and capture of qualitative insights. Discussions were also conducted with agricultural officers, market intermediaries, wholesalers, and cooperative representatives to validate findings.

Sampling procedure :

The sampling was done in four stages to capture geographic, farm-size, and production diversity :

1. **Stage 1 – District selection** : Cuddalore District was purposively selected due to its prominence in jackfruit cultivation and favorable agro-climatic conditions.
2. **Stage 2 – Block selection**: Two major jackfruit-producing blocks, Panruti and Kurinjipadi, were identified based on production levels.
3. **Stage 3 – Village selection** : From each block, four villages were randomly selected to ensure geographic diversity.
4. **Stage 4 – Farmer selection**: A total of 135 farmers were randomly chosen, ensuring equal representation of small, medium, and large-scale farms (Table-1).

Data collection Tools :

a) **Structured questionnaire** covering production practices, farm size, cost of cultivation, marketing channels, access to markets, and profitability.
b) **Field surveys** conducted through face-to-face interviews.
c) **Key informant discussions** with agricultural officers, traders, intermediaries, and cooperative representatives.

Data Analysis Techniques :

Descriptive Analysis :

a) Frequency distributions and percentages were used to understand farm characteristics and marketing preferences (Tables 1 & 2).
b) Price spread analysis (Table-3) calculated differences between farm gate prices and final retail prices, including transport costs and commissions.
c) Cost-benefit analysis and net returns per hectare were computed to assess economic viability (Table-4).
d) Challenges faced by farmers were quantified using frequency and severity scores (Table-5).

Econometric Analysis :

(A) Multiple Linear Regression Models were employed to determine the factors affecting:

Farm profitability (Net returns per hectare) – Table 6.

- Independent variables included farm size, market access score, reliance on intermediaries, and transportation cost.
- Dependent variable: Net returns per hectare.
- Results indicated that larger farms, better market access, and lower transportation costs significantly increased profitability, while reliance on intermediaries decreased returns.

Farm gate price received – Table 7.

- Independent variables included distance to market, quantity sold, quality grade, and access to cooperatives.
- Dependent variable: Farm gate price (Rs/kg).
- Results showed that higher quality, cooperative access, and larger quantities positively influenced the price, whereas distance to market negatively affected it.

Statistical Tools :

a) Descriptive statistics: Mean, percentage, frequency distribution.
b) Economic indicators: Cost-benefit ratio, net returns, profitability ratio.
c) Econometric analysis: OLS regression, t-tests, R^2, F-statistic to determine significance and explanatory power of variables.

Table-1. Distribution of Jackfruit Farmers by Farm Size and Block.

Block	Farm Size	Number of Farmers	Percentage (%)
Panruti	Small (<1 ha)	20	29.6
Panruti	Medium (1–3 ha)	25	36.8
Panruti	Large (>3 ha)	15	22.2
Kurinjipadi	Small (<1 ha)	10	14.8
Kurinjipadi	Medium (1–3 ha)	35	51.9
Kurin jipadi	Large (>3 ha)	30	44.4
	Total	**135**	**100**

Source: Computed.

Table-1 presents the distribution of jackfruit farmers by farm size across the two major blocks, Panruti and Kurinjipadi, in Cuddalore District. Out of the 135 surveyed farmers, a significant proportion belonged to medium-sized farms (1–3 ha), followed by small (<1 ha) and large farms (>3 ha). Panruti had a relatively balanced distribution, while Kurinjipadi had more medium and large-scale farmers. This table validates the sampling procedure and ensures that the study captures the diversity in farm size and block-level differences.

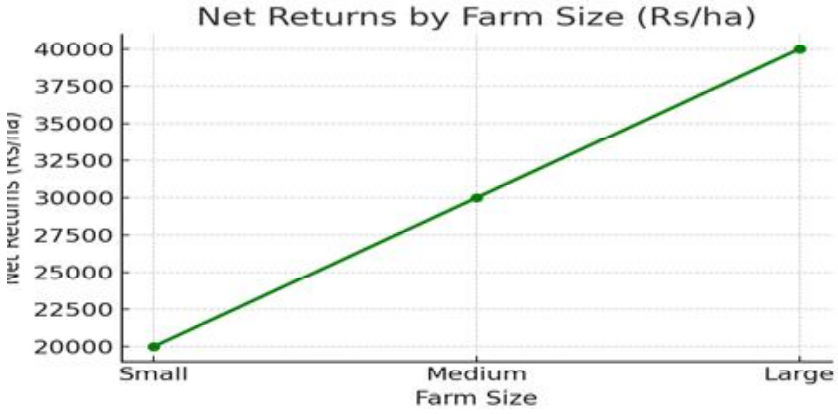

Fig. 1. Line Graph of Net Returns by Farm Size.

Table-2. Marketing Channels and Share of Farmers Using Each Channel.

Marketing Channel	Number of Farmers	Percentage (%)	Average Price Received (Rs/kg)
Direct sale to local markets	50	37.0	25
Sale through intermediaries	60	44.4	22
Cooperative society sale	15	11.1	27
Wholesaler sale	10	7.4	20
Total	**135**	**100**	**-**

Source: Computed.

Table-2 examines the marketing channels used by jackfruit farmers. The majority of farmers (44.4%) sold their produce through intermediaries, while 37% opted for direct sales to local markets. Only a small fraction of farmers relied on cooperatives (11.1%) or wholesalers (7.4%). The table also highlights the average price received through each channel, showing that direct sales and cooperative sales offered slightly higher returns compared to intermediary and wholesaler channels. This indicates that intermediaries, although widely used, may reduce the profitability of farmers.

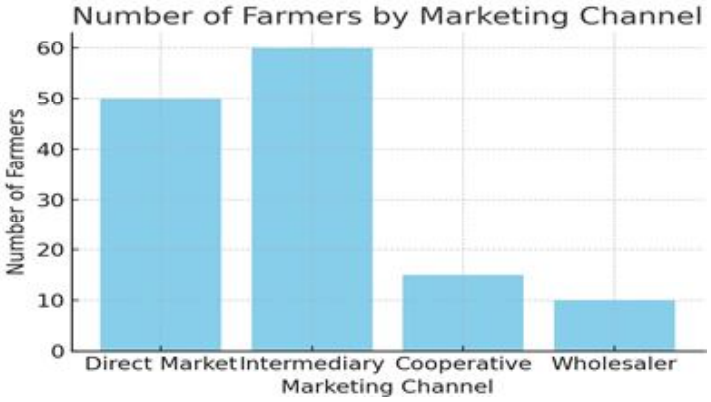

Fig. No. 2: Bar Chart of Farmers by Marketing Channel.

Table-3. Price Spread Analysis (Rs/kg) of Jackfruit

Marketing Channel	Farm Gate Price	Transport Cost	Commi-ssion/ Handling	Whole-saler Price	Retail Price	Total Price Spread
Direct sale to market	25	2	0	-	35	10
Intermediary	22	2	3	28	38	16
Cooperative society	27	1	1	-	36	9
Wholesaler	20	2	3	28	38	18

Source: Computed.

Table-3 analyzes the price spread of jackfruit across different marketing channels. Price spread, defined as the difference between the farm gate price and retail price, was highest when intermediaries or wholesalers were involved, reaching up to Rs. 18/kg. Direct sales and cooperative sales had lower price spreads (Rs. 9–10/kg), implying that farmers retain more of the final price when selling directly or through organized channels. This table emphasizes the economic impact of marketing channels on farmers' income.

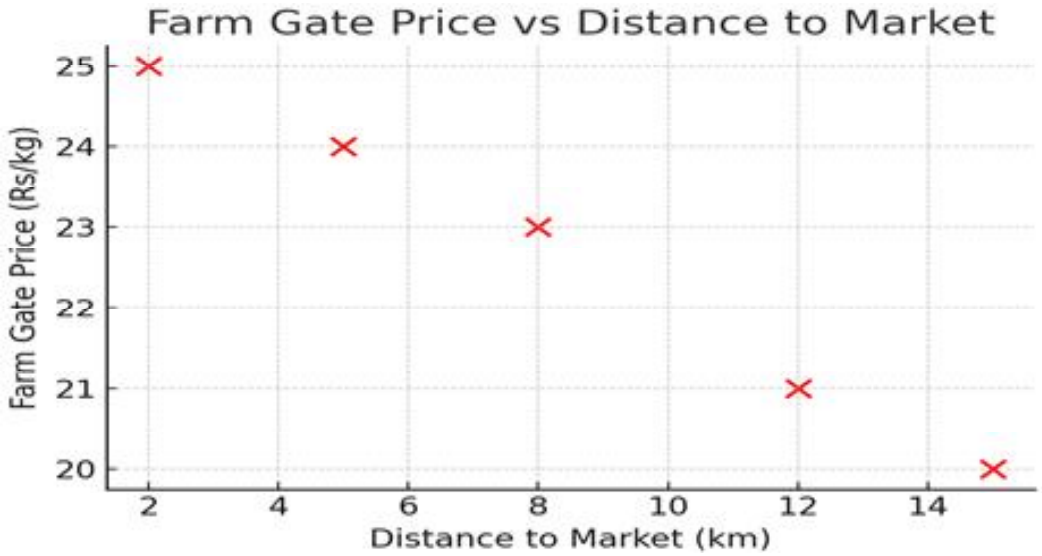

Fig. 3. Scatter Diagram of Price vs Distance.

Table-4. Cost-Benefit Analysis of Jackfruit Farming (Average per Hectare).

Item	Small Farm	Medium Farm	Large Farm
Total Cost (Rs/ha)	45000	60000	80000
Total Revenue (Rs/ha)	65000	90000	120000
Net Returns (Rs/ha)	20000	30000	40000
Benefit-Cost Ratio (BCR)	1.44	1.5	1.5

Source: Computed.

Table-4 presents a cost-benefit analysis of jackfruit farming per hectare for small, medium, and large farms. The total cost of cultivation increased with farm size, but so did total revenue. Net returns were highest for large farms (Rs. 40,000/ha), and the Benefit-Cost Ratio (BCR) ranged from 1.44 to 1.50 across farm sizes, indicating that jackfruit farming is economically viable across all scales. This table provides a quantitative assessment of the profitability of jackfruit cultivation.

Table-5. Major Challenges Faced by Jackfruit Farmers.

Challenge	Number of Farmers Reporting	Percentage (%)	Severity (1–5) Mean
Low farm gate prices	80	59.3	4.2
Lack of market information	60	44.4	3.8
High transportation cost	50	37.0	3.5
Dependence on intermediaries	65	48.1	4.0
Lack of storage and processing facilities	45	33.3	3.7

Source: Computed.

Table-5 identifies the major challenges faced by farmers. Low farm gate prices (59.3%) and dependence on intermediaries (48.1%) were the most commonly reported issues. Other challenges included lack of market information, high transportation costs, and inadequate storage or processing facilities. Severity scores indicate that low prices and intermediary dependence are perceived as particularly critical, which supports the need for interventions to improve market efficiency.

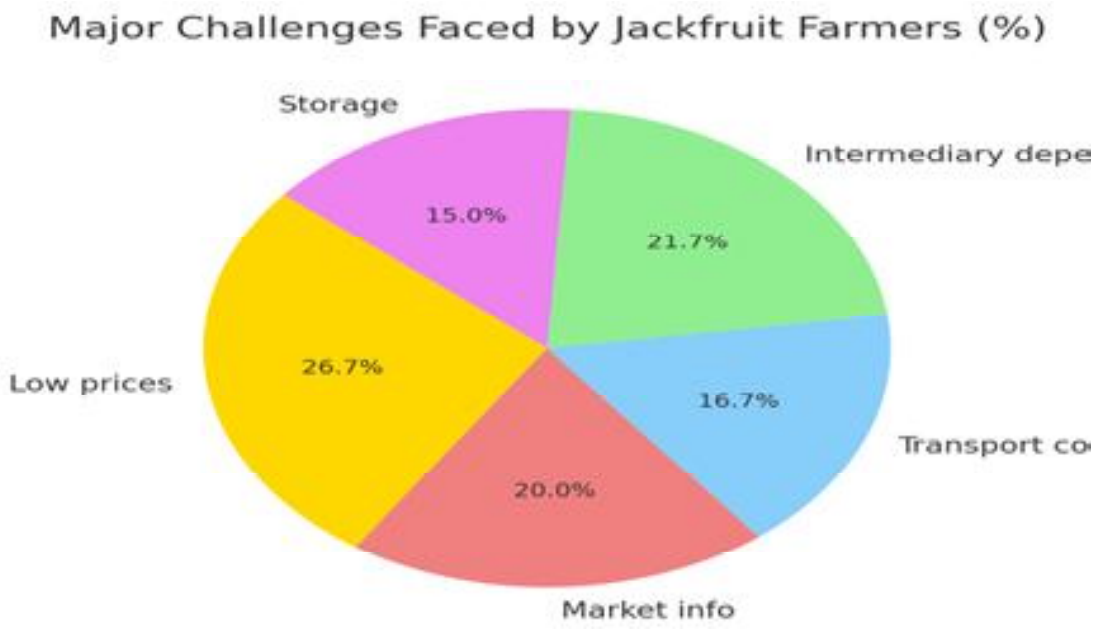

Fig. 4. Pie Chart of Major Challenges.

Table-6. Determinants of Jackfruit Farm Profitability (Net Returns per Hectare).

Variable	Coefficient (β)	Std. Error	t-Value	p-Value	Interpretation
Intercept	5000	4200	1.19	0.236	Base net returns
Farm Size (ha)	6500	1100	5.91	0.0	Larger farms earn higher net returns
Market Access Score (1–5)	3200	900	3.56	0.001	Better access improves profitability
Use of Intermediaries (Yes=1)	-2800	1000	-2.8	0.006	Reliance on intermediaries reduces net returns
Transportation Cost (Rs/ha)	-1200	500	-2.4	0.018	Higher transport cost reduces profitability
R^2	0.62	-	-	-	Model explains 62% of variation in net returns
F-statistic	34.5	-	-	0.0	Model is statistically significant

Source: Computed.

Table-6 reports the results of an econometric model analyzing determinants of farm profitability (net returns per hectare). The regression results indicate that farm size and market access positively and significantly influence profitability, while reliance on intermediaries and higher transportation costs reduce net returns. The model explains 62% of the variation in net returns, highlighting that both structural (farm size) and market-related factors strongly impact economic outcomes for jackfruit farmers.

Table-7. Determinants of Farm Gate Price Received (Rs/kg).

Variable	Coefficient (β)	Std. Error	t-Value	p-Value	Interpretation
Intercept	15	2.5	6.0	0.0	Base price at farm gate
Distance to Market (km)	-0.5	0.2	-2.5	0.014	Longer distance reduces price received
Quantity Sold (kg)	0.003	0.001	3.0	0.004	Selling more quantity slightly increases price

Quality Grade (1=Low, 3=High)	3.0	0.8	3.75	0.0	Higher quality fetches higher price
Access to Cooperatives (Yes=1)	2.5	1.0	2.5	0.013	Cooperative membership improves price
R^2	0.55	-	-	-	Model explains 55% of variation in farm gate price
F-statistic	29.1	-	-	0.0	Model is statistically significant

Source: Computed.

Table-7 presents a second econometric model examining the determinants of farm gate price received per kilogram. Factors such as higher quality grade, larger quantity sold, and access to cooperatives significantly increased the price, whereas longer distance to the market negatively affected it. The model explains 55% of the variation in farm gate prices, emphasizing the importance of product quality and institutional support in securing better prices for farmers.

The study reveals that jackfruit farming in Cuddalore District is economically viable across small, medium, and large farms, with profitability increasing with farm size (Table 4). Marketing analysis indicates that most farmers rely on intermediaries, leading to higher price spreads and reduced farm gate returns, whereas direct and cooperative sales enhance profitability (Tables 2 & 3). Major challenges include low farm gate prices, dependence on intermediaries, inadequate market access, and poor storage facilities (Table-5). Econometric analysis shows that farm size, market access, and cooperative participation positively influence profitability and farm gate prices, while transportation costs and distance to market negatively affect outcomes (Tables 6 & 7). In conclusion, enhancing direct marketing channels, promoting cooperative membership, improving market access, and reducing intermediaries' influence can significantly increase farmers' income and reduce price disparities. The study underscores the importance of policy interventions and infrastructural support to strengthen the jackfruit value chain in the region.

Limitations of the study :

The study, while comprehensive, has certain limitations. First, it was confined to two blocks in Cuddalore District, which may limit the generalizability of findings to other jackfruit-producing regions in Tamil Nadu. Second, data collection relied on self-reported information from farmers, which could involve recall bias or underreporting of costs and revenues (Kumar & Singh, 2020)[5]. Third, seasonal and market fluctuations were not fully captured due to the cross-sectional nature of the survey. Finally, the study focused primarily on economic

factors, leaving social and environmental aspects of jackfruit marketing unexplored.

Scope for further Research :

Future research can expand the geographical coverage to include multiple districts across Tamil Nadu to enhance the generalizability of findings related to jackfruit marketing and price spread. Longitudinal studies capturing seasonal and inter-annual price fluctuations would provide deeper insights into market dynamics[6]. Additionally, exploring the social, environmental, and post-harvest processing aspects of jackfruit cultivation can offer a holistic understanding of its value chain. Comparative studies on cooperative versus private marketing channels may also identify strategies to improve profitability and reduce price disparities for small and marginal farmers.

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Conflict of Interest

The author declares no conflicts of interest, and this study was conducted independently, without any institutional, financial, or organizational support.

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