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Marketing constraints and institutional utilisation among Maize (*Zea mays* L.) farmers in Namakkal District, Tamil Nadu: A Garrett ranking approach

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Abstract

Maize (*Zea mays* L.) has become an increasingly important commercial cereal in Tamil Nadu owing to the sustained demand generated by the poultry and cattle-feed industries concentrated in districts such as Namakkal. Despite this growing commercial importance, maize growers continue to face a range of marketing difficulties that constrain their price realization and net returns. This study examines the marketing constraints experienced by maize farmers and the extent to which they utilize formal marketing institutions in Puduchatram block, Namakkal district. A multi-stage cluster sampling procedure was used to select 60 maize-growing respondents from twelve villages grouped into four clusters, and primary data were collected through a pre-tested structured interview schedule. Garrett's ranking technique was employed to convert the farmers' subjective ordering of six marketing constraints into comparable quantitative scores. The results show that distance to market was perceived as the most severe constraint (mean Garrett score 77), followed by high transportation cost (63), price fluctuation (54), high commission charges (46), inadequate storage facilities (37) and lack of marketing intelligence and information (23). The socio-economic profile revealed that the sample was dominated by male, middle-aged, small and large landholders with moderate farming experience and secondary-level education. Despite the presence of six regulated markets in the district offering the Minimum Support Price, the physical proximity of 220 poultry units and allied feed industries to the cultivation clusters was found to draw farmers toward direct, informal sale, largely because the transport and time costs of reaching distant regulated markets erode the price advantage of the Minimum Support Price. The study concludes that strengthening rural transport linkages, decentralizing procurement infrastructure and improving farmers' access to real-time market information are essential for increasing the utilization of formal marketing institutions and improving farm income in the district.

Keywords: Maize marketing, Garrett ranking technique, marketing constraints, regulated markets, Namakkal, Tamil Nadu

1. Introduction

Maize (*Zea mays* L.), a member of the family Poaceae, is among the most widely cultivated cereal crops in the world. Its adaptability to diverse agro-climatic conditions, high yield potential and versatility of end uses has earned it the designation "Queen of Cereals" (Choudhary, 2013) ^[1]. India is currently the sixth-largest producer of maize globally (USDA, 2025–26) ^[9], with a cultivated area of 12.09 million hectares and a total production of 43.4 million tonnes. Tamil Nadu accounts for 0.49 million hectares (4.05 per cent of the national area) and 2.66 million tonnes of production (6.13 per cent of the national output), placing the state eighth in both area and production among Indian maize-growing states (Season and Crop Report, Tamil Nadu, 2024–25).

Within Tamil Nadu, maize cultivation is concentrated in districts such as Salem, Dindigul, Namakkal, Pudukkottai, Tiruppur, Villupuram, Perambalur and Ariyalur. Namakkal district occupies a distinctive position in this landscape

because of its large and intensive poultry industry, which generates continuous and substantial demand for maize as a feed ingredient. An estimated 19,101 hectares are under maize in the district, with cultivation concentrated in the Namagiripettai and Puduchatram blocks. For a large number of rural households, maize is therefore not merely a subsistence crop but a principal source of cash income.

Notwithstanding this expanding market demand, the marketing environment faced by maize growers remains far from efficient. Agricultural marketing performance determines how effectively value created in production is transferred to farmers, and inefficiencies in this chain excessive intermediation, multiplicity of market charges, non-transparent trade practices, weak market intelligence and inadequate storage, transport and processing infrastructure continue to erode farm-level returns (Minithra, 2019) ^[10]. A recurring symptom of these inefficiencies is distress selling, in which farmers, lacking on-farm storage and facing urgent cash needs, are compelled

to dispose of produce immediately after harvest, often during periods of market glut when prices are depressed. The dominant role of private traders and commission agents in price negotiation, together with the informal influence exerted by poultry-feed buyers on local price setting, further limits farmers' bargaining power. Delayed payment, quality-based deductions and inconsistent weighing practices compound these losses.

Public marketing institutions regulated markets, cooperative marketing societies and farmer-oriented procurement agencies have been established precisely to counter these problems by assuring transparent transactions, standard weighment and a floor price through the Minimum Support Price (MSP). Yet, in practice, the utilisation of these institutions by maize growers remains limited. Low awareness of institutional benefits, high transport costs relative to distant market locations, cumbersome procedural requirements and delayed settlement of payments are commonly cited reasons for this under-utilisation, with the consequence that a large share of marketed maize continues to move through informal, trader-mediated channels.

An economic understanding of these constraints is therefore necessary for designing interventions that can improve market efficiency and farmer welfare. Accordingly, the present study was undertaken with the following specific objectives: (i) to study the socio-economic profile of maize-growing households in the study area; (ii) to identify and rank, using Garrett's ranking technique, the principal marketing constraints faced by maize farmers; and (iii) to examine the level of utilization of formal marketing institutions among maize growers and the factors underlying their continued dependence on informal marketing channels, with a view to suggesting measures to improve marketing efficiency in the district.

2. Description of the Study Area

2.1 Geographical Location and Administrative Setup

The study was conducted in Puduchatram block of Namakkal district, Tamil Nadu. Namakkal district has a total geographical area of 3,368.21 sq. km, of which the Puduchatram block accounts for 207.15 sq. km. The area falls within the North-Western Agro-Climatic Zone of Tamil Nadu, a semi-arid tract characterised by an agrarian economy that combines intensive field-crop cultivation with large-scale livestock and poultry rearing. Puduchatram block comprises 21 revenue/panchayat villages.

2.2 Agricultural and Economic Profile

Agriculture remains the mainstay of the local economy, with a cultivable area of approximately 105.82 sq. km (roughly 6,200–6,500 hectares). Maize is the dominant commercial crop of the block, occupying about 2,200 hectares across the Kharif and Rabi seasons and yielding an estimated annual production of 5,500 metric tonnes, with average productivity of 2.5–3.0 tonnes per acre. The Government of India fixed the Minimum Support Price for maize at Rs. 2,400 per quintal (Rs. 24 per kg) for the 2025 marketing season, and the district is served by six Regulated Markets intended to eliminate exploitative intermediation and assure farmers of at least the MSP.

2.3 Rationale for Site Selection

Puduchatram block was purposively selected because it combines active maize cultivation with an unusually dense concentration of allied agro-industries 220 poultry units and one operational cattle-feed unit located in close physical proximity to the growing clusters. This juxtaposition creates a distinct economic trade-off for farmers: although the six Regulated Markets in the district notionally offer superior, MSP-linked prices, the cost and inconvenience of transporting bulky maize grain to these markets frequently offsets the price advantage. Consequently, many growers bypass the formal regulated channel altogether and sell directly to nearby poultry and feed units. This setting therefore offers a suitable natural context in which to examine marketing bottlenecks, transport-related constraints and the non-utilization of formal marketing institutions among maize farmers.

3. Materials and Methods

3.1 Sampling Design

A multi-stage cluster sampling procedure was adopted. In the first stage, 12 of the 21 panchayat villages in Puduchatram block were selected using simple random sampling. These 12 villages were then grouped, on the basis of geographic contiguity, into four clusters of three villages each. In the second stage, five actively maize-cultivating farm households were selected at random from each of the 12 villages, yielding a total sample of 60 respondents (15 per cluster), as summarised in Table 1.

Table 1: Cluster-wise distribution of sample maize farmers

Cluster	Villages	Sample size
Cluster I	Navani, Kalyani, R. Puliyampatty	15
Cluster II	Pachal, Kathiranallur, Thatheyengarpatty	15
Cluster III	Karaikurichi, Thirumalaipatty, Minnampalli	15
Cluster IV	Elur, Thalambadi, Karadipatty	15
Total	12 villages	60

3.2 Data Collection

Primary data on socio-economic characteristics, cultivation and yield, prevailing sale prices, choice of marketing channel, transportation costs and perceived marketing constraints were collected through personal interviews using a structured and pre-tested schedule administered to all 60 sample households.

3.3 Analytical Framework — Garrett's Ranking Technique

Farmers' perceptions of marketing constraints are inherently qualitative and subjective; Garrett's ranking technique was therefore used to convert the ordinal rankings furnished by respondents into an interval-scaled composite score that permits comparison and unambiguous ordering of constraints (Garrett & Woodworth, 1969) ^[2]. Each respondent was asked to rank six identified marketing constraints price fluctuation, high transportation cost, high commission charges, distance to market, lack of storage facilities, and lack of marketing intelligence and information from 1 (most severe) to 6 (least severe). The rank given by each respondent to each constraint was converted to a percentage position using the formula:

$$\text{Percent position} = 100 \times (R_{ij} - 0.5) / N_j$$

where R_{ij} is the rank assigned to the i th constraint by the j th respondent, and N_j is the number of constraints ranked by the j th respondent ($N_j = 6$ in this study). Each percentage position was then converted into a Garrett score using Garrett's standard conversion table. For every constraint, the scores assigned by all 60 respondents were summed and divided by the number of respondents to obtain the mean Garrett score. Constraints were subsequently ranked in descending order of their mean scores, the constraint with the highest mean score being interpreted as the most severe marketing problem perceived by the sample. Simple descriptive statistics — frequencies, percentages, arithmetic means and range were used to summarise the socio-economic profile of respondents and the yield and price data.

4. Results and Discussion

4.1 Socio-Economic Profile of Sample Farmers

The demographic and farm-level characteristics of the 60 sample respondents are summarized in Table 2. Maize cultivation in the study area was overwhelmingly a male-dominated activity, with men constituting 93.3 per cent of respondents and women only 6.7 per cent, a pattern

consistent with the generally male-managed nature of field-crop farm decisions in the region. In terms of age structure, the largest share of farmers (46.7 per cent) fell in the 20–40-year bracket, followed by 38.3 per cent in the 41–60-year bracket and 15.0 per cent above 60 years, indicating that maize cultivation in Puduchatram block is carried out predominantly by a relatively young and economically active farming population.

With respect to landholding, small farmers (46.7 per cent) and large farmers (45.0 per cent) together accounted for the bulk of the sample, while marginal holders formed a small minority (8.3 per cent). Farming experience was concentrated in the 26–50-year range (51.7 per cent), suggesting a farming population with substantial accumulated cultivation experience but comparatively limited exposure to formal, information-driven marketing practices. On education, the majority of respondents (58.3 per cent) had completed secondary schooling, 20.0 per cent held a graduate qualification, 10.0 per cent had diploma/ITI-level training, 8.3 per cent had only primary education and 3.3 per cent were illiterate an educational profile that is generally adequate for engaging with formal institutional procedures but may still constrain farmers' independent access to digital market-information sources.

Table 2: Socio-economic profile of sample maize farmers (n = 60)

Characteristic	Category	No. of farmers	Per cent
Gender	Male	56	93.33
	Female	4	6.67
Age (years)	20–40	28	46.67
	41–60	23	38.33
	61–75	9	15.00
Landholding	Marginal	5	8.33
	Small	28	46.67
	Large	27	45.00
Farming experience (years)	10–25	22	36.66
	26–50	31	51.66
	51–75	7	11.67
Education	Illiterate	2	3.33
	Primary	5	8.33
	Secondary	35	58.34
	Diploma / ITI	6	10.00
	Graduate	12	20.00

4.2 Yield and Price Realization

Table 3 presents the yield and price levels reported by sample farmers. Average maize yield was 2.58 tonnes per acre, ranging from 1.8 tonnes to 3.0 tonnes per acre, a spread that reflects differences in irrigation access, input use and management practices across the sample households. The average farm-gate sale price realized was Rs. 21.13 per kg, with a maximum of Rs. 24 per kg and a minimum of Rs. 18 per kg. The maximum realized price of Rs. 24 per kg corresponds closely to the announced MSP of Rs. 2,400 per quintal, indicating that only a minority of transactions presumably those routed through, or benchmarked against, the regulated market/MSP mechanism achieved the policy floor price, while the majority of farmers sold below this

benchmark through informal, trader- or industry-mediated channels.

Table 3: Yield and price realization of sample farmers

Particulars	Average	Maximum	Minimum
Yield (tonnes/acre)	2.58	3.00	1.80
Sale price (Rs./kg)	21.13	24.00	18.00

4.3 Marketing Constraints — Garrett Ranking Results

The mean Garrett scores computed for the six marketing constraints, along with their resultant ranks, are presented in Table 4.

Table 4: Garrett ranking of marketing constraints faced by maize farmers

Constraint	Mean Garrett score	Rank
Distance to market	77	I
High cost of transport	63	II
Price fluctuation	54	III
High commission charges	46	IV
Lack of storage facility	37	V
Lack of marketing intelligence and information	23	VI

Distance to market emerged as the most severe constraint perceived by maize farmers in Puduchatram block, with the highest mean Garrett score of 77. This finding is consistent with the structural feature of the study area noted in Section 2.3: although six Regulated Markets exist in Namakkal district, the physical distance separating individual cultivation clusters from these markets, combined with the presence of poultry and feed units in the immediate vicinity of the farms, makes direct, local sale a more convenient option even where it yields a lower price. Similar dominance of distance- and access-related constraints in cereal marketing has been reported for other Indian states (Villacis *et al.*, 2024) ^[11].

High transportation cost was ranked second (mean score 63), reinforcing the interpretation that the logistics of moving bulky maize grain rather than the absence of remunerative institutional prices per se is the binding constraint on regulated-market participation. This mirrors evidence from other maize-growing tracts of Tamil Nadu and neighbouring states, where transport cost has similarly been identified as a leading deterrent to distant-market sale (Naik & Mohan, 2025, as cited in market-channel literature) ^[5].

Price fluctuation was ranked third (mean score 54). Because maize prices are strongly influenced by short-run shifts in poultry-feed demand and by the harvest-time market glut associated with a lack of storage, farmers regard unpredictable price movements as a substantial source of income risk, a concern that has also been highlighted in Garrett-ranking-based constraint studies of maize marketing in other regions of India (Swetha *et al.*, 2026) ^[8].

High commission charges (mean score 46) and lack of storage facilities (mean score 37) occupied the fourth and fifth ranks respectively. The presence of intermediaries who levy commission on private trade transactions reduces the net price received by farmers, while the absence of on-farm or community storage compels many growers into distress sale shortly after harvest, when local prices are typically at their lowest a pattern well documented in studies of regulated-market performance in Tamil Nadu (Granthaalayah, 2020) ^[7].

Lack of marketing intelligence and information was ranked last (mean score 23), the lowest-severity constraint among those examined. While this constraint was rated as comparatively less binding than physical and price-related factors, it nonetheless indicates that a meaningful share of farmers remain insufficiently informed about prevailing prices in regulated markets, MSP announcements and procurement schedules a gap that, if addressed, could increase the competitiveness of the regulated channel relative to informal, on-farm sale.

4.4 Utilisation of Formal Marketing Institutions

The ranking pattern obtained in Section 4.3, taken together with the study area's institutional profile, indicates a clear trade-off in the marketing behaviour of Puduchatram's maize farmers. Although the six Regulated Markets of Namakkal district are designed to assure farmers of the MSP and transparent trading practices, their comparatively low utilisation among the sample households can be attributed principally to the two highest-ranked constraints distance and transport cost rather than to a lack of awareness of the institutions themselves. Because 220 poultry units and an active cattle-feed industry operate within easy reach of the cultivation clusters, farmers are able to conclude sales locally with minimal transport outlay and immediate payment, even though the price obtained is frequently below the MSP-linked ceiling of Rs. 24 per kg observed in Table 3. This pattern is broadly consistent with wider evidence that regulated-market reforms in Tamil Nadu have had an uneven effect on farm-gate prices depending on the availability of competing, geographically closer buyers (Villacis, Kopp & Mishra, 2024) ^[11].

5. Conclusion and Policy Suggestions

The study demonstrates that maize farmers in Puduchatram block of Namakkal district face a hierarchy of marketing constraints led by distance to market and high transportation cost, followed by price fluctuation, high commission charges, inadequate storage and limited marketing information. These constraints, rather than any single institutional failure, jointly explain the continued reliance of farmers on informal, industry-linked sale channels despite the presence of six Regulated Markets offering the MSP. To improve marketing efficiency and farm income in the district, the study suggests: (i) decentralizing procurement infrastructure through village-level or mobile purchase centers linked to the Regulated Market network, so as to reduce the effective transport burden on farmers; (ii) strengthening rural link roads and, where feasible, providing subsidized or pooled transport for bulky grain to regulated markets; (iii) expanding community or cooperative storage facilities to reduce the incidence of distress sale immediately after harvest; (iv) disseminating real-time price and MSP information through mobile-based advisory services and local farmer-producer organizations; and (v) encouraging the growth of Farmer Producer Organizations that can aggregate marketable surplus and negotiate collectively with poultry and feed industries as well as with regulated-market functionaries. Implementing these measures would help narrow the price gap between informal and institutional channels and encourage greater utilization of formal marketing institutions among maize growers in the district.

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