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SOCIAL CONSTRAINT FACTORS AFFECTING ENTREPRENEURSHIP AMONG RICE FARMERS IN KUTTANAD KERALA INDIA

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ABSTRACT

Kuttanad, located in Kerala, is globally recognized for its below-sea-level farming system and wetland ecosystem. Despite this distinctive ecological setting, the region faces persistent social and institutional challenges that restrict the development of farm-based entrepreneurship. This study identifies and prioritizes major social constraints limiting the entrepreneurial initiatives of rice farmers. A total of 160 respondents were selected from Alappuzha and Kottayam districts using a multi-stage random sampling method. Data were collected through a structured interview schedule, and the Garrett Ranking Technique was used. Results showed that high labour charges and scarcity of skilled workers (73.55), saltwater intrusion (67.81), and limited institutional credit access (63.82) were the most severe constraints. Moderate constraints included high input prices (51.56), weed infestation (48.35), and weak farmer unity (44.43). Lower-ranked constraints included poor seed quality, delayed mechanization, insufficient milling facilities, and lack of farmer-led marketing systems. The study suggests that targeted interventions in mechanization, credit access, value-chain development, and skill-building are essential to transform Kuttanad into a resilient agribusiness ecosystem.

Keywords **:** Kuttanad; Rice farmers; Social constraints; Entrepreneurship; Garrett ranking; Agribusiness development.

Introduction

Kuttanad, recognized as a Globally Important Agricultural Heritage System (GIAHS) by the FAO, is known for its unique below-sea-level farming system. Recurrent floods and saline water intrusion pose considerable challenges to agricultural sustainability (Thomas, 2002). Although globally popular for its ecological significance, Kuttanad has shown limited development in farm-based entrepreneurship due to persistent social and institutional barriers. Agricultural entrepreneurship has emerged as a key driver of rural transformation and livelihood diversification in India, encouraging farmers to value-added and market-oriented enterprises (Afroz *et al*., 2022).

A range of socio-economic and psychological constraints continue to limit farmer's entrepreneurial engagement despite institutional effort. Low awareness, weak social networks, inadequate collective action, and poor institutional linkages have been identified as the major barriers to agripreneurship development (Venkattakumar *et al*., 2016). In Kuttanad, the problems are further intensified by high labour costs, lack of availability of mechanization in time, weak post-harvest infrastructure and poor marketing systems (Nair *et al*., 2020). The recurrent floods and environmental stress have also affected the socio-psychological resilience of the farming

community, lowering confidence, decision-making ability, and willingness to innovate (Xavier, 2020).

Recognizing these social and institutional constraints is crucial for designing effective extension interventions that can transform farmers into successful rural entrepreneurs. Hence, the present study was undertaken to identify, analyze and rank the major social constraints hindering the entrepreneurial initiatives of farmers in Kuttanad. The Garrett Ranking Technique was used to prioritize these constraints based on farmers' perceptions, with the objective of providing insights for policy formulation and extension strategies to strengthen the agripreneurial ecosystem in the region.

Materials and Methods

The study was conducted in the Kuttanad region of Kerala, where agriculture is characterized by below-sea-level cultivation and recurrent flooding. To ensure focused and representative coverage of the region, two districts Alappuzha and Kottayam were purposively selected, as they encompass the largest area of the Kuttanad farming system. Both districts possess rich natural resources and high potential for developing a resource-centric, agri-based entrepreneurial ecosystem, yet remain underutilized. From these districts, 160 respondents were selected using a multi-stage random sampling technique. In the first stage, 8 panchayats representing Kuttanad's rice-farming tracts were identified. In the second stage, individual farmers engaged in rice and allied sector activities were randomly selected. This approach ensured representation across the region's socio-economic and ecological diversity and avoided over-reliance on specific locations. To supplement and validate the quantitative findings, focus group discussions (FGDs) were conducted in both districts. These sessions provided qualitative insights into the constraints faced by Kuttanad farmers in starting rice-based and allied enterprises, and enabled triangulation of data for a comprehensive understanding of the entrepreneurial environment.

The study focused on identifying and analyzing the social constraints that limit the entrepreneurial development of Kuttanad farmers across seven broad dimensions. The first, Natural and Ecological, relates to environmental barriers unique to Kuttanad's below-sea-level wetland ecosystem, where recurrent flooding, saline intrusion, and fragile hydrology constrain sustainable production and diversification (Thomas, 2002; Jayan & Sathyanathan, 2010). Studies have shown that traditional saline-resistant rice systems such as Pokkali and Kaipad illustrate both the ecological vulnerability and adaptive potential of Kerala's wetlands (Basheer, 2008; Chandramohanan & Mohanan, 2012) .The second, Resource and Input dimension, involves challenges related to labour scarcity, high wage costs, and poor input quality, which have been repeatedly identified as reasons for the declining profitability of paddy farming in Kuttanad (Suchitra & Venugopal, 2005; MSSRF, 2007). The Financial dimension concerns restricted access to timely and adequate institutional credit an issue that continues to limit entrepreneurial risk-taking among smallholders despite government policy efforts (GOI, 2019).The Institutional and Policy dimension includes weaknesses in governance, subsidy delivery, and collective organization through Padasekhara Samithis. These institutional inefficiencies, compounded by slow administrative responses, have hindered the scaling up of farmer-led enterprises (Thomas, 2002; MSSRF, 2007).The Infrastructure dimension captures limitations in storage, milling, and processing facilities, which constrain local value-chain integration and market expansion (Joseph, 2008). The Technological dimension points to gaps in mechanization, innovation and the lack of adaptive machinery for water-logged soils; although mechanization has improved productivity, it remains uneven and inaccessible to most small farmers (Jayan & Sathyanathan, 2010; Zalkuwi *et al*., 2015). Finally, the Entrepreneurial and Marketing dimension refers to the lack of managerial competence, market access, and value-addition opportunities. Despite Kuttanad's designation as a GIAHS ecosystem with strong tourism and diversification potential, farmers remain highly dependent on government procurement systems and show limited entrepreneurial orientation (MSSRF, 2007; Basheer, 2008). Overall, these dimensions collectively illustrate the structural and socio-ecological barriers preventing Kuttanad's farming community from fully realizing its economic and ecological potential through agribusiness entrepreneurship (Garrett & Woodworth, 1969).

The list of constraints was finalized through expert consultation and a review of relevant literature. To prioritize the identified factors, Garrett's Ranking Technique (Garrett and Woodworth, 1969) was employed. This method ensures uniformity in score distribution and facilitates clear prioritization even when the number of items or ranking patterns varies among respondents. Respondents were asked to rank the given constraints according to their perceived severity. Using the Garrett table, the assigned ranks were converted into percent positions and corresponding scores. The individual scores for each constraint were then aggregated and divided by the

total number of respondents to obtain mean scores, based on which the constraints were ranked in descending order of importance.

Results

The data in Table 1 reveal that the most critical constraint perceived by rice farmers in starting agribusiness enterprises in Kuttanad was high labour charges and shortage of skilled workers (Mean score = 73.55), followed by saltwater intrusion (67.81) and limited access to timely and adequate institutional credit (63.82). These results indicate that both resource and ecological limitations dominate the entrepreneurial environment of the region.

Delays in procurement, subsidy disbursement, and weak crop-insurance support (59.03) and frequent flooding and climatic factors (55.29) were ranked fourth and fifth, respectively, reflecting the high level of production risk and institutional bottlenecks typical of below-sea-level farming systems. Among mid-level constraints, high price of agricultural inputs (51.56), heavy weed infestation (48.35) and lack of strong farmer unity and collective action (44.43) were major operational challenges.

Lower-mean scores were recorded for poor seed quality and lack of timely availability of improved varieties (41.28) and lack of suitable timely mechanization (36.33), indicating technological and input-supply gaps. Insufficient rice mills and poor processing infrastructure (31.03) and absence of farmer-led marketing systems (23.64) suggest that post-harvest and marketing linkages remain underdeveloped. The least severe but still relevant constraints were limited value-addition and product diversification facilities (15.87), lack of awareness about modern marketing and branding (5.49), and weak farmer competency in enterprise management (3.57).

Table 1: Constraints faced by Kuttanad rice farmers in starting agri based entrepreneurship.

Sl. No.	Statements	Mean Score	Rank
	Natural and Ecological Constraints		
1	Saltwater intrusion	67.811	II
2	Flooding and climatic factors	55.289	V
3	Heavy weed infestation	48.346	VII
	Resource and Input-Related Constraints		
1	High labour charges and shortage of skilled workers	73.553	I
2	High price of agricultural inputs (seeds, fertilizers, machinery hire, pesticides)	51.560	VI
3	Poor seed quality and lack of timely availability of improved varieties	41.283	IX
	Financial Constraints		
1	Limited access to timely and adequate institutional credit	63.824	III
	Institutional and Policy Constraints		
1	Delays in procurement, subsidy disbursement, and weak crop insurance support	59.031	IV
2	Lack of strong farmer unity and collective action	44.434	VIII
	Infrastructure Constraints		
1	Insufficient rice mills, poor milling/processing infrastructure	31.025	XI
	Technological Constraints		
1	Lack of timely access to mechanization	36.333	X
	Entrepreneurial and Marketing Constraints		
1	Absence of farmer-led marketing systems	23.642	XII
2	Limited value-addition and product diversification facilities	15.874	XIII
3	Lack of awareness among farmers about modern marketing and branding	5.491	XIV
4	Weak capacity/competency of farmers to manage enterprises	3.569	XV

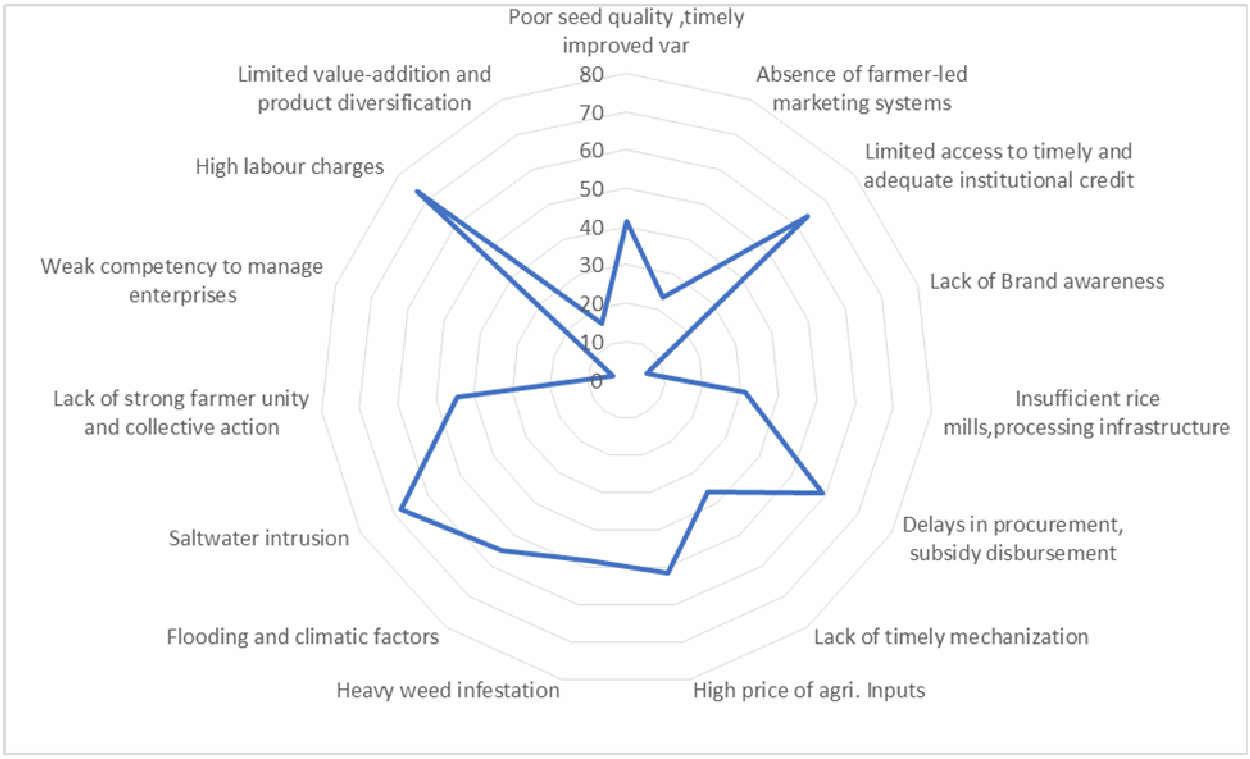

Fig. 1: Radar chart of ranked constraints in starting agri entrepreneurship among Kuttand rice farmers

The radar chart (Figure 1) further illustrates how these constraints cluster into seven major dimensions natural and ecological, resource and input, financial, institutional and policy, infrastructural, technological, and entrepreneurial-marketing. Natural and resource-related constraints were ranked highest, followed by financial and policy-institutional barriers, indicating that labour rationalization, ecological restoration, and improved institutional coordination are the most immediate areas requiring policy and extension attention.

Discussion

Kuttanad has very high labour charges mainly because most of the cultivation cost goes to hired labour and there is a severe labour shortage, forcing farmers to pay double wages during peak seasons. In addition, strong labour unions and their consistent demand for wage hikes have made Kuttanad one of the regions with the highest agricultural wage rates in India (Pillai, 2015). Labour-related constraints such as high wage rate and shortage of skilled workers has increased production costs and reduced competitiveness of rice enterprises. Similar findings were reported by Prabha *et al.* (2024), who found labour shortage to be the highest-ranked constraint among Padasekhara Samithi members in Palakkad district. The second-ranked constraint, saltwater intrusion, confirms the acute hydrological vulnerability of the Kuttanad wetlands. In Upper Kuttanad, saline water inflow becoming the primary ecological constraint limiting both productivity and the feasibility of enterprise diversification. Limited institutional credit access ranked third, demonstrating that farmer' entrepreneurial initiatives are hindered by liquidity shortages. Shahana and Ushadevi (2024) observed that inadequate credit and delayed financial support were key barriers in Kerala's branded-rice value chain. Institutional issues such as delayed procurement and subsidy disbursement (Rank 4) continue to erode farmer confidence. Siju and Baby (2024) documented similar findings, where delays in payments under Kerala's procurement scheme ranked as the top institutional constraint. The fifth-ranked flooding and climatic factors further accentuate production risk; Thomas (2011) described how recurrent floods and climate variability have long constrained paddy profitability in Kerala. Moderate-ranked issues such as input cost escalation and weed infestation mirror earlier reports by Nithin Raj *et al.* (2020), who highlighted input prices and weed management as key cost drivers in non-saline paddy areas. The lack of collective farmer action also weakens enterprise-level cooperation; Prabha *et al.* (2024) identified coordination and leadership gaps as major impediments to the effectiveness of Padasekhara Samithis. Technological constraints like poor seed quality and timely availability of mechanization are

consistent with Guru (2025), who emphasised the low availability of mechanization in time and inadequate availability of improved inputs in Indian rice systems. Similarly, Basheer and Muneer Babu (2024 reported that mechanization and climate-adaptive technology are essential to offset labour shortages and improve efficiency. Infrastructure gaps, particularly insufficient milling and processing facilities, restrict value-chain development. Shahana and Ushadevi (2024) likewise observed inadequate post-harvest infrastructure as a major bottleneck for branded rice ventures in Kerala. Entrepreneurial and marketing-related constraints including lack of marketing awareness, value-addition, and weak farmer competence suggest that most producers remain confined to production-level activities. Kutty (2014) noted that despite modernisation, many farmers lack business orientation and managerial skills. PwC (2024) highlighted that insufficient training and entrepreneurial capacity limit technology adoption in smallholder systems.

Overall, the 15 constraints were grouped into seven dimensions natural & ecological, resource & input, financial, institutional & policy, infrastructural, technological, and entrepreneurial-marketing. Among these, labour scarcity, salinity intrusion, and financial constraints were found most critical. These results align with the observations of Prabha *et al*. (2024) and Nithin Raj *et al*. (2020) and, reaffirming that targeted interventions in labour rationalisation, salinity control, mechanisation, and credit facilitation are prerequisites for promoting agripreneurship among Kuttanad's rice farmers.

Conclusion

The findings of the study highlight that social constraints are deeply intertwined with ecological and institutional realities of the Kuttanad region. Labour scarcity and high wage dependency continue to delay enterprise formation, while recurring floods and saltwater intrusion worsened the vulnerability of farmers to production and financial risks. Limited access to institutional credit, coupled with delays in subsidy and procurement processes, has further reduced entrepreneurial motivation and financial resilience. Technological and infrastructural gaps particularly inadequate mechanization, low-quality seeds, and insufficient milling facilities restrict value addition and business scalability. Moreover, weak farmer collectives and limited awareness of marketing strategies constrain the shift from traditional cultivation to enterprise-based model. To overcome these constraints, multi-dimensional strategy have to be implemented by policy makers combining labour rationalization, salinity management, credit accessibility, and entrepreneurial skill development. Incorporation of rice fish duck integration can lead profitability and productivity in Kuttanad with understanding the potential utilisation of Water as Resource. Understanding the rich agricultural heritage linked with tourism can boost farm related business enterprise, in turn supporting better farm livelihood. Strengthening farmer organizations, improving policy delivery mechanisms, and promoting cluster-based value addition can transform Kuttanad's paddy system into a sustainable agribusiness ecosystem. Addressing these interlinked barriers will not only enhance local livelihoods but also preserve the ecological integrity of this globally important Kuttand heritage landscape.

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