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RESEARCH ARTICLE

Empowering small farmers through Farmer Producer Organizations in southern districts of Tamil Nadu

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Abstract

Farmer Producer Organizations (FPOs) have emerged as a vital institutional mechanism to enhance the livelihoods of India's small and marginal farmers, who continue to face shrinking landholdings, weak market access and inefficient supply chains. This study assesses the performance, opportunities and constraints faced by FPOs in southern Tamil Nadu to understand their role in improving farm-level income and strengthening farmer collectives. The research covered FPOs across the districts of Ramanathapuram, Theni, Virudhunagar, Madurai, Sivagangai, Trichy, Thanjavur and Pudukkottai. Primary data were collected from member farmers and the Response Priority Index (RPI) was employed to systematically rank organizational, technical and marketing challenges faced by the FPOs. The findings indicate that FPOs provide critical benefits such as improved access to inputs, credit and enhanced bargaining power. However, several constraints hinder their efficiency. Key organizational barriers include poor group formation skills (RPI 2.69), weak teamwork (RPI 2.46), high labour costs (RPI 2.39) and limited credit access (RPI 2.15). Technical challenges include costly inputs (RPI 2.64), low awareness of post-harvest practices (RPI 2.46) and inadequate storage (RPI 2.13) and drainage infrastructure (RPI 2.01). Major marketing-related constraints include limited market access (RPI 2.65), middlemen exploitation (RPI 2.50), price fluctuations (RPI 2.40) and payment delays (RPI 2.30). Low technology adoption and unreliable partnerships further weaken FPO performance. Despite these constraints, opportunities exist for export market linkage, stronger farmer collectives and reduced rural migration. Overall, the study highlights the need for targeted interventions such as capacity building, infrastructure development, financial support and policy strengthening to empower FPOs, as their effective functioning is crucial for enhancing smallholder incomes and accelerating rural economic transformation.

Keywords: challenges; Farmer Producer Organizations; opportunities; Response Priority Index; strengths; weaknesses

Introduction

The Government of India set an ambitious target to double farmers' income by 2022, but this objective has not been fully realized due to persistent challenges in the agricultural sector. Factors such as inefficient supply chains, lack of technological adoption and the declining size of farm holdings have continued to hinder productivity and profitability. The majority of Indian farmers are small and marginal, with an average landholding size of just 1.08 ha (1). These farmers face difficulties in accessing modern farming techniques, institutional credit and profitable markets, further exacerbating rural distress (2).

To address these challenges, the government has actively promoted Farmer Producer Organizations (FPOs) as a means to enhance the economic viability of small farmers. FPOs help farmers aggregate their resources, negotiate better input prices and gain direct market access, reducing their dependency on middlemen (3). By facilitating collective bargaining and financial support, FPOs have enabled small farmers to access better technology, storage facilities and processing units, ultimately improving their income levels (4). The government has launched schemes like the Central Sector Scheme for the Promotion of 10000 FPOs, providing financial assistance and capacity-building support to encourage farmer collectivization (5).

Despite these initiatives, several bottlenecks remain in the effective functioning of FPOs. Many farmer organizations struggle with inadequate financial management, limited market reach and lack of technical expertise, preventing them from scaling up effectively (6). Strengthening FPO governance, ensuring access to institutional credit and improving infrastructure such as cold storage and logistics will be crucial for their long-term success. Furthermore, integrating digital platforms, precision farming and climate-resilient agricultural practices will help ensure that small and marginal farmers benefit from sustainable income growth (7). Addressing these issues holistically will be key to achieving agricultural prosperity and improving farmers' livelihoods in India.

The agricultural sector plays a vital role in the economy of Tamil Nadu, contributing significantly to employment, food security and rural development (8). The sector supports a large

proportion of the population, particularly smallholder farmers who rely on agriculture as their primary source of livelihood. However, these farmers face numerous challenges, including limited market access, price volatility, lack of financial resources and inadequate knowledge of modern agricultural practices (9). Additionally, fragmented landholdings, dependency on traditional farming techniques and unpredictable climatic conditions further exacerbate their difficulties, limiting their productivity and profitability (10).

To address these challenges, FPOs have emerged as a collective model aimed at strengthening the bargaining power of farmers, improving access to credit and resources and facilitating direct market linkages. FPOs function as cooperative entities that enable small and marginal farmers to pool their resources, negotiate better prices and gain access to institutional credit, extension services and modern farming techniques (11). By fostering collective action, these organizations empower farmers to improve their livelihoods, enhance agricultural productivity and establish more resilient supply chains in the face of market uncertainties (12).

Materials and Methods

Research environment

The study was conducted in the southern zone of Tamil Nadu, covering the districts of Ramanathapuram, Theni, Virudhunagar, Madurai, Sivagangai, Trichy, Thanjavur and Pudukkottai. These districts were purposively selected due to their agricultural significance and the active functioning of multiple FPOs engaged in crop cultivation, livestock and value-added activities.

Respondents of the study

A total of 900 respondents were selected, consisting of 600 FPO members and 300 non-members. The respondents represented small and marginal farmers engaged in crop and allied sectors. FPO-member farmers were drawn from selected Farmer Producer Companies (FPCs), while non-members were chosen from the same villages to ensure comparability in socio-economic and agro-ecological conditions.

Sampling procedure

A purposive sampling technique was employed to identify active FPOs across the selected districts. To ensure balanced representation, FPCs were categorized based on their authorized share capital, which reflects their scale, financial strength and level of organizational maturity:

FPCs with ≤ ₹5 lakh share capital (early-stage FPOs)

Malaikottai Paddy FPC, Agathiar FPC, Pudukkottai Organic FPC and Seeds FPC.

These emerging organizations primarily require support in business management, market access and capacity building.

FPCs with ₹6–10 lakh share capital (growing-stage FPOs)

Parambai FPC, Suranam Traditional Crop FPC and Ramanar Millets FPC.

These mid-sized FPCs have expanded market linkages and diversified operations but still require improved infrastructure and financial management.

FPCs with ≥ ₹10 lakh share capital (well-established FPOs)

Kariapatti Millets FPC, Mazhaithuli Livestock FPC and Meghamalai Collective FPC.

These mature FPOs operate large-scale value chains and require strategic support to strengthen competitiveness and innovation.

Equal consideration was given across the three FPC categories to ensure representation of different organizational scales within the FPO ecosystem.

Research design

The study adopted a descriptive research design supported by comparative and analytical techniques. This design enabled the assessment of socio-economic characteristics, production practices, market access and welfare differences between FPO members and non-members. Additionally, SWOT analysis and Response Priority Index (RPI) were used to identify key strengths, weaknesses, opportunities and threats faced by FPOs.

SWOT

Strengths: Collective bargaining power, enhanced market access, improved financial inclusion and capacity-building initiatives.

Weaknesses: Limited managerial skills, dependence on external funding and inadequate market intelligence.

Opportunities: Integration with digital marketplaces, value addition, export potential and adoption of climate-resilient agricultural practices.

Threats: Market fluctuations, policy changes, competition from large agribusinesses and climate change-related risks (I).

Response Priority Index

In the quantification of constraints expressed by the farmers, there was a problem, whether emphasis should be given for the number of responses to a particular priority or to the highest number of responses to a constraint in the first priority. But both lead to different conclusions. To resolve this, a Response Priority Index (RPI) was constructed as a product of the Proportion of Responses (PR) and the Priority Estimate (PE), where PR for the i^{th} constraint gave the ratio of the number of responses for a particular constraint to the total responses.

Where, RPI = Response Priority Index for i^{th} constraint

$$(RPI)_i = \frac{\sum_{j=1}^{k} f_{ij} X_{[(k+1)-j]}}{\sum_{i=1}^{1} \sum_{j=1}^{k} f_{ij}}$$

Where RPI_i = Response Priority Index for i^{th} constraint

f_{ij} = Number of responses for the j^{th} priority of the i^{th} constraint (i = 1, 2 … j = 1, 2, 3 … K)

$\sum_{j=1}^{k} f_{ij}$ = Total number of responses for the i^{th} constraint

k = Number of priorities

$X_{[(k+1)-j]}$ = Score for j^{th} priority

$\sum_{i=1}^{1} \sum_{j=1}^{k} f_{ij}$ = Total number of responses to all constraint

Here, larger the RPI, higher was the importance for that constraint.

Results and Discussion

SWOT (strengths, weaknesses, opportunities and threats) analysis is a strategic planning technique that assists organizations in identifying internal strengths and weaknesses as shown in Fig. 1. The SWOT analysis of FPOs involves evaluating their current strengths and weaknesses, gathering feedback from members and facilitators on areas of improvement and exploring future goals, strategies and potential obstacles, as well as external opportunities and threats, enabling them to strategize effectively.

The analysis of strengths revealed that the most frequently observed strength among the FPOs was their ability to engage in direct marketing of fresh farm produce, which ensured better prices, reduced dependency on intermediaries and enhanced members' profit margins. This was followed by strong coordination with government agencies, Krishi Vigyan Kendras (KVKs) and promoting institutions, which improved access to schemes, technologies and advisory services. Growing membership and community participation emerged as another notable strength, helping build social capital and economies of scale. Other strengths included transparent information sharing, which fostered trust and accountability within the organization and increasing participation of women, which enhanced decision-making and supported value addition activities. Institutional support from the National Bank for Agriculture and Rural Development (NABARD), the Small Farmers' Agribusiness Consortium (SFAC) and non-governmental organizations (NGOs) was present but less frequently noted, while the least reported strength was the presence of sustainable business models and structured operational systems indicating that while the organizations function collectively, their internal systems still require strengthening. Based on these findings, recommendations include scaling up direct marketing initiatives, formalizing institutional collaborations through Memoranda of Understanding (MoUs) promoting women-led enterprises and strengthening governance through regular leadership and business management training.

With respect to weaknesses, the most frequently reported issue was farmers' limited knowledge of modern agricultural practices, which restricts productivity and slows the adoption of innovative technologies. This was closely followed by dependency on rainfed agriculture, exposing farmers to climate risks and yield instability. Lack of processing and value addition facilities also ranked high, reducing the potential for enhanced income through diversified products. Dependence on intermediaries for credit, limited knowledge of post-harvest handling and inadequate paid-up capital were moderately reported weaknesses, while the least mentioned but still significant weakness was the lack of managerial expertise needed to undertake value addition and marketing activities (13, 14). Addressing these weaknesses requires targeted interventions such as continuous training on climate-smart agriculture, establishing small-scale processing units through government convergence, improving post-harvest management capacity and professionalizing FPO management through business incubation programmes.

Regarding opportunities, the most frequently cited was the scope for economical procurement of inputs, allowing farmers to reduce production costs and improve efficiency through collective purchasing. Government support through schemes, subsidies and the national 10000 FPO programme also presented major opportunities for organizational growth and financial strengthening. Access to emerging markets and export prospects ranked next, offering pathways to higher income through better price realization. Additional opportunities included private investment, value addition, digital technologies and stronger community involvement, while the least frequent but important opportunity was the potential role of FPOs in reducing rural migration by creating stable livelihoods. These findings suggest that FPOs should intensify bulk input procurement, leverage government support more strategically, expand value-added product lines and adopt digital and export-oriented business models.

Finally, the main threats included high volatility in agricultural market prices, which directly affects farmer income and organizational sustainability, followed by intense competition from local traders that weakens collective bargaining power. Difficulty in uniting members and maintaining group cohesion emerged as a moderately frequent threat, indicating internal governance challenges (15, 16). Less frequently reported threats included the absence of established markets for value-added products, inconsistent quality compliance among growers, breaches of contractual agreements and diversion of inputs. Social and cultural norms appeared as the least common threat but continue to influence participation in certain regions. To mitigate these risks, FPOs should develop strong buyer linkages, enforce internal quality protocols, adopt member commitment agreements and strengthen social mobilization efforts to improve group cohesion.

Constraints faced by the FPO members

Constraints faced by FPOs and their members reveal a complex set of challenges across organizational, economic, technical and marketing dimensions.

Organizational constraints

In the context of FPOs, the organizational constraints mentioned in Table 1 have significant implications for their success and sustainability. Poor group formation skills (RPI 2.69) can be particularly challenging for FPOs, as the very foundation of these organizations is based on effective collaboration between farmers. If an FPO does not properly form or structure its groups, it may lead to weak cooperation, ineffective decision-making and ultimately, poor resource utilization. When group members fail to work together effectively (RPI 2.46), it becomes difficult for the organization to achieve collective goals such as bulk purchasing, marketing, or accessing better market prices (17, 18). Disputes or

Table 1. Organizational constraints of FPO members

S. No	Organizational Constraints	RPI	Rank
1.	Poor group formation skills	2.69	I
2.	Group members failing to work together effectively	2.46	II
3.	Disappointing profit shares for members	2.37	III
4.	Competition in business	2.31	IV
5.	Ineffective monitoring	2.28	V
6.	Absence of effective decision-making	2.04	VI

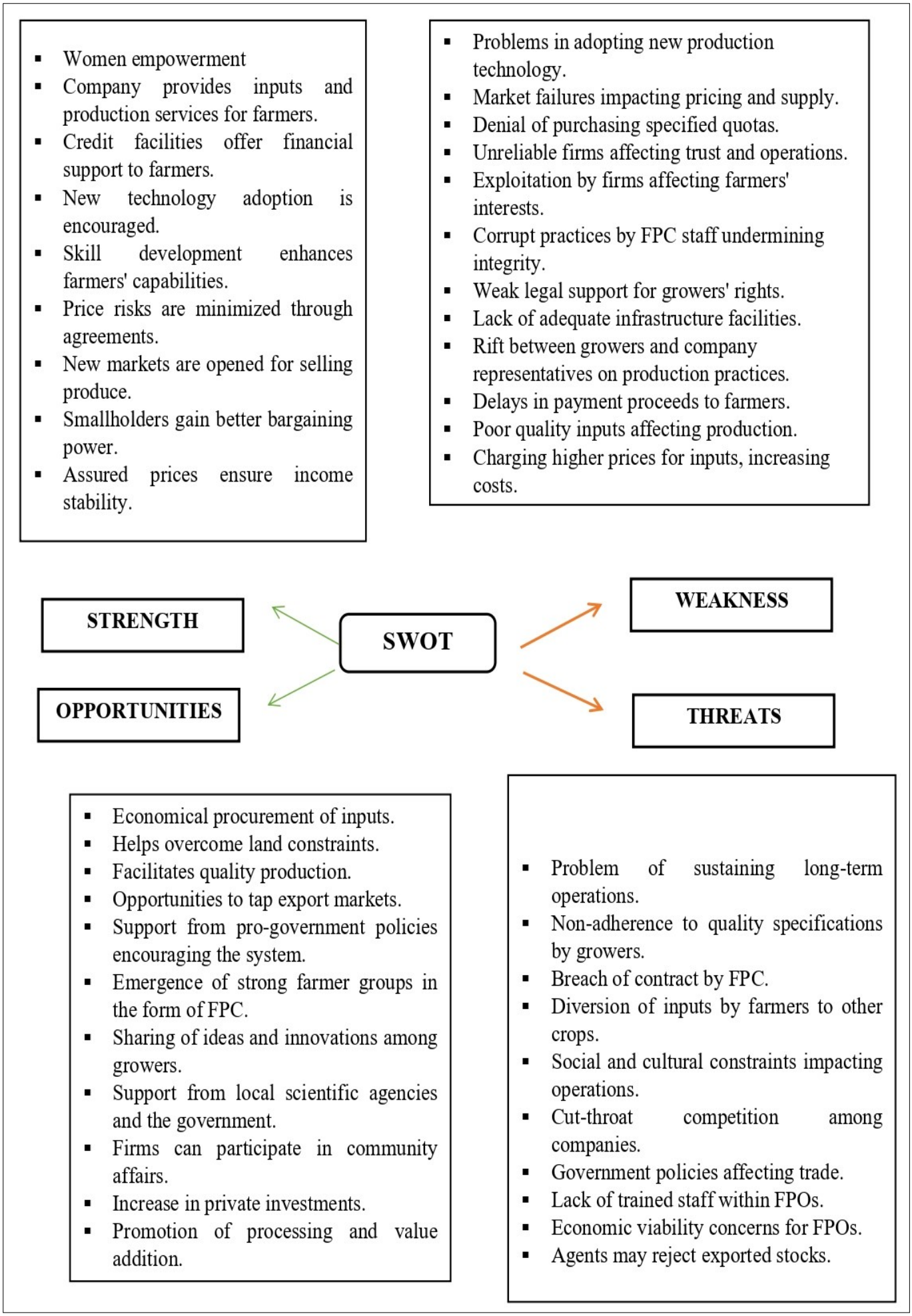

Fig. 1. SWOT analysis of Farmer Producer Organization.

misalignment among farmers can result in inefficiencies and a lack of trust, which hampers the organization's overall performance.

The disappointing profit shares for members (RPI 2.37) are particularly relevant in FPOs, where farmers typically invest in the organization with the expectation of improved returns on their produce. If profit-sharing models are not transparent or fair, it can lead to dissatisfaction and disengagement among the members, weakening the organization's foundation. Competition in business (RPI 2.31) is also a key challenge for FPOs, especially when they face market competition from large agribusinesses or established supply chains. FPOs must be able to offer competitive prices and high-quality products to survive. Ineffective monitoring (RPI 2.28) in FPOs can prevent proper tracking of production, distribution and finances, making it difficult for the organization to address issues such as waste, quality control, or financial mismanagement. Finally, the absence of effective decision-making (RPI 2.04) within FPOs is a critical constraint, as it can lead to a lack of direction or poor planning for growth and expansion. Farmers rely on clear, informed decisions to guide the organization toward success and without these, FPOs risk stagnating or failing to meet their objectives (19). Therefore, addressing these constraints is essential for the long-term success and sustainability of FPOs.

Economic constraints

For FPOs, the economic constraints highlighted in Table 2 have a direct impact on their ability to enhance productivity and ensure sustainable income for member farmers. High labour costs associated with intercultural operations such as weeding, pruning and crop maintenance (RPI 2.39) significantly reduce profitability, particularly in labour-intensive cropping systems. Rising rural wages and seasonal labour shortages have been widely identified as major constraints in Indian agriculture, especially during peak agricultural operations (20, 21). In addition, scarcity of agricultural labour (RPI 2.03) further constrains timely farm operations and negatively affects crop performance.

Limited awareness regarding institutional credit facilities (RPI 2.15) remains a critical bottleneck for FPO members. Despite the expansion of formal rural finance, small and marginal farmers and their collectives continue to face information asymmetries and procedural hurdles in accessing credit (22, 23). This restricts investment in quality inputs, farm mechanisation and productivity -enhancing technologies. Similarly, high ploughing and land preparation costs (RPI 2.10) disproportionately affect FPOs dominated by smallholders who lack ownership of farm machinery and depend on costly custom-hiring services (24).

Climate-induced yield decline (RPI 2.05) further intensifies economic vulnerability among FPO members. Empirical studies confirm that increasing climate variability, erratic rainfall and rising temperatures have adversely affected crop productivity and farm incomes in India (25, 26). Inadequate crop insurance coverage (RPI 2.00) limits effective risk mitigation, despite the presence of national schemes, which continue to suffer from issues of low awareness and delayed claim settlement (27). Additionally, shortage of sufficient capital (RPI 1.93) constrains FPOs from scaling operations, adopting modern technologies and strengthening value-chain participation.

Technical constraints

The technical constraints presented in Table 3 reflect major impediments to the operational efficiency of FPOs. The unavailability of cost-effective and good-quality inputs at the required time (RPI 2.64) emerges as the most severe constraint. Timely access to quality seeds, fertilizers and plant protection chemicals is a critical determinant of productivity, particularly for smallholder farmers who are highly sensitive to input delays (28, 29). Weak last-mile delivery systems and dependence on private input dealers often exacerbate this issue for FPOs.

Insufficient awareness regarding grading, packaging and post-harvest management practices (RPI 2.46) significantly reduces market competitiveness. Studies indicate that poor post-harvest handling results in quality deterioration and price discounts, especially for perishable commodities (30, 31). Similarly, limited awareness of value-addition opportunities (RPI 2.36) prevents FPOs from capturing higher margins through processing, branding and product differentiation, despite strong policy emphasis on agri-value chains (32).

The lack of adequate storage infrastructure (RPI 2.13) contributes substantially to post-harvest losses, which remain high in India, particularly for fruits, vegetables and grains (33, 34). Inadequate drainage facilities (RPI 2.01) further constrain productivity by increasing vulnerability to waterlogging and soil degradation. Finally, failure to accurately identify member needs (RPI 1.16) reflects institutional and managerial weaknesses within FPOs. Evidence suggests that participatory planning and need-based capacity building are essential for strengthening collective enterprises (35, 36).

Table 2. Economic constraints of FPO members

S. No	Economic constraints	Percentage	Rank
1.	Labor costs are significantly higher for intercultural farming operations	2.39	I
2.	Lacking knowledge of credit facilities	2.15	II
3.	High ploughing costs	2.10	III
4.	Declining yields due to climate change	2.05	IV
5.	Scarcity of agricultural labour	2.03	V
6.	Inadequate crop insurance facilities	2.00	VI
7.	Shortage of sufficient capital	1.93	VII

Table 3. Technical constraints of FPO members

S. No	Technical constraints	Percentage	Rank
1.	Unavailability of cost-effective, good-quality inputs on time	2.64	I
2.	Insufficient awareness of the importance of grading, packaging and post-harvest operation	2.46	II
3.	People are unaware of the benefits of value-addition	2.36	III
4.	Lack of adequate training and support services	2.33	IV
5.	Lack of adequate storage facilities	2.13	V
6.	Inadequate drainage systems	2.01	VI
7.	Failure to accurately identify needs	1.16	VII

Table 4. Marketing constraints of FPO members

S. No	Marketing constraints	Percentage	Rank
1.	Insufficient access to current market trends	2.65	I
2.	Exploitation of middleman	2.50	II
3.	Significant price fluctuations in the market	2.40	III
4.	Delayed payment for goods	2.30	IV
5.	Distant marketplace with costly transportation	2.20	V
6.	Coordination problem from production to consumption	2.05	VI
7.	Unfavorable market prices for farm products	1.85	VII

Marketing constraints

The marketing constraints outlined in Table 4 pose serious challenges to the viability and growth of FPOs. Limited access to real-time market information (RPI 2.65) restricts the ability of FPOs to respond effectively to changes in demand, prices and consumer preferences. Information asymmetry has been consistently identified as a major cause of weak market participation among smallholder collectives in India (37, 38). Exploitation by middlemen (RPI 2.50) continues to be a structural issue in agricultural marketing. Empirical studies show that intermediaries often dominate price discovery, control market access and extract significant margins, leaving producers with a small share of the consumer price (39, 40). Although FPOs are intended to reduce intermediary dependence through collective marketing, weak bargaining power, limited scale and inadequate infrastructure allow middlemen to retain influence (41, 42).

Price volatility in agricultural markets (RPI 2.40) further intensifies marketing risks. Agricultural prices in India are highly sensitive to supply shocks, weather variability and policy interventions, making farm incomes uncertain (38, 43). Delayed payments for produce (RPI 2.30) exacerbate liquidity constraints, limiting farmers' ability to reinvest in subsequent production cycles an issue widely documented in studies on agricultural value -chain inefficiencies (44, 45). Moreover, distant markets combined with high transportation costs (RPI 2.20) disproportionately affect FPOs located in remote areas, where poor logistics infrastructure increases transaction costs and reduces net returns (46, 47).

Addressing these interlinked marketing constraints is therefore essential for enhancing FPO viability, improving market access, reducing dependence on intermediaries and enabling farmers to secure fairer returns from agricultural markets.

Conclusion

The study highlights the transformative potential of FPOs in enhancing smallholder farmers' access to markets, financial resources and technical knowledge, particularly in Tamil Nadu. FPOs offer key strengths such as direct marketing of farm produce, reduced reliance on intermediaries and improved community engagement. However, they face challenges like poor group formation skills (RPI 2.69), ineffective teamwork (RPI 2.46), high labor costs for intercultural farming (RPI 2.39), limited access to credit (RPI 2.15) and inadequate processing facilities. Technical issues, including unavailability of cost-effective, high-quality inputs (RPI 2.64), insufficient awareness of post-harvest practices (RPI 2.46) and poor infrastructure such as storage (RPI 2.13) and drainage systems (RPI 2.01), further hinder their growth. On the marketing side, FPOs struggle with insufficient access to market trends (RPI 2.65), exploitation by middlemen (RPI 2.50), price volatility (RPI 2.40), delayed payments (RPI 2.30) and high transportation costs (RPI 2.20). Despite these challenges, opportunities exist through access to credit, improved market linkages and government schemes. Addressing these constraints through strategic interventions, infrastructure development and policy support is crucial to strengthening the effectiveness and sustainability of FPOs.

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Authors' contributions

AY designed the study framework and drafted the manuscript. AM participated in the article collection, contributed to the analysis of the results and assisted in drafting the manuscript. RM provided insights into the FPOs and helped with the literature review. All authors read and approved the final manuscript.

Compliance with ethical standards

Conflict of interest: Authors do not have any conflict of interest to declare.

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