

Determinants of financial performance of the farmer producer organization (FPOs)

Nisha Bharti and Sneha Kumari

Abstract

Purpose – Farmer producer organizations (FPOs) are cooperatives with farmers as members that come together for economies of scale. With the formation of FPOs, their viability and financial performance are constantly questioned. This study aims to answer which factors contribute to the economic performance of the FPOs. This study tries to analyze the factors responsible for the performance of FPOs and suggests the most important factors for the financial performance of these FPOs.

Design/methodology/approach – The study used a quantitative method, and the data were collected using a structured questionnaire. Maharashtra is one of the leading states in India in terms of the number of FPOs. Maharashtra was selected for this study because of the fast-growing number of FPOs in this state. The financial indicators have been identified as the dependent variable for the study, while other operational, marketing, institutional and organizational indicators have been identified as independent variables. Data analysis is done in two stages. In the first stage, multivariate analysis of variance (ANOVA) is performed using the FPO indicators as the independent variable and financial performance indicators as the dependent variable. In the second stage, the structural equation model is run with the important indicators for the financial performance.

Findings – Making the FPO financial statement and presenting it to the board of directors for approval is dependent upon the activities of FPO taking place at the right time, procurement of produce and timely adequate support from the chief executive officer (CEO) for the decision. It is found that marketing activities and institutional support significantly impact the financial performance of the FPOs. The effect size of the marketing activities of the FPO is 0.224, which shows that it has a large effect, and the effect size of institutional support is 0.482, which also has a large effect on financial performance.

Research limitations/implications – This study strengthens the collective theory by providing insights into the performance. The study develops a framework to validate the causal impact of financial performance and its determinants. This serves as an outcome for developing a scale for financial performance.

Practical implications – FPO's role in sustainable agriculture development has been widely discussed in the literature. However, unless we have clarity on how to assess the performance of FPOs, it will be difficult to sustain the growth of these FPOs. This study has significant findings on the performance parameters for the FPOs. The findings of the study will be helpful for policymakers, lenders and FPOs in assessing their performance. Furthermore, they can identify the need for skill-building and work on it to be promoted as a sustainable model for promoting agriculture. This study strengthens the collective theory by providing insights into the performance. The study develops a framework to validate the causal impact of financial performance and its determinants. This serves as an outcome for developing a scale for financial performance.

Originality/value – To the best of the authors' knowledge, this paper is unique as it explores various factors influencing the financial performance of FPOs.

Keywords Agriculture, Farmer producer organization, Financial performance, Marketing, Organization, Institutions

Paper type Research paper

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1. Introduction

In India, the fragmentation of land is a significant cause of low profitability in agriculture. The average size of operational holdings decreased from 2.28 hectares in 1970–1971 to 1.84 hectares in 1980–1981, 1.41 hectares in 1995–1996 and 1.08 hectares in 2015–2016

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(Ministry of Agriculture, 2020). The size of the landholdings has been consistently declining. Farmers have been facing a lack of capital and poor business skills. Aggregation or collectivization of farmers in any form of collectives, such as cooperatives, self-help-groups (SHGs) and more recent forms, i.e. farmer producer organizations (FPOs) or farmer producer companies (FPCs), has become center stage in policy issues and is attracting the attention of policymakers.

In 2019, the Government of India announced the promotion of 10,000 new FPOs in the next five years. The Ministry of Corporate Affairs listed over 40,000 FPCs registered till 2024 (NAFPO, 2024). Till September 2024, as per the Tata Cornell Institute, the total number of registered FPOs promoted in India under the Companies Act of 1956 is 44,460. However, those having a financial report submitted 15,455 (Tata Cornell Institute, 2024). The government has supported the scheme through several schemes and has provided massive funding. A recent press release by the Government of India reported that a financing of ₹686.5bn was allocated till 2027–2028. Since this scheme was launched in 2020, ₹25.44bn in equity grants and ₹45.3bn under credit guarantee cover have been released to 4,761 and 1,900 FPOs, respectively (Government of India, 2025). It is important to note that in the last five years, only about 10% of the total budget outlay has been spent and used to support FPOs financially. The FPOs are facing many challenges in terms of building members' "capacity" to understand their functioning and governance practices on one side and raising "capital" for management of their business operations and expansion and scaling up of business activities on the other hand (Singh *et al.*, 2011, 2008; Dwivedi and Joshi, 2007). In this context, the vital question is: What factors contribute to the financial performance of the FPOs? This study tries to analyze the factors responsible for the performance of FPOs and suggests the most important factors for the financial performance of these FPOs.

2. Literature review

This section reviews the work done on agriculture collectives and FPOs. This section looks at several studies on the theory of farmer collectives, the impact of agricultural collectives and the factors impacting the performance of these collectives.

2.1 Theory for collectives

Collectives in various forms have always been a great source of support for farmers. Multiple forms of cooperatives were tried, but it was reflected that these cooperatives turned out to be a political vehicle rather than a tool for development (Ramappa and Yashashwini, 2018). Aggregation or collectivization of farmers in any form of collectives, such as cooperatives, SHGs and more recent forms, i.e. FPOs, have been seen as "best-fit" models for addressing the issues and challenges faced by smallholders. One of the theories supporting the evolution of cooperation is the theory of collective action. This theory supports the idea that collective action helps farmers increase their bargaining power (Hannachi *et al.*, 2020). Cooperatives have also reported bridging the information gap between buyers and sellers (Hall and Matos, 2010), further helping farmers with better product prices.

Collective approaches to agri-environment-climate measures have emerged with three perspectives: business, collective and environmental. They also concluded that cooperation strengthens farmers' autonomy (Reichenspurner *et al.*, 2024). In the collective approach, Prager (2015) proposed two approaches based on the degree of cooperation, i.e. one approach emphasizes collaboration (farmers work together and maintain a dialogue), and the other approaches are based on coordination (farmers work toward the same goal, but in isolation. In some cases, the theory of collective action also believed that through the collection, not only the performance of individual cooperatives is enhanced, but it improves

the performance of the entire cooperative system and promotes collaboration among these collectives (theory also suggests that potential exists for improving the performance of the entire cooperative system, not just individual cooperatives. For example, in some cases, there is theoretical justification for more collaboration and less competition among cooperatives (Staatz, 1989). The cooperative theory for farmers adopted three viewpoints and considered cooperation as a form of vertical integration by otherwise independent firms, as an independent business enterprise, and as a coalition of firms (Staatz and Eicher, 1998). The recent FPO model supports all three viewpoints, and all types of business models exist, including individual FPOs and the federation of these collectives. Some scholars have analyzed FPOs from the social network analysis perspective (Isaac, 2012). Salimi *et al.* (2021) reviewed the literature on farmer collectives. They concluded that these farmer collectives are complex organizations and are loci for knowing and also help in learning processes for the farmers. Farmers collectivize for several benefits and help in increasing collaboration among them.

2.2 Impact of farmer producer organizations

Several scholars have argued about the benefits of collectives for farmers. This includes activities with varied levels of cooperation, ranging from “single purpose minimal cooperation,” like joint marketing, to “multipurpose limited cooperation,” with shared activities like crop planning, equipment purchase and input procurement and “multipurpose, comprehensive cooperation,” where all inputs and outputs are shared. Shared (Agarwal, 2014). In a study conducted to assess the impact of FPOs, four parameters were considered: governance and management, business and operations, processes and systems and financial performance. The study’s findings reflected that only 15% of the FPOs could perform (BIRD, 2021). Many of the FPOs are limited to managing only a single activity. However, the results showed that the FPOs with more enterprising activities achieved higher turnover and better net profit (Kumar *et al.*, 2023; Anand *et al.*, 2023). Some studies highlighted the importance of social capital in impacting the performance of FPOs (Pant *et al.*, 2024). A survey of rural producer organizations in Colombia reported that these organizations improve access to input and output markets and financial markets (Benson and Faguet, 2023).

Barghusen *et al.* (2021) discussed several motivation factors for joining FPOs. They concluded that, along with monetary rewards, nonmonetary rewards also play an essential role in motivating farmers to join these collectives. Numerous studies pointed out the benefits of collectives for farmers. Some of the studies also pointed out that not only land owners but tenant farmers’ collectives helped increase their bargaining power and helped them reduce the cost of their land from land owners (Sugden *et al.*, 2021). A recent study in Nigeria concluded that a significant relationship exists between the members and nonmembers of an agricultural cooperative (Kehinde *et al.*, 2025). FPOs are reported to promote women’s empowerment as well. A study from Uttar Pradesh in India reported that women’s empowerment was greater among FPO members than nonmembers (Jaacks *et al.*, 2025). FPOs have helped farmers increase their bargaining power and improve their socio-economic conditions.

2.3 Performance measures for farmer producer organizations

Bharti and Kumari (2024) also highlighted the importance of financial performance as a parameter for the sustainable development of FPOs. A study by Kumar *et al.* (2023) mentioned that capital requirement is the major challenge faced by FPOs. Trivedi *et al.* (2023) also concluded that these FPOs have constraints in accessing finance from banks that lead to capital constraints. In a study on identifying success and inhibiting factors of FPOs, practical organizational activities like branding and marketing of products were identified as enabling factors, whereas poor infrastructure, lack of robust organizational structure and climate change were identified as inhibiting factors for the success of FPOs

(Suresh and SS, 2024). Members of FPOs benefited from marketing training more than nonmembers (Arun *et al.*, 2024). Another study on FPO suggested that “Capacity building and a business plan were important factors in promoting FPOs” (Pabba and Ponnusamy, 2024). Malik and Kajale (2024) highlighted the role of a lack of working capital, poor management and the absence of skilled professionals in FPOs. These collectives help farmers in many ways.

In a study on evaluating the efficiency of FPOs through DEA by Gurung and Choubey (2023), several financial parameters were used as input (expenditure and assets) and output (profit). Muniyoor and Pandey (2024) also considered several financial parameters as their input and output combination, like total assets and paid-up capital as inputs and turnover and net profit as outputs. This demonstrates the importance of financial performance in evaluating the efficiency of FPOs. Financial performance is one of the keys to the success of these FPOs. One of the studies in Tamil Nadu in India revealed that in terms of financial performance, these FPCs were in the average to low-performance category. In contrast, their credit performance was increasing (Mohanasundari *et al.*, 2024). The FPOs have limited financing options in the current context, leading to a funding gap that hinders their growth and development. Low paid-up capital from farmers, high interest rates from non-banking financial companies, lack of collateral by these FPOs, lack of credit history, etc. are some of the important constraints leading to a lack of finance flow to these FPOs. The latest State of the Sector report on FPOs also mentioned that the quality and effectiveness of these FPOs varied because of inadequate capital for scaling up operations and internal funds like share capital, equity grants and business development assistance (State of the Sector report, 2024).

In addition, these FPOs are not performing well financially. This leads to a lack of trust in these credit institutions in these FPOs (Sattva Knowledge Institute, 2024). With a lack of access to credit, it will be difficult for them to grow. FPOs are known for increasing farmers' profitability. A recent study on shrimp farming concluded that as part of FPOs, the farmers could collectively procure inputs and sell shrimps, reducing the price risk and sustaining profitability among farmers (Bhargavi *et al.*, 2025). According to Murray (2019), 90% of the FPOs operate below the 10 lakh turnover level. This reflects the poor financial performance of these FPOs. However, it is also debated that these FPOs need funding support to grow and scale up. A study from Prasad (2019) mentioned that institutional credit to these FPOs is negligible. A recent draft policy on FPOs by the Ministry of Agriculture has emphasized the need for funding support for these FPOs (Government of India, 2024). Financial performance was identified as one of the key indicators for the success of these collectives.

2.4 Research gaps and objectives of the study

The comprehensive study reveals that existing research predominantly focuses on aspects such as the rationale behind the formation of FPOs (Anand *et al.*, 2023; BIRD, 2021), their evolution (Badatya *et al.*, 2018; Murray, 2019), the processes involved in their formation (Kumar and Kumar, 2022), challenges (Malik and Kajale, 2024) and the factors influencing their performance (Kumar *et al.*, 2023; Mohanasundari *et al.*, 2024; Pabba and Ponnusamy, 2024). However, there is a notable gap in studies aimed at studying the determinants of financial performance for FPOs. Mohanasundari *et al.* (2024) mentioned that financial performance is the key metric for assessing the economic and societal impact of FPOs. They also noted that regular evaluation of the financial performance of FPOs will help identify loopholes, and by working on that, the efficiency of FPOs can be improved. They suggested that future research should explore internal and external factors impacting the performance of FPOs. Garg (2012) identified inefficient financial management and inadequate liquidity as significant challenges for the FPOs. Various authors suggested that FPCs must improve their financial sustainability for long-term success. Even lenders will see the credit history while evaluating the creditworthiness of the FPOs (Benson and Faguet, 2023). Therefore, it is

essential to understand what factors will impact the performance of FPOs to improve their financial sustainability. In this context, the need for a study on the determinants of the financial performance of FPOs was felt.

Given the rapid pace at which FPOs are being established, it is crucial to ensure their long-term sustainability. Identifying the determinants of financial performance that significantly influence their success is essential. Understanding these indicators will also facilitate identifying training needs for these organizations. Furthermore, despite their growing presence, funding agencies remain hesitant to extend financial support to FPOs, mainly due to a lack of trust in their operational viability. Developing a robust performance measurement tool is necessary in light of these challenges. This study is, therefore, designed with the primary objective of creating such a tool to assess the performance of FPOs. The research gap leads to deriving the research objectives as:

- To identify determinants of the financial performance of the FPOs.
- To analyze the effectiveness of internal and external factors on FPOs' financial performance.
- To provide result-specific recommendations on the roles and responsibilities of the FPO members

3. Research methodology

The study is exploratory and based on primary data from the FPOs across different regions of a state dominated by FPOs (Figure 1). The study used a quantitative method, and the data were collected using a structured questionnaire.

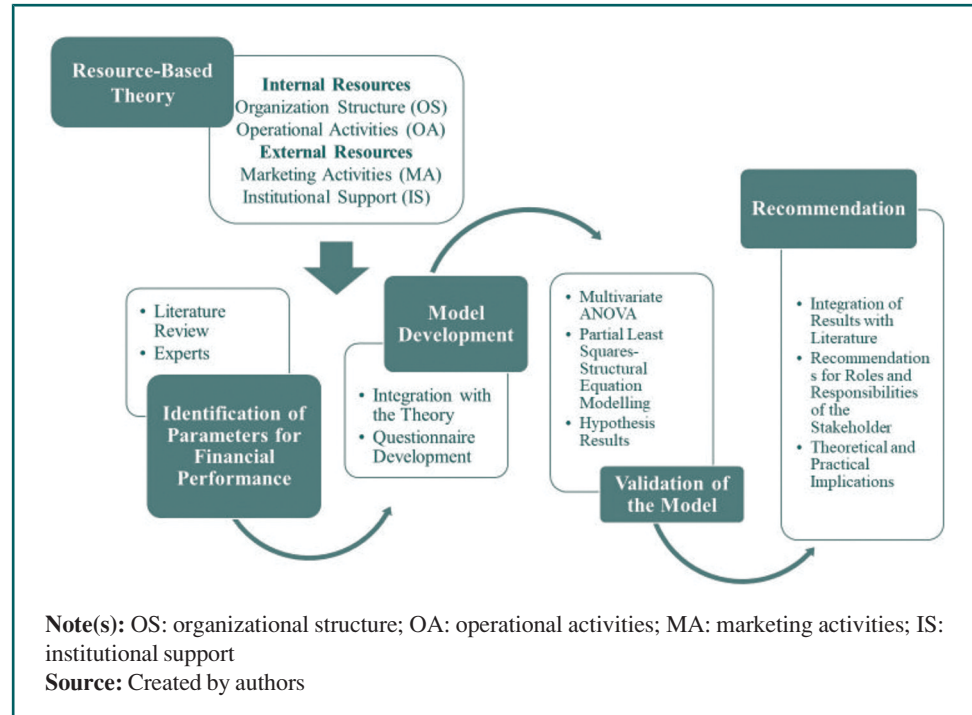
3.1 Scope of the study

Maharashtra state in India has seen a swift growth of FPOs. We selected Maharashtra for this study because of the fast-growing number of FPOs in this state. The State of the Sector report on FPOs for 2024 mentioned that out of 34870 FPOs across India, almost 33%, i.e. 11,700 FPOs are from Maharashtra only (NAFPO, 2024). The respondents were selected from different FPOs. The respondents were the chief executive officers, the chairman and the board of directors (BoD) of these FPOs. The FPOs were selected to represent various districts of Maharashtra. The financial indicators have been identified as the dependent variable for the study. The independent variables from the literature have been identified to test the impact of the FPO indicators on financial performance.

3.2 Sampling design

Data has been collected from 120 members of the FPO. A sample size of 100–200 is considered for the representation of the population for descriptive and inferential statistics in social science research (Kothari, 2004). The FPOs were selected based on their good performance, as indicated by the institutional firm, from every region in the previous years. Maharashtra, having a high number of FPOs, has been selected as the scope of the study. The FPOs have been selected across the different regions. The FPOs selected for the survey belonged to Aurangabad, Bhandara, Sidhudurg, Ahmednagar, Basmath, Bhandara, Chandrapur, Gondia, Guhagar, Jalna, Junnar, Osmanabad, Pune, Ratnagiri, Sakoli, Sindhudurg and Solapur districts of Maharashtra. Thirty FPOs across different districts of Maharashtra have been identified. A comprehensive set of questionnaires was made, reflecting the indicators for the chairman, BoDs, the CEOs and the farmer members of the FPO as the respondents.

Figure 1 Methodology



3.3 Indicators of the financial performance of the FPOs

The indicators of the financial performance of the FPOs have been studied and tabulated in Table 1. Multivariate analysis of variance (ANOVA) was performed to test the financial performance indicators. Furthermore, Wilk's Lambda and the significance level have been reported. Furthermore, the structural equation model was run to analyze the impact of the determinants on the financial performance. The determinants for the FPOs have been identified through an extensive literature review. In a study on Rural producer organizations in Congo by Ragasa and Golan (2014), various indicators identified for the performance measures of such organizations are governance and management, group composition, membership commitment, external linkage, institutional support and community and agroecological factors. This study classified the activities into four categories, i.e. organizational structure, marketing activities, operational activities and institutional support.

3.4 Determinants of the financial performance of the FPOs

The determinants of the financial performance of the FPOs have been studied and tabulated in Table 2. The activities of the FPOs are classified as marketing, operational, institutional and organizational structure.

3.5 Mode of data analysis

The financial performance measures have been analyzed using multivariate ANOVA to understand the influence of key selected variables on financial indicators. Furthermore, the impact of determinants of financial performance identified through the literature on financial performance indicators has been analyzed using partial least squares-structural equation modeling (PLS-SEM). The PLS-SEM analysis method is suitable for the study, as the causal impact can be observed. PLS-SEM is recommended for small sample studies with

Table 1 Indicators for financial performance of the FPOs

S.no.	Dependent variable (financial indicators)	References	S.no.	Independent variable	References
1	Making FPO financial statements and presenting them to various departments	Trivedi <i>et al.</i> , 2023; Roy <i>et al.</i> , 2022; D'Cruz (2025)	1	Timely and adequate support from the CEO for decision-making	Paty and Gummagolmath, 2018
2	Planning the budget for the coming year	SFAC guidelines; D'Cruz (2025)	2	Timely activities of the FPO	Mourya and Mehta, 2021; D'Cruz (2025)
3	Making the FPO financial statement and presenting it to BoD for approval	SFAC guidelines; D'Cruz (2025)	3	Monitoring meeting	Paty and Gummagolmath, 2018
			4	Decision on the agenda for the meeting	Paty and Gummagolmath, 2018
			5	Decision on the date of meeting	D'Cruz (2025)
			6	Organizing training programs for FPO members	Arun <i>et al.</i> , 2024; D'Cruz (2025)
			7	Training provided to CEO	Liu <i>et al.</i> , 2022; D'Cruz (2025)
			8	Training provided to board of directors	Liu <i>et al.</i> , 2022; D'Cruz (2025)
			9	Training conducted by the CEO for FPO members	Liu <i>et al.</i> , 2022; D'Cruz (2025)
			10	Training provided to the FPO members	Liu <i>et al.</i> , 2022; D'Cruz (2025)
4	Collection capital for FPO business	Kumar <i>et al.</i> , 2023; Mohanasundari <i>et al.</i> , 2024; SFAC guidelines; D'Cruz (2025)	11	Technical guidance to FPO members	D'Cruz (2025); Arun <i>et al.</i> , 2024
			12	Procurement of produce	Suresh and SS, 2024; Bhargavi <i>et al.</i> , 2025

Source(s): Created by the authors from literature and experts' views

adequate indicators identified for the constructs (Hair *et al.*, 2021). It has been observed that PLS-SEM performs well in management research with a smaller sample size (Reinartz *et al.*, 2009).

4. Theoretical framework for the study

The determinants have been used to develop a conceptual framework, as shown in Figure 2. The study uses Resource-Based Theory (Barney, 2001) to understand the financial performance of the FPOs. The theory is best suited for the study as it links tangible resources in the form of financial capital (access to credit, grants), physical capital (infrastructure, machinery) and intangible resources in the form of human capital (management skills, farmer training). Organizations gain a competitive advantage through access to valuable, rare, inimitable and nonsubstitutable resources. Better resources lead to improved operational efficiency, better market access and higher profitability. Das and Teng (2000) supported resource-based theory as it helps pool resources. In the context of FPOs, by collectivizing, they can pool resources. Hence, we analyzed the performance of FPOs in the context of resource-based theory.

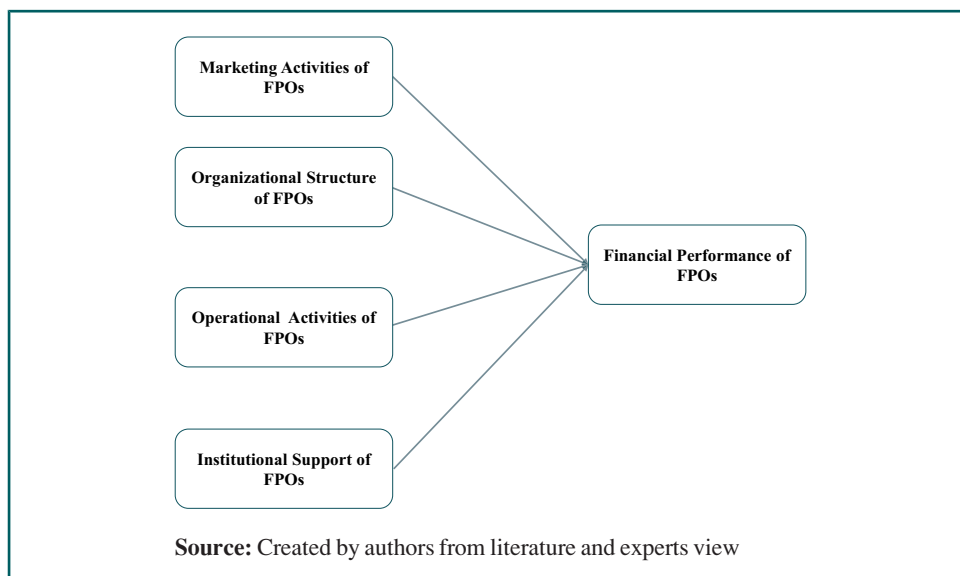
In the context of agribusiness firms, the resource-based theory considers various parameters, such as physical assets like farmland, human resources (e.g. business skills) and financial status (e.g. credit access), as the factors affecting the performance of these firms (Adetoyinbo and Mithöfer, 2023). Resource-based theory was analyzed in the context of farmers by Penrose (1959), and he argued that a collection of internal resources is the primary competitive factor of the organization. In the case of the FPO, by collectivizing in groups, they gain access to more resources and get a competitive advantage over their peer farmers. These internal resources are reflected in their organizational structure and governance. Studies also concluded the role of using these resources in marketing activities. Kueper *et al.* (2013) concluded that collective action through cooperatives helped

Table 2 Indicators for determinants of the financial performance of the FPOs

S.no.	Determinants	Items	References
1.	Organizational structure of the FPOs	<ul style="list-style-type: none"> ■ Age of the FPO ■ Number of board of directors members ■ Training for the members of the FPO ■ Training conducted by the CEO for the FPO members ■ Training provided to the board of directors ■ Timely and adequate support provided to the FPO members from the CEO for decision-making ■ FPO activities taking place at the right time ■ Five-year vision plan ready 	Karami and Rezaei-Moghaddam, 2005; Ragasa and Golan, 2014; Shiferaw, Kebede, and Reddy, 2009; Paty and Gummagolmath, 2018; SFAC guidelines; BIRD, 2021; D'Cruz (2025); Ragasa and Golan, 2014
2.	Marketing activities of FPOs	<ul style="list-style-type: none"> ■ Procurement ■ Call quotation ■ Contact with sellers and buyers ■ Advertisement ■ Guiding FPO members ■ Branding and promotional activities for the produce ■ Office space and required infrastructure 	Karami and Rezaei-Moghaddam, 2005; Ragasa and Golan, 2014; Etriya <i>et al.</i> , 2019; Singh, 2023; Adhikari <i>et al.</i> , 2021; Arun <i>et al.</i> , 2024; Suresh and SS, 2024; D'Cruz (2025); Etriya <i>et al.</i> , 2019; Sultana <i>et al.</i> , 2020; Nowfal <i>et al.</i> , 2025
3.	Operational activities of FPOs	<ul style="list-style-type: none"> ■ Training provided to CEO ■ Decision on the date of meeting ■ Decision on the agenda of the meeting ■ Monitoring meeting ■ Minutes of a meeting ■ Taking signatures of office bearers and members ■ Discipline and punctuality ■ Keeping the FPO campus clean ■ Organizing training programs for FPO members ■ Maintenance of the records 	Bernard and Spielman, 2009; Ragasa and Golan, 2014; Liu <i>et al.</i> , 2022; Krishnan <i>et al.</i> , 2021; Pabba and Ponnusamy, 2024; D'Cruz (2025)
4.	Institutional support of FPOs	<ul style="list-style-type: none"> ■ Government department ■ Bank ■ CA ■ Advocate ■ Agri. Dept ■ Contact with registrar of companies (ROC) and other departmental officers ■ Integrating with any of the national bank for agriculture and rural development (NABARD) promotional scheme 	Bernard, de Janvry, and Sadoulet, 2009; Neti <i>et al.</i> , 2019; Trivedi <i>et al.</i> , 2023; BIRD, 2021; D'Cruz (2025); Ragasa and Golan, 2014
5.	Financial performance of FPOs	<ul style="list-style-type: none"> ■ Filling ROC returns ■ Collection of capital for FPO business ■ Making the FPO financial statement ■ Presenting the FPO financial statement to BoD for approval ■ Paying FPO tax on time ■ Making the FPO financial statement and presenting it to various departments ■ Paying GST ■ Paying GST returns ■ Planning the budget for the coming year 	D'Cruz (2025); Ragasa and Golan, 2014; Garg, 2012; Mohanasundari <i>et al.</i> , 2024; Muniyoor and Pandey, 2024; Gurung and Choubey, 2023; Malik and Kajale, 2024

Source(s): Created by the authors from literature and experts' views

Figure 2 Determinants of financial performance of FPOs



exchange and use resources and allowed market development. [Song et al. \(2022\)](#) also highlighted the role of external resources as part of resource-based theory for farmers. [Gao et al. \(2017\)](#) talked about individual and provincial factors as part of the resource-based theory in the context of farmers. In this context, institutional support plays an important role.

4.1 Organization structure as determinant of financial performance

Any farmer organization that wants to increase efficiency and create peer pressure among its members should focus more on building its capacity. Promoters play a critical role in focusing and strengthening these organizations' capacities. Building leadership and motivational skills among the elected BoDs is essential. The members of the executive committee ought to get training in leadership, federation management, financial planning, linkages, output and input management and other related topics. Building the skills of members of FPCs and FPOs, or grassroots functionaries, is also crucial ([Paty and Gummagolmath, 2018](#)). The FPO's daily operations are anticipated to be overseen by a team of outside specialists employed under the guidance of the BoDs, who are chosen or elected by the general body of the FPO for a defined term. An FPO as an organization offers a suitable structure for the ownership of the business by the farmers themselves, since farmers or producers are the shareholders of the FPO (Small Farmers ' Agribusiness Consortium [SFAC] guidelines). Several studies emphasize various important factors for the sustainable development of FPOs. [Trivedi et al. \(2023\)](#) mentioned that the organizational structure would play an important role, and they suggested that these producer companies should form a federation to achieve economies of scale and cost-effectiveness:

H1. Organization structure has a significant impact on financial performance.

4.2 Marketing activities as determinants of financial performance

Business relationships and network heterogeneity improve financial success and inventive performance in more entrepreneurial farmers. Integrating farmers, networks and entrepreneurial skills to adapt to changes in the commercial environment. The data suggest that agricultural innovations are more demand-driven than supply-driven, reflecting that business relationships influence financial and inventive performance more than technical ties ([Terina et al., 2019](#)). An

effective marketing strategy can help BoDs promote and distribute FPC's products effectively. Before beginning any FPC business, the BoDs must conduct a market analysis to determine the target market and clients for continuous supply chain activities. On the contrary, some studies also reported that though these collectives were inclusive and included small and marginal farmers, they could not help these farmers much with input and output linkages (Singh, 2023). Adhikari *et al.*, 2021 emphasized the role of FPOs in promoting marketing activities, which will be a crucial element in defining the success of FPOs. Some studies also concluded that farmers with more diversified products are less likely to sell them through collectives than those producing single products in bulk (Fischer and Qaim, 2014). A study in Bangladesh concluded that these societies assured secure markets and fair prices for farmers, leading to higher production and higher income (Sultana *et al.*, 2020). A study in Kerala concluded that agricultural organizations promote financial inclusion, market participation and environmental sustainability among rural farmers (Nowfal *et al.*, 2025). Some studies also pointed out that though the number of FPOs is increasing fast, their contribution is limited to input procurement only (Rawat and Singh, 2025). Hence, marketing plays a vital role in defining the financial performance of the FPOs:

H2. Marketing activities have a significant impact on financial performance.

4.3 Operational activities as determinant of financial performance

The decentralized operation of smallholder farmers has resulted in an increasing number of issues as the market economy has grown. FPOs have created a new trend in agricultural development (large-scale, specialization and commercialization). The provision of agricultural supplies and technical training is just one of the core duties of the cooperatives (Liu *et al.*, 2022). Collectivizing also helps in their operational activities. One study used the supply chain operations reference model and divided FPOs. Operation in five stages, i.e. plan, source, make, deliver and return, concluded that forming FPO through collaboration facilitates many innovative practices, promoting socio-economic benefits for the members. Economic, environmental and social benefits to the FPO (Krishnan *et al.*, 2021):

H3. Operational activities have a significant impact on financial performance.

4.4 Institutional support as determinant of financial performance

A study by BIRD (2021) concluded that only 25% of FPOs are in a critical state in terms of functioning, and they require long-term strategic partnership support from agencies to strengthen their financial performance. The performance of FPCs has been examined in several studies, which have identified difficulties, including poor capital bases, inadequate financing, lack of required talent, operational problems, weak governance and inadequate storage and processing facilities (Neti *et al.*, 2019). Government announcements for the establishment of several FPOs through organizations like the SFAC and the National Bank for Agriculture and Rural Development are other supporters of FPOs, claiming to enhance farmers' quality of life (NABARD) (Mourya and Mehta, 2021). Trivedi *et al.* (2023) also supported the argument that members of FPOs expected more institutional support:

H4. Institutional support has a significant impact on financial performance.

5. Results and discussion

The descriptive statistics of the FPO indicators are tabulated in Table 3, where a few indicators are dichotomous, indicating 1 as yes and 2 as no. The indicators have a 1–5 ordinal scale, which indicates strongly agree to strongly disagree. We can see from Table 4 that we have a "Sig." value of 0.000, which means $p < 0.0005$. Therefore, we can conclude

Table 3 Descriptive statistics between-subjects factors

Indicators	Response choice	%
Are members provided any training in FPO?	1	83.33
	2	16.67
Has the CEO conducted any training for FPO members	1	83.33
	2	16.67
Are the board of directors provided training?	1	86.67
	2	13.33
Do the FPO members get timely and adequate support from your CEO for decision making	1	30
	2	0
	3	16.67
	4	40
	5	13.33
Are the activities of the FPO taking place at right time?	1	33.33
	2	3.33
	3	16.67
	4	36.67
	5	10.00
Training provided to CEO	1	100.00
Procurement of produce	1	93.33
	2	6.67
To decide date of meeting	1	100.00
To decide the agenda of the meeting	1	100.00
Monitoring meeting	1	100.00
Organizing training programs for FPO members	1	96.67
	2	3.33
Technical guidance to FPO members	1	96.67
	2	3.33

Note(s): 1 – yes and 2 – no. The indicators have a 1–5 ordinal scale, indicating strongly agree as 5 to disagree as 1 strongly

Source(s): Created by authors

Table 4 Multivariate test

Wilks' lambda effect	Value	F	Sig.	Partial eta squared
Intercept	0.126	118.056 ^b	0.000	0.874
Are the board of directors provided training	0.705	7.119 ^b	0.016	0.295
Do the FPO members get timely and adequate support from your CEO for decision	0.324	11.808 ^b	0.000	0.676
Are the activities of the FPO taking place at right time	0.355	7.712 ^b	0.001	0.645
Procurement of produce	0.318	36.444 ^b	0.000	0.682

Source(s): Created by authors

that the dependent variable was significantly dependent on the independent variable ($p < 0.0005$).

Pillai's Trace test assesses whether the mean vectors for different groups are the same. A high value indicates that the means of the groups differ more significantly, suggesting that the null hypothesis (that the group means are the same) is less likely to be true. Wilks' Lambda assesses the ratio of the variance explained by the model to the unexplained variance (residual variance). A smaller Wilks' Lambda indicates that the groups differ more significantly, suggesting that the null hypothesis of equal group means is less likely to be true. Hotelling's Trace measures the difference between group means with consideration for the covariance of the data. A larger value of Hotelling's Trace suggests that the means of the groups are significantly different. Roy's largest root tests the hypothesis that the means of multiple groups are equal. A larger value of Roy's largest root suggests a significant difference between the groups, providing more substantial evidence against the null hypothesis.

Pillai's trace is more robust than Wilks' Lambda when assumptions are violated. Roy's largest root is more potent if a significant difference exists between groups on one or a few dimensions. Wilks' Lambda tends to be sensitive to sample sizes and can be affected by multivariate normality assumptions. A Bonferroni adjustment was applied to proceed with the test of between-subjects on each dependent variable. The alpha value of 0.05 was divided by the number of dependent variables. The number of dependent variables was 5, so 0.05 was divided by 5. Furthermore, the result has been considered significant if found to be less than 0.01. A significant value of less than 0.01 is considered (Table 5).

Making the FPO financial statement and presenting it to the BoD for approval is dependent upon the activities of FPO taking place at the right time, procurement of produce and timely adequate support from the chief executive officer (CEO) for the decision.

5.1 Model validation

Figure 3 shows the model validation. Table 6 shows that the composite reliability of the constructs is greater than 0.7, and the average variance extracted is more than 0.50. This checks the validity of the constructs. Table 7 shows the results of the cause and effect. It has been found that marketing activities and Institutional support have a significant impact on the financial performance of the FPOs.

5.1.1 Effect sizes for path coefficients. The effect size of the marketing activities of the FPO was found to be 0.224, which shows that it is a significant effect, and the effect size of institutional support was found to be 0.482, which has a large effect on financial performance. Based on Figure 3 and Table 7, it was found that.

Marketing activities of the FPO have a significant impact on the financial performance.

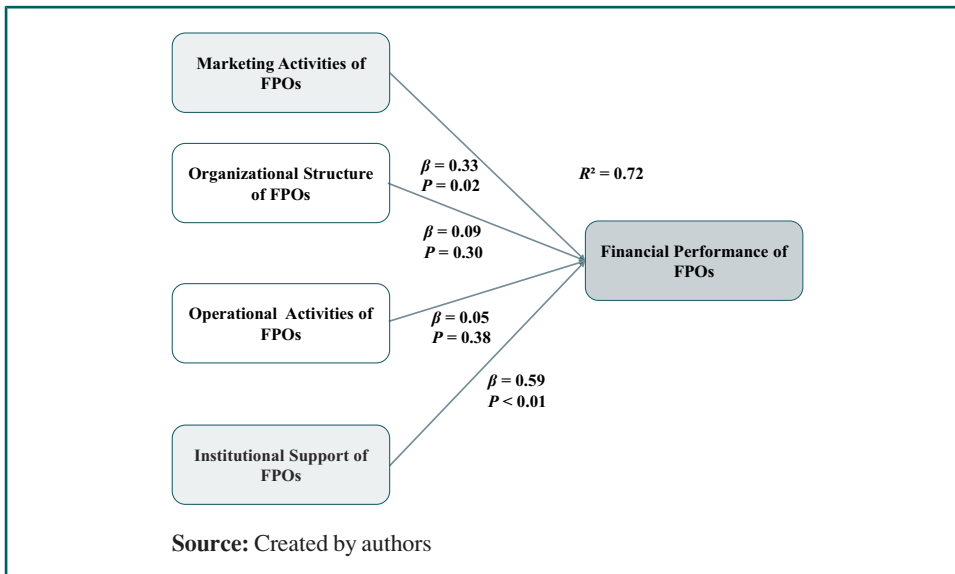
Institutional support has a significant impact on the financial performance.

Table 5 Tests of between-subjects effects

Source	Dependent variable	Type III sum of squares	df	Mean square	F	Sig.	Partial eta squared
Corrected model	Making FPO financial statement and presenting it to BoD for approval	1.494 ^b	12	0.125	5.687	0.001	0.801
Intercept	Making FPO financial statement and presenting it to BoD for approval	2.585	1	2.585	118.056	0.000	0.874
Are members provided any training in FPO	Making FPO financial statement and presenting it to BoD for approval	0.087	1	0.087	3.991	0.062	0.190
Are the board of directors provided training	Making FPO financial statement and presenting it to BoD for approval	0.156	1	0.156	7.119	0.016	0.295
Do the FPO members get timely and adequate support from your CEO for decision	Making FPO financial statement and presenting it to BoD for approval	0.776	3	0.259	11.808	0.000	0.676
Are the activities of the FPO taking place at right time	Making FPO financial statement and presenting it to BoD for approval	0.675	4	0.169	7.712	0.001	0.645
Training provided to CEO	Making FPO financial statement and presenting it to BoD for approval	0.000	0	–	–	–	0.000
Procurement of produce	Making FPO financial statement and presenting it to BoD for approval	0.798	1	0.798	36.444	0.000	0.682
To decide date of meeting	Making FPO financial statement and presenting it to BoD for approval	0.000	0	–	–	–	0.000

Note(s): ^bR squared = 0.801 (adjusted R squared = 0.660)

Source(s): Created by authors

Figure 3 Model validation**Table 6** Composite reliability and average variance extracted of the constructs

Constructs	Composite reliability coefficients	Average variances extracted
OS	0.780	0.64
MKT	0.626	0.50
OM	0.651	0.50
IS	0.676	0.50
FP	0.951	0.87

Source(s): Created by Authors

Table 7 Cause and effect analysis

Hypothesis	Coefficient	p-value
Marketing activities of the FPO → financial performance	0.33	0.02
Institutional support → financial performance	0.59	<0.000
Organizational structure → financial performance	0.09	–
Operational activities → financial performance	0.05	–

Source(s): Created by authors

$$\text{Financial Performance of FPOs} = a + 0.59 \text{ Institutional Support} + 0.33 \text{ Marketing Activities of the FPOs}$$

The main condition for the success of FPOs is the marketing of produce at profitable rates. Corporate producers set the majority of the input price caps. The farmers lose through the intricate web of market mechanisms affecting input and product prices. If FPOs can determine the local market needs of the consumers and form partnerships for selling their produce, there is more market potential. For FPOs to be sustainable in the long run, connections with industry, other market actors, major retailers, etc. are required. The result also shows that the organizational structure and operational activities do not significantly impact the financial performance.

5.1.2 *Organizational structure and operational activities do not have a significant impact on the financial performance.* Several studies have discussed the role and importance of FPOs in the socio-economic development of small and marginal farmers. The question begins with the issue of why some farmers decide to be a part of collectives, whereas others are not. In a study conducted in Sikkim on FPO to identify the factors impacting the participation of farmers, it was mentioned that education, farming experience, size of landholding, access to the internet, distance to the nearest market and transportation facility were some of the important variables impacting households' participation in FPOs (Gurung and Choubey, 2023).

The FPOs established have also been unable to attract institutional finance. It was reported that none of the FPOs availed of finance from formal sources. It was also important to note that newly established FPOs were denied bank loans as they could not submit their three-year balance sheet (Badatya *et al.*, 2018). The main operational problems in FPCs result from the insufficient capacity of the governing members and the limited resource availability (Roy *et al.*, 2022). FPCs struggle with several issues, including a lack of a strong sense of ownership among producer-shareholders, undercapitalization, poor governance, insufficient business skills and a lack of an enabling ecosystem. FPOs will improve the lives of millions of farmers (NAFPO, 2024).

Table 8 shows the model fitness. The quality indices have been found to meet the acceptable limits. In a study conducted in Andhra Pradesh on the relationship between business competencies and financial performance of FPOs, it was concluded that market-centric FPOs were better than production-centric FPOs in terms of business competencies and financial performance (Prabhavathi *et al.*, 2023). Govil and Neti (2024) recommended that incubating these FPCs will help provide financial and marketing support to these FPCs. This will further lead to the promotion of sustainable FPCs. This finding is in line with our findings, as our study also recommended that marketing activities significantly impact the performance of FPCs. The study also recommended that support from institutions plays an important role in the financial performance of FPOs. A study on fish farming recommended that, though FPCs also provide training to their members, institutional support from other agencies is also helpful in improving the performance of FPCs (Mondal *et al.*, 2025). Another study conducted by NABARD in three states, namely, Madhya Pradesh, Odisha and Kerala, reported an increase of 29% in the net annual income of the FPO members (Kumar and Kumar, 2022). Several studies have reported similar findings that marketing activities and institutional support are important for the financial performance of the FPOs.

6. Recommendations for roles and responsibilities of the FPO members

The linkage of resource-based theory justifies the financial performance of the FPOs. The study's findings suggest recommendations for strengthening the roles and responsibilities of the stakeholders.

Table 8 Model fit and quality indices

Quality indices	Value	Acceptability limits
Average path coefficient (APC)	0.267	$p = 0.026$
Average R-squared (ARS)	0.715	$p < 0.001$
Average adjusted R-squared (AARS)	0.670	$p < 0.001$
Average block VIF (AVIF)	1.448	Acceptable if ≤ 5 , ideally ≤ 3.3
Average full collinearity VIF (AFVIF)	2.185	Acceptable if ≤ 5 , ideally ≤ 3.3
Tenenhaus GoF (GoF)	0.642	Small ≥ 0.1 , medium ≥ 0.25 , large ≥ 0.36
Simpson's paradox ratio (SPR)	0.750	Acceptable if ≥ 0.7 , ideally = 1
R-squared contribution ratio (RSCR)	0.996	Acceptable if ≥ 0.9 , ideally = 1
Statistical suppression ratio (SSR)	1.000	Acceptable if ≥ 0.7
Nonlinear bivariate causality direction ratio (NLBCDR)	1.000	Acceptable if ≥ 0.7

Source(s): Created by authors

6.1 Chairman

The chairman of the FPOs acts as a leader. The chairman should be active. The study's outcome suggests that leadership commitment is essential for the sustainable performance of the FPOs. The chairman's leadership will help in the proper decision-making at the strategic level. The active role of the chairman will also ensure the effective functioning and governance of the BoDs. Awareness and motivational programs are required for the FPOs to perform better.

6.2 CEOs

The CEOs help in the execution of the strategic plans. It was observed that the CEOs are inactive, which results in poor performance. The CEO should be educated and well-qualified to manage the business operations concerning the agricultural commodity. Financial literacy programs should be organized for the CEOs so that they can regulate the board report. The focus should also be on bringing different market linkages for agricultural commodities.

6.3 Board of directors

The BoDs is the governing body. The findings suggest that governance programs should be organized. The programs should ensure the active participation of the BoD members. The FPOs have 10 BoD members who monitor the financial performance. The members should ensure good governance and sustainable operations in the FPO.

6.4 Farmer members

Farmer members are the primary beneficiaries of the FPO. The farmer members should participate in the meetings and avail their voting rights. The farmer members should supply the right quality produce. Farmer members should be trained in different agricultural activities and good agricultural practices. The findings also recommend that farmer members be made aware of the organization's structure and responsibilities.

[Table 9](#) discusses the specific recommendations for improving the performance of the FPOs.

7. Implications of the study

The study's findings outline theoretical and practical implications for a significant contribution toward the financial performance of farmer-producer companies.

7.1 Theoretical implications

The findings of the study contribute to the integrated performance of FPOs. First, this study strengthens the collective theory by providing insights into the performance. The study classifies the variables in a cooperative into dependent and independent variables for understanding financial performance. Second, the study performs a multivariate analysis of variance to compare the variables influencing financial performance. Third, the study digs out the determinants of the financial performance of the FPOs. These determinants have been further classified as marketing, operations, institutional and organizations. Fourth, the study develops a framework to validate the causal impact of financial performance and its determinants. This serves as an outcome for developing a scale for financial performance. Finally, the comprehensive framework adds to the reasons for the acceptance and rejection of the hypotheses.

Table 9 Hypothesis results and recommendations

<i>Hypothesis</i>	<i>Acceptance/rejection</i>	<i>Reason</i>	<i>Recommendations</i>
Marketing activities of the FPO have a significant impact on the financial performance	Accepted	These FPOs are business enterprises and are into primary production. Proper marketing at the right price is the key to the success of these organizations	Long-term partnerships will support the current market structures of agricultural <i>mandis</i>
Institutional support has a significant impact on the financial performance	Accepted	Schemes for creation of backward and forward linkages have been started to bridge the supply chain's gaps in terms of raw material accessibility and market linkages	The government should sensitize various government officials to support FPOs and also organize an awareness program to disseminate the importance of FPOs
Organizational structure has a significant impact on the financial performance	Rejected	The members and organizational structure play a critical role in focusing and strengthening these organizations' capacities. The members lack leadership and motivational skills	Building leadership and motivational skills among the elected board of directors is essential. The members of the executive committee ought to get training in leadership, management, financial planning etc. Building the skills of members of FPCs and FPOs or grassroots functionaries, is also crucial
Operational activities have a significant impact on the financial performance	Rejected	Despite an impressive increase in the number of FPOs nationwide, they still face a number of difficulties, including poor company management, unstable supply and a lack of timely financial support. Even though gathering raw produce from farmers in group is essential, it is insufficient to cope with market participants. For most of FPOs, having a significant impact on this value chain remains a distant prospect (NAFPO, 2024)	The capacities of the participating farmers need to be improved through assistance in gaining access to future links regarding technologies for increased production, value addition of marketable goods, and market connections. They will need access to contemporary technologies for better access to the input and output markets as well as negotiation leverage (Government of India, 2013)

Source(s): Created by authors

7.2 Practical implications

The study's findings contribute important practical implications for the stakeholders, including farmer members, BoD members, CEO and chairman. First, the findings from the multivariate ANOVA highlight the need for professional management practices among the members. These practices align with training, capacity building and financial literacy among the members. Second, the findings highlight the standard practices necessary for the BoD members and CEO of the FPO. Third, the study will help the FPO focus on decision-making and the determinants of a successful FPO. Fourth, the study ensures that the regular monitoring system drives the sustainable financial performance of the FPO. Therefore, managers and government firms should trace the key determinants for strategic decisions. Finally, the study brings important recommendations for the FPOs. Long-term partnerships can help FPOs in their market structures. The findings further help strengthen the organizational capabilities and capacity building of the FPOs. Institutional support is an important determinant of financial performance. There is a need for an impact evaluation study of the different institutional support provided to the FPOs.

8. Conclusion and future directions for research

The emergence of FPOs was meant to promote sustainable agriculture. Small farmers collectivize to increase their bargaining power. That helped them decrease the input cost

and increase their profitability by negotiating a better price for their produce. The study relied on resource-based theory for the study and finalized organizational structure, institutional support, marketing activities and operational activities as the major determinants of the financial performance of the collectives. The study validated the determinants of the financial performance of the FPOs. The study concluded that the marketing activities and institutional support were significant factors in affecting the financial performance of the FPOs. FPOs have operational and organizational challenges that need to be worked. FPOs need to work on improving their organizational structure as well. The FPOs have emerged as a tool to promote sustainability in agriculture. However, the fast emergence of FPOs raises questions about the model's sustainability. The government is pushing huge funds to make it sustainable. However, without properly defined performance measures, making the impact we desire will be difficult. This study recommends that the government should handhold these FPOs and work on their capacity building, especially leadership and managerial skills. Support for marketing activities for these FPOs will help improve their performance. The study suggests promoting inter-institutional collaboration among various organizations. It will also set new directions for future research, as with the identification of measures, it will be easier to develop a scale and model for validating the performance of these FPOs.

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