



Farmer Producer Organization: An Ecosystem for Building Socio-Economic Resilience of Farmers in India

ARVIND ARAHANT^{1*}, DILESWAR NAYAK², LOKESH JINDAL¹, GEETANJALI BATRA¹,
DEBENDRA NATH DASH³, RAMA KOTESWARA RAO KONDASANI⁴,
ADEEBA HOOR¹ and SHIVANI PRASAD¹

¹Atal Bihari Vajpayee School of Management & Entrepreneurship, Jawaharlal Nehru University, New Delhi, India.

²School of Environmental Science, Jawaharlal Nehru University, New Delhi, India.

³Mahatma Gandhi National Council of Rural Education, Ministry of Human Resource Development, Ministry of Education, Government of India, Hyderabad, India.

⁴Department of Management Studies, National Institute of Technology Silchar, Assam, India.

Abstract

This review paper examines the role of Farmer Producer Organizations (FPOs) in enhancing the socio-economic resilience of small and marginal farmers in India. Socio-economic resilience refers to the ability of farmers to withstand, adapt to, and recover from economic and social challenges while maintaining sustainable livelihoods. Despite India's leading position in agricultural production, small farmers face significant marketing challenges due to limited landholdings. FPOs help mitigate these issues by achieving economies of scale, reducing transaction costs, and improving market access. The study highlights successful initiatives, such as the Doubling Farmers' Income program and the formation of 10,000 FPOs, which aim to support marginalized communities. However, challenges like social barriers and inadequate infrastructure persist. This paper addresses how FPOs contribute to farmers' resilience, and explores the implementation, challenges and opportunities. The findings emphasize the need for continued support and effective policy implementation to maximize the potential of FPOs in transforming India's agricultural sector.



Article History

Received: 19 December 2024

Accepted: 13 February 2025

Keywords

Agrarian Economy; Doubling Farmers Income; Farmer Producer Organization; Small and Marginal Farmers; Socio-Economic Resilience.

Introduction

Traditional agriculture in India has a rich and diversified history, reflecting the country's diverse

climates and topographies. During the Indus Valley civilization (c. 2500-1900 BCE), people employed advanced farming techniques, including the

CONTACT Arvind Arahant ✉ aparahant@mail.jnu.ac.in 📍 Atal Bihari Vajpayee School of Management & Entrepreneurship, Jawaharlal Nehru University, New Delhi, India.



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Doi: <https://dx.doi.org/10.12944/CARJ.13.1.26>

cultivation of wheat, barley, and legumes.¹ They developed sophisticated irrigation systems, such as wells and canals, to ensure consistent water supply for their crops.² Additionally, they constructed granaries to ensure food security and manage seasonal variations.³ In addition, medieval period agricultural practices for new crops introduced from Southeast Asian countries like rice and sugarcane increased food production manifold.

Furthermore, the Mughal Era (16th-18th centuries) saw substantial advances in agricultural practices, including improved irrigation techniques and the introduction of cash crops such as cotton and indigo. After independence, the Green Revolution brought high-yield agricultural varieties, chemical fertilizers, and advanced irrigation techniques. While India's agrarian practices have evolved significantly over centuries,⁴ modern challenges such as resource constraints, market access limitations, and environmental degradation persist, particularly for small and marginal farmers.⁵

Small and marginal farmers are a crucial component of India's agricultural landscape, comprising about 86 percent of the total farming community. These communities are economically vulnerable and have constraints in access to resources and markets, demonstrating an intricate interaction of economic, social, and environmental elements. While they play a critical part in ensuring food security and rural economies, targeted policies and support systems are essential to improving their livelihoods and resilience. These challenges underscore the need for innovative solutions like FPOs, which address critical constraints and influence socio-economic resilience.⁶

Background of FPOs in India

The notion of agricultural cooperatives dates to the late nineteenth century, and it was primarily influenced by the European cooperative movement. Early endeavors, centered on credit societies and marketing cooperatives. Following independence, India embraced cooperative farming as a strategy to increase agricultural productivity. Previous experiences with cooperatives in India highlighted the need for broader independence for cooperatives to function as commercial organizations in competitive markets. Therefore, a newly established term

FPOs started with the aim of FPOs differs from traditional cooperatives in India in that they are legally allowed to share profits through dividends. They offer members a better price for their produce, benefiting them. An FPO aims to boost farmers' competitiveness and provide them an advantage in new markets and the agricultural sector in India is predominantly composed of small and marginal farmers who will benefit from it. These Farmers face multiple problems, notably limited availability of resources, markets, and technology. In recent years, FPOs have emerged as a potential solution to influence the socio-economic resilience of these farmers.⁷ FPOs are collective organizations that aim to improve the bargaining power, income, and sustainability of smallholder farmers by providing them with better access to inputs, services, and markets.^{8,9} Further, The World Bank defines socio-economic resilience as a factor influencing the risk to well-being and anticipated losses.¹⁰ However, effective implementation of FPOs relies heavily on the support of state public authorities, which play a crucial role in improving farmers' economic and social conditions.

The concept of FPOs is rooted in the idea of collective action and cooperation, which are essential for addressing the vulnerabilities encountered by small and marginal farmers. Previous studies have highlighted the potential of FPOs to empower farmers, increase their incomes, and promote sustainable agricultural practices.⁹ For example, in China, cooperatives and farmer organizations have had a favorable impact on smallholders by specializing in production technology, and market access, thus reducing entry barriers.^{11,12} Similarly, in Mozambique, membership in a farmers' organization led to a 50 percent increase in profits and benefited 80% of smallholder farmers, demonstrating the potential of collective action to enhance farmers' income.¹³ While FPOs in India hold similar potential, their effective implementation faces significant challenges,¹⁴ including governance issues, financial sustainability, market linkages, and policy coherence.^{15,16}

In India, FPO is a long-term and multi-faceted vision of the government aimed at supporting marginalized communities. They are indispensable organizations that shield small and marginal farmers from the

adverse effects of globalization and the market economy.⁷ FPOs have demonstrated their capacity to create value within their value chain for their member farmers.¹⁷ For instance, Organic Producer Groups (OPGs) in Uttarakhand have successfully negotiated better price protection with buyers, ensuring premium prices even during periods of declining crop yields. This arrangement has provided farmers with a stable income and reduced their vulnerability to market fluctuations. Another example is the Indian Organic Producer Company Limited (IOPCL) in Kerala which has supported member producers with subsidized seeds, micro-irrigation tools, and organic certification.¹⁸ These initiatives have significantly impacted members' awareness, income, and output, highlighting the importance of institutional support and capacity building in enhancing the resilience of smallholder farmers.

Currently, India has approximately 7374, Farmer Producer Companies (FPCs) covering about 4.3 million farmers.¹⁹ The resilience and capabilities of these institutions have proven to be critical resources for mitigating the adverse effects of the COVID-19 pandemic on the farming sector. FPOs have played a crucial role in developing the socio-economic resilience of farmers and are instrumental in achieving many sustainable development goals. With one of the largest and most educated rural youth populations globally, India has immense opportunities to leverage FPOs for agricultural transformation. The integration of young, educated individuals into these organizations can drive innovation, enhance productivity, and foster sustainable agricultural practices.

Given the significant role that FPOs can play in transforming the agricultural landscape of India, the Government of India (GOI) recently established a new Union Ministry of Cooperation. This ministry is expected to bring innovation to the functioning of collectives, particularly producer organizations, by facilitating better coordination, providing technical assistance, and ensuring access to financial resources.

The purpose of this study is to examine the role of FPOs in enhancing the socio-economic resilience of small and marginal farmers in India. The study aims to analyze how FPOs contribute to

improving farmers' access to markets, resources, and technology, thereby mitigating vulnerabilities associated with globalization, resource constraints, and market fluctuations. Additionally, the research seeks to identify the key challenges and opportunities in the effective implementation of FPOs and the role of institutional support in fostering their success.

Research Questions

1. How do FPOs contribute to the socio-economic resilience of small and marginal farmers in India?
2. What are the key challenges and opportunities associated with the implementation and policy support of FPOs in India?

Literature Studies

One of the studies²⁰ underscores the critical role of training programs in enhancing self-confidence among young farmers, which subsequently boosts their risk-taking abilities. These trained farmers exhibit a heightened interest in the commercialization of agriculture. The entrepreneurial behavior fostered within FPO significantly contributed to the improvement of farmers' livelihoods. This is particularly important in the context of rural India, where traditional farming practices often limit economic opportunities.⁸ By equipping farmers with the necessary skills and confidence, training programs within FPOs can catalyze a shift toward more entrepreneurial and commercially viable agriculture practices.

In terms of market access and price realization, which refers to the price that producers actually receive after transaction costs,²¹ it was observed that producer organizations can significantly increase their share of consumer prices, thereby addressing pervasive issues such as trader exploitation and opening new market opportunities.²² The collective action enabled by FPOs allows farmers to pool their resources, negotiate better prices, and access larger markets that would otherwise be out of reach. This collective bargaining power not only helps in securing better prices but also in reducing the transaction costs associated with individual selling. As a result, farmers can retain a higher share of the consumer price, enhancing their overall economic stability and resilience.

In addition to improving market access and price realization, FPOs are essential to maintaining food security.²³ His analysis of the state-regulated production system and its impact on food security within socio-political and socio-economic contexts concluded that the global situation necessitates the prioritization of intensive agricultural practices under government oversight. The aggregation of farmers into FPOs is identified as an effective tool to address the issues faced by small and marginal farmers.²⁴ This suggests that FPOs can make a substantial contribution to national food security goals by facilitating the adoption of advanced agricultural practices, improving access to quality inputs, and enhancing productivity.

The role of FPOs in addressing production and market risks is further emphasized in a study²⁵ which conducted a detailed examination of the production dynamics, disposal patterns, post-harvest wastage, advertising strategies, pricing, and sales of Arunachal oranges. He argued that promoting producer cooperatives and providing sufficient short-term financial facilities are critical, especially in rural areas. To mitigate the risks associated with Arunachal orange production, he recommended that the Government of Arunachal Pradesh establish market intelligence services, organize FPOs, implement support prices, and introduce an insurance model. These measures would help stabilize income and reduce the vulnerabilities faced by orange producers, underscoring the importance of targeted interventions in protecting farmers from market volatility and ensuring sustainable income levels.

Further a study, it was highlighted the positive impact of aggregating small, marginal, and landless farmers into FPOs.²⁶ They found that this aggregation helps increase farmers' income and economic strength, improving market linkages and providing comprehensive services that cover marketing, technical support, and processing. This integrated support system significantly enhances the economic outcomes for farmers. By leveraging economies of scale and enhancing resource accessibility, FPOs enable smallholders to compete more effectively in the market, thus driving overall economic growth in rural areas.

In examining strategies to enhance farmers' income, it was argued that integrating agricultural systems, such as combining livestock and crops, is one of the most effective strategies to achieve the goal of doubling farmers' income in Banda District, Uttar Pradesh.²⁷ This integration can enhance productivity and income stability, providing a sustainable path to increased earnings for farmers in the region. Such diversified farming systems not only spread risk but also create multiple revenue streams, making farmers more resilient to economic shocks and climatic variability.

Lastly, a study examined the productivity of Rajasthan's main seed spices as well as their growth and volatility from 1991 to 2019.²⁸ They found that farmers face numerous challenges, including market instability and production risks. To address these issues, they recommended that the government establish Agri-Export Zones to promote the commercial activities of seed spices, thereby enhancing economic opportunities and reducing risks for farmers. By creating specialized zones, the government can provide targeted support and infrastructure to boost the competitiveness of seed spice producers, fostering a more stable and lucrative agricultural sector.

Overall, while the prevailing studies^{20,22-28} give an insightful account of the function of FPOs in enhancing farmers' livelihoods, market access, and economic resilience, there remains a need for further research to explore the long-term sustainability of these organizations and their impact across different regions in India. This paper aims to fill these gaps by evaluating the effectiveness of FPOs in various contexts and identifying best practices for their implementation. By examining a range of case studies and empirical data, this research seeks to provide a thorough understanding of the role of FPOs in enhancing the socio-economic resilience of small and marginal farmers and to identify the practical challenges and opportunities in their implementation.

Methodology

This review article is based on an extensive examination of existing literature and secondary data from government sources.^{29,30} The foundational framework for Farmer Producer Companies (FPCs)

originates from a 1999 initiative by the Government of India, which established a committee chaired by economist Dr. Y.K. Alagh. This committee's recommendations led to the formation of legislation allowing the registration and operation of FPCs, entities wholly owned and self-regulated by farmers, managed by professionals with the farmers' interests in mind. The committee recognized the potential adverse impacts of the market economy on small and marginal farmers, proposing FPOs as a mechanism to protect these farmers from price exploitation and enhance their market access. The insights gained from this study can inform policymakers, practitioners, and researchers about the effective strategies for supporting FPOs and fostering sustainable agricultural development in India.

The methodology for this study draws upon a wide array of research articles, government reports, policy documents, and case studies. Key research articles consulted include works such as Singh (2021) which examines the performance and impact of producer companies, Lalitha (2024), which examines the integration of producer companies into the Indian rural economy, Shiferaw (2011), which explores the economic and market impact of FPOs in rural development and including other studies on understanding the role of FPOs.^{20, 22-28} Government reports like the Ministry of Agriculture and Farmers Welfare's "Doubling Farmers' Income Report" (2018)^a and the National Policy On FPO-Draft (2014)^b provide critical insights into agricultural production, challenges faced by farmers, and the government's policy frameworks for supporting FPOs. Policy documents, such as the GOI's National Policy on the Development of FPOs (2014)^c and the Formation and Promotion of 10,000 FPOs^d, outline the legislative and financial frameworks aimed at enhancing the capacity of FPOs. Additionally, case studies from various regions in India, including those focused on aspirational and tribal districts, offer real-world examples of the challenges and successes encountered by these organizations in diverse socio-economic contexts. These varied sources contribute to a nuanced understanding of how FPOs impact the socio-economic resilience of small and marginal farmers.

The methodology provides a detailed understanding of the role of FPOs in enhancing the socio-economic

resilience of small and marginal farmers. While economic resilience primarily focuses on improving livelihoods, market access, and economic stability, social resilience pertains to the strengthening of social networks, fostering collective action, enhancing social capital, and improving the overall cohesion within farming communities. This dual focus enables a thorough analysis of how FPOs contribute to both the economic and social dimensions of resilience. Additionally, it helps identify the critical challenges and opportunities associated with the implementation and policy support of FPOs, highlighting the interplay between economic strategies and social structures essential for sustainable agricultural development.

Results

Legislative and Policy support for FPOs

To ensure the viability and sustainability of FPOs within a market-driven economy, the Government of India undertook significant legislative measures. The Ministry of Company Affairs (MCA) amended the Companies Act of 1956 by adding Part IXA, which provides a legal framework for the incorporation of producer organizations. This legislative change aimed to provide agricultural producers with an efficient and modern organizational firm promoting business proficiency while supporting mutual assistance principles. The national policy for the development of FPOs focuses on the collectivization of small and marginal farmers, merging cooperative society principles with privately owned producer companies.³¹

In April 2016, an Inter-ministerial Committee examined various strategies related to the Doubling Farmers' Income initiative. The committee's report, submitted in September 2018, provided a detailed analysis of potential income sources for farmers, emphasizing resource use efficiency, cost reduction in production, increased cropping intensity, and diversification into high-value crops and non-farm activities. This policy analysis forms a crucial part of understanding the role of FPOs in enhancing the socio-economic resilience of small and marginal farmers, as these strategies are integral to the functioning and success of FPOs.³² The Government of India's mission-mode approach to agricultural reforms included the launch of a new scheme by the Prime Minister on February 29, 2020, with a budgetary provision of Rs. 6865 crores. This

scheme supports the socio-economic transition in the agrarian sector.

Economic and Market Impact of FPOs

The idea of a producer company is central to regulating the Indian rural economy more effectively. These companies consist of farmers and agriculturalists working together to improve living standards and access to credit, technology, and markets.³³ Between 2020-21 and 2021-22, a total of 630 and 611 FPOs, respectively, were registered or were in the process of registration. As of May 6, 2022, 64 FPOs had been registered in tribal districts and 85 in aspirational districts. These initiatives align with broader policy frameworks aimed at fostering socio-economic resilience and ensuring inclusive growth in India's rural areas.³⁴

Regional and Demographic Outreach of FPOs

The Formation and Promotion of 10,000 FPOs scheme, launched in January 2018, is part of the GOI's Aspirational Districts Program, which aims to transform 112 of the most under-developed districts quickly and effectively. Many of these districts, particularly in northeastern India and the scheduled areas of Gujarat, Maharashtra, Chhattisgarh, Jharkhand, and Madhya Pradesh, fall under Schedule Six and Schedule Five regions, respectively. The government has integrated initiatives from 2016, 2018, and 2020 to support the most marginalized and vulnerable communities, including farmers, Scheduled Castes (SC), and Scheduled Tribes (ST). Agricultural productivity in these scheduled and tribal areas is below the national average, with rice yielding about 2713 kg/ha and wheat 3500 kg/ha. This lower productivity, especially for staple foods in tribal regions, underscores the need for targeted interventions.³⁵ The government's initiatives align with the United Nations' Sustainable Development Goals (SDGs) of 'No Hunger,' to increase agricultural output and food security in these underdeveloped areas.³⁶

Diversification and Agricultural Resilience

The recently released National Sample Survey Office (NSSO) report on the Status of Agriculture reveals that agricultural production in India encompasses more than just crop production. It includes the cultivation of field crops (including fodder crops), nuts, grapes, seeds, fruits, and seedlings in

nurseries, and the production of bulbs and flowers both in open fields and under glass. This highlights the diverse nature of agricultural activities in India, which contributes significantly to the overall agricultural economy. Diversification in agricultural activities helps mitigate risks associated with monoculture and ensures a steady income stream for farmers throughout the year.³⁷ Despite being the highest and second-largest producer of millets, pulses, rice, wheat, and lentils, India faces challenges in marketing its agricultural products due to the predominance of small and marginal farmers.³² India also leads in the production of dry beans, chickpeas, okra, bananas, mangoes, guavas, lemons, and limes in the horticultural segment. The success story of the Amul cooperative, which has uplifted marginalized rural poor and women, is well-documented and serves as a model for other cooperative efforts.³⁸ This example underscores the potential of cooperative models in enhancing market access and income for smallholder farmers. Additionally, the production of spices and fibers provides significant support to the manufacturing industry, particularly in textiles and agri-food processing, highlighting the interconnectedness of agricultural production and industrial growth.³⁹

Challenges Faced by FPOs

In India, small and marginal farmers who own less than two hectares of land make up 86.2 percent of all farmers, yet they only hold 47.3 percent of the crop area, under the tenth agriculture census (2015–16). Within this group, approximately 69 percent of farmers cultivate an average of 0.38 hectares, while 17.6 percent cultivate around 1.40 hectares. The limited landholding size hampers their ability to achieve economies of scale, both in terms of input costs and output prices and restricts their ability to advance in the supply chain, including access to global markets and modern marketing channels. The feasibility of contract farming for better price realization is minimal due to their small numbers. This lack of market access results in many small and marginal farmers, particularly those from tribal and aspirational districts and SC, ST, and OBC communities, being deprived of fair prices for their agricultural produce. The segmentation of these farmers from larger, more economically integrated areas exacerbates income disparities and limits their participation in value-added agricultural processes.

Since Independence, the Indian rural economy has faced numerous structural challenges.⁴⁰ The post-reform period did not adequately address farmers' issues, leading to the formation of 10,000 FPOs to create a robust vision for marginalized sections. Past policy decisions failed to generate sufficient livelihood mechanisms, prompting rural-to-urban migration. The rural sector in India remains resource-poor and lacks infrastructure.⁴¹ Policy decisions primarily target rural areas with low levels of education, low-skilled workers, economic stagnation, inadequate infrastructure, low income, and a culture that does not support business, presenting challenges to the policy's success. Social obstacles such as caste discrimination, gender bias, patriarchal norms, isolation, resistance to change, and lack of feedback further complicate implementation. The policy aims to drive structural reform, but rural sector conditions hinder progress. Neglect of the rural sector in post-reform planning has left a void that this policy seeks to fill, potentially transforming the socio-economic landscape of marginalized communities.⁴² Addressing these deep-rooted issues requires a multifaceted approach that integrates social, economic, and infrastructural development.

Government Initiatives and Financial Support

Converting Indian agriculture into *Atmanirbhar Krishi* (self-reliant agriculture) begins with the essence of FPOs. The government has enlisted notable implementing agencies, including the Small Farmer's Agriculture Consortium, the National Cooperative Development Commission, and the National Bank for Agriculture and Rural Development (NABARD), to promote and form FPOs effectively. The goal is to establish 10,000 new FPOs within five years, providing maximum financial support of Rs.18.00 lakh per FPO over three years to ensure sustainability and cost-effectiveness. In plain areas, FPOs require a minimum of 300 farmer members, while in northeastern and hilly regions including other Union territories (UTs), a minimum of 100 members is eligible for an equity grant. Additionally, there are provisions for a matching equity grant of up to Rs. 2000 per member and a credit guarantee facility for bankable project loans up to Rs. 2.00 crore, enhancing the financial capacity of FPOs. These financial measures are designed to provide initial stability and growth potential, allowing FPOs to establish themselves and become economically viable entities.

Table 1: FPOs in different states and UTs in India

Sr. no.	State and UT	Total count		
		March, 2021	March, 2022	June, 2024
1.	Andaman and Nicobar	-	3	7
2.	Andhra Pradesh	147	399	449
3.	Arunachal Pradesh	15	28	150
4.	Assam	87	185	427
5.	Bihar	221	356	580
6.	Chandigarh	1	-	-
7.	Chhattisgarh	32	144	213
8.	Dadra Nagar Haveli	-	-	2
9.	Delhi	7	5	-
10.	Goa	-	5	8
11.	Gujarat	108	355	419
12.	Haryana	257	201	172
13.	Himachal Pradesh	7	174	168
14.	Jammu and Kashmir	10	89	318
15.	Jharkhand	70	256	355
16.	Karnataka	195	578	336
17.	Kerala	53	170	137

18.	Ladakh	-	3	3
19.	Lakshadweep	-	-	1
20.	Madhya Pradesh	237	550	622
21.	Maharashtra	1950	569	579
22.	Manipur	26	36	76
23.	Meghalaya	1	25	57
24.	Mizoram	4	34	49
25.	Nagaland	6	23	87
26.	Odisha	177	447	448
27.	Puducherry	1	2	6
28.	Punjab	13	122	136
29.	Rajasthan	114	351	533
30.	Sikkim	-	40	13
31.	Tamil Nadu	241	410	414
32.	Telangana	119	460	302
33.	Tripura	8	31	59
34.	Uttar Pradesh	654	450	1246
35.	Uttarakhand	14	154	150
36.	West Bengal	184	404	353
	Total	4959	7059	8875

Source: <https://pib.gov.in/FactsheetDetails.aspx?Id=148588®=3&lang=1>

State-wise Growth of FPOs

The government and NABARD view FPOs as mechanisms for addressing farmers' challenges and promoting agricultural growth.⁴³ It was observed that some promoters need to grow to make a significant difference under the Producers Company structure.³

The initiative to form and implement 10,000 new FPOs by 2023-24, targeting marginalized groups such as small and marginal farmers, women farmers, women Self Help Groups (SHGs), and SC/ST farmers, is a crucial policy measure for uplifting farmers. The immediate need is a supportive ecosystem that makes FPOs more effective and inclusive. The success of this initiative hinges on the development of robust support systems, including training, market linkages, and access to technology, to ensure that FPOs can overcome the challenges posed by limited resources and market access.

Phased Approach to FPO Implementation

The initial phase of the policy focuses firstly on handholding support to enhance capacity in management, secondly on business development and governance, and lastly on business diversification. In the later phases, the emphasis will shift to participation in supply and value chains, credit linkages, market linkages, and the use of technology.

This phased approach ensures that FPOs are not only established but are also supported throughout their development stages, allowing them to grow and integrate more effectively into the broader agricultural economy.

Therefore, FPOs offer a promising solution to many challenges, problems, and issues faced by small and marginal farmers. The formation of FPOs addresses issues such as the need for better market access, protection from market exploitation, and the development of entrepreneurial capabilities among farmers. The result underscores the potential of FPOs⁴⁴ to transform India's agricultural sector and support the socio-economic upliftment of marginalized communities. The evidence presented reinforces the importance of continuing and expanding support for FPOs to ensure sustainable agricultural^{45,46} and economic development.

Summarization of the Results

The findings of this study highlight the pivotal role of FPOs in enhancing the socio-economic resilience of small and marginal farmers in India. By addressing issues such as market access, resource pooling, and collective bargaining, FPOs contribute significantly to the livelihoods of farmers in rural areas. Legislative

support through the amendment of the Companies Act (1956) to include provisions for producer organizations provides a legal framework for FPOs to operate effectively, ensuring their sustainability in a market-driven economy. The government's inter-ministerial initiatives, such as the Doubling Farmers' Income program and schemes like the *Atmanirbhar Krishi*, emphasize a holistic approach towards agricultural growth. These initiatives, coupled with the collectivization of farmers, align with broader socio-economic goals, allowing smallholders to diversify their agricultural activities and mitigate the risks associated with monoculture. The formation and support for FPOs have thus facilitated a shift towards more resilient farming systems, where smallholder farmers can access modern agricultural technologies, participate in value chains, and increase their market power, fostering long-term sustainability.

However, the successful implementation of FPOs has not been without its challenges. Despite the legal and policy support, issues such as inadequate infrastructure, resource-poor conditions, and social obstacles like caste discrimination and gender bias remain significant barriers to the effective functioning of FPOs. The persistence of these challenges underscores the need for a multifaceted approach to rural development, where economic, social, and infrastructural reforms are intertwined. Rural areas in India, particularly in tribal and marginalized regions, continue to face systemic disadvantages, including limited landholding sizes, low levels of education, and a culture that is not conducive to business development. These factors hinder the integration of small and marginal farmers into more extensive agricultural supply chains and limit their ability to access better prices for their produce. Furthermore, the high dependency on low-value crops and the lack of advanced market access mechanisms compounds the difficulties faced by these farmers, making the success of FPOs highly dependent on overcoming these entrenched issues.

Despite these challenges, the policy framework surrounding FPOs provides a unique opportunity to transform India's agricultural landscape. The government's provision of financial support through equity grants and credit linkages, along with the phased approach to FPO development, offers a

structured pathway for FPOs to grow from small cooperatives to significant players in the agricultural sector. Furthermore, the targeted interventions for marginalized communities have the potential to foster inclusivity and promote social equity. While the road to achieving widespread success for FPOs is fraught with challenges, their potential to improve market access, diversify income sources, and enhance the resilience of farmers makes them a promising tool for socio-economic upliftment. Continued focus on building robust support systems, including capacity-building programs, market linkages, and technology adoption, will be crucial for scaling up the impact of FPOs and realizing their full potential in driving India's rural development agenda.

Limitation and Future Study

While this study provides a comprehensive overview of the role and potential of FPOs in India, it primarily relies on secondary data from government reports and literature reviews, which may not reflect the most current developments. The analysis is broad, lacking in-depth regional insights, and missing recent policy changes that could affect FPO implementation. Furthermore, the study does not fully capture the qualitative experiences of farmers or the practical challenges of policy execution. Future research should focus on comparative analyses with other countries to offer a more detailed and nuanced understanding of the FPO model's effectiveness.

Future research should focus on assessing the long-term impact of FPOs on agricultural productivity, rural livelihoods, and socio-economic resilience, with comparative analyses across different regions and countries to identify best practices. Additionally, exploring the integration of digital technologies such as AI, blockchain, and e-commerce platforms could enhance FPO operations, supply chain efficiency, and market linkages. However, this study has certain limitations, primarily its reliance on secondary data from government reports and literature reviews, which may not fully reflect recent developments or ground realities. The lack of in-depth regional insights and qualitative perspectives on farmers' experiences also limits the study's applicability across diverse socio-economic contexts. Moreover, challenges in policy execution, including bureaucratic inefficiencies and financial constraints, remain unaddressed. Addressing these

gaps through future empirical research will be crucial for strengthening the sustainability and effectiveness of FPOs in India's agricultural sector.

Conclusion

This study investigates the role of FPOs in building the socio-economic resilience of small and marginal farmers in India, with a particular focus on their impact on improving market access, income stability, and overall rural development. Through a detailed analysis of the legislative frameworks, policy interventions, and the practical functioning of FPOs, the research underscores their significance in addressing the systemic challenges faced by India's agricultural sector.

FPOs have emerged as a transformative model for smallholder farmers, enabling them to collectively pool resources, enhance bargaining power, and access modern agricultural inputs and technologies. The policy frameworks, particularly the Formation and Promotion of 10,000 FPOs scheme, have provided critical financial support, training, and infrastructure to foster the establishment of these organizations, especially in underserved regions such as tribal and aspirational districts. These interventions have not only improved economic outcomes for farmers but have also contributed to broader socio-economic resilience by addressing issues such as income disparity, food security, and rural poverty.

However, the study also reveals that the success of FPOs hinges on several contextual factors, including governance capacity, market integration, and access to appropriate technologies. While there has been progress, challenges related to the sustainability and scalability of these organizations remain significant. The complexities of rural socio-economic structures, including caste discrimination, gender inequality, and inadequate infrastructure, pose ongoing barriers to the full realization of the potential benefits offered by FPOs.

The research highlights the critical need for a robust ecosystem that supports FPOs not just at the inception stage but throughout their lifecycle. This includes continuous investment in capacity building, strengthening market linkages, and facilitating technology adoption. Furthermore, there is a need

for future research to examine the long-term effects of FPOs on agricultural productivity, rural livelihoods, and community well-being, particularly in relation to different geographical and socio-economic contexts. The evidence from this study reinforces the critical role of FPOs in transforming the socio-economic landscape of India's rural communities. By providing platforms for collective action, improving market access, and fostering entrepreneurial capabilities, FPOs address many challenges faced by small and marginal farmers. Their potential to enhance socio-economic resilience is significant, especially when supported by continued policy interventions and effective implementation. FPOs align with several Sustainable Development Goals (SDGs), including poverty reduction (SDG 1), decent work and economic growth (SDG 8), and responsible consumption and production (SDG 12), highlighting their contributions to global development priorities. To maximize the impact of FPOs, it is essential to ensure they receive adequate resources, capacity-building support, and a conducive policy environment.

However, the success of FPOs depends on the effective integration of policy, governance, and market support structures. This study contributes to the understanding of FPOs as a viable solution for sustainable agricultural development in India and offers insights into how these organizations can be strengthened for long-term, inclusive growth. The findings advocate for continued policy innovation and targeted interventions, ensuring that FPOs are equipped to meet the evolving challenges of India's agrarian landscape. Investing in and scaling FPOs is crucial for advancing rural development, fostering economic resilience, and contributing to long-term sustainability in India's agricultural sector.

Acknowledgement

We wish to express our profound gratitude to the Indian Council of Social Science Research (ICSSR), Ministry of Human Resource Development, New Delhi, Government of India, for their generous support, which has been instrumental in facilitating the successful execution of this research project.

Funding Sources

The author received support from the Minor Research Project sponsored by the Indian Council

of Social Science Research (ICSSR), Ministry of Human Resource Development, New Delhi, Government of India. The application/ grant/ project no. is F.No.02/1/SC/2021-22/ICSSR/RP/MN

Conflicting of Interest

The author(s) do not have any conflict of interest.

Data Availability Statement

This statement does not apply to this article.

Ethics Statement

This research did not involve human participants, animal subjects, or any material that requires ethical approval.

Author Contributions

- **Arvind Arahant:** Conceptualization, Methodology, Writing, Data Collection, Analysis, Visualization, Project Administration, Funding Acquisition, Resources
- **Dileswar Nayak:** Conceptualization, Methodology, Analysis, Visualization
- **Lokesh Jindal and Geetanjali Batra:** Conceptualization, Supervision
- **Debendra Nath Dash and Rama Koteswara Rao Kondasani:** Conceptualization, Methodology, Analysis
- **Adeeba Hoor and Shivani Prasad:** Conceptualization, Methodology, Writing, Analysis, Visualization, Resources.

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