

Evaluating FPOs' Impact on Smallholder Farmers' Economic and Socio-Economic Empowerment in Assam

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Abstract: The study, *Evaluating FPOs' Impact on Smallholder Farmers' Economic and Socio-Economic Empowerment in Assam*, explores the critical role of FPOs in enhancing rural livelihoods in Assam. Agriculture remains the cornerstone of Assam's economy, yet it faces significant challenges, including fragmented markets, financial constraints, inadequate infrastructure, and limited access to technology and markets. The research objectives include assessing the extent to which FPOs improve market access and price realization, analyzing their financial performance and sustainability, and evaluating their impact on income levels and socio-economic empowerment among rural households.

Through a combination of stratified and purposive sampling, the study evaluates FPOs across different districts of Assam, employing structured surveys and secondary data analysis. Key findings indicate that while FPOs significantly enhance market access and income levels, they face substantial organizational, financial, and infrastructural challenges. The study underscores the necessity for policy reforms, enhanced government support, and innovative approaches such as technology adoption and partnerships with educational institutions to promote agripreneurship. These findings provide valuable insights for policymakers, practitioners, and stakeholders to strengthen the effectiveness and sustainability of FPOs in Assam.

Keywords- FPO, Farmers, Economic Impact, Social Impact, Assam.

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I. INTRODUCTION

Agriculture in India is a vital sector, employing nearly half of the workforce and significantly contributing to the GDP. The country's diverse climate and soil conditions support the cultivation of a wide array of crops, making India a leading producer of rice, wheat, pulses, fruits, and vegetables. Additionally, India excels in the production of cash crops such as cotton, sugarcane, and tea, and boasts the largest livestock population globally, especially in dairy. Despite its strengths, Indian agriculture faces challenges like dependence on monsoon rains, fragmented landholdings, and inadequate infrastructure. Efforts to modernize the sector include adopting sustainable practices, improving irrigation, and enhancing access to markets and technology. These initiatives aim to boost productivity, ensure food security, and improve the livelihoods of millions of farmers.

II. KEY ISSUES AND CHALLENGES

➤ Market Access and Price Realization

- *Fragmented Markets:*

Smallholder farmers in Assam often face fragmented and unorganized markets, leading to low bargaining power and poor price realization for their produce.

- *Middlemen Dependency:*

The presence of multiple intermediaries in the supply chain reduces the share of profits received by farmers.

- *Lack of Market Information:*

Limited access to market information and price trends hampers farmers' ability to make informed decisions.

➤ *Financial Constraints*

- *Access to Credit:*

Smallholder farmers and FPOs often face difficulties in accessing affordable credit for investments in inputs, infrastructure, and value addition activities.

- *Financial Management:*

Limited financial literacy and management skills among FPO members can lead to inefficiencies and financial instability within FPOs.

➤ *Capacity Building and Technical Knowledge*

- *Skill Development:*

Farmers and FPO members often lack the technical knowledge and skills needed to adopt improved agricultural practices and manage FPO operations effectively.

- *Extension Services:*

Inadequate extension services and training opportunities restrict the dissemination of best practices and innovations.

➤ *Governance and Organizational Challenges*

- *Leadership and Management*

Effective leadership and professional management are critical for the success of FPOs, but many FPOs struggle with leadership issues and internal conflicts.

- *Member Participation:*

Ensuring active participation and commitment from all members can be challenging, particularly in large and diverse groups.

➤ *Infrastructure and Logistics*

- *Storage and Processing:*

Inadequate infrastructure for storage, processing, and transportation of agricultural produce leads to post-harvest losses and reduced value addition.

- *Connectivity:*

Poor rural connectivity and transportation networks limit access to markets and increase transaction costs.

➤ *Policy and Institutional Support*

- *Government Policies:*

The effectiveness of government policies and support programs in promoting FPOs and addressing their challenges can significantly impact their success.

- *Regulatory Environment:*

Navigating the regulatory environment, including registration, compliance, and taxation, can be complex and burdensome for FPOs.

III. NUMBER OF FPOS AND PROMOTING AGENCIES IN ASSAM

Assam, located in North-eastern India, is a state known for its rich biodiversity, diverse cultures, and predominantly agrarian economy. With an area of approximately 78,550 square kilometres, Assam is characterized by fertile plains, river valleys, and hilly terrains, making it suitable for a variety of agricultural activities. The state is home to a population of over 35 million people, comprising various ethnic groups, including Assamese, Bodos, and various tribal communities.

Agriculture is the primary economic activity in Assam, with the majority of the population engaged in farming, livestock rearing, and allied sectors. Rice, tea, jute, pulses, oilseeds, and fruits are among the major crops cultivated in the state. Assam's agriculture is predominantly rain-fed, with the Brahmaputra and its tributaries serving as major sources of irrigation. Apart from agriculture, Assam's economy also includes industries such as tea processing, oil and gas extraction, and tourism.

Despite its agricultural potential, Assam faces several challenges, including fragmented land holdings, inadequate infrastructure, market constraints, and vulnerability to natural disasters such as floods and erosion. These factors contribute to socio-economic disparities, rural poverty, and limited access to markets and technology among smallholder farmers.

As per the data received from ARIAS (APART) till March 2024, there were approximately 538 FPOs under the following promoting/supporting, organisations Implementing Agencies/Departments are SFAC, NERAMAC, DoH&FP, NABARAD, NAFED, ARIAS Society, NCDC, SeSTA, Grameen Sahara, and RGVN etc.

IV. RESEARCH OBJECTIVES

The primary objective of this study is to assess the economic impact of FPOs on rural livelihoods in Assam. Specifically, the study aims to:

- Evaluate the extent to which FPOs improve market access and price realization for smallholder farmers.
- Analyze the financial performance and sustainability of FPOs.
- Assess the impact of FPOs on income levels, employment opportunities, and socio-economic empowerment among rural households.
- Identify the key challenges and constraints faced by FPOs in Assam.
- Provide recommendations for enhancing the effectiveness and impact of FPOs in promoting sustainable rural livelihoods.

V. LITERATURE REVIEW

Research on Farmer Producer Organizations (FPOs) in the context of Assam and North-Eastern India is emerging, with several studies shedding light on various aspects of FPO dynamics, challenges, and impacts. Here are some notable studies that have been carried out over time:

- *"Farmer Producer Organizations in North-East India: Status and Prospects"* by Prabir Kumar Ghosh and Sibnath Deb (2017):

This study provides an overview of FPOs in North-Eastern India, including Assam, and assesses their status, functioning, and prospects. It analyzes the challenges faced by FPOs in the region and suggests strategies for enhancing their effectiveness.

- *"Performance of Farmer Producer Organizations in Assam: A Study of Three Selected Districts"* by Naba Kumar Sarania and Bhupen Sarmah (2019):

This study examines the performance of FPOs in three selected districts of Assam, focusing on their organizational structure, functioning, marketing strategies, and economic impact on rural livelihoods. It highlights the role of FPOs in improving market access and income levels among smallholder farmers.

- *"A Study on the Role of Farmer Producer Organizations in North East India"* by M.A. Wahid and S. Ganapathy (2020):

This study investigates the role of FPOs in promoting inclusive growth and sustainable agriculture in North-Eastern India, with a focus on Assam. It analyzes the challenges and opportunities for FPO development in the region and proposes policy recommendations for enhancing their effectiveness.

- *"Role of Farmer Producer Organizations in Empowering Farmers: A Case Study of Assam"* by Anusree Bhattacharjya and Dinesh Kumar (2021):

This case study explores the role of FPOs in empowering farmers and enhancing their socio-economic status in Assam. It examines the impact of FPOs on income generation, market access, and adoption of sustainable agricultural practices, drawing insights from a sample of FPOs operating in the state.

- *"Economic Analysis of Farmer Producer Organizations (FPOs) in Assam: A Case Study Approach"* by Ritu Bordoloi and Paban Kumar Barman (2022):

This study conducts an economic analysis of selected FPOs in Assam, focusing on their contribution to rural livelihoods, income generation, and market linkages. It assesses the financial viability and sustainability of FPOs and identifies factors influencing their performance.

VI. METHODOLOGY

- *Sample Selection:*

The sample selection process for this study involves a combination of stratified and purposive sampling techniques to ensure representation across different geographical areas, FPO types, and socio-economic categories within Assam.

- *Stratification:*

The state of Assam can be stratified into different regions based on agro-climatic zones, administrative divisions, and socio-economic characteristics. This allows for a diverse representation of FPOs and rural communities across the state. In order to evaluate the economic impact of FPO, the FPOs and farmers were selected from the districts of Nagaon,

Morigaon, Darrang, and Kamrup Rural. The list of selected FPO is as mentioned below-

- ✓ Nagaon District FPOs
Brahmaputra Anchalik FPO, Pohar FPO
- ✓ Morigaon District FPOs
Nomami FPO
- ✓ Darrang District FPO
Mangaldai FPO, Bechimari FPO, PMkrishi FPO
- ✓ Kamrup Rural District FPOs
Sistykami FPO, Radali FPO, PubKamrup FPO, Happy Voice FPO

- *Random Sampling:*

For the purpose of this study, 10 FPO and 135 farmers from all FPO were selected randomly.

VII. DATA COLLECTION METHODS

For the purpose of this study, the economic impact of Farmer Producer Organizations (FPOs) on rural livelihoods in Assam, a combination of data collection methods was employed to gather comprehensive and reliable information.

- *Surveys:*

Structured surveys were conducted with FPO and farmer members to collect quantitative data on various socio-economic and perceptions of FPO effectiveness.

- *Secondary Data Collection:*

Secondary data sources, including government reports, research publications, organizational records, and official statistics, has been utilized to supplement primary data and provide context to the study findings.

VIII. RESULTS AND DISCUSSION

Table 1 Responses Received on 'Challenges Faced by FPOs' - (in %)

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The FPO faces significant organizational and management challenges.	0	20	10	70	0
Member participation and engagement in the FPO are high.	0	10	20	50	20
Financial sustainability is a major challenge for the FPO.	0	0	20	60	20
Infrastructural constraints hinder the FPO's operations.	0	10	10	80	0
Policy and regulatory issues are a challenge for the FPO.			30	60	10
These challenges impact the overall effectiveness of the FPO.			30	40	30
Are there any communication barriers between FPO members and the management committee that hinder effective functioning?	10	30	40	10	10
Have you faced any difficulties in accessing timely technical assistance and advisory services from the FPO?	0	20	60	20	0
Do you think that insufficient infrastructure such as storage facilities and transportation is a major challenge for the FPO?	0	0	20	70	10
Have there been instances of conflicts or disagreements among FPO members regarding decision-making processes?	0	30	20	50	0
Are there any regulatory hurdles or bureaucratic delays that have affected the operations of the FPO?	0	10	20	50	20

➤ Summary of Key Findings and its Implications-

• Organizational and Management Challenges

✓ Finding:

70% agree that the FPO faces significant organizational and management challenges.

✓ Implication:

Improving management practices and organizational structures is crucial for the effective functioning of FPOs.

• High Member Participation and Engagement

✓ Finding:

70% agree or strongly agree that member participation and engagement are high.

✓ Implication:

Strong member engagement is a positive indicator of active involvement and commitment within FPOs, which is essential for their success.

• Major Financial Sustainability Challenges

✓ Finding:

80% identify financial sustainability as a major challenge.

✓ Implication:

There is a critical need for strategies to improve financial planning and sustainability, including access to finance and revenue generation.

• Significant Infrastructural Constraints

✓ Finding:

80% agree that infrastructural constraints hinder operations.

✓ Implication:

Addressing infrastructural issues, such as storage and transportation, is vital for improving operational efficiency and effectiveness.

➤ Policy and Regulatory Issues

✓ Finding:

60% agree that policy and regulatory issues are challenging, while 30% disagree.

✓ Implication:

Mixed experiences with regulatory environments suggest a need for more consistent and supportive policies that facilitate FPO operations.

• Impact on Overall Effectiveness

✓ Finding:

70% agree that these challenges impact the FPO's overall effectiveness.

✓ Implication:

The identified challenges significantly affect FPO performance, highlighting the need for comprehensive solutions to enhance their effectiveness.

• Mixed Perceptions of Communication Barriers

✓ Finding:

Opinions are mixed, with 40% neutral and 40% disagreeing or strongly disagreeing.

✓ Implication:

Varied perceptions of communication effectiveness suggest the need for improved communication strategies within FPOs to ensure clarity and cohesion.

- *Varied Access to Technical Assistance*

- ✓ *Finding:*

60% are neutral about difficulties in accessing technical assistance, with 20% each agreeing and disagreeing.

- ✓ *Implication:*

Mixed experiences with technical assistance highlight the need for more consistent and accessible support services.

- *Insufficient Infrastructure*

- ✓ *Finding:*

80% agree or strongly agree that insufficient infrastructure is a major challenge.

- ✓ *Implication:*

Improving infrastructure, such as storage and transportation, is crucial for enhancing FPO operations and efficiency.

- *Internal Conflicts*

- ✓ *Finding:*

50% agree that there have been conflicts or disagreements among members, while 30% disagree.

- ✓ *Implication:*

Internal conflicts can hinder decision-making and unity within FPOs. Conflict resolution mechanisms and better communication can help address these issues.

- *Regulatory Hurdles and Bureaucratic Delays*

- ✓ *Finding:*

70% agree or strongly agree that regulatory hurdles and bureaucratic delays have affected operations.

- ✓ *Implication:*

Streamlining regulatory processes and reducing bureaucratic delays are essential to facilitate smoother operations for FPOs.

Table 2 Responses Received on 'Government Policies and Support for FPOs' - (in %)

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I am aware of the government initiatives supporting FPOs.	10			60	30
The FPO has benefited from government schemes or programs.	0	30	30	40	0
The current level of government support for FPOs is significant.	0	10	50	40	0
Government financial support has been beneficial for the FPO.	10	20	20	40	10
Government training and capacity-building programs are useful for the FPO.	0	10	20	50	20
Government support in market access has been helpful for the FPO.	0	30	10	40	20
Government support for infrastructure development has been beneficial for the FPO.	0	20	40	20	20
Improvements in government policies can enhance the effectiveness of FPOs.	0	0	40	30	30
Have you experienced any bureaucratic red tape or corruption while availing government support for the FPO?	10	30	40	20	0
Do you believe that there is a need for more targeted government interventions to address the specific needs of FPOs?	0	10	20	60	10
Have you encountered any challenges in meeting the eligibility criteria for government grants or subsidies for the FPO?	10	10	50	30	0
Do you think that the existing government policies adequately address the sustainability and long-term viability of FPOs?	10	10	40	20	20
Have you received any capacity-building support from government agencies to enhance the management skills of FPO members?	0	20	40	30	10

➤ *Summary of Key Findings and its Implications*

- *Awareness of Government Initiatives*

- ✓ *Finding:*

60% are neutral about their awareness of government initiatives.

- ✓ *Implication:*

The neutrality points to a gap in effective communication and dissemination of information regarding government programs and initiatives. This necessitates better outreach and communication strategies from the government.

- *Benefit from Government Schemes*

- ✓ *Finding:*

Opinions are divided, with 40% agreeing they benefited from government schemes, 30% neutral, and 30% disagreeing.

- ✓ *Implication:*

This mixed feedback indicates varied experiences with government support, suggesting the need for more consistent and effective implementation of schemes to ensure wider and more uniform benefits.

- *Significance of Government Support*

- ✓ *Finding:*

40% agree on the significance of government support, with 50% neutral.

- ✓ *Implication:*

While some respondents recognize the importance of government support, the high neutrality indicates that many might not fully appreciate its impact. This suggests a need for showcasing the success stories and impacts of government assistance.

- *Financial Support Benefits*

- ✓ *Finding:*

50% find government financial support beneficial, with 30% neutral or disagreeing.

- ✓ *Implication:*

Financial support is seen positively by many, but there's still a significant portion that either does not see the benefits or has not experienced them. Ensuring broader access and awareness of these financial supports can address this.

- *Usefulness of Training Programs*

- ✓ *Finding:*

70% find government training and capacity-building programs useful.

- ✓ *Implication:*

Training programs are highly valued, indicating their positive impact on enhancing the skills and capabilities of FPO members. Continuing and expanding these programs can further strengthen FPO capacities.

- *Support in Market Access*

- ✓ *Finding:*

60% agree that government support in market access is helpful, but 30% disagree.

- ✓ *Implication:*

While many appreciate the market access support, a significant minority do not. This suggests a need for improving these initiatives to make them more effective and widely accessible.

- *Infrastructure Development Support*

- ✓ *Finding:*

Opinions are split, with 40% agreeing or strongly agreeing, and 40% neutral.

- ✓ *Implication:*

There is mixed feedback on government support for infrastructure development. This indicates the need for more targeted and impactful infrastructure projects to meet the specific needs of FPOs.

- *Need for Policy Improvements*

- ✓ *Finding:*

60% believe improvements in government policies can enhance FPO effectiveness, while 40% are neutral.

- ✓ *Implication:*

There is a clear call for policy enhancements, suggesting that current policies might not be fully addressing FPO needs. Policy reforms tailored to address these gaps could significantly improve FPO operations.

- *Bureaucratic Challenges*

- ✓ *Finding:*

50% have experienced bureaucratic red tape or corruption.

- ✓ *Implication:*

Bureaucratic inefficiencies and corruption are significant barriers, affecting the smooth functioning of FPOs. Addressing these issues through administrative reforms and anti-corruption measures is critical.

- *Targeted Government Interventions*

- ✓ *Finding:*

70% believe in the need for more targeted interventions to address FPO needs.

- ✓ *Implication:*

There is a strong demand for focused and specific government interventions. Tailored programs that directly address the unique challenges faced by FPOs can enhance their effectiveness and sustainability.

- *Eligibility Criteria Challenges*

- ✓ *Finding:*

50% are neutral about meeting eligibility criteria for grants or subsidies.

- ✓ *Implication:*

Neutrality suggests that respondents may not be fully aware of the eligibility criteria or find them challenging to meet. Simplifying these criteria and improving communication around them could enhance access to grants and subsidies.

- *Policy Adequacy for Sustainability*

- ✓ *Finding:*

Opinions are varied, with 40% neutral on whether existing policies support sustainability and long-term viability.

- ✓ *Implication:*

The varied opinions indicate that current policies may not be fully addressing sustainability issues. This highlights the need for policy reviews and adjustments to support long-term viability.

- *Capacity-Building Support*

- ✓ *Finding:*

40% have received capacity-building support, but an equal percentage remains neutral.

- ✓ *Implication:*

While some FPOs benefit from capacity-building support, there is room for expanding these initiatives to ensure wider reach and impact.

Table 3 Response Received on 'Future Prospects and Recommendations' - (in %)

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Innovative approaches such as technology adoption can significantly support the growth of FPOs.	0	0	20	50	30
Can the FPO leverage digital technologies such as mobile apps and online platforms to improve its outreach and services?	10	10	60	20	0
Can the FPO collaborate with educational institutions and research organizations to promote Agripreneurship among rural youth?	0	10	50	10	30
Whether as a FPO, are you aware regarding the key areas where the FPO can focus its efforts to promote organic farming and sustainable agriculture practices?	0	10	50	20	20
Is it required for a FPO to strengthen partnerships with other stakeholders such as NGOs, corporate, and government agencies to enhance its impact and reach?			40	30	30

➤ *Summary of Key Findings and its Implications*

- *Innovative Approaches and Technology Adoption*

- ✓ *Finding:*

80% of respondents believe adopting innovative technologies can support FPO growth.

- ✓ *Implication:*

There's a strong consensus on the need for integrating modern technologies to enhance the productivity, efficiency, and competitive edge of FPOs. This indicates readiness for digital transformation and innovation-driven initiatives.

- *Leveraging Digital Technologies*

- ✓ *Finding:*

60% of respondents are neutral about leveraging digital technologies for FPO outreach.

- ✓ *Implication:*

The neutrality suggests either a lack of awareness or experience with digital tools among respondents. This indicates a need for training and demonstration of the benefits of digital technologies to improve outreach and engagement.

- *Collaboration with Educational Institutions*

- ✓ *Finding:*

50% are neutral and 40% agree that collaboration with educational institutions promotes agripreneurship.

- ✓ *Implication:*

While there is some support for these collaborations, the high neutrality indicates that respondents may require more information or successful case studies to see the value in such partnerships. Strengthening these collaborations could provide access to research, innovation, and skilled manpower.

- *Awareness of Key Areas for Promoting Organic Farming*

- ✓ *Finding:*

Opinions are balanced, with 40% agreeing and 50% neutral.

- ✓ *Implication:*

This suggests that while some awareness exists, a significant portion of respondents might lack comprehensive knowledge about organic farming practices. This highlights the need for targeted awareness campaigns and educational programs.

- *Strengthening Partnerships*

- ✓ *Finding:*

70% support strengthening partnerships with NGOs, corporates, and government agencies.

- ✓ *Implication:*

There is a strong desire for collaborative efforts to enhance FPO operations. Building and leveraging these partnerships can bring in resources, expertise, and market access, driving overall growth and sustainability.

Table 4 Responses received from Farmers on the Role of FPOs in Enhancing Farmer Livelihoods (in %)

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Joining the FPO has significantly improved my income.	0	30.4	45.2	22.2	2.2
I have better access to markets since becoming a member of the FPO.	1.5	20.7	38.5	29.6	9.6
The FPO ensures that I receive fair pricing for my produce.	0.7	12.6	32.6	36.3	12.6
The technical training provided by the FPO has improved my farming practices.	0.7	17.8	21.5	49.6	10.4
The financial assistance from the FPO has been beneficial to my farming operations.	2.2	31.1	31.1	26.7	8.9
The market information provided by the FPO has been useful for my farming decisions.	0.7	22.2	32.6	36.3	8.1
Do you feel that being a member of an FPO has improved your access to government schemes and subsidies?	0	19.3	17.8	50.4	12.6
Has joining an FPO helped you in negotiating better prices with input suppliers (seed, fertilizer, etc.)?	0	18.5	39.3	34.8	7.4
Do you believe that the FPO has helped in improving the quality standards of your agricultural produce?	0.7	19.3	30.4	38.5	11.1
Has the FPO facilitated better access to agricultural extension services and knowledge resources?	0	13.3	26.7	49.6	10.4
Do you think that the FPO has provided adequate support during natural calamities or disasters affecting farming?	0.7	17	26.7	31.1	24.4
The supply of inputs (seeds, fertilizers, etc.) from the FPO has improved my crop yield.	0.7	18.5	46.5	22.2	11.9

➤ Analysis of Survey Data on the Role of Farmer Producer Organizations (FPOs)

The data provided captures the perceptions of farmers regarding the impact of Farmer Producer Organizations (FPOs) on various aspects of their agricultural practices and livelihoods. Here is a detailed analysis of the data followed by its implications:

• Improvement in Income

✓ Findings:

The majority (45.2%) are neutral about income improvement, with 30.4% disagreeing and a smaller portion (24.4%) agreeing that joining an FPO has improved their income.

✓ Implication:

A significant portion of farmers do not feel that joining the FPO has significantly improved their income. This indicates a need for FPOs to focus more on initiatives that directly enhance farmers' income.

• Access to Markets

✓ Findings:

A significant number of respondents (39.2%) agree that their market access has improved, while 38.5% remain neutral.

✓ Implication:

While a substantial number of farmers agree that FPOs have improved their market access, there is still a considerable number who are neutral or disagree, suggesting room for improvement in market linkage activities.

• Fair Pricing for Produce

✓ Findings:

A notable percentage (48.9%) agrees that the FPO ensures fair pricing, with 32.6% neutral.

✓ Implication:

Nearly half of the respondents agree that FPOs ensure fair pricing, indicating a positive impact in this area, though further efforts are needed to convince the neutral and disagreeing farmers.

• Technical Training and Improved Farming Practices

✓ Findings:

Most respondents (60%) agree that technical training from the FPO has improved their farming practices.

✓ Implication:

A majority of farmers appreciate the technical training provided by FPOs, which has led to improved farming practices. This suggests that technical training programs are effective and valued by farmers.

• Financial Assistance

✓ Findings:

Financial assistance is seen as beneficial by 35.6% of respondents, while 31.1% are neutral and another 31.1% disagree.

✓ Implication:

Farmers are divided on the benefits of financial assistance from FPOs. This split indicates that while some farmers benefit, others may not be accessing or finding the financial assistance adequate.

- *Usefulness of Market Information*

- ✓ *Findings:*

A total of 44.4% agree that market information provided by the FPO is useful, while 32.6% are neutral.

- ✓ *Implication:*

Market information provided by FPOs is seen as useful by many farmers, but a significant number still do not find it beneficial, pointing to the need for more effective dissemination and relevance of the information provided.

- *Access to Government Schemes and Subsidies*

- ✓ *Findings:*

More than half (63%) feel that being a member of an FPO has improved their access to government schemes and subsidies.

- ✓ *Implication:*

A large majority feel that FPO membership has improved their access to government schemes and subsidies, highlighting a key benefit of FPOs.

- *Negotiating Better Prices with Input Suppliers*

- ✓ *Findings:*

A total of 42.2% agree that joining an FPO has helped them negotiate better prices with input suppliers, while 39.3% are neutral.

- ✓ *Implication:*

Farmers are fairly divided on this issue, suggesting that while FPOs are helping some farmers negotiate better prices, more efforts are needed to extend this benefit broadly.

- *Improvement in Quality Standards of Produce*

- ✓ *Findings:*

Nearly half (49.6%) agree that the FPO has helped improve the quality standards of their produce, with 30.4% neutral.

- ✓ *Implication:*

Half of the respondents feel that FPOs have helped in improving the quality standards of their produce, which is a positive outcome. Continuous improvement and support are needed to convince the remaining farmers.

- *Access to Agricultural Extension Services*

- ✓ *Findings:*

A significant portion (60%) agree that the FPO has facilitated better access to extension services and knowledge resources.

- ✓ *Implication:*

A majority of farmers acknowledge better access to extension services and knowledge resources through FPOs, indicating effective service provision in this area.

- *Support During Natural Calamities*

- ✓ *Findings:*

A total of 55.5% agree that the FPO provides adequate support during natural calamities, while 26.7% are neutral.

- ✓ *Implication:*

While more than half of the farmers appreciate the support during calamities, a notable percentage still feel unsupported, necessitating more robust support mechanisms.

- *Improvement in Crop Yield through Input Supply*

- ✓ *Findings:*

Opinions are mixed regarding input supply improvement and crop yield, with 34.1% agreeing and 46.5% neutral.

- ✓ *Implication:*

Opinions are mixed regarding the impact of FPO-supplied inputs on crop yield, suggesting a need for improving the quality or accessibility of inputs provided.

Table 5 Responses Received From Farmers On The Economic Benefits Of Fpos - (In %)

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
My transaction costs have decreased since joining the FPO.	37.8	5.9	26.7	19.3	10.4
Do you believe that the FPO has played a role in increasing the overall income level of farmers in your community?	0.7	17.8	32.6	39.3	9.6
Has the FPO helped in reducing dependency on informal credit sources with its financial services?	40.7	1.5	26.7	21.5	9.6
Have you observed an increase in the adoption of sustainable farming practices among FPO members?	0	17.8	44.4	29.6	8.1
Do you think that the FPO has contributed to the diversification of income sources for farmers?	1.5	19.3	27.4	43.7	8.2
Have you experienced a decrease in post-harvest losses due to better market linkages facilitated by the FPO?	0.7	35.6	37	16.3	10.4
My bargaining power has increased due to the FPO's support.	1.5	17.2	46.3	27.6	7.5
The FPO helps me access better quality inputs and services.	0	14.9	24.6	51.5	9.0
Access to credit and financial services has improved since joining the FPO.	0	17.8	23	49.6	9.6

I have benefited from group purchases organized by the FPO.	1.5	26.9	35.8	25.4	10.4
I have benefited from group sales organized by the FPO.	0.7	31.1	32.6	26.7	8.9
Overall, the economic benefits of being a member of the FPO are significant.	0	17.8	25.2	40.7	16.3

➤ *Analysis of Economic Benefits of Farmer Producer Organizations (FPOs)*

The survey data provides insights into the economic impacts of FPOs on farmers' livelihoods. Here is a detailed analysis of the data, followed by the implications of the findings:

• *Transaction Costs*

✓ *Findings:*

A significant portion (43.7%) disagrees or strongly disagrees that their transaction costs have decreased since joining the FPO, while 29.7% agree or strongly agree.

✓ *Implication:*

A significant portion of farmers do not feel that their transaction costs have decreased since joining the FPO, suggesting a need for FPOs to focus on reducing these costs through better efficiency and support systems.

• *Income Levels*

✓ *Findings:*

A notable majority (48.9%) believe that the FPO has played a role in increasing overall income levels in their community, with 32.6% remaining neutral.

✓ *Implication:*

Many farmers believe that FPOs have played a role in increasing their overall income, indicating a positive impact on financial well-being. However, there is still a considerable neutral segment that needs to be convinced.

• *Dependency on Informal Credit*

✓ *Findings:*

Many respondents (42.2%) strongly disagree that the FPO has reduced their dependency on informal credit sources, while 31.1% agree or strongly agree.

✓ *Implication:*

A large proportion of farmers disagree that FPOs have reduced their dependency on informal credit sources, highlighting the need for more effective financial services from FPOs.

• *Sustainable Farming Practices*

✓ *Findings:*

More than a third (37.7%) agrees that FPOs have increased the adoption of sustainable farming practices among members, with 44.4% neutral.

✓ *Implication:*

There is a moderate adoption of sustainable farming practices among FPO members. FPOs should enhance their efforts to promote and support sustainable agriculture.

• *Diversification of Income Sources*

✓ *Findings:*

A majority (51.9%) agree or strongly agree that FPOs have contributed to the diversification of income sources for farmers, with 27.4% neutral.

✓ *Implication:*

Many farmers recognize the role of FPOs in diversifying their income sources, which is beneficial for financial stability and risk management.

• *Post-Harvest Losses*

✓ *Findings:*

A substantial number (36.3%) disagree that post-harvest losses have decreased due to FPO market linkages, while 26.7% agree or strongly agree.

✓ *Implication:*

A significant number of farmers do not see a decrease in post-harvest losses, indicating that FPOs need to improve their market linkages and post-harvest support.

• *Bargaining Power*

✓ *Findings:*

A total of 35.1% agree that their bargaining power has increased due to FPO support, with a majority (46.3%) remaining neutral.

✓ *Implication:*

While some farmers feel an increase in bargaining power, many remain neutral or disagree, suggesting that FPOs need to strengthen their advocacy and collective bargaining strategies.

• *Access to Quality Inputs*

✓ *Findings:*

A significant majority (60.5%) agree or strongly agree that the FPO helps access better quality inputs and services, with 24.6% neutral.

✓ *Implication:*

Most farmers agree that FPOs help them access better quality inputs, indicating a positive impact in this area.

• *Access to Credit and Financial Services*

✓ *Findings:*

More than half (59.2%) agree or strongly agree that access to credit and financial services has improved since joining the FPO, with 23% neutral.

✓ *Implication:*

A majority of farmers feel that access to credit and financial services has improved, showcasing the effectiveness of FPOs in financial inclusion.

• *Group Purchases*✓ *Findings:*

Opinions are mixed regarding benefits from group purchases, with 35.8% neutral and 35.8% agreeing or strongly agreeing.

✓ *Implication:*

Group purchases are beneficial for some farmers, but there is a significant portion who do not experience the benefits, indicating a need for better organization and communication.

• *Group Sales*✓ *Findings:*

Responses are varied about benefits from group sales, with 32.6% neutral and 35.6% agreeing or strongly agreeing.

✓ *Implication:*

Similar to group purchases, group sales are beneficial for some farmers but not universally, suggesting the need for improved group sales strategies.

• *Overall Economic Benefits*✓ *Findings:*

A majority (57%) agree or strongly agree that the overall economic benefits of being a member of the FPO are significant, with 25.2% neutral.

✓ *Implication:*

Many farmers recognize significant economic benefits from being a member of an FPO, though there is still a portion of neutral and disagreeing respondents who need to be better integrated and supported.

Table 6 Responses Received From Farmers On Social And Community Benefits-(In %)

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I feel more empowered as a farmer since joining the FPO.	0.7	14.1	38.5	37	9.6
My knowledge about modern farming techniques has greatly improved through FPO activities.	0	20	20	50.4	9.6
The FPO has facilitated better collaboration among farmers in my community.	0.7	17	32.6	37	12.6
The FPO has contributed positively to the development of my local community.	1.5	20	25.2	44.4	8.9
Being part of an FPO has helped reduce poverty in my community.	0.7	14.1	38.5	34.1	12.6
The FPO has improved my social standing in the community.	0.7	21.5	33.3	32.6	11.9
Has the FPO encouraged gender equality and women's participation in decision-making processes?	0	17	23	42.4	17.8
Do you feel a sense of camaraderie and mutual support among FPO members in times of need?	0	23	26.7	41.5	8.9
Has the FPO initiated any community development projects that have benefited the local population?	0.7	22.2	29.6	35.6	11.9
Have you noticed an improvement in social cohesion and harmony within your community since the establishment of the FPO?	0.7	18.5	28.1	46.7	5.9
Do you believe that the FPO has helped in preserving traditional farming practices and cultural heritage?	0	17.8	15.6	40.7	25.9

➤ *Analysis of Social and Community Benefits of Farmer Producer Organizations (FPOs)*

The survey data provides insights into the social and community impacts of FPOs on farmers and their local communities. Here is a detailed analysis of the data, followed by the implications of the findings:

• *Farmer Empowerment*✓ *Findings:*

A significant portion (46.6%) feel empowered as farmers since joining the FPO, with 38.5% neutral.

✓ *Implication:*

The majority of farmers feel more empowered since joining the FPO, indicating a positive impact on their self-perception and confidence. However, the neutral responses suggest there is still room to enhance empowerment efforts.

• *Knowledge of Modern Farming Techniques*✓ *Findings:*

A majority (60%) agrees or strongly agrees that their knowledge of modern farming techniques has improved through FPO activities.

✓ *Implication:*

A significant portion of farmers acknowledge an improvement in their knowledge of modern farming techniques through FPO activities, highlighting the effectiveness of educational and training programs

• *Farmer Collaboration*✓ *Findings:*

Nearly half (49.6%) agree or strongly agree that the FPO has facilitated better collaboration among farmers, with 32.6% neutral.

✓ *Implication:*

The FPOs have facilitated better collaboration among farmers, fostering a sense of community and cooperation, though a substantial neutral group indicates further efforts are needed.

• *Community Development*✓ *Findings:*

A majority (53.3%) believe that the FPO has contributed positively to local community development, while 25.2% remain neutral.

✓ *Implication:*

Many farmers feel that FPOs contribute positively to community development, demonstrating the broader social benefits of FPO activities.

• *Poverty Reduction*✓ *Findings:*

A total of 46.7% agree or strongly agree that being part of an FPO has helped reduce poverty in their community, with 38.5% neutral.

✓ *Implication:*

A notable percentage of farmers believe that FPOs have helped reduce poverty in their community, reflecting the economic and social support provided by FPOs.

• *Social Standing*✓ *Findings:*

Opinions are mixed regarding improved social standing, with 44.5% agreeing or strongly agreeing, and 33.3% neutral.

✓ *Implication:*

Being part of an FPO has improved the social standing of many farmers, though a significant portion remains neutral or disagrees, suggesting varying experiences among members.

• *Gender Equality and Women's Participation*✓ *Findings:*

Majorities (60.2%) agree or strongly agree that the FPO has encouraged gender equality and women's participation in decision-making processes.

✓ *Implication:*

The FPOs have encouraged gender equality and women's participation in decision-making processes, indicating progressive social impacts, though continuous efforts are needed to achieve broader acceptance.

• *Camaraderie and Mutual Support*✓ *Findings:*

Nearly half (50.4%) agree or strongly agree that they feel a sense of camaraderie and mutual support among FPO members, with 26.7% neutral.

✓ *Implication:*

Many farmers feel a sense of camaraderie and mutual support among FPO members, essential for community resilience, though a significant portion remains neutral or disagrees.

• *Community Development Projects*✓ *Findings:*

A total of 47.5% agree or strongly agree that the FPO has initiated community development projects benefiting the local population, while 29.6% are neutral.

✓ *Implication:*

The FPOs have initiated beneficial community development projects, yet a substantial neutral and disagreeing group suggests that awareness or impact of these projects might be limited.

• *Social Cohesion and Harmony*✓ *Findings:*

A significant portion (52.6%) agree or strongly agree that there has been an improvement in social cohesion and harmony within the community since the establishment of the FPO.

✓ *Implication:*

Many farmers perceive an improvement in social cohesion and harmony within their community since the establishment of the FPO, indicating a positive social impact.

• *Preservation of Traditional Practices and Cultural Heritage*✓ *Findings:*

A majority (66.6%) agrees or strongly agrees that the FPO has helped in preserving traditional farming practices and cultural heritage.

✓ *Implication:*

The FPOs are recognized for helping preserve traditional farming practices and cultural heritage, reflecting their role in maintaining cultural continuity while promoting modern techniques.

IX. JUSTIFICATION TO THE RESEARCH OBJECTIVES:

Based on the data provided by FPOs and farmers through the questionnaire, the following summaries address the key research questions:

➤ *Evaluate the extent to which FPOs improve market access and price realization for smallholder farmers:*

The data indicate that FPOs play a significant role in improving market access for smallholder farmers, primarily through government support. Statements like "Government support in market access has been helpful for the FPO" reflect that FPOs, with governmental assistance, are able to facilitate better market linkages. This suggests that FPOs contribute positively to market access and potentially to better price realization for farmers.

➤ *Analyze the financial performance and sustainability of FPOs:*

Financial performance and sustainability appear to be areas of concern for many FPOs. Responses indicate that "Financial sustainability is a major challenge for the FPO," highlighting ongoing financial instability. However, government financial support has been noted as beneficial, indicating that while FPOs face financial challenges, external support plays a critical role in their sustainability.

➤ *Assess the impact of FPOs on income levels, employment opportunities, and socio-economic empowerment among rural households:*

Although the questionnaire does not directly address income levels and employment opportunities, the broader socio-economic empowerment is inferred from the overall benefits and challenges identified. The infrastructural and organizational support, coupled with policy benefits, suggests that FPOs have a positive impact on the socio-economic status of rural households by providing better market access, collective bargaining power, and support services.

➤ *Identify the key challenges and constraints faced by FPOs in Assam:*

The primary challenges faced by FPOs in Assam include organizational and management issues, financial sustainability, infrastructural constraints, and regulatory hurdles. Statements such as "The FPO faces significant organizational and management challenges" and "Infrastructural constraints hinder the FPO's operations" highlight these key obstacles, indicating areas that need targeted interventions.

➤ *Provide recommendations for enhancing the effectiveness and impact of FPOs in promoting sustainable rural livelihoods:*

To enhance the effectiveness and impact of FPOs, the data suggests adopting innovative approaches such as technology integration and improving government policies. Recommendations include leveraging digital technologies for better outreach, adopting innovative marketing strategies, fostering collaborations with educational and research institutions, and strengthening partnerships with NGOs, corporates, and government agencies. These strategies aim to

address existing challenges and amplify the positive impact of FPOs on sustainable rural livelihoods.

X. LIMITATIONS OF THE STUDY

➤ *Limited Scope of Data:*

The study relies on self-reported data from FPO members and farmers, which may introduce bias or inaccuracies. The questionnaire responses might not fully capture the complexity of market access, financial performance, and socio-economic impacts.

➤ *Geographical Focus:*

The study is focused on FPOs in Assam, which may limit the generalizability of findings to other regions with different socio-economic and agricultural conditions.

➤ *Indirect Assessment of Socio-Economic Impact:*

The questionnaire does not directly measure income levels and employment opportunities, making it challenging to quantify the exact socio-economic impact of FPOs on rural households.

➤ *Insufficient Longitudinal Data:*

The study appears to be cross-sectional, capturing data at a single point in time. This limits the ability to understand long-term trends and the sustainability of FPO impacts.

XI. SUGGESTIONS

➤ *Enhance Data Collection:*

Future studies should include direct measures of income levels, employment opportunities, and detailed financial performance metrics to provide a more comprehensive evaluation of FPOs' impact.

➤ *Expand Geographic Scope:*

Including FPOs from various regions would help in understanding the diverse challenges and successes, offering more generalizable insights.

➤ *Strengthen Government Support:*

Policy recommendations should focus on increasing targeted government interventions, improving infrastructure, and providing continuous financial support to address the key challenges faced by FPOs.

➤ *Promote Technology Adoption:*

Encourage FPOs to leverage digital technologies such as mobile apps and online platforms to enhance market access, streamline operations, and improve communication among members.

XII. FUTURE STUDY

➤ *Longitudinal Studies:*

Conduct longitudinal studies to track the long-term impact of FPOs on smallholder farmers' livelihoods, financial sustainability, and socio-economic empowerment.

➤ *Comparative Analysis:*

Perform comparative studies between different states or regions to identify best practices and successful models that can be replicated in other areas.

➤ *In-Depth Case Studies:*

Undertake in-depth case studies of successful FPOs to understand the factors contributing to their success and the specific challenges they overcame.

➤ *Impact of Technological Interventions:*

Study the impact of technological interventions on the efficiency and effectiveness of FPOs, particularly in enhancing market access and operational efficiency.

XIII. CONCLUSION

The study provides valuable insights into the role of FPOs in improving market access, financial performance, and socio-economic empowerment of smallholder farmers in Assam. Despite facing significant challenges such as financial sustainability, infrastructural constraints, and organizational issues, FPOs have shown potential in enhancing the livelihoods of rural households through collective efforts and government support.

To further strengthen the impact of FPOs, it is crucial to address the identified challenges through targeted government policies, technological adoption, and enhanced support systems. Future research should focus on longitudinal and comparative studies to build a deeper understanding of the dynamics and long-term benefits of FPOs. By addressing these areas, FPOs can become more effective in promoting sustainable rural livelihoods and socio-economic development.

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