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Impact of farmer producer organization in augmenting farmers' income in Assam: A case study

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Abstract

In India, agriculture is dominated by marginal and small farmers, own nearly 86.08% of all operational landholdings (Agriculture Census 2015-16). In Assam also more than 80% of the population is directly or indirectly related to agriculture. Lack of proper marketing infrastructure, the existence of middlemen, and a lack of collectivization efforts make it difficult to take advantage of marketing possibilities and generate as much revenue. The Farmer Producer Organization (FPO) concept was created and put into practise to address this issue. The present study is a modest attempt to study the impact of FPOs on farmer's income. Data on the socioeconomic characteristics and specifics of the sample farmers' farming operations were gathered from both FPO members and non-members. To ascertain the elements encouraging the farmers to join as group members, binary logistic regression was performed. To research how FPOs affect farmers' income multiple linear regression was applied by incorporating the participation of the farmers in FPO as a dependent variable. Again, to check whether there is a significant difference in income of the members over non-members t-test was done. The study found that younger and more educated farmers are more likely to participate in FPOs. The membership in FPOs influences the outcome variable (income) positively and significantly at 1% level. The study suggested that there should be a proper mechanism for selecting the farmers in case of formation of FIG's based on cropping pattern. To maximize the price receive for the produce; the FPOs can come up with the idea of product differentiation and finally, to adopt an incentive-based model so that each farmer in a group will participate actively which will automatically reduce the problem of free-riding to some extent.

Keywords: FPO, farmers' interest group, FPC, small & marginal farmers, farmers' income

Introduction

Agriculture is the largest source of livelihoods in India as 70 per cent of India's rural households still depend primarily on agriculture. But still, farmers in India are unorganized and deprived of the latest technologies and techniques in agricultural sector production leading to crop failure crop losses. Looking into the matter the expert committee headed by Dr. Y. K. Alagh noted the need to transform the cooperative structure to a new organizational structure: the farmer producer company (FPC). The main purpose of the Farmer Producer Company is to form a farmer society in the form of a company and conversion of an existing co-operative society into an organized company for performing certain beneficial activities like production, procurement, pooling, harvesting, grading, handling, marketing, selling and import/export of the primary produces of all the members so to provide them a remunerative price against their product. Different state departments and central level agencies are involved in the act of mobilizing the primary producers into producer organizations under various schemes like Paramaparagat Krishi Vikas Yojana (PKVY), Rashtriya Krishi Vikas Yojana (RKVY) and Vegetable initiative for Urban Cluster (VIUC) etc. Among the central level institutions, SFAC and NABARD are the major institutions taking up the task of promoting FPOs in the country. The FPOs provide a good platform for marketing of output and this can immensely enhance farm productivity and increase income of members (Vedasri, R. and Mishra, K.R., 2021) [3]. FPOs were instrumental in reduction in transaction cost and the number of intermediaries leading to realization of the highest proportion of producer's share in consumer's rupee by 65 per cent. The availability of a guaranteed market for their goods has benefited about 56% of member. FPO membership has a statistically significant and positive impact on the number of technologies adopted by farmers and FPO members adopted 1.5 times greater number of technologies than non-members (Verma, S. *et al.*, 2019) [4]. Till 2020, India has a total of 4,959 FPOs which further increased to 7,059 till May, 2022. Karnataka has the highest number of FPOs which is 578 out of which 125 under SFAC, 225 under NABARD and 166 are under other Implementing Agencies.

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Delhi & Goa have lowest nos. of FPOs followed by Andaman (3), Ladakh (3) and Puducherry (2). To develop and promote 10,000 new Farmer Producer Organizations (FPOs) until 2027–2028, the Government of India has authorised and launched a Central Sector Scheme with a budgetary allotment of 6865 Crore.

In Assam, more than 80 per cent of the population is directly or indirectly related to agriculture for their livelihood. However, majority of farmers belong to small and marginal categories having limited exposure to market as well as business orientations. Considering their limitations in these aspects, a large number of Farmers Producer Organization (FPO) / Farmers Producer Company (FPC) were organized in the state by the state government through various FPC/FPO promoting organizations with the objectives of improving the livelihood of farmers. Presently, Assam has a total of 185 FPOs out of which 18 are under SFAC, 72 under NABARD and 95 are under other Implementing Agencies; and all the FPOs/ FPCs are performing their activities for the economic

upliftment of the their members. However, no in-depth study has been carried out in Assam to evaluate the impact of FPOs/ FPCs on their member. Thus, the present study was undertaken with the following objectives;

1. Analyze the profile of the sample farmers
2. Factors influencing farmers to join as members in FPO
3. Impact of FPC in augmenting farmers income and employment

Methodology

The present study was conducted in Golaghat district of Assam. A total of seven FPCs were found operational during the survey. Out of these, Brahmaputra valley farmer producer company Ltd. (760 total members) mainly focusing in mustard cultivation was selected purposively for carrying out the present study. A total of 120 sample farmers were selected for the study, out of which, 60 were FPO members and the remaining 60 were Non FPO-members; and majority were small & marginal farmers as shown in Table-1.

Table 1: Distribution of members and non-members of FPC by their land holdings (in ha)

Classification	Member farmers	Non-member farmers
Marginal & small farmers (< 2 ha)	48(80.0)	43(71.7)
Semi-medium farmers (2-4 ha)	10(16.7)	15(25.0)
Medium farmers (4-10 ha)	2(3.3)	2(3.3)
Large farmer (> 10 ha)	0.0	0.0
All	60(100.0)	60(100.0)

(Figures in the parentheses indicate the percentage to the total) (Source: Field Survey)

The primary data was collected using a pre-structured questionnaire & the secondary information's are collected from Govt. portals, internet and different research articles etc. The sample farmers were chosen by taking into account the homogeneity of the cropping pattern, the sources of irrigation, and the distance from urban markets in order to enable a meaningful comparison of the results of participation in FPCs. For analyzing factors influencing to join farmers as members in FPO, Binary Logistic regression was estimated using SPSS as per equation:

$$M_j (1,0) = \beta_0 + \sum \beta_i X_i + e_i$$

Where, M_j is the dependent variable that represents the farmers' participation in FPOs ($j=1$ for members, $j=0$ for non-members), X_i = Factors responsible for the farmers to join as members, β_0 = Constant, e_i = Random error term and the explanatory variables are as follows:

- X_1 = Age (No. of years)
- X_2 =Education (Standard)
- X_3 =Land holding (under mustard cultivation, ha)
- X_4 =Distance from market (in Km)
- X_5 =Market risk mitigation
- X_6 =Input availability
- X_7 =Provision of storage
- X_8 =Provision of extension services

After identifying the factors to join as members in FPO, multiple linear regression was used to examine the influence of FPO on farmers' by integrating the participation of farmers in FPO as an explanatory variable. (Along with the other explanatory variables)

$$Y_i = \beta_0 + \sum \beta_i X_i + \beta_j M_j + e_i$$

Where, Y_i is farmer's income, M_j is Farmers participation in FPO, X_i is other explanatory variables that influence the outcome variable. Also, t-test was done to check the whether there is a significant difference between the income earned by the FPO members and Non FPO members and different conventional statistical tools like percentages, mean is also used for carrying out the present study.

Results and Discussions

The findings of the study revealed that FPO members are younger, educated than that of non-members. They have better access to information and thereby, the tendency to join as member's in FPOs increases since educated farmers are well known about the benefits. The landholdings of the member farmers was smaller (1.8 ha) than that of non-member farmers (2.3 ha) which also triggers them to participate in FPOs to alleviate their agricultural production constraints. (Table-2)

Table 2: Profile of the sample farmers

Particulars	Member farmers	Non-member farmers
Age (Yrs)	36.4	42.6
Education (Standard)	8	4
Size of land (ha)	1.8	2.3

(Source: Field Survey)

Table 3: Factors influencing farmers to join as members in FPO

Dependent Variable: Participation in FPO			
Independent Variables	Coefficients	S.E.	p-value
Age	-0.052**	0.035	0.043
Land	-0.702**	0.672	0.011
Education	0.213**	0.083	0.010
Input availability	0.841	0.648	0.194
Marketing facilities	0.900***	0.305	0.003
Extension services	0.141	0.088	0.109
Storage facilities	0.063	0.010	0.921
Distance to market	0.489**	0.091	0.019
Constant	0.899	0.654	0.169

Pseudo R2 = 51.3 LR chi2(8) = 68.1 *** = 1% level of significance
 *** = 5% level of significance

(Source: Field Survey)

Logistic regression model was used (Table-3) to analyze the factors determining the farmers to join as members in FPO. Younger and more educated farmers are more likely to participate in FPOs. Age is negatively related and significant coefficient, indicating that for every unit increase in the age of farmers the probability of participation to join as group members decreases. Participation of older farmers is less in joining as the group members. On the other hand, farmers who cultivate on smaller landholdings are more likely to take part in FPOs. This might be due to the reason that the marginal farmers are forced to find a support system that can ease their limitations on agricultural production. Education of farmers and Distance to market was significant at 5% level and positively related to participation in FPO. The result shows that for every unit increase in the distance to market the tendency to join as members increased because FPOs provided transportation facilities to market their produces. Market linkage facilities provided to the farmers attracted the attention to join as members as marginal & small farmers always look for a support system that can alleviate their motivation to grow more and it is possible since FPOs by eliminating the middle man help them to earn remunerative prices for their produce. In our findings also it was significant and positively related to Participation in FPOs.

Table 4: Impact of FPC in providing inputs and services

Support	Members farmers Yes (%)	Non-member farmers Yes (%)
Market risk mitigation	39(78.0)	8(26.7)
Input availability	34(68.0)	12(40.0)
Custom Hiring of Machinery	40(80.0)	20(66.7)
Storage facility	30(60.0)	0(0.0)
Extension services	37(74.0)	12(40.0)

(Figures in the parentheses indicate the percentage to the total)
 (Source: Field Survey)

According to the study's findings (Table 4), 78 percent of member farmers claimed to have benefited from the availability of a guaranteed market for their goods, compared to 26.7% of non-members. On the other hand, 68 per cent of the member farmers got quality inputs timely at a cheaper price than market, while the non members had to purchase from the retailers or traders at the expense of more time & money. Only 40 per cent of non members somehow able to manage inputs from different line departments like KVK, RARS, AAU etc. Again, One of the key considerations in averting a distress sale was the storage facility supplied by the FPOs; 60 per cent member farmers had availed storage facility of FPOs. In the pre-harvesting period, extension

services like training programmes related to capacity building, technology dissemination are the other important activities provided by the FPO in collaboration with CBBO. The study also reveals that for being the members of FPO, 74% of the members received extension support through FPO, while only 40.00 per cent non members got extension support. It is observed from the table that 80% of the members of FPO adopted mechanization as against 66.7 percent in case of non members. This might be due to the reason that FPO provided the custom hiring services to its members at 25 per cent less cost than that of non members for utilizing their machineries.

Table 5: Impact of FPC on income and employment of members over non-members

Particulars	Member farmers	Non-member farmers	Difference	t-test
Net income (Rs./ha)	54,250	43,750	10,500 [24%]	13.8*** (0.000)
Extra employment (man-days/household)	15.96	0	15.96 [100%]	33.3*** (0.000)
Total income (Rs./household)	58,360	43,750	14,610 [33.39%]	21.8*** (0.000)

*** = 1% level of significance

(Source: Field Survey)

(Figures in the [] indicates the percentage change)

Table 6: Impact of FPO in augmenting farmers' income

Dependent Variable: Farmers' Income			
Independent Variables	Coefficients	p-value	R ² Value
Participation in FPO	14036.87***	0.000	R ² = 87.8 Adj. R ² = 86.2
Age	27.28(NS)	0.447	
Land	852.04(NS)	0.218	
Education	304.66(NS)	0.659	
Input availability	300.02(NS)	0.175	
Marketing facilities	165.71**	0.026	
Extension services	-258.83(NS)	0.699	
Storage facilities	345.54(NS)	0.630	
Distance to market	-145.83(NS)	0.148	
Constant	43929.58***	0.000	

*** = 1% level of significance, ** = 5% level of Significance

(Source: Field Survey)

From Table-5 it was observed that net farm income for FPO members was Rs. 54,250 per hectare, or nearly 24% higher than it was for non-members. This difference was statistically significant. Additionally, the FPO members might work an extra 16 man-days (about) doing tasks like packaging, sorting, loading, and sealing (having an average daily wage of around Rs. 256.87/-) accounting about 33.39% more household

income than non-members. FPO members were questioned during the poll about how they used the additional cash. They claimed that they had used it for groceries and other daily costs.

The results of the outcome equations were presented in Table 6. A farmer member of an FPO was expected to earn Rs. 14,036.87 more per year than a non-member, demonstrating the positive and considerable impact of involvement in FPOs.

Conclusion

In comparison to elderly farmers who are less likely to participate and join the group, the study's findings showed that younger farmers were better informed and attracted to joining FPO/FPCs. However, there is a higher chance of FPOs for farmers who farm on smaller parcels of land. This may be due to marginal farmers being forced to create a support system that can alleviate their constraints on agricultural productivity. Distance to market and farmer education were both significant at the 5% level and positively correlated with FPO membership. The outcome demonstrates that the likelihood to join as members increased for every unit increase in the distance to market because FPOs supplied transportation facilities to promote their produce. Since marginal and small farmers are constantly looking for a support system to lessen their motivation to grow more, it is possible since FPOs by eliminating the middle man help them to earn remunerative prices for their produce; market linkage facilities offered to the farmers attracted the attention to join as members. It was substantial and positively connected to participation in FPOs in our findings as well. Farmers who were members received prompt access to high-quality inputs at prices below those found on the open market, while non-member farmers were forced to spend more time and money buying from merchants or dealers. One of the key elements in averting a distress sale was the storage facility supplied by the FPOs. Other significant pre-harvesting activities offered by the FPO in partnership with CBBO include extension services including training programmes for capacity building and technology distribution. The study shows that, compared to non-members, FPO members' embraced greater mechanization. This may be because FPO offered bespoke hiring services to its members at a rate that was 25% lower than that of non-members for using their equipment. Additionally, the FPO members might work 16 additional man-days doing tasks including packaging, sorting, loading, and sealing. Participation in FPOs had a good and considerable impact; due to the general assistance that the FPOs offered, a farmer who was a member of one was likely to earn more than a non-member.

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