

Evaluating the Economic Impact of Farmer Producer Organizations on Member Farmers in Mizoram: A Pathway to Agricultural Prosperity

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Abstract

India is a nation characterised by a significant proportion of small and marginal farmers who lack the capacity to take advantage of economies of scale. Farmer Producer Organisations (FPOs) have emerged as a possible solution for the many challenges faced by Indian agriculture, bringing a glimmer of positive outlook for the vast number of farmers within the country. The present research was carried out in the state of Mizoram. The data collecting process included the use of the personal interview approach, using a meticulously designed interview schedule, as well as conducting Focus Group Discussions with both member farmers and executives. Data was gathered through a purposeful selection of 16 Farmer Producer Organisations (FPOs) that had been operational for a minimum of 3 years. A random sample of 25 member farmers each was chosen from the selected FPOs using Yamane's sample size formula. Consequently, a total of 380 farmers were included in the study. The results of the study showed a statistically significant increase ($p < 0.05$) in members' annual income, number of working days, savings, and landholding size after membership in the Farmer Producer Organisation (FPO). The eta square values of 0.10, 0.18, 0.03, and 0.01 indicated that the magnitude of the intervention on income, working days, saving, and land holding size were negligible.

Keywords: *Economic impact, FPO, small and marginal farmers, Agriculture, Small Farmers Agribusiness Consortium (SFAC), Producer.*

INTRODUCTION

In India about 86.08 per cent of the total operational land holding owned by the small and marginal farmers (Census report, 2015-16) and their number shows a raising trend in each year due to continuous fragmentation of land. Small and marginal farmers are facing several challenges like high cost of cultivation, limited access to good quality input, credit facilities, modern technologies, extension services, marketing facility etc. and also frequent crop failure leads to increased dependency on middle man and money lenders (Nikam *et al.*, 2019).

The world's biggest tribal population resides in India. According to the 2011 census, there were 10.43 crore tribal people living in the nation, or 8.6 per cent of the overall population. The main issues that tribal farmers encountered were their inability to get financing, their inability to employ agricultural equipment for convenience of labor because of their limited landholdings, and their lack of market expertise. These factors contribute to the tribal farmers' poor income and low productivity (Srikanth *et al.*, 2022). So to overcome these problems there is a need for organizing the farmers into a producer group and to form the Farmer Producer Organization (FPOs) and this concept was first put forth by a panel of expert led by Y.K. Alagh, and by following their recommendation the Indian government modified the Companies Act of 1956 during 2002

that paved the way for formation of Farmer Producer Organisation (Alagh, 2007; DAC, 2013; Kakati and Roy, 2018; Mukherjee et al., 2018a).

The primary objective of the Farmer Producer Organisations (FPOs) is to facilitate the consolidation of small-scale farmers, enabling them to establish backward linkages for essential resources like seeds and fertilisers, enhance farmers' access to credit, insurance, knowledge, and extension services. FPOs also foster forward linkages by facilitating collective marketing, processing, market-driven agricultural production, and generating time and cost efficiencies (Mondal, 2010; Gorai and Wason, 2022). Primary producers, including those engaged in farming, milk production, fishing, weaving, and rural craftsmanship, collaborate to form the Farmers' Producer Organisation (FPO), which is an independent legal entity. According to the study conducted by Mukherjee et al. (2018), the form of a Farmer Producer Organisation (FPO) might manifest as a producer enterprise, a cooperative organisation, or any other legally recognised structure that facilitates the equitable sharing of revenues and benefits among its members.

A Farmer Producer Organisation or Company is a collection of farmers or producers who engage in commercial operations connected to the main produce, product, or inputs. According to Section IX A of the Companies Act of 1956, it is a legitimate organisation with official status. The organization's proprietors are the producers. In an FPO, each member has just one vote but may invest whatever amount they selected. (<https://www.nabard.org>)

Small Farmers Agribusiness Consortium (SFAC), an organisation that was given the authority to operate as a nodal agency by the Department of Agriculture Cooperation and Farmers Welfare (DAC&FW), is performing the formation of FPO in order to ensure that the process runs smoothly. In recent time government of India giving more importance to the formation of FPOs to make the small and marginal farmers Atmanirbhar and fulfill the goal of Atmanirbhar Bharat and for that recently government of India has announced a budgetary allocation of Rs. 4496.00 crore for five years for the promotion of 10,000 new FPOs (*Cabinet Committee on economic affairs (CCEF), PIB Delhi, 2020*).

Keeping in mind the critical role that FPOs play in the process of improving the quality of living of marginal and small-holder farmers, the present research is being conducted with an objective of evaluating the impact that Farmer producer organisations have had on their member farmers in the state of Mizoram.

LITERATURE REVIEW

Numerous global studies have been conducted to evaluate the performance and socio-economic impact of FPO. Few studies have indicated that the perceived effect of FPO on sustainable economic development is 82 per cent, followed by 9 per cent of considerable influence. (Adhikari et al., 2020). The impact study also found that members reported a considerable rise in production (with a mean score of 2.504), which was followed by a decrease in input costs (with a mean score of 2.481), and finally a reduction in transaction costs with a mean value of 2.458 (Das and Syed, 2021). According to Nikam et al. (2019) small producers benefit from FPOs in terms of group cohesion, bargaining leverage, and risk management.

Concerning economic characteristics, Michalek et al., (2018) found that the producer members experienced enhanced economic growth after they joined the farmer-producer organizations. The farmers got increased income, better employment opportunities, and were able to save more, leading to a change in their economic status and living standards than the non-members. Eighty-five per cent of the farmers could diversify and commercialize their agricultural practices, and 83 per cent easily accessed the available and quality farming inputs and services. Moreover, Gowda et al., (2019) research on the impact of FPO on its members residing in Puri District, Odisha, indicated exceptional knowledge in their group formation activities with a mean score of 2.77. Also, the members had better bargaining power of 2.71 when determining the prices of their products and better risk management skills with a mean of 2.60. In addition, they displayed a better understanding of agriculture-based advisory with a 2.6 mean and good management practices with a mean of 2.62. Similarly, a higher technical development was evident in the FPO members as they continually engaged with the organization, which made them acquire better extension support with a mean score of 2.34, market

information service with a mean score of 2.35, and capacity building at 2.42. However, they indicated a minor development in their technical abilities in value addition, ICT use, storage facilities, and the process of acquiring customs (Chauhan et al., 2021).

DATA AND METHODOLOGY

The statistics pertaining to the registration of Farmer Producer Organisations (FPOs) in both the nation as a whole and the specific state of Mizoram were gathered from reputable sources such as the Small Farmers' Agribusiness Consortium (SFAC), the National Bank for Agriculture and Rural Development (NABARD), and the Mission Organic Mizoram (MoM). The primary data were collected by a meticulously prepared survey questionnaire (both open-ended and closed-ended) administered at the household level. Additionally, a Focus Group Discussion (FGD) was conducted with farmer-members of FPO and relevant authorities who had a role in the founding of these organisations. Purposive sampling method was applied to select FPOs. A deliberate selection was made of 16 out of the 23 functioning FPOs that have been operational for a period exceeding three years. The sample size was determined using Yamane's (1967) method, which makes it easier to compute the sample size without overestimating it when the population is known. The sample size formula proposed by Yamane is as follows:

$$n = \frac{N}{1 + N \cdot e^2}$$

In this formula, the variables are:

n = sample size

N = number of population of the study

e = margin of error

Based on the Yamane formula, 25 member farmers each from the chosen FPOs were selected at random. Unfortunately, as some data were discarded owing to inconsistency, this study only comprised 380 sample member farmers.

In this research, inferential statistics of a paired-samples t-test was used to determine the impacts of the FPO on member farmers using various economics parameters such as annual income, saving, employment and size of landholding of member farmers prior to and post FPO membership.

The paired t-test formula is given by

$$t = \frac{\sum d}{\sqrt{\frac{n(\sum d^2) - (\sum d)^2}{n - 1}}}$$

Where,

$\sum d$ = Sum of the Differences

n = Number of Samples

However, the findings of the paired t-test do not provide information with regards to the magnitude of the interventions effect. So, we employed eta squared which is one of the most often employed effect size statistics in this study. The formula is given as:

$$\text{Eta Squared} = \frac{t^2}{t^2 + (N - 1)}$$

Where,

t = t statistic in paired samples test

N = Number of responses

RESULTS AND DISCUSSION

In order to determine the economic impact of Farmer Producer Organisations (FPOs) on their member farmers, this study utilized variables such as income, number of working days per year, level of savings, and size of operational land holding. We employed the paired T-test to evaluate the differences of these parameters between before and after joining the organization.

As observed from the table 1 and 2 that the result of paired-samples t-test showed a substantial upsurge in the annual income of farmers before joining FPO (M= 124323.16, SD=150069.60) to after joining FPO (M= 152248.95, SD = 142223.86), $t(379) = -6.49$, $p = .000$ (two-tailed). The mean increase in the test scores was -27925.79 with a 95per cent confidence interval ranging from -36385.32 to -19466.26. Therefore, the $p < 0.05$, we reject the null hypothesis. According to the results of the paired sample t-test, it is evident that FPO membership considerably altered the income level of farmers. According to Cohen's (1988) standards, effect sizes are typically referred to be small ($d = 0.2$), moderate ($d = 0.5$), and high ($d = 0.8$). With our eta squared value of 0.10, we may conclude that there was a minor impact with a small income difference before and after FPO membership.

Table 1: Paired Samples Statistics of Income, Saving, Working Days and Land Holding Size

Variables	Mean	N	Std. Deviation	Std. Error Mean	Eta Squared
Income Level before FPO	124323	380	150070	7698.41	0.1
Income Level after FPO	152249	380	142224	7295.93	
Level of Saving before FPO	18035.8	380	67554.5	3465.47	0.03
Level of Saving after FPO	26490.8	380	73579.4	3774.54	
No. of working days before FPO	120.86	380	88.47	4.54	0.18
No. of working days after FPO	129.65	380	88.97	4.56	
Land holding size (Before FPO)	2.54	380	2.212	0.113	0.01
Landholding size (After FPO)	2.63	380	2.161	0.111	

Source: Primary data

Table 2: Paired Differences Test of Income, Saving, Working Days and Land Holding Size

Variable	Mean	ME	95per cent CID		t	df	Sig. (2-tailed)
			Lower	Upper			
Income Level	-27926	4302.38	-36385	-19466	-6.49	379	.000
Saving Level	-8455	2381.01	-13137	-3773.4	-3.55	379	.000
Working Days	-8.79	0.98	-10.71	-6.87	-.9	379	.000
Land Holding	-0.088	0.036	-0.159	-0.018	-2.463	379	.014

Source: Primary data

*CID= Confidence Interval of the Difference

Similarly, saving level of respondents increased significantly before joining FPO ($M = 18035.79$, $SD = 67554.54$) compared to after joining FPO ($M = 26490.79$, $SD = 73579.35$), $t(379) = -3.55$, $p = .000$ (Two-tailed). The mean rise in test scores was -8455.00, with a 95 per cent confidence range of 13136.64 to -3773.36. Therefore, the $p < 0.05$, we reject the null hypothesis. Therefore, we can infer that there was a small effect with a difference in the saving level obtained before and after joining FPO which is indicated by the eta squared value of 0.03.

Likewise, the member farmers' working days before joining FPO ($M = 120.86$, $SD = 88.47$) increased significantly to after joining FPO ($M = 129.65$, $SD = 88.97$), $t(379) = -9.00$, $p = .000$ (Two-tailed). With a 95 per cent confidence range of -10.71 to -6.87, the mean increase in test scores was -8.79. Therefore, the $p < 0.05$, we reject the null hypothesis. Thus, the eta squared value of 0.18 highlighted that there was a small effect with a difference in the number of working days in a year i.e. there is little increase in the number of working days after being a member of FPO.

Moreover, the operational land holding size increased significantly from before joining FPO ($M = 2.54$, $SD = 2.212$) to after joining FPO ($M = 2.63$, $SD = 2.161$), $t\text{-statistic}(379) = -6.49$, $p = .014$ (two-tailed). The test score increase was -.088 on average, with a 95 per cent confidence range of -.159 to -.018. Therefore, the $p < 0.05$, we reject the null hypothesis. The eta square statistic (0.01) indicated an extremely small effect size. Therefore, we can conclude that the increase in landholding size prior to and after FPO membership is negligible.

CONCLUSION

As indicated by the results of the paired t-test, the level of income, savings, number of working days per year, and land holding size increased after FPO membership. However, the increase is negligible, suggesting that membership in FPO has minimal impact on the economic conditions of farmers in the study area. Today, farming has become a deficit business, and the majority of farmers, particularly youth, are abandoning agriculture as their primary source of income in favour of other occupations. The farmer producer organisation (FPO) model has shown efficacy in fostering the socioeconomic development of farmers as a collective entity. However, a substantial number of farmers remain unaware about FPOs, including its advantages and operating procedures. Therefore, awareness programmes must be conducted in rural areas. In order to make farmers aware of the benefits of establishing a farmer producer company, the concerned department or other agency must conduct training and capacity-building programmes. In addition, the state government should create a special programme to link the self-help groups by establishing women's FPOs. To make it possible for women to perform better and earn remunerative incomes through concerted action, it is highly encouraged that the Department of Agriculture and the Department of Rural Development converge in order to establish women's FPOs in the state.

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