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Economic Impact of Farmer Producer Organisations on Punjab Peasantry

Renuka and Sukhpal Singh

Department of Economics and Sociology, Punjab Agricultural University, Ludhiana, Punjab, India

Abstract

The present study has been designed to investigate the impact of farmer producer organisations (FPO's) on the employment and income of farmers in Punjab during the year 2019-20. A total sample of 160, which includes 10 FPOs, 100 farmer members and 50 non-farmer members, was taken for the study. The income of the farmers increased after joining the FPOs and the greater impact was seen in case of small, marginal and semi-medium farmers. Overall, the permanent labour employment had marginally increased but the income of farmers has increased by 15.71 per cent due to shift in the cropping pattern and proper use of farm inputs. Multiple linear regression analysis was applied to analyse the factors affecting the farmers' income. Multiple linear regression analysis revealed that farm size, family size and membership of FPOs had significantly influenced the income level of the farmers. To enhance the functioning of FPOs, it is suggested that the problems and constraints of non-functional or inefficiently working FPOs may be addressed. There is an urgent need to extend financial and technical assistance to the FPOs for setting up modern storage facilities.

Keywords: Farmer producer organisation, Income, Farmer, Employment, Punjab

JEL Classification: C30, P36, Q10, E24, Q19

Introduction

Punjab has earned the name of 'Granary of India' as the state with just 1.53 per cent of the total geographical area of the country contributes 37.8 per cent of wheat and 25.5 per cent of rice to the central pool (Anonymous, 2020). Punjab contributes about three per cent of rice, two per cent of wheat, and one per cent of cotton to the world (Anonymous, 2018). In Punjab, out of the total of 10.93 lakh land holdings, about 33 per cent are small and marginal farmers. Farmers in general and small farmers in particular, have been facing a large number of production and marketing problems. The diseconomies of scale and market uncertainties are among the major issues which can be addressed through group farming or cooperative farming. In these days, the FPOs are also projected as viable alternative of cooperative farming.

The small and marginal farmers comprised of the leading group of cultivators in Indian agriculture. As much as around 86 per cent of total operational holdings of 120 million are less than two hectares of land and amongst these holdings, 66 per cent are less than one hectare of land (Vedasri *et al,* 2018). Small size of operational land holdings is often cited as the instant reason for higher fixed costs and lower earning. Low profitability has prompted many small farmers to leave agriculture (Singh and Bhogal, 2014). Most of the issues are associated with vulnerability to risks in agriculture production. These issues include lower scale of operation, lack of information, poor communication linkages with regulated markets, and subsequent exploitation by intermediaries in procuring inputs, marketing uncertainties, private lending practices and so on. Many strategies and approaches have been undertaken to address the difficulties and problems faced by the farmers. Agricultural co-operatives, formed under the Co-operative Credit Societies Act, 1904, have long been the dominant form of farmer collectives

Corresponding author email: renukaur331@gmail.com

(Vedasri *et al,* 2018; Prasad, 2013). However, these co-operative societies experienced a number of limitations that prevent effective collective action. At present, the Union Government has been promoting a new kind of collectives known as FPOs to address the viability issue of the small peasantry throughout the corporate farming (Vedasri *et al,* 2018; Salokhe, 2016).

The FPO is an organisation which is made and run by farmers with the support from organisations/ agencies. Hand holding support is given in the initial few years of establishment of FPO, and afterward it is expected that the farmers may take it forward all alone. The professionals from producer company, guide farmers regarding selection of the crops to be grown, area under particular crop and the crop produce prices. Funds required for setting up FPO depend upon the potential of the local area and funding accessibility of funding as per government guidelines covering various government schemes and programmes. Institutional support is urgently required for the success of the FPO. But in Punjab, it has been observed that most of the FPOs are lacking this support and hence remained inactive. Resource Institutions are supposed to left the FPOs and all partners who are liable for FPO operations became inactive. FPOs could not extent benefit to the small farmers as they ended up selling their produce to the local aggregators or local traders who charged very high commission ranging from six to nine per cent of the production value (Singh *et al,* 2018; Verma *et al*, 2017).

Farmer producer organisations are projected as the appropriate institution for assisting the farmers to strengthen their capacity to collectively leverage their production and marketing strategies (Verma, 2018). It is significant to set up financially stable and sustainable member-owned producer organisations so that farmers can increase their productivity and realize higher returns for their produce. In this way, farmer producer organisations are being considered a way forward to support farmers to bring down the cost of cultivation and enhance access to marketing for better price realization. Keeping this view in light, the present study was designed to examine the impact of FPOs on income of farmers

Data Sources and Methodology

The present study was conducted in the Punjab during the year 2019-20. As per NABARD data, there are 67 FPOs in the state. At first stage, all the 67 FPOs were contacted. Out of these, only 25 FPOs have given positive response while other FPOs were non-responsive regarding their working. After this, a sample of 10 FPOs was randomly selected from these 25 FPOs (Table 1).

Similarly, a sample of total 100 farmers was taken by selecting 10 farmer members from each selected FPO. Further, a sample of 50 non-farmer members was also taken, choosing five farmers each from the respective FPO's area of operation (Table 2). In this

Table 1. Sampled farmer producer organisations, Punjab

Name of the FPO	FPO belongs to	District	Block	Village
Jagriti	Agriculture	Amritsar	Ajnala	Makowal
Sallopur foods		Gurdaspur	Kahnuwan	Sallopur
Fresh-crop farmer producer company limited		Patiala	Sanuar	Paharipur
Akal farmer producer company limited	Horticulture	Fatehgarh Sahib	Khamano	Nanowal
Punjab organic vegetables/ fruits		Patiala	Pataran	Ghagga
Farmway farmer producer company limited	Livestock	Ludhiana	Doraha	Kotla Afgana
Young innovative		Gurdaspur	Dhariwal	Sahari
Rupnagar producers	Biomass	Rupnagar	Rupnagar	Lodhi Majra
Nojvan farmer producer company limited	Apiculture	Patiala	Sirkapda	Bhunar-hedi
Amitoj		Amritsar	Ajanala	Bhakhra Tara Singh

Table 2. Sample of FPO member and non-member farmers in Punjab

Farmer	Sample farmers (No.)	Area (in acre)	Non-member farmers (No.)	Area (in acre)
Marginal	10	1.6	5	1.5
Small	31	4.16	16	3.5
Semi-medium	31	8.05	15	7.0
Medium	23	16.6	12	15.0
Large	5	30	2	28
Overall	100	9.28	50	8.09

way, the total sample comprised of 10 FPO's, 100 farmer members and 50 non-member farmers. The primary data were collected from the selected FPO's, farmer members and non-member farmers through well structured pre-tested schedule with personal interview method.

Similarly, the selected farmers were categorized into five categories on the basis of their operational size of holding. In this way, as member farmers a sample of 10 marginal, 31 small, 31 semi-medium farmers, 23 medium and 5 large farmers was taken for the study . Similarly, five marginal, 16 small, 15 semi-medium, 12 medium and two large farmers were selected from non-member farmers.

Multiple linear regression analysis was applied to analyse the factors affecting the farmers' income. The multiple linear regression model was applied as under:

$$\text{Log } Y = a+b_1X_1+b_2X_2+b_3X_3+b_4X_4+b_5X_5+\mu_0$$

Where,

Y= Income of respondents (includes both FPO member& non-member farmers) Rs/annum/household

A= Constant term

X_1=Age (Years)

X_2=Farm size (in acre)

X_3=Household size (Number of members in the family)

X_4=Membership of FPO (Member=1, Non-member=0)

X_5=Education (Illiterate=0, Literate=1)

b_1=Regression Coefficient

μ_0=Error term

Garret ranking method

This technique was used to evaluate the problems faced in the FPOs and member farmers of FPOs. The orders of merit given by the respondents were converted into ranks using this techniques. Respondents were asked to rank the given problems according to severity of the problem. Garrett's ranking Technique provides the change of orders of constraints into score value using the following formula:

Percent position = 100 * (Rij –0.5)/Nj

Where,

Rij= Rank given for the ith constraint by the jth individual

N_j = Number of constraints ranked by the jth individual

The percent position of each rank given by respondents was converted into scores by referring to the table given by Garrett and Woodworth (1971). Then for each factor, the scores of the individual sampled FPOs and FPO members were added together and divided by the total respondents for whom scores were added. Thus, mean score for each constraint was ranked by arranging them in the descending order.

Results and Discussion

Volume of trade and loan availability of FPOs

All the sampled FPO's were involved in the trading of produce. Every FPO trade produce in other districts, however some of them in other states also. The highest annual amount (Rs 13.33 lakh) of trading was performed by the FPO's which deals with mainly pulses and oilseeds crops. The lowest trading of produce belongs to the FPOs which deal with horticultural crops. These FPO's sold mainly flowers to super markets which were beneficial to small and marginal farmers. Out of the sampled FPO's, only five FPO's got mark of approval of produce from Food Safety and Standard Authority (FSSAI) of India, whereas another five FPO's didn't

have any license for the quality of their produce but they give guarantee of the quality of their produce at their own level.

Table 3. Volume of trade, turnover, grant and loan facilities of sampled FPO's in Punjab

Particulars	(Rs/lakh)
Volume of trade	11.80
Turnover	103.3
Grant	2.65
Loan facilities	6.4

The data given in Table 3 reveals that the annual volume of trade and turnover of an average FPO is Rs 11.80 lakh and Rs 103.3 lakh. Similarly, the grants and loan facilities given by NABARD to each FPO is Rs 2.65 lakh and 6.4 lakh, respectively. The study inferred that NABARD provided short-term loan for setting-up processing plant for various commodities, for setting-up storage and for buying farm implements for paddy straw management.

Socio-economic profile of selected farmers

The socio-economic profile of sampled FPO members revealed that most of the farmers (about 78.00%) belonged to age group of 25-50 years while just five percent of the farmers were below 25 years. The category wise analysis revealed that the overall average age of farmers was 39 years. Average family size of the sample ranged between 4.3 to 6.6 whereas average family size was 6.5. Overall, 41 per cent farmers were under graduate while this proportion was the highest among the small farmers (54.8%) followed by the large farmers (40%), semi-medium farmers (38.71%), medium farmers (30%) and marginal farmers (30%). About 46 per cent of the farmers had 15-25 years of experience in farming. A few farmers (3%) have experience of more than 50 years. The study found that the occupation of the sampled farmers with the highest number of farmers engaged in pure agriculture was sixty three per cent followed by 31 per cent farmers engaged in agriculture and allied sectors. Only six per cent farmers engaged with agriculture and job together. It was found that the income of the farmer increased after joining the FPO. The major impact was seen in case of small, marginal and semi-medium farmers.

Change in cropping pattern

The cropping pattern of farmers before and after FPOs is depicted in Table 4. Before FPO the major part of the area is covered by mainly two crops i.e. wheat (46.8%) and paddy (48.00%). But after the establishment of FPO, the area under wheat (31.7%) and paddy (33.1%) declined which was shifted under pulses (4.2%), vegetables (6.9%), sugarcane (15.8%) and other crops (8%). The category-wise analysis revealed that almost all the farmer categories have shifted their area from wheat, paddy to horticulture and other crops.

Change in employment status

The change in permanent employment with the formation of FPO has been displayed in Table 5. A nominal increase in the permanent labour employment was noticed after formation of FPO's. Except marginal farmers, permanent labour on all the farm categories increased, but this increase was slightly higher in case of large farmers. Overall, permanent labour employment increased from 0.43 persons (before FPO) to 0.67 persons (after FPO). Crop diversification is the main reason behind the increase in labour employment, as horticultural crops are more labour intensive than that of principal crops

Change in income

The change in the net annual income of the FPO members after the establishment of FPO is displayed in Table 6. Overall, increase in income of sampled FPO members, was 15.71 per cent which was mainly due to the shift in cropping pattern and the awareness about the farm inputs used by farmers such as seeds, fertilizers, insecticide, pesticide, insect and pest attack, timely use of inputs and subsidized farm implements. Before formation of FPO, the farmers used excessive fertilizers. But due to monthly meetings and awareness created by FPOs, the farm input costs decreased which led to increase the income of the farmers. The entire analysis revealed that the highest increase was seen in case of marginal farmers as they started practicing allied activities along with farming.

To analyse the impact of FPO membership on farmers' income a dummy variable representing farmer being FPO member/non-member was included. To determine and signify the factors affecting farmers' income, a multiple linear regression model was used and regression coefficients has been presented in Table 7. Explanatory variables explained 60 per cent variation in the magnitude of farmers' income. Farm size has positive and significant relationship

Table 4. Change in the cropping pattern of sampled FPO members in Punjab (Acres)

	Before FPO					
Crops	**Wheat**	**Pulses***	**Paddy**	**Vegetables***	**Sugarcane**	**Others****
Marginal	1.5	0.05	1.6	0	0	0
	(48.4)	(1.5)	(50)	(0)	(0)	(0)
Small	3.83	0.25	4.06	0.03	0.06	0
	(50)	(1.1)	(48)	(0.2)	(0.5)	(0)
Semi-medium	7.51	0.46	7.82	0.06	0.19	0
	(46.6)	(2.9)	(48.5)	(0.4)	(1.2)	(0)
Medium	15.08	0.95	16.04	0.34	0.8	0
	(47.1)	(2.6)	(49)	(1)	(0.2)	(0)
Large	27.6	0.8	27.6	0	4	0
	(46)	(1.3)	(46)	(0)	(6.6)	(0)
Overall	8.52	0.49	8.91	0.11	0.28	0
	(46.8)	(2.6)	(48)	(0.5)	(1.5)	(0)
After FPO						
Marginal	1.25	0	1.25	0	0	0.9
	(39)	(0)	(39)	(0)	(0)	(22)
Small	2.89	0.35	3.06	0.54	0.54	0.84
	(34.8)	(4.2)	(36.8)	(6.5)	(6.5)	(10.1)
Semi-medium	5.19	0.64	5.45	0.87	2.12	1.7
	(32.2)	(40.8)	(33.8)	(5.4)	(13.2)	(10.6)
Medium	9.82	1.82	10.32	3.65	5.30	1.5
	(29.4)	(5.4)	(30.9)	(10.9)	(15.8)	(4.4)
Large	18.6	0.8	18.6	0	17.2	4.8
	(31)	(1.3)	(31)	(0)	(28.6)	(8)
Overall	5.82	0.77	6.07	1.28	2.91	1.46
	(31.7)	(4.2)	(33.1)	(6.9)	(15.8)	(8)
Difference	2.7	0.28	6.07	1.28	2.63	1.46

** Rabi and Kharif*
***Others include poplar, mushroom, maize and oilseeds crops*

Table 5. Change in permanent labour employment with sampled FPOs in Punjab

(Number of permanent labour)

Farmer	**Before FPO**	**After FPO**
Marginal	Nil	Nil
Small	0.35	0.48
Semi-medium	0.51	0.77
Medium	0.52	0.86
Large	1.00	1.67
Average	0.43	0.67

Table 6. Change in net annual income of sampled FPO members in Punjab (Rs.)

Farmer	Before FPO	After FPO	Change in income
Marginal	96000	111500	15500 (16.10)
Small	270161	309193	39032 (14.45)
Semi-medium	518806	626774	107967 (20.81)
Medium	1035652	1105652	70000 (6.75)
Large	1868000	1924000	56000 (2.99)
Overall	585780	677850	92070 (15.71)

Note: Figures in parenthesis indicate percentage change in annual income

with farm household income which indicates that for every acre increase in the farm size leads to six per cent increase in famers' income. In the study, family size also significantly influenced the farm household income and regression coefficient was found to be 0.043 which indicates that one unit increase in the family member leads to increase the farmers' income by 4.3 per cent. The impact of FPO on the farmers' income was also observed from the table. The magnitude of the coefficient was found to 0.088 which showed that FPO member earned 8.80 per cent more income compared to non-member. The coefficient of education dummy was positive and significant at 5 per cent level indicating literate farmers have 12.3 per cent more income than illiterate farmers.

Constraints affecting performance of the organisations

Henry Garrett Ranking technique has been used to analyse the function/performance of FPOs and member farmers of FPOs. A perusal of the Table 8 revealed that major constraints faced by the FPOs were lack of storage facilities (56.81%) ranked I followed by lack of government support during the marketing of the produce (54.82%), less external linkages with markets and other institutions (53.09%). Ineffective utilization of money (49.08%), non-availability of latest technology (44.79%) and lack of trust among farmer members (41.41%) that affect the performance of FPOs as well as on the income of FPOs were the another constraints in order of ranking reported by the official of FPOs in Punjab.

Constraints faced by member farmers of FPOs

The information given in Table 9 highlights the ignorance/constraints faced by the sampled FPO member farmers regarding the facilities provided by FPOs in Punjab. As much as 57.19 per cent of the farmers were unaware regarding the facilities provided by FPOs to them, which emerged as a major constraint reported

Table 7. Factors affecting change in farmers' income (N=150)

Variables	Coefficient	Standard Error	P-Value
Intercept	12.93	0.054	0.134
Age (years)	0.160	0.003	0.256
Farm size (acre)	0.063***	0.014	0.001
Family size (No.)	0.043***	0.008	0.000
Farmer (member=1, non-member=0)	0.088***	0.022	0.002
Education (Illiterate=0, Literate=1)	0.123**	0.023	0.042
R^2	0.60		

Table 8. Constraints faced by the sampled FPOs in Punjab

Constraints	Mean score	Rank
Lack of government support	54.82	II
Less external linkages	53.09	III
Lack of storage facilities	56.81	I
Non availability of technology	44.79	V
Ineffective utilization of funds	49.08	IV
Lack of trust among farmer members	41.41	VI

Table 9. Constraints faced by the sampled FPO members in Punjab

Constraints	Mean score	Rank
Lack of awareness about FPO facilities	57.19	I
Lack of processing facilities	41.80	V
Lack of credit facilities	54.92	II
Political interference	43.98	IV
Lack of timely, subsidized and quality inputs	52.11	III

Table 10. Suggestions given by Chief Executive Officer of FPOs to strengthen the functioning of FPOs

Suggestions	CEOs Response (N=10) (Multiple Responses) (Per cent)
Liberalize the rules and regulation	90.00
Supply and value chain guidance	80.00
Enhance government support	90.00
More financial assistance	100.00
Develop national and international linkages	80.00
Knowledge about agri-marketing, processing, and other business practice	70.00
Storage facilities and quality standards	80.00

Table 11. Suggestions given by members for improving performance of FPOs

Suggestions	Member Response (N=100) (Multiple Responses) (Per cent)
Improvement in trainings and demonstration	89.00
Higher and stable price of product	87.00
Processing, storage and transport facilities	98.00
Efficient supply of inputs	82.00
Technical staff cooperation	74.00
Transparent use of credit	84.00

by the member farmers. Lack of credit facilities was the second major constraint highlighted by the farmer members (54.92%). Lack of timely, subsidized and quality inputs was the third major constraint reported by the member farmers. Political interference (43.98%) and lack of processing facilities (41.80%) emerged as other important constraints faced by the FPO members.

Suggestions/ remedial measures

The data given in Table 10 shows the suggestions given by CEO to strengthen the functioning of FPOs. All the FPOs require financial assistance from government as well as other institutions. Out of the sample of the 10 FPOs, nine FPO's (90.00%) wants to liberalize the rules and regulations for effective working of the FPOs. Government support was the main factor which affects the working of the FPO's. Therefore, 90 per cent of the FPO's have suggested to enhance government support for helping FPOs. Likewise, 80 per cent of the FPO officials stressed upon proper guidance regarding the supply and marketing channels of the produce. National and international linkages, storage facilities and quality standard were suggested by FPO's (80%) for better marketing. Similarly 70 per cent FPO's requires knowledge about agri-marketing, processing, and business practices for the better performance of FPOs.

A perusal of Table 11 revealed that the suggestions given by FPO members for addressing the constraints and enhancing their profitability. The study found that the processing, storage and transport facilities were the most required by ninety eight per cent FPO members. As much as 89 per cent of the FPO members want improvement in trainings and demonstration. Good price of the produce, transparent use of credit, efficient input supply and technical staff co-operation were another suggestions made by the farmers for making improvement in performance of FPOs.

Conclusion and Policy Implications

The present study found that the FPO's have been playing some role in the income enhancement, crop diversification and increase in the labour employment in Punjab agriculture. The permanent labour employment has marginally increased but the income of farmers has increased by 15.71 per cent due to shift in the cropping pattern and proper use of farm inputs. Multiple linear regression analysis reveals that farm size, family size and membership of FPO's significantly influenced the income level of farmers. These FPO's have been improving the income level of the member farmers. To enhance the performance and functioning of FPO's, the following policy measures are suggested. First of all, many FPO's in Punjab are either non-functional or working inefficiently. Therefore, it is important to address their problems and constraint for getting desired results. Secondly, many FPO's have been lacking storage facilities. Therefore, there is an urgent need to extend financial and technical assistance to the FPO's for setting up modern storage facilities. Thirdly, large number of FPO's complained regarding ineffective utilisation of funds and lack of credit facilities to members. For this purpose, liberal credit facilities and monitoring of funds should be ensured. Fourthly, many FPO's have been facing the problems of non-linkages with national and international markets. These issues can be addressed by setting-up marketing intelligence cell, provision of special transportation facilities along with liberalisation of legal framework for global market. Fifthly, many FPO's pointed out that the rules and regulations of FPO's are not dynamic which affect the functional efficiencies of FPO's. Therefore, liberal and state-specific rules should be framed so that FPO's may function as per the prevailing conditions of areas. Lastly, a mass campaign should be launched for creating awareness regarding functions of FPO's, cooperative behaviour and removal of unnecessary political interference. These policy measures may be helpful for addressing the constraints and problems of FPO's to improve their working and functional performance.

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