Original Research Article

Determinants of Participation of Members in Farmer Producer Organization in Madurai district

ABSTRACT

Aims: The study aimed to identify the factors influencing the participation of members in FPO.

Study Design: The study has utilized random sampling method to identify sample districts, sample blocks, sample villages and sample respondents for interview.

Place and Duration of Study: The study was carried out in Madurai district of Tamil Nadu in the month of May 2023.

Methodology: Primary data was used in the study. Logit regression model was used to identify the factors influencing the participation of members in FPO. A well-structured interview schedule was used to collect data from the sample respondents. A sample of 60 members and 60 non-members of FPO were chosen at random and relevant data were collected.

Results: The estimates of the logit regression function revealed that family size, annual income, landholding, distance to market, extension service, marketing facilities and input availability were found to be the major factors influencing the participation of members in FPO and found significant. Of these variables, family size, annual income, distance to market, extension service, marketing facilities storage facilities and input availability were positively influencing the probability of participation of members in FPO programme. However, farm size was negatively influencing the probability of participation of members in FPO.

Conclusion: Based on the analysis, it is evident that the variables such as family size, annual income, distance to market, extension service, marketing facilities and storage facilities were found significant and positively influencing the probability of participation of sample respondents in FPO programme. However, the variable namely farm size was found to be significant but negatively influencing the probability of participation of sample respondents in FPO programme. It is also evident that the probability of participation of small and marginal farmers in FPO is found high. It is concluded that provision of services by FPOs such as training and capacity building programme, marketing facility, supply of inputs,

transport arrangements to the farmer may increase their participation in FPO.

Keywords: Determinants of participation; FPO; logit regression.

ABBREVIATIONS:

FPO : Farmer Producer Organization

NABARD : National Bank for Agriculture and Rural Development

SFAC : Small Farmers Agribusiness Consortium

NGO : Non-Governmental Organizations

1. INTRODUCTION

In India, small and marginal farmers constitute 87 per cent of the total agricultural households. Indebtedness is found to be the major reason for distress. The major risks involved in agricultural production are lack of information, poor communication with diverse markets and frequent exploitation by intermediaries in procurement of inputs and in marketing of produce. The farmers lack organization in obtaining a fair market price for their produce. Farmers can overcome the obstacles by organizing Farmer Producer Organizations (FPOs). According to Rondot and Collion (2001), "Farmer Producer Organization (FPO) are rural organizations whose members organize themselves for improving farm income through improved production, marketing and processing activities". The main goal of the Farmer Producer Organization (FPO) is to form a farmer society into an organized company for performing beneficial activities like production, procurement, grading, harvesting, marketing and import/export of the produces of all members to provide them a remunerative price for their products.

In India, FPOs are promoted by NABARD, SFAC, NGOs etc. There are 4748 FPOs registered in India, of which, 1350 are NABARD promoted FPOs, 1763 are promoted by SFAC and the rest are promoted by other organizations. In Tamil Nadu, 88 FPOs are promoted by NABARD, 57 FPOs by SFAC and 103 FPOs by other professional bodies. But most of FPOs limit their activities by providing inputs than implementing a comprehensive business programme. Therefore, an investigation is needed to ascertain the role of FPOs on serving members with their activities to enhance their income.

Verma *et al.* (2019) examined the impact of FPO on various technologies adopted by members and found that technologies adopted by the members were 1.5 times greater than non-members. Vedasri and Mishra (2021) have also studied the factors influencing the participation of members in different regions, but there are no major studies on FPO in Madurai district. Hence, the present study was conducted to determine the factors influencing the participation of members in FPO programme in Madurai district.

2. MATERIALS AND METHODS

2.1 Data Sources

Primary data was collected in Madurai district covering two blocks namely Chellampatti and Kotampatti. A sample size of 120 respondents was chosen for the study covering two revenue villages in each block. The total sample of 120 respondents were interviewed for the study which includes 60 members of FPO 60 non-members of FPO.

2.2 Method of Analysis

Logit regression function was used to identify the factors influencing the members participation in FPO.

2.2.1 Logit regression

Logit regression model was used in this study to assess the likelihood of the sample respondents participating in the FPO programme which was used by Dube and Rondhi *et al.*(2020). Logit regression is appropriate if the dependent variable is in dichotomous form.

The sample respondents participating in FPO programme is the dependent variable (PART) having the dichotomous random variable, which can take the values 1 or 0, where 1 denotes a sample respondents participating in FPO programme and 0 denotes a sample respondents who does not participate in the programme.

The Logit regression model is specified as below:

$$PART=\beta_0 + \beta_1 AGE + \beta_2 GEN+\beta_3 EDN + \beta_4 FS + \beta_5 AINC +\beta_6 FAS +\beta_7 DM + \beta_8 PES +$$

$$\beta_9 PMF+ \beta_{10} PSF+ \beta_{11} PINP + \nu_i$$

Eleven explanatory variables were selected based on the past reviews for the logit model analysis and are defined as follows:

PART=Dummy dependent variable (1 if Participation in the FPO programme and 0 otherwise)

β_0 = Intercept

β_1……, β_{11}= Coefficients

AGE= Age of the respondent (years)

GEN= Gender (Male=1, Female=0)

EDN=Education (Years of schooling)

FS= Family Size (numbers)

AINC= Annual Income (Rs.)

FAS= Farm Size (hectare)

DM= Distance to market (Km)

PES=Provision of extension services by FPO (Dummy variable, 1 if yes and 0 otherwise)

PMF= Provision of market facilities by FPO (Dummy variable, 1 if yes and 0 otherwise)

PSF=Provision of storage facilities by FPO (Dummy variable, 1 if yes and 0 otherwise)

PINP= Provision of Inputs by FPO (Dummy variable, 1 if yes and 0 otherwise)

v_i =Error term

The computed coefficients β_1 for the parameters are odds ratio, which measures the changes in the ratio of probabilities. The sign of the coefficient indicates whether the sample respondents likelihood of participating in the FPO programme has increased or decreased. The positive coefficient indicates the likelihood of participation in the programme is high, whereas a negative coefficient indicates the likelihood of participation in the programme is low. The STATA software was used to analyse the factors influencing the farmers participation in FPO programme.

3. RESULTS AND DISCUSSION

3.1 Socio-Economic Characteristics of the Sample Respondents

The socio-economic characteristics of the sample respondents (Table 1) revealed that the average age of the sample respondents were 42.66 and 47.23 for members and non-members of FPO, respectively. About 36 per cent of members had completed their secondary education whereas 35 per cent of non-members of FPO had completed primary and secondary education each. Nearly 25 per cent of the members had completed more than higher secondary education whereas it was only 13.33 per cent among non-members. About 75 per cent and 25 per cent of the members were males and females participants in FPO while 70 per cent and 30 per cent of the non-members were males and females, respectively. It indicates about one third of sample farmers are female participants in the FPO programme.

The average family size of the respondents was 3.8 and 3.5 for members and non-members, respectively. The average annual income of the respondents was Rs. 44402.06 and Rs. 34039.76 for members and non-members, respectively. The average land holding size of the respondents was 2.3 hectares and 2.2 hectares for members and non-members, respectively which shows semi medium farmers were participating in the FPO programme. It is concluded that medium aged, educated and semi-medium farmers were participated in FPOs in the study area.

Table 1. Socio-economic characteristics of the sample respondents

S.No.	Category	Members (N=60)	Non-members (N=60)
I	**Mean Age (Yrs)**	42.66	47.23
II	**Gender**		
1	Male	45(75.00)	42(70.00)
2	Female	15(25.00)	18(30.00)
III	**Educational Status**		
1	Illiterates	2(3.33)	10(16.66)
2	Primary Education	21(35.00)	21(35.00)
3	Secondary Education	22(36.66)	21(35.00)

4	Higher Secondary Education	7(11.66)	5(8.33)
5	Graduate	8(13.33)	3(5.00)
IV	**Mean Family Size** (Nos.)	3.8	3.5
V	Mean Annual income (Rs.)	44402.06	34039.76
VI	**Land holding size (Hectares)**	2.3	2.2

(Figures in parentheses denotes the per cent to total)

Source: Primary data, 2022-2023.

3.2 Determinants of Participation of Members in FPO Programme

To determine the factors that influence the members participation in FPO Programme, logit regression function was performed. The value of log likelihood ratio (-50.62) in the model (Table 2) states that the data used are good fit in model as the log likelihood can range from negative to positive infinitely.

Table 2. Results of Determinants of Participation of Members in FPO programme-Logit Regression Model

Variables	Coefficients	Std.Error	P value	Exp(β)
Constant	-6.63	2.18	0.002	0.001
AGE	-0.03	0.02	0.139	0.968
GEN	0.65	0.55	0.241	1.911
EDN	0.12	0.22	0.578	1.133
FS	1.11**	0.41	0.007	3.021
AINC	0.04**	0.02	0.004	1.002
FAS	-1.56**	0.57	0.006	0.212
DM	0.61**	0.15	0.002	1.848
PES	2.02**	0.69	0.004	2.434
PMF	1.97**	0.67	0.004	7.559
PSF	2.77**	0.81	0.001	3.207
PINP	1.82**	0.73	0.023	0.161
Log Likelihood ratio	-51.69			
Pseudo R^2	0.37			
Number of observations	120			

** denotes significant at 1 % level.

Source: Primary data, 2022-2023.

The pseudo R^2 of 0.37 indicates that the independent variable used in this model explains 37 per cent of the variability in the dependent variable.

The estimates of the logit regression shows that family size, annual income, farm size, distance to market, extension service, marketing facilities, storage facilities and input availability are found statistically significant at one per cent level. Of these variables family size, annual income, distance to market, extension service, marketing facilities, storage facilities and provision of inputs were positive and significantly influencing the probability of participation of sample respondents in FPO. If the family size increases by one number, the probability of participation of member increases by the log odds ratio of 3.021 and are found to be significant at one per cent level. These findings are similar in line with the results of Ekepu *et al.* (2017), i.e., the family size had positive influence on the probability of participation.

The annual income of members also had a favorable impact on the participation of respondents in FPOs. It was found that for every rupee increase in annual income of the sample respondents, the probability of participation in FPO increases by the log odds ratio of 1.002 and are found significant at one per cent level. It is evident that the participation of members in FPO will increases with the increase in annual income of households.

The result shows that for every unit increase in the distance to market, the tendency to join as member of FPO increases because FPOs are providing transportation facilities to market their products and hence their participation in FPO will increases by the log odds ratio of 1.848 and are found to be significant at one per cent level. These findings are similar in line with the results of Mthombeni *et al.* (2021), i.e., distance to market had positive influence on the probability of participation in FPO.

Provision of Extension services by FPO had found positive and significant at one per cent which shows that it would increase the participation of members in FPO. These findings are similar in line with the results of Jamilu *et al.* (2015) where FPOs had benefitted the sample respondents with frequent extension services.

Market facilities provided to the farmers attracted the attention of farmers to join as members of FPO as these members seek for a support system that help them to grow more and this helps in eliminating the middle man to earn remunerative prices for their produce. It is revealed from the results that provision of market facilities by FPO has found positive and significant at one per cent which shows that it would increase the participation of members in

FPO. These findings are similar in line with the results of Rantlo *et al.* (2020) where FPOs had benefitted the sample respondents with market facilities.

Storage facilities provided to the farmers also attracted the attention of farmers to join as members. It is revealed from the results that provision of storage facilities by FPO was found positive and significant at one per cent level which shows that it would increase the participation of members in FPO. These findings are similar in line with the results of Singh and Vatta (2019) where FPOs have benefitted the sample respondents with storage facilities.

It is revealed from the results that provision of inputs by FPO has found positive and significant at one per cent level which shows that it would increase the participation of members in FPO. These findings are similar in line with the results of Bharali and Gogai (2022) where FPOs had benefitted the sample respondents with provision of inputs.

The results revealed that farm size was significant at one per cent level but had negative influence on the probability of participation of sample respondents in FPO. If the farm size of the respondents increases by one hectare, the probability of participation of members decreases by the log odds ratio of 0.212. These findings are similar in line with the results of Dung (2020), i.e., the farm size had negative influence on the probability of participation.

4. CONCLUSION

Based on the analysis, it is evident that the variables such as family size, annual income, distance to market, extension service, marketing facilities and storage facilities were found significant and positively influencing the probability of participation of sample respondents in FPO programme. However, the variable namely farm size was found to be significant but negatively influencing the probability of participation of sample respondents in FPO programme. It is also evident that the probability of participation of small and marginal farmers in FPO is found high. It is concluded that provision of services by FPOs such as training and capacity building programme, marketing facility, supply of inputs, transport arrangements to the farmer may increase their participation in FPO.

REFERENCES

1. Rondot P, Collion MH. Agricultural producer organizations: their contribution to rural capacity building and poverty reduction. Report of a Workshop, Washington, D.C; 2001.
2. Verma S, Sonkar KV, Kumar A, Roy D. Are farmer producer organizations a boon to

farmers? The evidence from Bihar, India. Agricultural Economics Research Review. 2019;32:123-137.

3. Vedasri, R. K., and Mishra, R. "A Study on Impact of Farmer Producer Organisation on Farmers' Income in Andhra Pradesh." Asian Journal of Agricultural Extension, Economics & Sociology. 2021; 39(8): 7-18.

4. Dube. "Factors influencing market participation by smallholder farmers in Masvingo and Manicaland provinces, Zimbabwe." *International Journal of Agricultural Economics* 2020; 5(6): 313-320.

5. Rondhi, M., Aji, J. M. M., Hasan, A. F., & Yanuarti, R."Factors affecting farmers Participation in contract farming: The case of broiler sector in Indonesia." *Tropical Animal Science Journal* 2020;43(2): 183-190

6. Ekepu, D., Tirivanhu, P., & Nampala, P. Assessing farmer involvement in collective action for enhancing the sorghum value chain in Soroti, Uganda. *South African Journal of Agricultural Extension*,2017; *45*(1), 118-130.

7. Mthombeni, D. L., Antwi, M. A., & Rubhara, T. Level of participation of small-scale crop farmers in agro-processing in Gauteng Province of South Africa. *African Journal of Food, Agriculture, Nutrition and Development*, 2021;*21*(1):17125-17139.

8. Jamilu, A. A., Atala, T.K., Akpoko, J. G., & Sanni, S. A. "Factors influencing smallholder farmers participation in IFAD-community based agricultural and rural development project in Katsina State." 2015; 19(2): 93-105.

9. Rantlo, A. M., Tsoaka, M., & Muroyiwa, B. "Institutional factors influencing diary farmers

participation in formal and informal milk markets in Maseru urban, Lesotho, South Africa."

Journal of Agricultural Extension. 2020; 24(2): 48-59.

10. Singh, G., Vatta, K. Assessing the economic impacts of farmer producer organizations: case study in Gujarat, India. *Agricultural Economics Research Review*, 2019;*32*(347-2020-1020).

11. Bharali, D, H. J. A. Gogoi . "Impact of farmer producer organization in augmenting farmers' income in Assam: A case study."2022;36: 42.46.

12. Dung. "A multinomial logit model analysis of farmers' participation in agricultural cooperatives: Evidence from Vietnam."2020; 27: 1-22.