



Impact of Farmer Producer Companies on Small and Marginal Millet growers

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Abstract: Farmer Producer Company (FPCs) is a viable option to increase the farmers' income through their collective actions. FPCs are emerging in larger number with the support of SFAC and NABARD to provide business services to small and marginal farmers. Many small and marginal farmers depends on the FPCs. Therefore, the present study aims to find the impact of farmer producer companies on small and marginal millet growers in Dharmapuri district of Tamil Nadu. The primary data was collected from 60 members and 60 non-members of farmer producer companies comprising total of 120 millet growers. The study employed resource use efficiency and stochastic frontier model to find the profits earned by the millet growers. The sample FPC established a robust backward and forward linkages in which millet growers realized a profit for their produce. The study also found that, in addition to value added products, allied enterprises like cattle and poultry farming brought an additional income for sample FPCs. The results concluded that millet growers gained a substantial increase in farm revenue.

Keywords: Farmer Producer companies, Business performance, Millet growers, Revenue

1. Introduction

Farmer Producer Companies are emerging to cater to the needs of farmers at the grass root level. It offers a wide range of benefits, increase market participation and reduce input and transaction costs, provide collective action [1]. They act as an interface between small-holder farmers and markets with forward and backward linkages. Farmer Producer Companies (FPCs) are a viable option for increasing farmers' income through collective actions. With the help of Small Farmer Agribusiness Consortium (SFAC) and National Bank for Agriculture and Rural Development (NABARD) more FPCs are springing up to provide business services to small and

marginal farmers [2]. Indian government has decided to promote 10,000 FPOs over the next five years. It is estimated that the implementation of 10,000 farmer producer organisations would require the capacity building of nearly 4.6 million stakeholders [3]. To address this huge challenges, Ministry of Agriculture and Farmers Welfare, the Government of India in tie up with MANAGE has established an "MANAGE FPO Academy" with effect from 01st January 2021. The aim of this academy is to provide trainings regarding networking with external agencies, access to capital and technology, processing and marketing activities, financial management and business performance activities to determine the viability of FPCs [4].

2. Objectives of the study

- To analyze the backward and forward linkages of millets farmer producer company.
- To evaluate the business activities of millets farmer producer company.
- To assess the benefits gained by the members of millets farmer producer company.

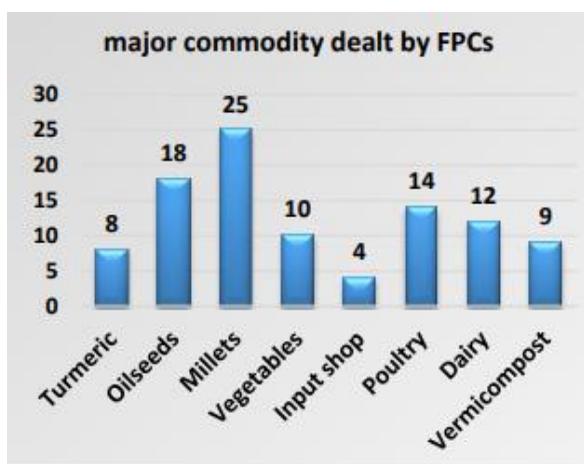
3. Research Methodology

The present study was based on the primary data collected from two farmer producer companies namely Sittilingi Valley Organic Farmers Producer Company and Navadhanya Farmer Producer Company in Dharmapuri district. The details of selected sample FPCs are given in the table 1. This research brings out the business activities of FPCs, value addition, backward and forward linkages and benefits earned by FPCs millet farmers. The primary data was collected from the millet farmers - members and non-members of sample FPCs in the month of August - September, 2023. The members list involved in millets cultivation were obtained from chief executive officer of both sample FPCs. Based on simple random sampling method, 60 members and 60 non-members comprising a total of 120 sample farmers were selected for the study from two sample FPCs in Pennagaram and Harur block of Dharmapuri district. All the sample respondents were directly contacted and information was collected regarding land holding, cropping pattern, experience in farming, farm size, source of irrigation, annual income, cost and returns of millets using pre tested interview schedule. This research employed stochastic frontier approach, Cobb-douglas production function and Resource use efficiency to assess the impact of farmer producer companies on millet farmers. The study estimates the benefits earned by FPC member farmers compared to non-member farmers. Further, SWOC analysis was done in the study to bring out suggestions for further improvement of sample FPCs.

Table 1. profile of selected FPCs in the study area

District	Name of FPC	No of members	Source of funding
Dharmapuri	Sittilingi Valley Organic Farmers Producer Company Limited, Harur	1000	NABARD
	Navadhanya Farmer Producer Company Limited, Pennagaram	1001	NABARD

4. Results and Discussion

**Figure 1.** major commodity dealt with by FPCs

The Figure 1 and 2 shows the major commodities and business activities carried out by sample FPCs which engaged in the aggregation of primary produces of their members and marketing activities. Besides, they are also involved in value addition, processing, and packaging activities. FPCs generate revenue through the processing activities of millets and oilseeds. Apart from that FPCs earn income from poultry and dairy enterprises. FPCs were performing low in retailing and networking activities, followed by marketing services. If FPC improves their networking, then they may be able to find a target market to sell their member produce which helps in strengthening the marketing services of FPCs. It should assist in the expansion of the farmer base by providing inputs, purchasing output, providing agricultural advice, providing loans and insurance, and facilitating post-harvest processing activities among other things [5].

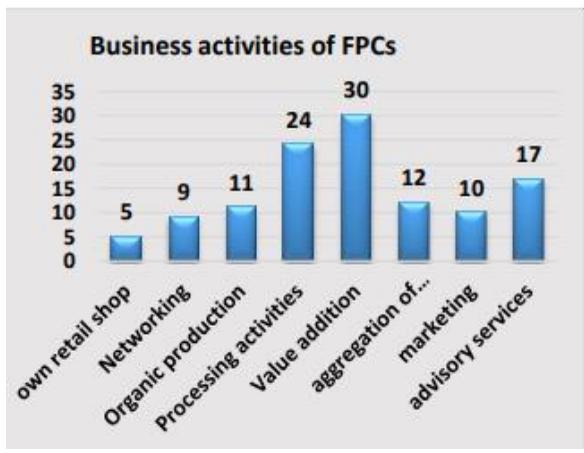


Figure 2. major business activities of FPC

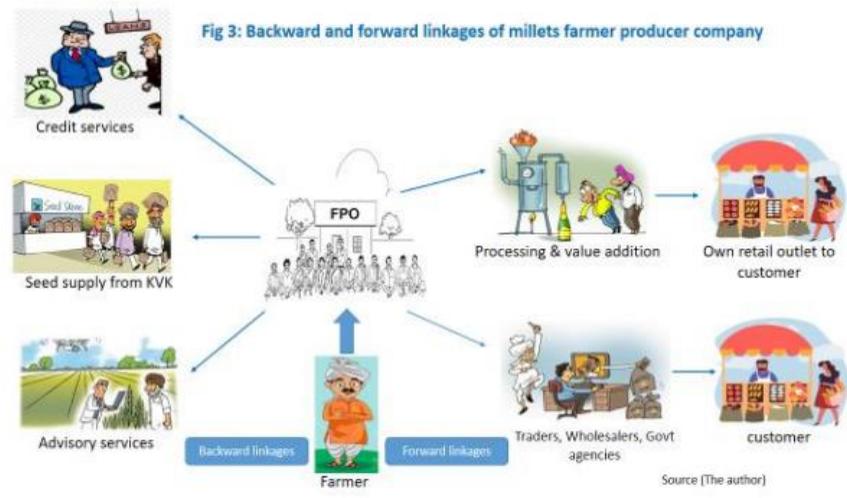


Figure 3. Backward and forwards linkages of millets producer company

Figure 3 clearly shows that sample FPCs were engaged in establishing backward linkages like buying inputs, availing credit facilities from institutional sources, and providing advisory services, and also forward linkages like disposal of farmer produce to traders, wholesalers, and sometimes to government agencies. Apart from that FPCs also engaged in processing and value addition activities like millet processing, millet flour, cookies, health mix, and oil extraction. The FPCs sell value-added products to consumers through their own retail outlets established in different areas in the district.

4.1. Returns from Millets Cultivation - Members & Non members

The average yield of finger millet for both FPC members and non-members varies with a difference of 86 kg respectively which indicates FPC members gets maximum yield when compared with non - members. The average sales price per kg of finger millet for FPC member farmer accounts for about Rs. 32 per kg, higher than non - members (Rs. 28/kg). Similarly, cost of cultivation of finger millet for FPC members and non-members also varies with a difference of Rs.1064 per ha. It has been found that FPC member farmers benefited more from finger millet cultivation and obtains a net income of Rs. 30828 per ha and non-members received a net income of Rs. 20148 per ha, lower than FPC member farmers income. The details are furnished in the table 2.

Table 2. Returns from Millets Cultivation - Members & Non members

S. No	Particulars	Finger millet			Little millet			Foxtail millet		
		FPC Member	Non member	Difference	FPC Member	Non member	Difference	FPC Member	Non member	Difference
1	Average yield (kg/ha)	1802	1716	86	1270	1250	20	1050	980	70
2	Average price (Rs./kg)	32	28	4	43	35	5	27	25	2
3	Gross Income (Rs.)	57664	48048	8664	54610	47500	7110	28350	24500	3850
4	Cost of Cultivation (Rs.)	26836	27900	1064	22970	23750	780	13510	14000	490
5	Cost of Production (Rs. / kg)	14.89	16.25	1.36	18.08	19	0.92	12.86	14.28	1.42
6	Net Income (Rs.)	30828	20148	10680	31640	23750	7890	14840	10500	4340

The average yield of little millet for both FPC members and non-members varies with a difference of 20 kg respectively which indicates FPC members gets maximum yield when

compared with non - members. The average sales price per kg of little millet for FPC member farmer accounts for about Rs. 43 per kg, higher than Non - members (Rs. 38/kg). Similarly, cost of cultivation of little millet for FPC members and non-members also varies with a difference of Rs.780 per ha. It has been found that FPC member farmers benefited more from little millet cultivation and obtains a net income of Rs. 31640 per ha and non-members received a net income of Rs. 23750 per ha, lower than FPC member farmers income. The average yield of foxtail millet for both FPC members and non-members varies with a difference of 70 kg respectively which indicates FPC members gets maximum yield when compared with non - members. The average sales price per kg of foxtail millet for FPC member farmer accounts for about Rs. 27 per kg, higher than non - members (Rs. 25/kg). Similarly, cost of cultivation of foxtail millet for FPC members and non - members also varies with a difference of Rs. 490 per ha. It has been found that FPC member farmers benefited more from foxtail millet cultivation and obtains a net income of Rs. 14840 per ha and non - members received a net income of Rs. 10500 per ha, lower than FPC member farmers income.

4.2. Efficiency of resource use by members and non - members

The specific contribution of individual resources for FPC member farmers and non - member farmers were estimated through a production function analysis using Cobb - Douglas production function and the results are given in the table 3.

Table 3. Cobb Douglas production function estimates of finger millet cultivation for FPC member

S.No	Variables	Coefficients	Standard Error	P-value
1	Seed (Kg/ha)	0.015	0.152	0.002**
2	N (Kg/ ha)	0.062	0.025	0.014*
3	P (Kg/ha)	-0.039	0.068	0.574NS
4	Manures (Kg/ha)	-0.127	0.15	0.037*
5	Human Labour (Mandays)	0.453	0.092	0.018*
6	Machine (hours)	3.986	0.083	0.023*
			$R^2 = 0.714$	

The results shows that R2 value was 0.714 which implies 71.4 percent of total variation in dependent variable explains the variation in independent variable. From the results it has been found that the exogenous variable seed influences the yield of finger millet at 1 % level of significance. This denotes that one percent increase in use of seeds increase the yield of finger millet by 0.015 percent. It was observed that nitrogen, human labour, machine hours positively

influence the yield of finger millet at 5 % level of significance. Therefore, one percent increase in use of nitrogen, human labour and machine hours increases the finger millet yield by 0.06, 0.45, 3.98 percent respectively. Manures was found to be negatively influenced at 5 % significant level, implying that manure was used in excess quantities than the recommended quantity.

4.3. Efficiency of Resource use in Finger millet production of member farmers

The estimates coefficients of relevant independent variables from Cob-Douglas production function were used to compute the marginal value products (MVP) and their corresponding Marginal factor costs (MFC). Hence the ration of MVP to MFC was used to determine resource use efficiency.

Table 4. Efficiency of Resource use in Finger millet production of member farmers

Variables	Coefficients(b)	Y/X	MPP	MVP	MFC	MVP/MFC
Seed (Kg/ha)	0.015	972.01	14.97	478.91	14	34.21
N (Kg/ ha)	0.062	29.9	1.85	59.32	18	3.3
P (Kg/ha)	-0.039	45.89	-1.77	-56.71	15.3	-3.71
Manures (Kg/ha)	-0.127	0.079	-0.01	-0.323	4	-0.08
Human Labour (Mandays)	0.453	28.5	12.91	413.09	260	1.59
Machine (hours)	3.986	10.2	40.66	1301.3	950	1.37

Table 5. Production function estimates of finger millet cultivation for non - members

S.No.	Variables	Coefficients	Standard Error	P-value
1	Variables	0.071	0.34	0.045*
2	Seed (Kg/ha)	0.156	0.081	0.063*
3	N (Kg/ ha)	0.512	0.186	0.010*
4	P (Kg/ha)	0.541	0.434	0.222 NS
5	Manures (Kg/ha)	-0.613	0.187	0.002**
6	Human Labour (Mandays) Machine (hours)	-0.015	0.004	0.036**
		R ² = 0.645		

** 1 % level of significance * 5 % level of significance NS - Non Significant

The table 4 shows that the efficiency ratio of inputs seed, nitrogen, human labour and machine hours were found to be more than one indicating underutilization of these resources. If these resource uses are increased, then there exists possibility of enhancing the yield of finger millet. The results shows that the resources are used inefficiently. Therefore, proper capacity building programmes need to be given for FPC members to use the resources in an effective way.

The results shows that R² value was 0.645 which implies 64.5 percent of total variation in dependent variable explains the variation in independent variable. From the results it has been found that the exogenous variable seeds, nitrogen, phosphorus positively influences the yield of finger millet at 5 % level of significance. This indicates that one percent increase in use of seeds, nitrogen and phosphorus, there will be 0.071, 0.156 and 0.512 percent increase the yield of finger millet. Human labour, machine hours negatively influences the yield of finger millet at 1 % significant level. This denotes that one percent increase in use of human labour and machine hours, there would be 0.613 and 0.015 percent decrease in yield of finger millet respectively.

Table 6. Efficiency of Resource use in Finger millet production of non - member farmers

Variables	Coefficients(b)	Y/X	MPP	MVP	MFC	MVP/MFC
Seed (Kg/ha)	0.071	865.356	61.38	1595.85	26	99.74
N (Kg/ ha)	0.156	10.739	1.67	43.5	18	2.42
P (Kg/ha)	0.512	45.89	23.49	610.84	15.3	39.92
Manures (Kg/ha)	0.541	2.494	1.35	35.05	3	11.68
Human Labour (Mandays)	-0.613	12.716	-7.8	-202.8	240	-0.85
Machine (hours)	-0.015	105.48	-1.58	-41.14	1000	-0.04

The efficiency ratio of inputs seed, nitrogen, phosphorus, manures were found to be more than one indicating underutilization of these resources. If these resource uses are increased, there exist possibility of increasing the yield of finger millet by non - member farmers. The efficiency ratio of inputs human labour and machine hours were found to be less than one indicating over utilization of these resources and has to be reduced from existing mean level. This denotes that these resources were utilized advantageously. The results shows that the resources are used inefficiently in production of finger millets by non - member farmers.

4.4. Efficiency of Resource use among member and non-member farmers

The resource use efficiency was obtained from the estimated equation by comparing the Marginal Value Product (MVP) of a particular input with the Marginal Factor Cost (MFC) of that input. The formula used to estimate the relative efficiency of resource use ratio, $r = MVP/MFC$. Decision rule for resource use efficiency was

- If $r = 1$; it shows the resource is efficiently used, that is optimum utilization of resource hence the point of profit maximization
- If $r < 1$; resource is excessively used or over utilized hence decreasing the quantity use of that resource increases profits.
- If $r > 1$; resource is under used or being underutilized hence increasing its rate of use will increase profit level.

Table 7. Resource use efficiency of members and non-member millet farmers

S.No.	Variables	Members		Non Members	
		MVP/MFC	RUE	MVP/MFC	RUE
1	Variables	34.21	Under use	99.74	Under use
2	Seed (Kg/ha)	3.3	Under use	2.42	
3	N (Kg/ ha)	-3.71	Over use	39.92	
4	P (Kg/ha)	-0.08	Over use	11.68	Over use
5	Manures (Kg/ha)	1.59	Under use	-0.85	
6	Human Labour (Mandays) Machine (hours)	1.37	Under use	-0.04	

The challenges faced by the FPC members are lack of financial resources, delayed payment, high labour cost, non-availability of labour during harvesting, Lack of well-developed storage facilities. The next challenges associated with sample FPC was lack of coordination for different group activities. FPC members lacks coordination which paves a way for unawareness about credit facilities and recent technologies. FPC members should be educated and trained more on recent practices of farming, technology up gradation and good agricultural practices.

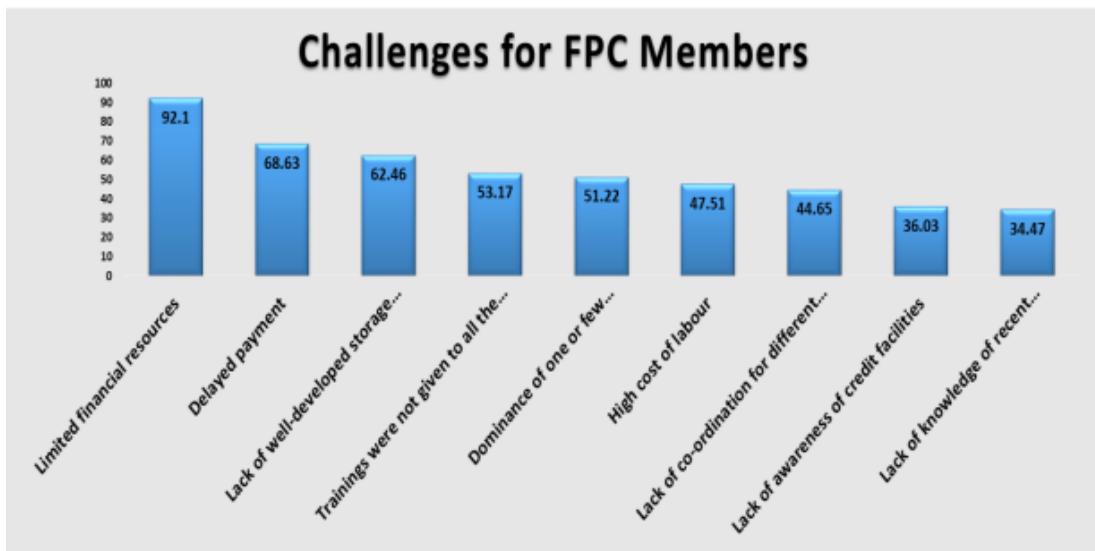


Figure 4. Challenges faced by members of Farmer Producer Companies

4.5. SWOC Analysis

Table 8. Strength, Weakness, Opportunities and Challenges of sample FPCs

Strength	Weakness
<ul style="list-style-type: none"> • Large number of stakeholders • Farmer centric - 80 % women contribution • Efficient use of waste resources • Support from DEEPS 	<ul style="list-style-type: none"> • Assets base is insufficient • Inadequate infrastructure and storage facilities • Members performance is weak • Lack of better infrastructure facilities
Opportunity	Challenges
<ul style="list-style-type: none"> • Financial credibility from banks/promoted institutions • Enhance participation of members in decision making • Funding support for expansion of business • Planning for FPC driven supply chain management through New FPC formation 	<ul style="list-style-type: none"> • Mistrust among the members and leaders • Price fluctuation of the produces • Political intervention • Weak supply chain management • Difficult in finding target market for farmers produce

5. Conclusion

Farmers should be educated regarding the sustainable use of resources, which helps in increasing the returns and reduces costs. FPCs should ensure efficient participation of farmer members in decision-making process. Policy support for farm-gate processing, control of wild animals, buy-back assurance, and PDS system will boost up the economy of member farmers in FPC. “Farmer-centric Schemes” through the FPCs like integrated farming system approach - poultry, dairy, goat farming, piggery, and apiculture at each household will help to supplement the farmers’ income and women empowerment. Private Institutions and Agricultural Universities - special courses on FPO and FPC promotion and agribusiness management, to create a large pool of professionals in rural areas for efficient management. The purchase of FPCs' products may be expanded through public programs. Enhancement of export competitiveness of FPC produce in the international as well as targeted domestic markets will help the farmers to fetch good returns for their products in long term.

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