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Factors influencing annual turnover of farmer producer organizations dealing with perishable produce in Tamil Nadu

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DOI: https://doi.org/10.22271/maths.2023.v8.i5Sb.1173

Abstract
This study explores the factors determining financial turnover for Farmer Producer Organizations (FPOs) engaged in perishable agricultural products in Tamil Nadu. A total of sixty FPOs dealing with perishable products were randomly selected for the study. Using linear regression analysis, this study aims to identify the significant factors affecting the turnover of the FPOs. The results revealed that number of marketing activities undertaken by the FPOs, number of active members, and experience of the CEO had positive impacts on turnover. The R^2 value suggested that these variables collectively contributed 83 percent to the turnover of the FPOs. The study underscored the importance of adopting effective marketing activities, a robust active membership base, and experienced leadership in enhancing FPO financial performance.

Keywords: FPOs, turnover, linear regression, value addition

Introduction
Farmer Producer Organizations (FPOs) have emerged as a formidable force, empowering farmers to collectively navigate the challenges of production, post-harvest handling, and marketing. Based on various sources of information approximately a count of 900 Farmer Producer Organizations (FPOs) are present in Tamil Nadu. Adopting diverse climatic zones that characterize the state, Farmer Producer Organizations (FPOs) strategically cultivate a variety of crops. The state's unique agro-climatic conditions create distinct zones, each suitable for different types of agricultural production. The climate variability is becoming a challenge to the perishable commodities cultivation. According to Saravanakumar (2022) [1], the projected changes in the weather variables such as temperature and rainfall were also decreasing crops yield in the state. FPOs operating within the realm of perishable produce hold a crucial role in improving farmers' livelihoods and ensuring the availability of quality food produce for consumers. Both central and state governments are supporting FPOs by providing funding. Government agencies like the Small Farmer Agribusiness Consortium (SFAC) and the National Bank for Agriculture and Rural Development (NABARD) were appointed as the nodal agencies for the promotion of FPOs. The primary goal of promoting FPOs is to improve the collective utilization of inputs, technologies, and other resources and improved bargaining power during post-harvest practices. According to Kanika (2021) [2], Farmer Producers have better bargaining power in the form of bulk buyers of produce and bulk suppliers of inputs. Salokhe (2016) [3] found that FPO enables small farmers to engage more successfully in the market, for increasing agricultural production, productivity, and revenue.
Recently, the successful execution of FPO over the years itself a challenge due to various reasons like poor administration, lack of coordination among the members, limited access to resources, lack of market access, etc. A study in Andhra Pradesh indicated that the major issues hindering the growth of FPCs were the lack of a coordinated approach of the promoting agencies and the government in promoting the farmer organizations (Raju *et al.* 2017) [4]. NABARD annual report (2019-20) has also listed issues of FPOs, such as lack of professional management, weak financials, and inadequate access to a range of services such as credit, market, risk mitigation, and infrastructure.

Based on the current scenario, there is a need to explore the main reasons for FPOs operating successfully. It was observed that the profit-making FPOs were progressively administrating in a futuristic way. So, the turnover of the FPOs was considered as an important criterion for the successful execution of the FPOs.

In this study, the primary objective is to identify the factors that influence the financial turnover of the FPOs that are dealing with perishables like tomatoes, onions, mangoes, bananas, etc., The performance of the FPOs was influenced by a range of factors. These factors were taken for this study bycollaborative brainstorming sessions involving chief executive officers (CEOs), Board of Directors of the FPOs, members of the FPOs and domain experts have been instrumental in identifying and understanding these factors. By identifying these influencing factors, stakeholders, policymakers, and practitioners can gain valuable insights into fostering the growth and resilience of FPOs in the agricultural sector.

Pant (2022) [5] investigated the role of social capital and self-efficacy in shaping the performance of producer organizations. The findings highlighted the substantial significance of social capital and self-efficacy in predicting the performance of FPOs. Notably, the study showed that self-efficacy acts as a partial mediator with a mediation effect of approximately 69.28 percent in the relationship between social capital and FPO performance. Prishila (2019) [6] investigated the diverse socio-economic effects on FPO members in the plains area of Chhattisgarh state, involving 240 farmers using a multistage sampling technique. Challenges such as inadequate professional leadership, insufficient working capital, difficulty in securing loans from financial institutions, lack of awareness among producer members, inadequate guidance and strategic direction from the Board of Directors, and subpar infrastructure facilities emerged as significant obstacles to the improved performance of Producer Organizations. Fałkowski (2016) [7] studied the market performance of producer organizations, meticulously investigating the factors influencing their formation and their subsequent effects on farmers' welfare and market performance.

2. Materials and Methods
2.1 Sample size and Study area: A total of sixty FPOs details were collected from different CEOs and Board of Directors of FPOs engaged in the trade of perishable agricultural products in Tamil Nadu through a random selection method. The information like the years since the establishment of the FPOs, the number of marketing activities carried out by the FPOs, the percentage of value-added products sold, the number of members registered in the FPO, the number of active members, the experience of the CEO and the turnover of the FPOs were collected and utilized in this study.

For analysis, the marketing activities followed by the FPOs were normalized to ordinal values. The ordinal values assigned to FPOs' marketing activities range from 1 to 5, where 1 was assignedfor basic trading, 2 for trading and retailing, 3 for trading, retailing, and e-commerce, 4 for trading, retailing, e-commerce, and B2B activities, and 5 for trading, retailing, e-commerce, B2B, and export.

2.2 Tool for analysis
2.2.1 Linear Regression
Linear regression analysis is a statistical technique used to investigate the relationship between a dependent variable and one or multiple independent variables. It measures how adjustments in the independent variables relate to modifications in the dependent variable. Linear regression is an important instrument for assessing and comprehending the influence of variables on the phenomenon being studied. The equation for simple linear regression can be expressed as follows:

$$Y = \beta_0 + \beta_1 x + \varepsilon,$$

In this equation, Y represents the reliant variable, x stands for the independent variable, β_0 denotes the intercept, β_1 represents the coefficient, and ε indicates the term for errors.

3. Results and Discussion
In this study, linear regression analysis was used to find out the factors that influence the turnover of the FPOs. The turnover of the FPOs was taken as the dependent variable and the years since the establishment of the FPOs, the number of marketing activities carried out by the FPOs, the percentage of value-added products sold, the number of members registered in the FPO, the number of active members and the experience of the CEO were taken as independent variables.

Table 1: Regression analysis of factors influence the turnover of FPOs

Model	Unstandardized Coefficients		Standard Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-42.062	19.216		-2.189	.033
Years since the establishment of the FPO	1.050	1.568	.058	.669	.506
No. of marketing activities undertaken	27.116	6.322	.508	4.289	.000*
Percentage of value-added products sold	.720	2.101	.032	.343	.733
No. of Members registered	-.032	.026	-.115	-1.217	.229
No. of active members	.180	.061	.250	2.953	.005**
Experience of the CEO	8.751	2.733	.271	3.202	.002**

Dependent Variable: Turnover of the FPOs

* - level of significance 1%, ** - level of significance 5%

From Table 1, the linear regression analysis revealed that the number of marketing activities undertaken, the number of active members, and the experience of the CEO are the factors that have significant positive influences on the turnover of farmer-producer organizations (FPOs), with coefficients of 27.11 (β = 0.508, p = 0.000), 0.180 (β = 2.953, p = 0.005) and 8.751(β = 0.271, p = 0.002), respectively. The R^2 value has shown that all the variables contributed to 83 percent of the turnover of the FPOs. Meanwhile, variables such as the years since the establishment of the FPOs, the percentage of value-added products sold, and the number of members registered showed negligible or non-significant

effects on the turnover of the FPOs. The constant coefficient was -42.062, indicating the baseline predicted turnover. These results emphasized the pivotal role of effective marketing activities, a higher number of active members, and experienced leadership in driving FPO performance and turnover. According to Kavin and Divya (2019) [8], the major determinants influencing the performance of the FPOs were age, education, and experience were positive and significantly influencing factors on the officials/executives economy of the farmer producer organization in the western zone of Tamil Nadu.

4. Conclusion
This study revealed that the number of marketing activities followed by an FPO, the number of active members and the experience of the CEO of an FPO were playing a key role in shaping the financial performance of Farmer Producer Organizations (FPOs) dealing with perishables. Diversified marketing activities, a larger active membership, and adept leadership emerge as significant drivers of FPO success. These factors enhance the financial outcomes of the FPOs, thus benefiting both farmers and the broader agricultural landscape.

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