RESEARCH ARTICLE

Performance Analysis of the Farmer Producer Companies in Western Tamil Nadu, India using Altman's Z-score

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ABSTRACT

The agriculture sector is undergoing a revolution, owing to several initiatives by Government of India aimed at increasing farmers' income by 2022-23. These efforts should not be implemented in a traditional manner, but rather with farmers as partners in the process. Farmer producer Companies (FPCs) could serve as a ground-level implementation entity. As a result, FPCs may be at the lead of the economic opportunities that these reforms will generate. The financial viability or health of a Farmer Producer Companies is an important factor because many small and marginal farmers depend on it. Therefore, this study evaluated the financial performance of Farmer Producer Companies of the Western agro-climatic zone of Tamil Nadu utilizing Altman Z' score model and sustainable growth rate for the period 2015 to 2020. This analysis utilized secondary data gathered from the Ministry of Corporate Affairs, India. According to the results, it is concluded that the majority of the sample Farmer Producer Companies are in distress zone and if the present circumstance proceeded, these organizations will be bankrupt, within next two years and all of the companies have negative sustainable growth rate, indicating that they would be unable to operate without external funding. As a result, there is an urgent need to concentrate on these companies in order to ensure their sustainable growth.

Keywords: *Financial performance; Altman Z' score; Sustainable growth; Farmer Producer Company; Distress zone*

INTRODUCTION

India is witnessing a strategic policy shift from increasing productivity to increasing profitability. Doubling Farmers' Income (DFI) by 2022-23 is the important policy thrust of Government of India (GOI). To achieve this, mobilization of farmers' collective is an important strategy. However, there have been a number of models for group approaches were practiced in the forms of farmer cooperatives, farmer interest groups, farmer producer companies, commodity based organizations, etc. These experiments were plagued with issues and outcomes were short-lived. In recent years, the concept of farmer's collectives has regained attention across the states. Both union and state governments are providing special support for the promotion and formation of producer collectives (Farmer Producer Companies (FPCs)). Currently, the country has over 5000 FPCs, with 881 of them under the Small Farmers Agribusiness Consortium (SFAC), 2109 to the National Bank for Agriculture and Rural Development (NABARD), and the rest to various state governments. Tamil Nadu Government has been supporting FPCs since 2014.There are 500

FPCs registered in Tamil Nadu, 165 FPCs have been promoted through TNSFAC, more than 200 FPCs promoted by NABARD and 13 FPCs supported by central SFAC, besides self-promoted FPCs and by other agencies. But most FPCs appear to limit their activities by providing farm inputs rather than implementing a comprehensive business program. Now, as the number of FPCs has increased by orders of magnitude since 2014, their long-term viability is critical. Therefore, an investigation is required to determine if FPCs will continue to serve farmer-members with their activities in the near future. Hence, this study focuses to on assessing the present scenario of financial sustainability of FPCs in Western Tamil Nadu. The general objective of this study is to evaluate the financial performance of FPC with the help of Altman's Z score model. Results of the study provide a quantitative measure of FPCs financial performance. It will help in early identification of weaknesses and will enable early planning to mitigate anticipated consequences. These research findings will also be useful in formulating requisite policies to build confidence in FPCs.

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Financial viability analysis is a comprehensive procedure that includes financial statements, financial performance, and other related data. (National Regulatory System for Community Housing Directorate, 2014, p. 2). Fitzpatrick began using financial ratios to predict financial performance and distress in 1932. (Colak, 2019). Accounting ratios could be employed as financial distress indicators, according to Fitzpatrick's research. Beaver (1966) employed univariate analysis for prediction by using net cash flow to total liabilities as the most significant predictor to explain company distress (Affes and Hentati-Kaffel, 2019). To assess the possibility of a company's failure, Altman (1968) utilized multiple discriminant analysis (MDA) with five ratios, and this method became one of the first and most extensively used models for predicting financial distress.

Garg (2012) examined the performance of a Rewa crop producer company private Ltd. in Madhya Pradesh using 21 various financial ratios and concluded that inefficiencies have occurred in financial management. In the following year, Singh and Singh (2013) studied the overall performance of 25 FPCs from the states of Madhya Pradesh, Maharashtra, Gujarat, and Rajasthan. Chauhan (2015) assessed the performance of the 18 FPCs in Madhya Pradesh and concluded that all FPCs under the study were below the desired standards. Saini (2018) used the Altman Z score model to assess the financial health of Chambal Fertilizers and Chemicals ltd over the last ten years (2007-08 to 2016-17) and concluded that these companiesrelay on debt rather than equity. Swarankar and Jain (2020) measured financial performance of dairy cooperatives in Rajasthan using Altman Z score for the past 5 years (2014-15 to 2018-19). They concluded that sample cooperatives performed under safe zone as per Altman z' score. The revised Altman Z score was 83 percent and 67 percent accurate in predicting bankruptcy, one or two years before filing for bankruptcy, respectively (Abdulkareem, 2015). Hence, in this study, revised Altman Z score model was used to assess the financial performance of FPC in western Tamil Nadu.

MATERIAL AND METHODS

In today's world, borderless economy is the new trend and each organization including FPCs should be prepared to accept the challenges of this change if they want to play a major role in farm businesses and remain competitive. An FPC must be efficient if it wants to stay in business. Therefore, the performance measurement is necessary, hence this study aims to analyze the performance of FPCs. For this FPC under western agro-climatic Zone was purposefully selected to ensure homogeneity. Among the Western agro-climatic zone, Coimbatore district had 16 FPCs, Tirupur district had nine FPCs, and

Erode district had 22 FPCs that are functioning with the support of NABARD, SFAC, TN-Govt., and NGOs. From this, 47 FPCs were formed as a universe of the study. This study was based on secondary data analysis. It is mandatory that every FPC registered under the Register of Companies (RoC GOI) to submit their audited financial statements, including balance sheet, cash flow statement, and income statement every year. This study focused to on utilizing the above said financial statements of FPCs for analyzing the performance of FPC. At the time of data extraction, it was found that the Ministry of Corporate Affairs (MCA), India, stroked off only 29 FPCs. It was further found that some of the FPCs have not filed their annual mandatory filings with RoC for one or more years. Hence, out of 47 FPC under the agro-climatic zone, 25 FPCs were taken as sample for the study. The financial statements of 25 selected FPCs, form AOC-4 and MGT-7 were collected from the MCA, India website for the period from 2015 to 2020.

There are different ways to define the financial sustainability of FPCs. According to Zietlow (2012), the best measure of a company's financial sustainability is its financial health. Soliwoda (2015) reported that economic, social, and environmental aspects of sustainability of farms were well documented, but there is a gap in the assessment of the financial sustainability of the farms. Hence, the financial viability and financial health of companies should also be considered for measuring financial sustainability. Therefore, in this study sustainable growth rate has been used to assess the financial sustainability of FPCs with the help of extracted financial statements from the Ministry of Corporate Affairs, GOI.

Financial Performance

Altman's Z-score model (1968) is composed of five linear combinations of business ratios, which used a Multiple Discriminate Analyses (MDA) in order to measure the business performance of a firm. Altman's Z-score model (1968) equation taken into consideration of five financial variables namely liquidity, profitability, leverage, solvency and sales activity.

Altman's formula is,

$$Z = 0.012\,X_1 + 0.014\,X_2 + 0.033X_3 + 0.006\,X_4 + 0.999\,X_5$$

Z = Cumulative Values

Based upon Altman's formula, the firms were classified into three categories according to the company's sustainability. Subsequently, Z-score technique was extended to other industrial sectors such as private manufacturing companies. As a result, Altman updated the original Z-score formula in X_4 to replace book value of equity with market value

in order to match them with different parameters. This leads to change in the classification standards and Z-score results. Finally, the revised Altman Z'-score formula is shown as follows:

$$Z'\text{Score} = 0.717*X_1 + 0.84*X_2 + 3.107*X_3 + 0.42*X_4 + 0.998*X_5$$

$$X_1 = \frac{\text{Current assets} - \text{Current liabilities}}{\text{Total assets}} \quad X_4 = \frac{\text{Total assets} - \text{Total liabilities}}{\text{Total liabilities}}$$

$$X_2 = \frac{\text{Retained earnings}}{\text{Total assets}} \quad X_5 = \frac{\text{Sales}}{\text{Total assets}}$$

$$X_3 = \frac{\text{Earnings before interest and taxes}}{\text{Total assets}}$$

This model measures the financial health of the business. FPCs come under the purview of a private company and their shares are not traded freely in the open market. Hence, in this study the Altman Z' Score (1983) is used instead of the Altman Z Score (1968) to evaluate the financial health of the FPCs.

X_1-Working Capital/Total Assets:

Working capital is the difference between the current assets of a company and its current liabilities. The value of a company's working capital determines its short-term financial health. A positive working capital means that a company can meet its short-term financial debt, and still make funds available to invest and grow. In contrast, negative working capital means that a company will struggle to meet its short-term debt because there are insufficient current assets.

X_2-Retained Earnings/Total Assets

The retained profits to total assets ratio illustrate the amount of retained earnings or losses in a company. When a company's retained earnings to total assets ratio is low, it suggests the company is financing its expenditures with borrowed money rather than retained earnings. It raises the chances of a business going bankrupt. On the other hand, high retained earnings to total assets ratio, indicates that a firm uses its retained earnings to fund capital investment. It demonstrates that the company has attained profitability over time and does not require borrowings.

X_3-Earnings Before Interest and Tax/Total Assets:

EBIT, a measure of a company's profitability, refers to the ability of a company to generate profits solely from its operations. The EBIT/Total Assets ratio indicates a company's ability to earn enough revenue to remain profitable, sustain ongoing operations, and pay the debt.

X_4-Book Value of Equity/Total Liabilities:

The book value of the equity/total liabilities ratio shows the degree to which a company's value would decline when it declares bankruptcy before the value of liabilities exceeds the value of assets in the balance sheet. A high value of the equity to total liabilities ratio can be interpreted to mean

high investor confidence in the company's financial strength.

X_5-Sales/Total Assets:

The sales to total assets ratio show how efficiently the management uses assets to generate revenues vis-à-vis the competition. High sales to total assets ratio are to mean that the management requires a small investment to generate sales, which increases the overall profitability of the company.

If Altman's Z-score value, is lower than 1.23, it means that the company is in financial distress and with a high probability of going bankrupt. On the other hand, a score of 2.9 and above means that the company is in a safe zone and is unlikely to file for bankruptcy. A score of 1.23 to 2.90 indicates that the company is in the grey region and has a moderate risk of bankruptcy.

Financial Sustainability:

Sustainable Growth Rate

Sustainable growth rate is the maximum growth rate that a company can sustain without having additional external funds or debt. SGR calculated as follows (Kakati and Roy, 2019)

$$SGR = \frac{\text{Retention rate} * \frac{\text{Net Profit}}{\text{Sales}} * \left(1 + \frac{\text{Debt}}{\text{Equity}}\right)}{\frac{\text{Total assets}}{\text{Sales}} - R * \frac{\text{Net Profit}}{\text{Sales}} * \left(1 + \frac{\text{Debt}}{\text{Equity}}\right)}$$

Retention rate computed as dividing retained earnings by net income

RESULTS AND DISCUSSION

The various financial ratios have been calculated and substituted into the Altman Z' score formula (1983), yielding a score for predicting each company's insolvency. Revised Altman's Z- score of sample companies were further grouped into three categories as described above. The details of FPC that comes under different categories of Altman Z' score are presented in Table 1.

Table 1. The Details FPC comes under different categories of Altman Z' score

	2015	2016	2017	2018	2019	2020
Below 1.23	3 (75.00)	4 (57.14)	11 (84.62)	13 (76.47)	13 (54.17)	9 (52.94)
Between 1.23 to 2.90	1 (25.00)	2 (28.57)	1 (07.69)	2 (11.77)	5 (20.83)	5 (29.41)
Above 2.90	0	1 (14.29)	1 (07.69)	2 (11.77)	6 (25.00)	3 17.65)
Total number of FPC Reported	4	7	13	17	24	17

*Values indicated in the parenthesis are percentage to the total

From Table 1 it is revealed that the number of FPC in the distressed zone climbed until 2017, after which, it decreased, and the number of

companies in the safe zone increased in 2018-19 and decreased in 2019-20. The FPC under grey area is an increasing trend and has a moderate chance of filing for bankruptcy. The details of Altman Z' score for individual Farmer Producer Companies of western region of Tamil Nadu during 2015- 2020 is given below in Figure 1.
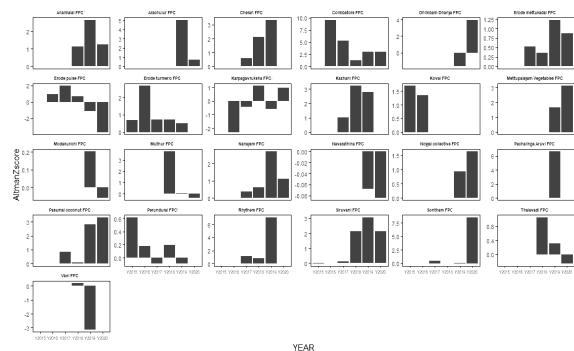
Figure. 1 Altman Z' score for Farmer Producer Companies of Western region of Tamil Nadu

From the figure 1, it is inferred that initially, Cheran FPC, Pasumai coconut FPC, Rhythem FPC, Sontham FPC, Siruvani FPC, Mettupalayam vegetable FPC, Dhimbam dhaniya FPC, and Kazhani FPC has reported low performance and has proceeded to safe zone afterwards. These companies are in a state of fluctuation over time toreach the safe zone. Coimbatore FPC had a better sales-to-assets ratio, putting them in a strong financial position over the years and Panchalinga Aruvi FPC has a greater book value of equity to total liability ratio, making them in a decent position for the financial year 2018-19. Noyyal collective FPC, Anaimalais FPC, and Siruvani FPC have been in the grey zone in the financial year 2019-20, with values ranging from 1.23 to 2.90.

The FPCs has Z' score value less than 1.23 indicates that company is under distress zone, the probability of financial discomfiture is very high, and this company is at considerable risk of bankruptcy. Karpaga vruksham coconut FPC, Erode mettukadai FPC, Modakurichi FPC, Perundurai FPC and Navarathina FPC have been in the state of distress over the years. Decreased sales, inadequate fund and inefficient management could be reason for their poor performance.

Sustainable growth rate

Sustainable growth rate worked out for selected FPCs in the western region of Tamil Nadu. Table 2 shows the sustainable growth rate of sample FPCs. From the results, it was concluded that all of the companies had negative growth, and they cannot increase even 1 percent growth rate without additional financial resources. This is because the business does not have additional funds to reinvest, and these companies require the backing of investors and other lending companies in an opportunity to expand their business.

Table 2. The details of Sustainable growth rate of selected Farmer Producer Companies of Western region of Tamil Nadu

Name of FPC	2015	2016	2017	2018	2019	2020
Erode turmeric FPC	0.000	-0.952	-0.981	-0.990	0.989	
Thalavadi FPC				0.000	-0.668	0.987
Arachalur FPC					0.623	-0.826
Coimbatore coconut FPC		0.279	-2.167	-7.370	-1.431	-1.162
Karpaga vruksham coconut FPC		0.000	0.000	-0.940	-0.985	-0.986
Kovai FPC	-0.647	-0.647				
Noyyal collective farming FPC					0.000	-0.856
Pasumai coconut FPC			0.000	0.000	-1.006	-1.009
Rhythem FPC			0.000	0.000	-1.047	
Siruvani FPC	-0.921	-0.973	-0.981	-0.968	-0.941	-0.963
Sontham FPC			-0.833	-0.977	-0.988	-0.991
Anaimalais coconut FPC				0.000	-1.293	-1.645
Mettupalayam vegetable FPC					-1.110	-1.086
Muthur FPC				-1.352	-0.971	-0.978
Cheran FPC				-0.961	-0.815	
Dhimbam dhaniya FPC					-0.991	-0.990
Erode mettukadai FPC		0.000	0.000	-0.933	-0.953	-0.971
Erode pulse FPC		-0.932	-0.877	-0.957	-0.989	-0.996
Vavi FPC					-0.996	
Kazhani FPC			0.000	-1.146	-1.033	-1.002
Modakurichi FPC						-0.980
Perundurai FPC	0.000	0.000	0.000	-0.975	-0.987	
Nanayam FPC			0.000	-0.925	-0.957	-0.978
Navarathina FPC						-0.974
Panchalinga aruvi collective farming FPC					-	

In the financial year 2019, Arachulur and Erode turmeric FPC had a positive sustainable growth rate and Thalavadi FPC had a good value in the year 2020. Sustaining a firm with internal resources is a positive

indicator. Panchalinga aruvi FPC does not have the MGT-07 form, which is needed to calculate the rate of sustainable growth rate.

CONCLUSION

Generally, FPCs go through difficulties in terms of performance because of the impact of business cycles and other macroeconomic variables. Measuring the financial health of FPCs has been an extremely important need for both managers as well as investors. Several tools have been developed to assess an FPC's financial strength based on its financial statements and balance sheet. Edward I. Altman's Z score, which employs a combination of various ratios to form an index of liquidity, profitability, sustainability and feasibility, has been highly accurate in analyzing the present state of financial health of a FPC as well as to enable one to predict the future, particularly in terms of probability of bankruptcy. In this research, we concluded that most of the sample FPCs are in the distressed zone and if this situation continues, these companies would be bankrupt within the next two years. The sustainable growth rate of sample FPCs also confirmed that most FPC required external funds to sustain their operations. Hence, there is an urgent need for financial support for those FPCs under Altman Z score grey and distress zone categories. The FPCs should invest in long-term capital, which means that the stakeholders are willing to spend on the company activity without expecting a quick return.

Consent for publication

All the authors agreed to publish the content.

Competing interests

The authors Dhineshwari.S, Selavm.S, Amarnath. J.S., Prabakaran.K of the research article entitled "Performance Analysis of Farmer Producer Companies in Western Tamil Nadu", India using Altman's Z score* declared that they have no conflict of interest.

Originality and plagiarism

Authors ensured that only totally original works were written and submitted, and that any work and/ or words borrowed from others were properly cited.

Author contributions

Idea conceptualization– Dhineshwari. S, Selvam. S

Experiments- Dhineshwari. S

Guidance –Selvam. S ,

Writing original draft – Dhineshwari. S,

Writing- reviewing &editing   - Selvam. S, Amarnath. J.S., Prabakaran. K

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