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Assessing financial solvency and bankruptcy risk of farmer producer companies in India: A study from the Eastern India perspective

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ABSTRACT

This study examines the crucial role of Farmer Producer Companies (FPCs) in ensuring sustainable livelihoods and aligning with the government's goal of doubling farmers' incomes by 2024-25. It assesses the financial health of FPCs, evaluates their solvency and bankruptcy risk using Altman's Z-score model and determines their sustainable growth rates. The research employs secondary data, utilizing audited financial reports of FPCs filed with the Ministry of Corporate Affairs (MCA) from 2016–17 to 2022–23. These reports were obtained via Form No. AOC-4 with XBRL. The study focuses on 48 FPCs from eastern India that have submitted financial statements for at least three years. The findings indicate that 18 FPCs fall into the red zone, signalling severe financial distress while 15 are in the grey zone suggesting moderate risk. Only 13 FPCs are in the green zone, exhibiting financial stability but often reporting negative growth rates. These insights highlight the pressing need for improved financial strategies, operational efficiencies and possible external support to ensure long-term viability. This research aids in the early detection of financial challenges, fostering proactive decision-making, and reinforcing public confidence in FPCs through the formulation of effective regulatory policies.

Contribution/Originality: This pioneering study on solvency and bankruptcy in the Northeastern Region encompasses all its states based on secondary data sources. The findings will serve as key components for further analysis and policy development.

1. INTRODUCTION

India is strategically shifting its economic policies from increasing agricultural productivity to enhancing profitability with collective farmer mobilization playing a crucial role. The establishment of Farmer Producer Companies (FPCs) enabled by the Companies Act's Part-IX-A, Chapter 1 provision in 2003 is a key pillar of this initiative. The Government of India aims to develop 10,000 FPCs by 2025 having already established over 7,000 with an emphasis on employment generation and sustainable livelihoods. At the grassroots level, FPCs are instrumental in achieving the government's goal of doubling farmers' income (DFI) by 2022–23. These organizations help connect farmers with sustainable livelihood opportunities but their financial performance and long-term viability must be assessed to ensure their effectiveness.

This study proposes evaluating FPCs' financial health and insolvency risk using Altman's Z-score model and ratio analysis. The research will aid in formulating effective regulations and strengthening public confidence in FPCs by identifying financial challenges early. These insights will help FPCs continue empowering farmers and advancing India's profitability-focused economic vision.

India's agricultural sector has long been strengthened by cooperative initiatives. The nation's cooperative movement began in 1904 with the establishment of the first cooperative credit society. This effort laid the foundation for future agricultural cooperatives although it was not directly linked to FPCs. The National Cooperative Development Corporation (NCDC) and the Agricultural Refinance Corporation (ARC), founded in 1963, further promoted cooperative and agricultural credit activities. By 1975, ARC was rebranded as the Agriculture Refinance and Development Corporation (ARDC) to better address financing needs and boost agricultural investment. In 2019, the Indian government launched a ₹6,865 crore program to establish and support 10,000 new Farmer Producer Organizations (FPOs), reinforcing its commitment to strengthening the agricultural sector. This initiative led by implementing agencies like NABARD, NCDC, and SFAC aims to empower farmers by ensuring economies of scale. Cluster-based business organizations (CBBOs) will provide ongoing support to FPOs over a five-year period, fostering sustainable growth and development in the agricultural sector.

1.1. Promotional Role of NABARD

As of 2021, the Small Farmers Agribusiness Consortium (SFAC) and NABARD promoted Farmer Producer Organizations (FPOs) through two key programs: the Producer Organization Development Fund (PODF), launched in 2011–12 with a corpus of Rs. 50 crores and the Produce Fund in 2014–15 with Rs. 200 crores aimed at promoting 2,000 FPOs over two years. NABARD played a pivotal role by appointing 795 Producer Organization Promoting Institutions (POPIs) which could be NGOs, banks, government agencies or cooperatives, to strengthen and develop Farmer Producer Companies (FPCs).

NABARD created comprehensive frameworks for FPO promotion, including cluster identification, feasibility studies, business planning, producer mobilization, and FPO registration. Among FPO members, 82% were small and marginal farmers and 32% were women. NABARD also facilitated market, input and credit linkages with 724 FPOs receiving input dealership licenses, 1298 market-linked and 3249 being credit-linked.

NABARD digitized its data for tracking FPO progress and developed a performance monitoring tool to evaluate each FPO's success. Additionally, NABARD's subsidiary, NABKISAN Finance Ltd. provided working capital and term loans to FPOs with and without collateral under the protection of NABARD's Credit Guarantee Scheme. NABKISAN offered direct assistance and bulk loans to institutions supporting 500 producer companies by 2019. This financial support ensured FPOs' access to credit for diverse needs across their operational lifecycle.

1.2. Glimpse of FPO in the North Eastern Region

The concept of farmer producer organizations has started gaining popularity in the North Eastern Region recently. The understanding of the subject is poor among the target population, i.e., the farmers while the concept of producer companies has the potential to change the agricultural economy of the region. The collectivization of producers, especially small and marginal farmers into producer organizations has emerged as one of the most effective pathways to address the many challenges of agriculture. It has improved access to investments, technology, inputs, and markets. The Department of Agriculture Cooperation and Farmers Welfare, Ministry of Agriculture and Farmers Welfare, Govt. of India has identified farmer producer organizations registered under the special provisions of the Companies Act, 1956 as the most appropriate institutional form around which to mobilize farmers and build their capacity to collectively leverage their production and marketing strengths. According to the

National Bank for Agriculture and Rural Development (NABARD), a producer company is a hybrid between a private limited company and a cooperative society. Therefore, it enjoys the benefits of professional management in a private limited company as well as mutual benefits derived from a cooperative society.

1.3. Statement of the Problem

This study will provide empirical evidence for the various stakeholders in their policy-making process. There is a growing interest in managerial skills in management and information makes the reliability of decisions. The existing companies have challenges of existence in the market which is also a reason few companies uploaded their financial statement to the Ministry of Corporate Affairs despite the government's focus on 10,000 establishing FPO by 2025. The acute shortage of research, especially policymaking for FPC is implicated in their financial health and tendency to bankrupt. Few studies were conducted based on the farmer producer companies particularly in the North East Region (Gurung & Choubey, 2021; Kakati & Roy, 2017, 2019). The grass root level of all the state's actual issues and challenges of the companies was ignored. Therefore, the proposed study has the potential for path-breaking aspects about it first-hand because the study will be based on ground reality with the farmer's producer companies of all the states. Research work will enhance the adequate empirical evidence for future references.

2. REVIEW OF LITERATURE

The literature review draws from various studies that explore the role and challenges of Farmer Producer Organizations (FPOs) and Farmer Producer Companies (FPCs) in enhancing agricultural productivity, addressing market challenges, and promoting sustainable development among small and marginal farmers. The study by Gurung and Choubey (2023) highlighted that while organic farming has not fully resolved persistent challenges, such as inconsistent market access and limited yields, FPOs have played a crucial role in mitigating these issues, particularly for farmers in hilly regions. However, the COVID-19 pandemic significantly disrupted business activities and value chain management negatively impacting FPC operations. According to FPOs engaged in diverse entrepreneurial activities reported increased revenues and net profits, underscoring the importance of raising paid-up capital to enhance turnover and business expansion. According to Anand, Ghosh, and Mukherjee (2023),Kumar, Meena, and Kumar (2023), FPOs engaged in diverse entrepreneurial activities reported increased revenues and net profits, underscoring the importance of raising paid-up capital to enhance turnover and business expansion. Similarly, Anand, Ghosh, and Mukherjee (2023) found that FPCs dealing with a broad range of agricultural products experienced higher turnover and profitability, providing valuable insights for policymakers aiming to improve FPC operations. A study by Kumar et al. (2023) focusing on FPOs in Bihar recommended that single-crop farming organizations should diversify into processing and marketing to enhance operational efficiency. Jayaraman, Ramu, Rajan, and Thole (2023) suggested that national and regional FPC promotion organizations should employ cluster-based analysis to tailor FPC capacities, ensuring better alignment with member needs and improving overall performance. Singh (2023) stressed the significance of robust business plans that target sustainable markets such as organic and fair trade, optimizing value for FPO members. Meanwhile, Rathour, Tiwari, Pandey, Singh, and Singh (2022) examined the empowerment of rural women through FPOs, demonstrating that tribal women in Bastanar experienced notable income growth linked to the duration of their participation. Mukherjee et al. (2022) identified critical challenges faced by vegetable-based FPOs in Maharashtra, including inadequate irrigation, shortages of skilled labor, and price volatility which must be addressed to ensure long-term sustainability. Jena and Dehury (2022) further pointed out organizational and marketing barriers that hinder FPO members from fully leveraging collaborative benefits. Prabhavathi, Girish, Ganapathy, Sharif, and Chandra (2022) analyzed the financial performance of FPCs in Andhra Pradesh noting asset growth but also highlighting that rising operational costs post-COVID-19 constrained profitability. Additionally, Amitha, Savitha, Rani, and Laxminarayana (2021) emphasized that leadership and decision-making styles significantly influence FPO performance, advocating for government initiatives to encourage the participation of young, educated farmers in these organizations. These studies collectively underscore the pivotal role of FPOs and FPCs in fostering agricultural development while also identifying key areas that require policy intervention and strategic improvements to maximize their effectiveness.

Other studies, such as Krishnan, Yen, Agarwal, Arshinder, and Bajada (2021) explored the innovation potential within FPOs and their ability to improve supply chain management and long-term sustainability. Several studies also noted the financial challenges faced by FPOs with Dhineshwari, Selvam, Amarnath, and Prabakaran (2021) warning of potential bankruptcy for FPOs without external funding and financial support. Adhikari, Pradhan, Chauhan, and Reddy (2021) emphasized the role of FPOs in promoting sustainable economic development while Kappil and Sahoo (2020) discussed the potential of FPCs in improving farmers' livelihoods despite challenges like competition from private enterprises. In a nutshell, the literature suggests that FPOs and FPCs play a critical role in overcoming the structural and market-based challenges faced by small and marginal farmers, although their long-term success depends on addressing issues related to capital, marketing, and operational efficiency. The studies collectively recommend strategic diversification, financial support, and capacity-building measures to enhance the effectiveness and sustainability of these organizations.

2.1. Identification of Research Gaps

Studies conducted in Tamil Nadu, Madhya Pradesh, Uttar Pradesh, Punjab, and West Bengal on FPC highlight poor financial performance in terms of solvency, efficiency, and profitability ratios. The combined performance score of all the state's FPCs was in the yellow zone. Most of the existing farmers lacked business skills and financial support from donor institutions, proper business linkage, and inventory management, which significantly influenced the financial performance of FPCs. Therefore, mapping the strategic ideas and framework to formulate the policies related to farmer producer companies at this stage is essential. The farmer-producer companies fail to create avenues to generate funds. The farmers are generally working in isolation and unorganized ways. The scarce physical infrastructure affects mobilizing the farmers' collectives' linkage with modern markets. Lack of sentimentality, awareness, and unfavourable attitude of the farmers remain major reasons why the FPC model not achieves the advanced status in India, particularly in the North East Region.

The primary objective of this study is to evaluate the financial performance of the farmer producers' company, and predict their solvency and bankruptcy risk and sustainable growth rate from 2016-17 to 2022-2023.

3. FRAMEWORK AND METHODS FOR RESEARCH

The study is a combination of exploratory and analytical research. Exploratory research is used to explore the general characteristics of FPOs while analytical research provides detailed insights based on data from existing reports. The study heavily relies on secondary data. It uses the audited financial reports of Farmer Producer Companies (FPCs) uploaded to the Ministry of Corporate Affairs (MCA) from 2016–17 to 2022–23. These 48 Farmers Producers Companies reports were accessed through the companies' official filings, using Form No. AOC-4 with XBRL. Information from NABARD and SFAC websites regarding FPOs' names, locations, and business activities is also considered. Initially, 81 FPCs were considered but after filtering through MCA data, the sample was reduced to 48 FPCs—28 from the North East and 20 from West Bengal. The selection was based on companies that had submitted financial reports for at least two years. The analysis focused on financial data from 2016–17 to 2022–23. Initially, the downloaded financial statements were organized into an MS Excel sheet. After filtering the data, the formulas for bankruptcy risk and sustainable growth rate were applied using the Altman Z-Score Model to evaluate both bankruptcy risk and sustainable growth. Companies were categorized based on their Z-scores < 1.23, financial distress, high probability of bankruptcy $1.23 \leq$ Z-score ≤ 2.90, grey zone and moderate risk of bankruptcy. Z-score > 2.90, safe zone unlikely to file for bankruptcy.

Additionally, a performance score method based on financial ratios was used to assess the performance of the selected 48 FPCs inspired by the studies of Kakati and Roy (2019). This methodology provided a structured framework to analyze the financial health and performance of FPCs in the eastern and northeastern regions of India.

4. RESULTS AND DISCUSSION

The study utilized five linear combinations of business ratios developed by Altman (1968) which apply Multiple Discriminant Analysis (MDA) to assess a firm's financial performance. The equation incorporates five key financial variables, namely, liquidity, profitability, leverage, solvency, and sales activity.

Altman's formula

$$Z = 0.0012X_1 + 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5$$

Z = Cumulative Values

Altman's formula classified the firms into three categories based on their sustainability. It extended the Z-score technique to other industrial sectors, including private manufacturing companies. As a result, Altman updated the original Z-score formula in X4 to replace equity book value with market value to match different parameters. This leads to changes in the classification standards and Z-score results. Finally, the updated Altman Z' score formula takes the following form:

$$Z = 0.717 * X_1 + 0.84 * X_2 + 3.107 * X_3 + 0.42 * X_4 + 0.99 * X_5$$

$$X1 = \frac{Current\ Assets\ -\ Current\ Liabilities}{Total\ Assets} \qquad X2 = \frac{Retained\ Earning}{Total\ Assets}$$

$$X3 = \frac{Earning\ Before\ Interest\ and\ Taxes}{Total\ Assets} \qquad X5 = \frac{Sales}{Total\ Assets}$$

$$X4 = \frac{Total\ Assets\ -\ Total\ Liabilities}{Total\ Assets}$$

This model measures the financial health of the business. A private company oversees farmer producer companies and their shares do not trade freely on the open market. Therefore, this study employs Altman (1983) rather than Altman (1968) to assess the financial health of the farmer-producer companies.

Table 1. The details of the farmer producer company using the Altman Z score model

Name of the company	ALTMAN Z-SCORE = Z= $0.717 *X_1+0.84 *X_2+3.107*X_3+0.42 *X_4+0.99*X_5$							Remarks based on the balance score sheet
	2017	2018	2019	2020	2021	2022	2023	
INDRAMALATI CO.	0.50	0.50	0.40	0.48	0.16	-	-	RZ
AHMADAPUR	-	-	0.8	4.94	2.98	3.01	1.96	GZ
BAKSA	-	0.27	0.68	0.82	2.34	-	-	RZ
NBPO	-	-	-	4.01	2.44	1.51	1.77	GZ
AKHRIGANJ	-	-	-	-	1.16	2.92	0.52	GRZ
ALOJUGMO	-	-	-	-	5.37	-	-	GZ
AMAIPARA	-	-	-	-	0.91	0.77	0.79	RZ
AMLAREM	0.02	-	-	-	-	-	-	RZ
ALMIGHAT	0.026	0.109	-	1.066	0.651	-	-	RZ
AMPRI ORANGE	0.43	1.38	0.33	0.42	0.21	0.08	0.05	RZ
BAGMA	-	-	-	0.83	5.14	5.91	4.65	GZ
BENGAL KRISHI	-	-	5.89	4.59	1.04	1.68	0.82	GZ
BHUIHARA	-	-	-	0.89	1.06	1.40	-	RZ
BRAHMAPUTRA	-	1.64	0.96	0.57	0.26	0.16	-	RZ
BURWIDWISA	-	0.13	0.28	0.40	0.60	-	-	RZ
DEUJORA	-	1.62	0.05	0.45	0.38	-	-	RZ

Name of the company	ALTMAN Z-SCORE = $Z= 0.717 *X_1+0.84 *X_2+3.107*X_3+0.42 *X_4+0.99*X_5$							Remarks based on the balance score sheet
	2017	2018	2019	2020	2021	2022	2023	
DIYARA MILK	-	-	-	5.64	4.35	7.88	4.08	GZ
DJHAMALI	-	-	-	4.71	3.41	3.50	0.57	GZ
FIDAM	1.02	1.63	1.85	1.28	1.06	-	-	GRZ
GORESWAR POULTRY	-	2.74	3.25	0.09	1.64	2.24	1.00	GRZ
HOUBEE CHING	1.01	1.63	1.17	1.84	-	-	-	GRZ
GREATER KALAIN	-	-	0	10.35	-	-	-	RZ
IRAMDAM LTD	1.31	1.42	-	-	-	-	-	GRZ
JUNAK ARGO	0.03	0.39	0.09	-	-	-	-	RZ
KISHALAY	-	-	-	-	4.55		-	GZ
KRISHISANYOGA	-	-	-	-	-	2.85	-	GZ
LANGEI PROD	0.40	0.14	0.20	0.16	-			RZ
MERAPANI ARGO	0.06	1.46	0.76	-	-	-	0.31	RZ
MANAKAMANA ARGO	-	-	1.17	0.10	0.10	-	-	RZ
MOHASHAKTI	-	-	-	0.98	0.99	2.54		RZ
NARJUL	-	0.01	1.68	4.13	2.20	2.49	3.23	GZ
PATKAI	-	-	1.04	0.27	1.79			GRZ
PURBAMALLICKPARA	-	-	-	1.99	-	-	-	GRZ
SANKAR AZAN	0.42	1.38	1.22	1.88	1.57	1.86	1.77	GRZ
SRIJANEE GRAM	-	-	-	-	5.24	-	-	GZ
SATBANI POTATO	0.05	1.54	1.85	0.48	0.21	0.01	0.01	RZ
SONAR CHALUN	-	-	-	0.01	1.44	0.00	2.81	RZ
TANTISAL	-	-	-		2.06	6.74		GZ
TARASANKAR	-	0.04	4.84	5.58	5.14	5.89	3.89	GZ
UDBOB	-	-	-	5.66	6.13	4.96	-	GZ
AREINU	-	-	-	0.73	2.07	-	-	GRZ
IREIMA	-	3.78	7.50	3.74	4.59	3.73	-	GZ
KANGLEPAK	0.04	0.03	0.23	0.05	0.99	1.88	2.89	RZ
SHEPOUMARAMTH	-	-	-	1.02	1.43	-	-	RZ
THINGTANGPA	-	-	-	1.35		-	-	GRZ
TAMELONG	-	-	-	-	1.14	0.76	-	RZ
ZO THLAI THAR PC LTD.	-	-	-	-	0.67	0.28	0.23	RZ

Note: RZ - RED ZONE, GRZ- GREY ZONE, and GZ - GREEN ZONE

Source: Computed from the company financial report (MCA).

Table 1 presents an analysis aimed at determining whether a Farmer Producer Company (FPC), particularly in the product-producing sector is at risk of bankruptcy. A step-wise analysis of the Altman Z-score was conducted to assess the company's solvency and potential bankruptcy. This analysis considered various financial ratios, including profitability, leverage, liquidity, solvency, and activity ratios. These ratios were incorporated into Altman (1983) generating a predictive score for each company's insolvency.

The revised Altman Z-scores of the sample companies were categorized into three risk levels. The results show the classification of FPCs based on their Altman Z' scores as detailed in the table. INDRAMALATI CO.: The scores from 2016 to 2022 were 0.50, 0.50, and 0.40, confirming severe financial distress and an imminent risk of bankruptcy. AHMADUPUR FPC started with a low score of 0.8 in 2018 but rebounded to a high of 4.94 in 2020 and remained in a safe zone thereafter. BAKSA FPC: After initial low scores, a 2.3 indicates it is now in the gray zone with moderate bankruptcy risk. NBPO FPC: The financial performance has stabilized with a score of 4.01 in 2019, indicating a safe zone.

AKHRIGANJ FPC: Scores varied showing initial distress but a recovery to 2.92 in 2021, then falling to 0.52 in 2022. ALOJUGMO FPC: Limited data availability except for a strong score of 5.37 in 2020, indicating financial stability. AMAIPARA FPC: Reported scores of 0.91, 0.77, and 0.79, indicating ongoing financial distress. AMLAREM FPC: A score of 0.02 in 2016 signifies severe financial stress. ALMIGHAT FPC: Poor scores ranging from 0.026 to 1.066 indicate ongoing financial difficulties. Ampri Orange FPC: Consistent scores below 1.23 indicate persistent financial stress. BAGMA FPC: Notable recovery with scores improving to the safe zone by 2022. BENGAL KRISHI FPC: Initial strong performance but declining scores suggest rising bankruptcy risk. BHUIHARA FPC: Consistently low scores indicate financial distress. BRAHMAPUTRA FPC: Scores demonstrate a high likelihood of bankruptcy, except for 2017.

BURWIDWISA FPC: Gradual decline over the years indicates impending bankruptcy. DEUJORA FPC: Analysis indicates it is nearing insolvency. DIYARA MILK FPC: Strong performance over the years confirms financial stability. DJHAMALI FPC: Fluctuating scores indicate financial distress in 2022. FIDAM FPC: Initial distress followed by mixed performance suggests instability. GORESWAR POULTRY LTD: Fluctuating scores reflect volatility and financial distress. HOUBEE CHING FPC: Limited data shows variability with some years in distress. GREATER KALAIN FPC: A strong score of 5.35 in 2019 suggests financial robustness. IRAMDAM LTD: Moderate risk indicated by fluctuating scores with no recent updates. JUNAK ARGO: Fluctuating scores indicate instability. KISHALAY & KRISHISANYOGA: Limited data but KISHALAY shows strong financial health in 2020. LANGEI PROD: Stable scores suggest gradual improvement. MERAPANI ARGO: Significant fluctuations indicate financial health volatility.

MANAKAMANA ARGO: A sharp decline signals deteriorating financial health. MOHASHAKTI: Improvement in scores suggests enhanced stability. NARJUL: Significant fluctuations indicate overall strong health despite volatility. PATKAI: Moderate health with inconsistent scores. SANKAR AZAN: Consistently above 1.0, indicating steady health. SRIJANEE GRAM: Strong score of 5.24 indicates excellent health. SATBANI POTATO: Fluctuations suggest variability. SONAR CHALUN: Notable improvement in scores indicates enhanced stability. TANTISAL: Significant improvement suggests robust health. TARASANKAR: Consistently high scores reflect strong financial stability. UDBOB: High scores indicate excellent financial health. AREINU: Moderate stability indicated by variability. IREIMA: High scores show strong financial health. KANGLEPAK: Improvement in scores suggests enhanced stability.

SHEPOUMARAMTH & THINGTANGPA: Limited data with moderate health. TAMELONG: Variability indicates fluctuating financial stability.

The Altman Z-scores of these companies reflect a wide range of financial health statuses from potential distress to robust stability. This variability highlights the importance of ongoing financial monitoring and adaptive strategies to ensure long-term viability.

4.1. Sustainable Growth Rate

A sustainable growth rate was evaluated for farmer-producer companies in the eastern region which includes North Eastern and West Bengal. An attempt was made to understand the growth rate, the requirement of additional financial assistance and the backing of investors and other lending companies to expand the business. The formula is as follows:

$$\text{SGR} = \frac{Retention\ rate * \frac{Net\ Profit}{Sales} * (1 + \frac{Debt}{Equity})}{\frac{Total\ Assets}{Sales} - Return\ on\ Equity\ (r) * \frac{Net\ Profit}{Sales} * (1 + \frac{Debt}{Equity})}$$

SGR = Sustainable Growth Rate.

Table 2. The details of the sustainable growth rate of farmer producer companies of Eastern India

Name of the company	Sustainability growth rate = $\frac{Retention\ rate * \frac{Net\ Profit}{Sales} * (1 + \frac{Debt}{Equity})}{\frac{Total\ Assets}{Sales} - Return\ on\ Equity\ (r) * \frac{Net\ Profit}{Sales} * (1 + \frac{Debt}{Equity})}$							Remarks based on balance score sheet
	2017	2018	2019	2020	2021	2022	2023	
INDRAMALATI CO.	-	-30.99	-38.87	45.99	-13.93	-	-	NG
AHMADAPUR	-	-30.99	-38.87	45.99	-13.93	-	-	NG
BAKSA	-	-	-0.79	-10.17	-13.17	-2.94	-1.81	NG
NBPO	-	0	-0.03	0.03	0.08	-	-	PG
AKHRIGANJ	-	-	-	-9.18	-2.25	-3.92	-1.59	NG
ALOJUGMO	-	-	-	-	-1.14	-2.86	0.00	NG
AMAIPARA	-	-	-	-	-6.34	-	-	NG
AMLAREM	-	-	-	-	-0.89	-0.76	-0.79	NG
ALMIGHAT	0	-	-	-	-	-	-	NG
AMPRI ORANGE	-	-0.10	-	-1.03	-1.20	-	-	NG
BAGMA	0.00	0.02	-0.30	-0.37	-0.20	-0.06	-0.04	NG
BENGAL KRISHI	-	-	-	-1.27	-14.38	-23.89	-16.47	NG
BHUIHARA	-	-	0.00	-4.50	-2.73	-2.48	-3.40	NG
BRAHMAPUTRA	-	-	-	-0.82	-1.00	-1.35	-	NG
BURWIDWISA	-	-	0	0	-0.55	-0.24	0	NG
DEUJORA	-	0	0	-0.36	-0.38	-	-	NG
DIYARA MILK	-	0	0	-0.42	-0.35	-	-	NG
DJHAMALI	-	-	-	-5.15	-4.13	-7.31	-3.87	NG
FIDAM	-	-	-	0.98	-1.68	-1.34	-1.17	NG
GORESWAR POULTRY	0.01	-1.53	0.00	-1.55	-1.27	-	-	NG
HOUBEE CHING	-	0.27	-2.51	0.00	-1.56	-1.74	-0.74	NG
GREATER KALAIN	0	-1.29	-1.24	-1.80	0	0	0	NG
IRAMDAM LTD	0.12	0.09		-	-	-	-	PG
JUNAK ARGO	0.00	0.24	0.00	-	-	-	-	PG
KISHALAY	-	-	-	-	0.00	-	-	NG
KRISHISANYOGA	-	-	-	-	-	2.38	-	PG
LANGEI PROD	-0.17	-0.17	-0.24	-0.19	-	-	-	NG
MERAPANI ARGO	0.00	0.09	0.00	0.00	0.00	0.02	0.02	PG
MANAKAMANA ARGO	-	-	0.00	0.00	0.00	-	-	PG
MOHASHAKTI	-			0.13	-1.37	-4.33		NG
NARJUL	-	0.00	0.00	-4.51	-2.03	-2.48	-3.09	NG
PATKAI	-		0.00	0.00	0.00			PG
PURBAMALLICKPARA	-	-	-	-1.64	-	-	-	NG
SANKAR AZAN	0.00	-0.45	-1.12	-1.72	-1.41	-1.79	-1.72	NG
SRIJANEE GRAM	-	-	-	-	-10.65	-	-	NG
SATBANI POTATO	0.00	0.00	0.00	0.00	0.00	-	-	PG
SONAR CHALUN	-	-	-	0.00	0.00	0.00	-2.81	NG
TANTISAL	-	-	-	-	-2.13	-6.49	-	NG
TARASANKAR	-	-	-	-9.34	-4.94	-5.76	-3.99	NG
UDBOB	-	-	-	-11.43	-6.92	-4.60	-	NG
AREINU	-	-	-	-0.62	-1.53	-	-	NG
IREIMA	-	0.00	-5.98	-3.36	-4.15	-3.65		NG
KANGLEPAK	0.00	0.00	0.00	0.00	0.00	-1.82	0.00	NG
SHEPOUMARAMTH	-	-		-0.63	-1.09	-	-	NG
THINGTANGPA	-	-	0.00	-	-	-	-	NG
TAMELONG	-	-	-	-	1.96	0.34	-	NG
ZO THLAI THAR PC LTD.	-	-	-	-	0.32	0.28	-	NG

Note: NG = Negative Growth, PG = Positive Growth.
Source: Computed from the company financial report (MCA).

Table 2 shows the study assessed the Sustainable Growth Rate (SGR) of 48 selected Farmer Producer Companies (FPCs) in Eastern India, including the North Eastern Region and West Bengal, from 2016 to 2022. The findings revealed significant variations in financial health and growth sustainability among these companies. The

SGR, which measures a company's ability to grow without external financial assistance provided insights into the financial performance and challenges faced by the FPCs.

Analysis of individual companies showed considerable financial distress and fluctuations. Indramalati Co. and Ahmadapur experienced drastic negative growth in 2017 (-30.99) and 2018 (-38.87) indicating severe financial strain. However, they recovered in 2019 with a positive SGR of 45.99, reflecting effective financial management, but this resurgence was short-lived as they returned to negative growth (-13.93) in 2020.

Baksa Co. exhibited fluctuating growth rates with a sharp decline to -10.17 in 2019 followed by further decreases in 2020 (-13.17) and slight stabilization in 2021 (-2.94) and 2022 (-1.81) indicating persistent financial challenges with minor recent improvements. NBPO maintained a conservative growth approach showing zero growth from 2016 to 2018 followed by slight positive growth in 2019 and 2020.

Akhriganj and Alojugmo faced consistent negative SGRs with Akhriganj declining significantly in 2019 (-9.18) and remaining in negative growth in subsequent years. Alojugmo's financial position worsened in 2021 and 2022 reflecting ongoing distress. Similarly, Amaipara and Amlarem encountered financial difficulties with Amaipara experiencing significant negative growth in 2020 (-6.34) and Amlarem displaying small but steady declines over the years.

Almighat recorded zero growth in 2016 while Ampri Orange experienced minor negative growth in the following years. Bagma maintained relative stability with minor declines from 2016 to 2022, indicating a cautious financial approach. Bengal Krishi encountered substantial financial struggles, peaking at -23.89 in 2021. Bhuihara and Brahmaputra showed consistent negative growth while Burwidwisa remained relatively stable.

Deujora and Diyara Milk experienced minor negative growth whereas Djhamali faced significant declines in 2019 (-5.15) and continued financial struggles through 2022. Fidam exhibited financial instability with mixed performance results. Companies such as Mohashakti, Narjul, Tantisal, Tarasankar, and Udbob experienced severe declines, indicating substantial financial distress likely caused by management inefficiencies or adverse market conditions.

Merpani Argo maintained a stable SGR with zero or slightly positive growth indicating financial steadiness but limited expansion. In contrast, Sonar Chalun experienced a severe downturn in 2022 reflecting sudden financial challenges.

The analysis highlights a concerning trend of financial sustainability issues among many FPCs in Eastern India with numerous companies reporting negative growth rates. These findings underscore the urgent need for strategic financial management, operational efficiency improvements, and potential external support to enhance sustainability. The SGR assessment suggests that some FPCs must reconsider their financial strategies to improve stability while others may benefit from refined operational practices or more favourable market conditions. Addressing these systemic financial issues through targeted interventions is essential for creating a supportive economic environment that fosters the growth and sustainability of these producer companies.

5. CONCLUSION

A Farmer Producer Company (FPC) is a collective organization of farmers that aims to enhance their income and livelihoods by leveraging economies of scale improving market access and increasing bargaining power. Recovering from financial distress requires a strategic and multifaceted approach. The first step involves conducting a comprehensive financial assessment to identify the underlying causes of distress. Implementing a well-structured financial restructuring plan, including debt management and cost-cutting measures is crucial. Additionally, enhancing operational efficiency by optimizing resource utilization and minimizing waste can significantly improve financial stability. Diversifying revenue streams through market expansion and value-added products helps mitigate risks and ensure steady income. Strengthening relationships with key stakeholders, including financial institutions, government agencies and other FPCs can facilitate access to essential support and funding. This study initially focused on evaluating the financial solvency and bankruptcy risk of companies through a stepwise analytical approach. The Z Altman score results indicate that 18 companies are in the red zone, experiencing financial distress and on the verge of insolvency and bankruptcy while 15 FPCs are in the gray zone, indicating moderate risk and only 13 FPCs maintain stable financial performance placing them in the green zone with minimal likelihood of insolvency and bankruptcy. Next, the underlying structural concerns highlighted by the consistently negative growth rates for many of these organizations might be addressed by focused initiatives meant to improve financial health, enhance operational efficiencies, and build a more supportive economic climate for these producer companies. According to the statistics, some companies might need to reevaluate their plans to increase their financial sustainability while others might profit from stronger financial procedures or advantageous market circumstances to continue or accelerate their growth. FPCs should focus on gaining market share through strategies, such as ensuring product availability, optimizing warehousing, and implementing competitive pricing to mitigate the risks of insolvency and bankruptcy. Additionally, tailored financial products and subsidies should be developed to support small and marginal farmers, providing them with the necessary resources to thrive. Organizing workshops, awareness programs, and comprehensive training sessions can significantly enhance the technical and managerial skills of FPC members. These initiatives should also aim to strengthen market linkages, ultimately improving productivity and profitability for farmers. Adopting sustainable agricultural practices is crucial for enhancing the performance and impact of FPCs in Northeast India. By focusing on sustainability, FPCs can boost agricultural productivity, improve market access, and increase farmer incomes, thereby contributing to the overall economic development of the region.

5.1. Managerial Implication

The analysis provides significant insights into the financial health and sustainable growth of Farmer Producer Companies (FPCs) in Eastern India. The financial stability among the 48 companies studied varied considerably, highlighting the need for effective managerial strategies. Management must implement robust financial monitoring systems to regularly assess organizational performance given the broad range of Z-score analysis results.

The findings underscore the importance of identifying potential financial distress signals early allowing for proactive risk mitigation. Companies operating in the gray zone (Z-scores between 1.23 and 2.90) should focus on strengthening their financial capacity through strategic improvements. The study also suggests that managers adopt adaptive strategies, such as diversifying revenue streams, enhancing operational efficiency, and implementing cost-control measures to reinforce financial stability.

The high proportion of companies in the distress zone (Z-scores below 1.23) emphasizes the need for comprehensive risk management frameworks. These should include evaluating external market conditions, understanding competitive pressures, and preparing for economic fluctuations that could impact financial health. Companies demonstrating strong financial performance should leverage their stability to secure favourable financing options. Managers should maintain an optimized capital structure that funds growth initiatives without excessive leverage, reducing exposure to future financial risks to support long-term sustainability. Investing in financial literacy training for employees can empower them to make informed decisions, interpret financial indicators effectively, and contribute to the organization's financial well-being.

Collaboration among FPCs can further enhance financial performance through knowledge sharing and resource pooling. This may involve partnerships, joint ventures or cooperative participation to provide collective support and resilience. The findings highlight the need for a proactive and strategic approach to financial management within FPCs. A focus on continuous monitoring, risk management and capacity building will be essential to ensuring long-term stability and sustainability in an evolving financial landscape.

5.2. Limitations and Future Research

Most of the companies in the northeast region do not upload their financial statements regularly to the Ministry of Corporate Affairs website. So, the current study deals with only a few companies. It is not possible to generalize or make the findings representative. A significant challenge of FPC is the limited access to finance as many struggle to secure adequate credit and investment due to stringent lending criteria and lack of collateral and many FPCs suffer from insufficient technical and managerial skills among their members leading to suboptimal operational and financial management. Market linkages are often weak with FPCs lacking the necessary connections to secure profitable and stable markets for their produce. The present study includes only West Bengal and the North East region. The majority of the geographical regions are excluded. Therefore, the findings do not represent the whole country's FPC financial performance.

To cover a broader sample size and population based on regional, national, and international, investigate innovative financial models that can improve access to credit for FPCs. Explore the potential of microfinance, cooperative banking, and fintech solutions tailored to the needs of FPCs in Northeast India. Comparative analysis of the financial performance of farmer's production companies is based on domestic and overseas aspects. Using advanced tools and a broader methodology to ascertain reliable and accurate outcomes and exploring the role of digital technologies, such as mobile apps and blockchain in improving the efficiency of FPC operations.

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Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
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