



Navigating Agricultural Risk: Evaluating Farmers' Perceptions and Barriers in the Adoption of PMFBY Scheme for Risk Management

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Abstract

The challenges faced by Indian farmers, exacerbated by systemic neglect and climate uncertainties, demand robust risk management strategies. This study investigates farmers' awareness and perceptions of the Pradhan Mantri Fasal Bima Yojana (PMFBY), a flagship agricultural insurance scheme introduced to mitigate these challenges. The methodology combines a comprehensive literature review and secondary data analysis, drawing insights from government reports and scholarly databases. Findings reveal a significant disparity in awareness across states, with farmers struggling to understand critical scheme features. Recommendations include enhancing communication strategies and leveraging technology for better claim settlements. By addressing these gaps, the PMFBY can better serve its primary stakeholders the farmers.



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Introduction

Agriculture has historically served as the bedrock of India's socio-economic framework, sustaining livelihoods for more than half the population and contributing significantly to the national GDP.¹ Agriculture accounts for 17% of India's GDP while

supporting 53% of its populace. Despite its pivotal role, the sector is fraught with risks, including erratic monsoons, depleting groundwater levels, soil degradation, and fluctuating market prices.² These risks not only endanger farmers' incomes but also threaten national food security.³ India's ranking of

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94th among 107 nations in the 2020 Global Hunger Index (GHI) highlights the severe vulnerabilities tied to agricultural underperformance.⁴ Additionally,⁵ point out that poor infrastructure and limited access to financial services exacerbate the plight of farmers.

Indian agriculture's dependency on monsoons exacerbates these challenges. Nearly 60% of the country's agricultural land relies on rain-fed irrigation, making it particularly susceptible to climate variability.⁶ As a result, crop failures due to droughts, floods, and unseasonal rains are not uncommon, often driving farmers into cycles of debt and distress.⁷ Reports of farmer suicides due to mounting debt underscore the urgency for effective risk management interventions.⁸ The introduction of agricultural insurance schemes, therefore, becomes imperative to mitigate these risks and safeguard farmers' livelihoods.⁹

The Indian government has attempted to address these challenges through various initiatives, the most notable being the Pradhan Mantri Fasal Bima Yojana (PMFBY). Launched on February 18, 2016, PMFBY aims to provide comprehensive risk coverage against crop failure due to natural calamities, pests, and diseases.¹⁰ The scheme represents a paradigm shift in agricultural insurance, offering a uniform premium structure for farmers across India—2% for Kharif crops, 1.5% for Rabi crops, and 5% for commercial and horticultural crops—with the balance premium subsidized by the government.¹¹ By ensuring affordability and accessibility, PMFBY seeks to stabilize farmers' incomes, encourage investment in agriculture, and promote the adoption of modern farming practices.¹²

However, the success of any policy initiative depends on its effective implementation and the extent to which it addresses the needs of its beneficiaries. Despite its ambitious objectives, PMFBY has faced criticism for implementation challenges. Key concerns include low awareness among farmers, delayed claim settlements, and lack of transparency in loss assessment processes.¹³ These issues have led to dissatisfaction among farmers, many of whom perceive the scheme as ineffective in addressing their concerns.¹⁴ Beginning with the 2020 kharif season, even loanee farmers may no longer participate in the program.¹⁵

Awareness is a critical determinant of the scheme's adoption and success. Studies have revealed significant disparities in farmers' understanding of PMFBY's provisions. While some farmers are aware of basic features like premium rates and coverage, many remain unaware of critical aspects such as indemnity levels, claim filing procedures, and timelines for claim settlement.¹⁶ This lack of awareness not only limits the scheme's reach but also undermines its credibility.

Another significant barrier is the procedural complexity associated with PMFBY. The reliance on crop-cutting experiments (CCEs) for yield assessment has been a contentious issue. While CCEs are intended to ensure accurate loss estimation, their implementation has been marred by inconsistencies and delays. Farmers often find the process opaque and cumbersome, further eroding their trust in the scheme.¹⁷ Additionally, the integration of technology, such as remote sensing and drones, in loss assessment remains limited, despite its potential to enhance efficiency and transparency.¹⁸

The financial sustainability of PMFBY has also been a subject of debate. The high claim-to-premium ratio in some states has raised concerns among insurance companies, leading to their withdrawal from the scheme in certain regions.¹⁹ This has disrupted the scheme's continuity and created uncertainty among farmers. Furthermore, the optional participation introduced in 2020, even for loanee farmers, has led to a decline in enrollment, particularly among non-loanee farmers who are not mandated to participate.²⁰

Recognizing these challenges, the government has introduced several reforms to enhance the scheme's effectiveness. These include the use of mobile apps for real-time monitoring, the establishment of grievance redressal mechanisms, and increased emphasis on awareness campaigns.²¹ Despite these efforts, gaps persist, necessitating a deeper understanding of the barriers to adoption and the measures required to address them.

This paper seeks to explore the implementation of PMFBY, focusing on farmers' awareness levels and the barriers hindering its adoption. By analyzing

these factors, the study aims to provide actionable insights for policymakers and stakeholders to improve the scheme's reach and impact. The findings of this study are particularly relevant in the context of India's broader agricultural policy framework, which emphasizes sustainability, resilience, and farmer welfare.

In the subsequent sections, the paper discusses the objectives of the study, the methodology employed, and the key findings related to farmers' awareness and barriers to adoption. It concludes with recommendations for improving the implementation of PMFBY, highlighting the need for targeted interventions to make the scheme more inclusive and effective. Through this analysis, the paper contributes to the ongoing discourse on agricultural risk management in India, offering valuable perspectives on the role of insurance schemes in fostering agricultural sustainability and resilience.

Objectives

- To study the awareness of farmers regarding the PMFBY scheme.
- To identify barriers to the scheme's effective adoption and propose actionable solutions.

Methodology

This study employs a mixed-methods approach, combining a comprehensive review of the literature with secondary data analysis. The methodology is structured to evaluate farmers' perceptions of the Pradhan Mantri Fasal Bima Yojana (PMFBY) and identify barriers to its adoption.

Identification of Articles

To build a robust understanding of the PMFBY scheme and its implementation challenges, the study followed a systematic review process.

Database Selection

Articles were sourced from prominent academic and governmental databases, including

- Scopus
- Web of Science
- PubMed
- JSTOR
- Google Scholar
- Government publications and reports (e.g., Ministry of Agriculture, NITI Aayog)

Search Strategy

A combination of keywords and Boolean operators was used to ensure comprehensive retrieval of relevant articles. The key terms included

- "Pradhan Mantri Fasal Bima Yojana"
- "PMFBY awareness"
- "agricultural insurance India"
- "crop failure risk management"
- "farmer perceptions and PMFBY"
- "challenges in agricultural insurance"

Boolean search queries such as ("PMFBY" OR "crop insurance") AND ("awareness" OR "adoption barriers") were applied across multiple databases.

Inclusion and Exclusion Criteria

Inclusion

Articles published in peer-reviewed journals, reports from credible institutions, and studies focusing on India between 2015 and 2023.

Exclusion

Studies that did not focus on agricultural insurance or lacked empirical data.

Screening Process

- A total of 600 articles were retrieved initially.
- Titles and abstracts were screened to remove duplicates and irrelevant articles, reducing the count to 250.
- Full-text screening narrowed the selection to 95 articles.
- Finally, 42 articles were deemed highly relevant and included in the review.

Secondary Data Analysis

Secondary data was obtained from

- Annual reports of PMFBY published by the Ministry of Agriculture.
- Agricultural Statistics at a Glance, Government of India.
- State-level PMFBY implementation reports.
- Farmer grievance records and survey data from local agencies.

Data Analysis

Literature Synthesis

The articles were analyzed to extract themes related to awareness levels, implementation barriers, and proposed solutions. Thematic coding was employed

to categorize findings into key areas such as procedural challenges, technological integration, and communication gaps.

Quantitative Analysis

Secondary data was analyzed using statistical tools. Key indicators included:

- Enrollment rates (loanee vs. non-loanee farmers).
- Premium collection and claim settlement ratios.
- Variability in participation across states and crops.

Results & Discussions

Challenges in Insurance Innovation and Awareness

The primary challenge faced by insurance providers is the continuous innovation of products that align with customer needs while adapting to changes in policyholder behavior, government interventions, competitive landscapes, distribution networks, technological advancements, service quality, and customer relationship management. The success of any insurance enterprise largely depends on raising awareness about insurance products. The Pradhan Mantri Fasal Bima Yojana (PMFBY) has led to large-scale marketing efforts to address these challenges effectively.

Factors Influencing Loanee Farmers' Awareness of PMFBY

Loanee farmers' awareness of the PMFBY scheme can be attributed to several key factors, which explain a significant portion of the variance in their understanding

Risk Coverage (22.02%)

The primary factor influencing awareness is the risk coverage, particularly concerning yield loss.

Sum Insured (17.08%)

The second factor is the relationship between the sum insured and the threshold yield or the scale of finance, whichever is higher.

Use of Technology (7.75%)

The third factor is the incorporation of technology in crop-cutting experiments.

Uniform Seasonality (5.14%)

This factor emphasizes the uniformity in seasonality and the cut-off date for both loanee and non-loanee farmers.

Subsidy in Premium (4.76%)

The fifth factor is the subsidy provided on the premium.

Coverage for Localized Calamities (4.43%)

The sixth factor focuses on insurance coverage for localized calamities.

Eligibility Based on Insurable Interest (4.23%)

The final factor is eligibility for insurance based on the insurable interest in the crop.

Together, these factors account for 65.41% of the variance in loanee farmers' awareness.²²

Awareness Levels Between Loanee and Non-Loanee Farmers

Non-loanee farmers have shown greater awareness than loanee farmers regarding the PMFBY scheme. Using Garrett ranking, the study identifies key obstacles.

Loanee Farmers

The delay in settling claims is the most significant challenge.

Non-Loanee Farmers

The primary obstacle cited is ignorance of the scheme.²³

Awareness of Program Features

Most farmers are aware that natural disasters such as lightning, storms, cyclones, floods, and droughts are covered under the PMFBY scheme. They are also aware that the scheme aims to improve productivity through advanced technology and that crop loans through the Kisan Credit Card are covered under compulsory insurance. Coverage extends to Kharif, Rabi, and Annual Horticulture Crops.²⁴

However, over 64% of respondents were unaware of the increased benefits for small farmers and the subsidy structure under the PMFBY scheme. Interestingly, 87% of respondents believed that agricultural development plans were performing well, while only 13% felt the program's performance was inadequate.

Satisfaction with Other Agricultural Programs

Regarding the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), 72% of participants expressed satisfaction with its performance. Additionally, around half of the respondents found agricultural mechanization efforts for in-situ crop residue management effective. Two-thirds were aware of the initiative, and 62% found custom hiring centers beneficial for crop residue management.²⁵

Awareness of Crops Covered and Premium Information

A large portion of farmers (86%) were aware of the crops covered by PMFBY, and 72% were familiar with both the e-NAM facility and crop insurance premiums.²⁶

General Awareness and Gaps

The study found that almost 70% of farmers exhibited awareness regarding the general features and premium-related information of PMFBY, thanks to mandatory recommendations for farmers obtaining loans. However, there were notable gaps in awareness concerning the following aspects.

Prevented Sowing, Committee Assessments, and Localized Calamities

Awareness ranged from 1.66% to 5.00% for these critical features.

Claims Processing

Farmers showed lower awareness about claim approval, payment timelines, and data submission deadlines.²⁷

Perception of Publicity Efforts

A significant number of farmers, particularly those in Andhra Pradesh, perceive that the publicity efforts for PMFBY have not been sufficient. Farmers with lower literacy levels have reported difficulties in accessing and understanding information related to PMFBY. Furthermore, both government and private

insurance providers show limited interest in ensuring comprehensive coverage for all farmers.²⁸

Assessment of Awareness Using Likert Scale

The study used a three-point Likert scale to assess farmers' awareness, with scores ranging from no awareness (1) to full awareness (3). The mean scores for various aspects of PMFBY awareness were as follows.

Premium Rate for Crop Insurance

Highest mean score (2.05), indicating relatively higher awareness.

Agrarian Risk (1.92)

Awareness of compensation provided by insurance companies for crop losses.

Crop Insurance Features, Final Date for Availing Insurance, Loss Evaluation Process

Lower mean scores (ranging from 1.70 to 1.79), indicating partial awareness or low clarity on these aspects.²⁹

Literature Insights on Awareness Gaps

The literature suggests that awareness levels of PMFBY vary significantly across states, with general knowledge being prevalent but a lack of clarity on specific aspects. Key areas where farmers lack detailed understanding include.

Loss Evaluation Process

Farmers are unaware of the intricacies of how losses are assessed.

Indemnity Coverage and Claims Timelines

Many farmers lack knowledge about the extent of coverage for indemnity, committee assessments, and the submission deadlines for yield data.

To bridge these gaps, targeted and detailed awareness campaigns are essential, providing farmers with a comprehensive understanding of the scheme's features and processes.

Barriers to Adoption

Structural and Procedural Challenges

Delayed Claim Settlements

Loanee farmers report significant delays in claim processing, undermining trust in the scheme.²³

Insufficient Publicity Efforts

Farmers, especially those with limited literacy, struggle to access and interpret scheme information.²⁸

Technology and Infrastructure Deficits

While crop-cutting experiments and other technological tools are integral to PMFBY's framework, their uneven implementation hampers effectiveness.

Perception and Knowledge Gaps**Partial Awareness**

Farmers exhibit only partial understanding of premium rates (mean score: 2.05) and agrarian risks (mean score: 1.92).²⁹

State-wise Disparities

Awareness levels and participation rates vary significantly across states, reflecting disparities in outreach and implementation efforts.

Recommendations for Improvement**Enhanced Communication Strategies**

Focused campaigns, leveraging vernacular media and community-based interactions, can address awareness gaps.

Technology-Driven Solutions

Introducing mobile apps for real-time updates on claims and premium payments can streamline processes and boost confidence.

Stakeholder Training

Capacity-building initiatives for government officials and insurance providers can ensure more consistent and empathetic implementation.

Simplification of Processes

Streamlining claim settlement procedures and reducing paperwork can encourage greater farmer participation.

Conclusion

An analysis of farmers' knowledge and opinions regarding the Pradhan Mantri Fasal Bima Yojana (PMFBY) program sheds important light on agricultural risk management. A road map for focused communication tactics is provided by the characteristics that were found to impact loanee farmers' comprehension. These factors include risk coverage, sum insured, technological integration,

seasonality, subsidies, calamity coverage, and eligibility. Even while non-loanee farmers are typically more aware, issues like insured farmers' claim settlement delays and non-insured farmers' ignorance highlight the need for improved outreach and simpler procedures.

The paper highlights the significance of accessible communication channels by revealing a considerable gap in publicity effectiveness, particularly among farmers with lower literacy levels. Although there is a respectable amount of knowledge about covered crops and their ability to withstand natural disasters, a significant number of farmers still do not know important information about things like subsidies and small farmer benefits. The results highlight how financial lending and insurance participation are intertwined, especially for farmers who receive loans.

The study emphasizes the need for farmers to have a comprehensive grasp of the PMFBY system that goes beyond only the loan-related requirements and includes other important components. The mean scores indicate that farmers have a partial awareness, which points to the necessity of focused educational efforts. Since agriculture continues to be a crucial industry for economies, closing these knowledge gaps and resolving issues will greatly aid in the successful implementation of agricultural insurance programs like PMFBY, strengthening the farming community's resilience and sustainability.

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Conflict of Interest

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Data Availability Statement

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Ethics Statement

This research did not involve human participants, animal subjects, or any material that requires ethical approval.

All aspects of the research were independently carried out by Bijin Philip under the guidance of Dr. Suresh Ganesan

Author Contributions

The author conceptualized the study, collected and analyzed the data, and prepared the manuscript.

Reference

- Gulati A, Terway P, Hussain S. Crop Insurance in India: Key Issues and Way Forward. Think Asia. Published 2018. Available at: <https://www.think-asia.org/handle/11540/8052>. Accessed November 15, 2023.
- Ramasamy C. Agricultural risk management in India: issues and challenges. *Indian J Agric Econ*. 2015;47(1):28-38.
- Kaur M, Singh P. Awareness and adoption of PMFBY in Punjab. *Agric Econ Res Rev*. 2019;32(1):89-101.
- Global Hunger Index. India: Making Food a Right for All. Global Hunger Index. Published 2020. Available at: <https://www.globalhungerindex.org/case-studies/2016-india.html>. Accessed November 15, 2023.
- Raj S, Kumar M, Singh V. Impact of poor infrastructure on agricultural risk. *Agric Econ Res Rev*. 2020;33(1):90-100.
- Singh A, Mishra P. Climate change and agricultural dependency: The Indian context. *J Environ Econ*. 2021;22(1):15-27.
- Chand R, Sharma R, Kumar D. Agricultural distress in India: Causes and consequences. *Econ Polit Wkly*. 2017;52(7):47-56.
- Nair R. The role of agriculture in rural suicides in India. *Indian J Rural Health*. 2018;29(2):134-142.
- Mishra S, Mehta M. The role of agricultural insurance in mitigating farmers' risks. *Agric Econ Res Rev*. 2022;41(1):102-113.
- Agarwal R. PMFBY: A critical analysis of its implementation and future. *Agric Policy Rev*. 2016.
- Sharma R. The effectiveness of PMFBY in mitigating agricultural risk. *J Rural Dev*. 2020;39(4):112-124.
- Verma D. Adoption of agricultural insurance schemes in India: An empirical analysis. *Indian J Agric Econ*. 2021;53(2):88-99.
- Kaur M, Singh P. Awareness and adoption of PMFBY in Punjab. *Agric Econ Res Rev*. 2019;32(1):89-101.
- Basu K. Farmers' perceptions of agricultural insurance schemes: Evidence from India. *Agric Econ*. 2021;48(2):211-223.
- Tiwari R, Chand K, Anjum B. Crop insurance in India: A review of Pradhan Mantri Fasal Bima Yojana (PMFBY). *FIIB Bus Rev*. 2020;9:249-255. doi:10.1177/2319714520958485.
- Choudhury A. Awareness and knowledge levels of PMFBY among farmers: A study in rural India. *Int J Agric Policy*. 2020;9(3):128-138.
- Jha S. Procedural complexities in PMFBY: An analysis of crop-cutting experiments and their impact on farmers. *Agric Policy J*. 2021;29(1):85-94.
- Shukla S, Patel R. The role of technology in enhancing agricultural insurance schemes: A review. *Agric Innov J*. 2020;16(2):70-82.
- Raghavan S, Ramesh R, Pillai S. Financial sustainability of PMFBY: A critical assessment. *Indian Insurance Rev*. 2022;12(2):75-86.
- Kumar P, Soni S. Challenges and opportunities in the implementation of PMFBY in India. *Indian J Insurance Risk Manag*. 2020;10(3):45-57.
- Prakash M. Reforms in PMFBY: A step towards greater inclusivity. *Indian J Agric Insurance*. 2021;17(3):54-63.
- Santhi P, Sangeetha S. Prediction of farmers' access to Pradhan Mantri Fasal Bima Yojana (PMFBY) scheme using discriminant analysis. *SDMIMD J Manag*. 2020;11(2).
- Kavitha V, Nandhini SU. An analysis on farmer's awareness and perception towards Pradhan Mantri Fasal Bima Yojana scheme in

- Coimbatore District of Tamil Nadu. *Int J Agric Stat Sci.* 2022;18(2).
24. Devi K, Gupta S. Awareness of farmers regarding Pradhan Mantri Fasal Bima Yojana. *Int J Home Sci.* 2020;6(3):340-343.
25. Shehrawat A, Sharma N, Shehrawat P, Bhakar S. Awareness and performance of agricultural development schemes in the context of farmers' welfare in Haryana. *Econ Aff.* 2020;65(2):167-172.
26. Singh S, Bhakar S, Shehrawat PS. Farmers' awareness and performance about agriculture development schemes in Haryana. *Int J Agric Innov Res.* 2020;8(5):495-502.
27. Ghanghas BS. Awareness of Pradhan Mantri Fasal Bima Yojana among farmers of Haryana state. *J Pharmacogn Phytochem.* 2018;7(4):1912-1914.
28. Prasuna S. Barriers to effective communication and outreach in agricultural insurance schemes: a case study on PMFBY. *Int J Agric Res.* 2019;14(2):98-112.
29. Suneja P. Awareness and perceptions of farmers towards Pradhan Mantri Fasal Bima Yojana: an empirical study. *Agric Econ Res Rev.* 2022;35(1):55-70.