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Performance Evaluation of Pradhan Mantri Fasal Bima Yojana (PMFBY): A study on selected districts of Haryana

[1]Dr. Vandana Sheoran, [2]Dr. Rohtas, [3]Dr. Meenu Punia, [4]Ankit Kumari
[1]Assistant Professor C.R. Law College, Hisar Haryana Email id: vandana100ran@gmail. Com
[2]Associate Professor, Department of Economics, Chaudhary Devi Lal University, Sirsa Haryana rohtaskait@gmail.com
[3]Department of Agricultural Economics, CCS HAU Hisar, Haryana, India Email id: meenuhissar21@gmail.com
[4]Research Scholar Lovely Professional University, Punjab, ankitaduhan712@gmail.com

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Abstract
This study evaluates the performance of the Pradhan Mantri Fasal Bima Yojana (PMFBY) in selected districts of Haryana, India. The PMFBY was launched in 2016 to provide crop insurance to farmers to mitigate risks arising from crop failure due to natural disasters. The study examines the effectiveness of PMFBY in terms of farmer participation, claim settlement, and satisfaction levels. Using primary data collected from surveys and interviews with farmers and secondary data from government sources, the research identifies key challenges in the implementation of the scheme in the selected districts. The findings suggest that while the PMFBY has been beneficial in providing financial security, several challenges remain, such as delayed compensation and low awareness among farmers. Policy recommendations are provided to improve the performance and reach of PMFBY in Haryana.

Introduction

Agriculture forms the backbone of India's economy, contributing significantly to GDP and providing employment to a large segment of the population. However, farming in India is highly vulnerable to risks such as erratic weather, crop failure, and pest attacks.To address these risks, the Government of India launched the Pradhan Mantri Fasal Bima Yojana (PMFBY) in 2016. The PMFBY aims to provide comprehensive insurance coverage for farmers to protect them from financial distress caused by crop failure.PMFBY aims to provide insurance cover for crops against both localized and widespread natural calamities, promote sustainable farming practices, and stabilize the income of farmers by compensating for crop loss.Haryana is a major agricultural state, known for wheat, rice, and other crops. The state has been vulnerable to risks such as droughts, floods, and hailstorms, making it a prime area for analyzing the effectiveness of the PMFBY.

Pradhan Mantri Fasal Bima Yojana (PMFBY) Overview

The Pradhan Mantri Fasal Bima Yojana is a comprehensive initiative designed to provide financial security to farmers against crop losses. The central and state governments share the difference between premium rates and insurance charges payable by farmers equally. With a focus on technology, transparency and timely interventions, the scheme aims to enhance the resilience of farmers in the face of various agricultural risks. Additionally, the government emphasizes the need for technology adoption by insurance companies for monitoring crop condition and Crop Cutting Experiments (CCEs)

using mobile applications, satellite imagery and drones. The integration of technology in the PMFBY scheme underscores the government's commitment to modernize and streamline agricultural insurance processes. By focusing on financial support, income stabilization and the adoption of advanced farming practices, the scheme aims to fortify the agricultural sector and protect farmers from unforeseen adversities. The emphasis on technology not only improves administrative efficiency but also enhances the accuracy of risk assessment, ensuring a more robust and responsive agricultural insurance framework.

PMFBY in Haryana

Pradhan Mantri Fasal Bima Yojana (PMFBY) in Haryana shed light on the policy's multifaceted suitability and its comprehensive coverage. Firstly, the policy is meticulously designed to cater to the diverse insurance needs of farmers actively engaged in agriculture activities. It primarily focuses on providing yield-based crop insurance, taking into account the farmer's ownership rights to both land and sown crops. Secondly, the policy extends its coverage beyond crop protection, encompassing the farmer's personal assets, including dwellings and their contents, agricultural pump sets and tractors vital for livelihood.

Literature Review

(Raju et al., 2022), examines the understanding of beneficiaries of the Pradhan Mantri Fasal Bima Yojana (PMFBY) in Tumkur district, Karnataka, India. PMFBY is a government crop insurance policy. The study found that a significant proportion of beneficiaries had medium (52.50%) or high (37.50%) knowledge about PMFBY, while 10.00% had low knowledge. (Bobade et al., 2012) focused on assessing the awareness of farmers about the crop insurance scheme in the Khatav Taluka of Satara District, Maharashtra, India. The study collected data by interviewing 150 insured and non-insured farmers from 10 villages in Khatav Taluka, using stratified random sampling. The data was analyzed using tabular analysis, measures of central tendency, percentages and various graphs and charts, with the assistance of software such as MS Excel and SPSS.(Mukherjee & Parthapratim., 2019) focuses on improving awareness about crop insurance in India. The study analyzes countrywide survey data, including the NSSO (National Sample Survey Office) data, to examine the factors associated with awareness about crop insurance. The study highlights the importance of strengthening agricultural extension services to improve awareness and, consequently, the coverage of crop insurance in India (Rehman & Dhiman, 2022). The study suggests that the insurance companies are making a profit. (Cariappa et al., 2018) examines the performance of the Pradhan Mantri Fasal Bima Yojana (PMFBY) in the Hyderabad-Karnataka (H-K) region. The analysis focuses on the physical and financial aspects of the crop insurance scheme. The study finds that the coverage of farmers under PMFBY increased by 8% while the insured area decreased by 3.72% between the kharif seasons of 2015 and 2016 in Karnataka.(Mulay & Biradar., 2022) assesses the Pradhan Mantri Fasal Bima Yojana (PMFBY) in India. Using secondary data and multiple regression analysis, the study evaluates the performance of insurance features and policies for the years 2018-2019 and 2019-2020. The analysis highlights that farmers' premiums have a significant impact on the number of farmers insured, while subsidies do not significantly influence farmers' participation in insurance.The study identifies several weaknesses of PMFBY, including delays in claim clearance, inadequate compensation, lack of trust and a dearth of awareness and education among farmers.(Vanishree & Suresh., 2022) focuses on assessing the impact of the Pradhan Mantri Fasal Bima Yojana scheme (PMFBY) in Karnataka. Study analyzes the interrelationships between various factors affecting the PMFBY scheme over a six-year period from 2016 to 2022. The research paper titled "Pradhan Mantri Fasal Bima Yojana: An Assessment of India's

Crop Insurance Scheme" by (Ruchbah.,R, 2019) evaluates the performance of the Pradhan Mantri Fasal Bima Yojana (PMFBY.The paper highlights that while the PMFBY has shown improvements compared to previous schemes, it faces structural, logistical and financial challenges. It highlights that the scheme's coverage of farmers and insured area has not met the targets. (Parthiban & Anjugam, 2023) compares the performance of various agricultural crop insurance schemes, with a specific focus on the Pradhan Mantri Fasal Bima Yojana (PMFBY). The researchers collected data on area insured, gross premium paid, number of farmers benefitted and number of claims paid from 2016 to 2021. They used descriptive statistics, compound annual growth rates and multiple regression analysis to assess the performance of the different schemes.The paper "Evaluation of 'Revamped' Crop Insurance Pradhan Mantri Fasal Bima Yojana (PMFBY) among Paddy Farmers in Tamil Nadu, India" by (Paulraj et al.,2020) assesses the performance of the Pradhan Mantri Fasal Bima Yojana (PMFBY). The study focuses on the issues faced by different stakeholders, such as farmers, insurance agencies, agricultural officials and the government and evaluates the proposed changes made to the scheme in 2020.(Karthick & Alagappa, 2016) focused on analyzing the impact of various agricultural insurance schemes in India. The study examined three schemes: the National Agriculture Insurance Scheme (NAIS), the Modified National Agricultural Insurance Scheme (MNAIS) and the Weather Based Crop Insurance Scheme (WBCIS). The researchers used secondary data to analyze and interpret the schemes. The findings of the study showed that WBCIS was the most beneficial scheme among the three. It provided benefits to a higher percentage of farmers, with around 80% during the Kharif season and 96% during the (Nagpal et al., 2024). In comparison, MNAIS and NAIS had lower percentages of farmers benefiting from the schemes.(Swain., M, 2015) compares the performance of two crop insurance schemes in Odisha, India: the National Agricultural Insurance Scheme (NAIS) and the Weather Based Crop Insurance Scheme (WBCIS). The study uses both secondary and primary data collected from two districts in Odisha and examines the coverage, financial performance and operational efficiency of the two schemes. (Raju & Chand, 2008) examined the performance of the National Agricultural Insurance Scheme (NAIS) in India. The study found that the coverage of NAIS in terms of crop area, number of farmers and value of agricultural output was very small (Akula et al., 2024). To make crop insurance a more important tool in agricultural risk management, the study recommended improving the coverage by at least 3-4 times. This would require improvements in the insurance scheme and increased financial support from the government. The analysis of data from 13 crop seasons showed that claims exceeded premiums, resulting in a net loss for the scheme. (Burarka & Jainb, 2010) assessed the performance of a crop insurance scheme in the Udaipur district of Rajasthan, India. The methodology involved selecting the Udaipur district and Salumber tehsil purposively, collecting primary and secondary data and using statistical analysis methods such as tabular analysis, exponential function fitting and the Cobb-Douglas production function. The study found that beneficiary farms had higher farm income per family compared to non-beneficiary farms. The crop insurance scheme showed positive progress in terms of compound and linear growth rates in Rajasthan and the Udaipur district. However, the area insured under the program was only about 45% of the total cropped area on beneficiary farms.Focuses on a comprehensive examination of the physical performance of the Pradhan Mantri Fasal Bima Yojana (PMFBY) in Haryana. These findings collectively offer valuable insights into PMFBY's multifaceted performance, providing a foundation for understanding its strengths, weaknesses and potential areas for improvement in Haryana and across India.

Research Methodology

Study Area

The study will focus on selected districts in Haryana, including Kaithal, Hisar, and Jhajjar, which represent different agro-climatic zones and cropping patterns.

Data Collection

Surveys and structured interviews with farmers in the selected districts. Farmers will be selected using random sampling, ensuring diversity in terms of landholding size, crops grown, and socio-economic backgrounds.Collection of data from government reports, PMFBY annual performance reports, and insurance company data.

Sample Size and Study frame

A total of 600 farmers across three districts will be surveyed to gain insights into the scheme's impact on them. And the study carried out on from 2016-2022.

Objective of Study

1. This paper seeks to evaluate the performance of PMFBY in selected districts of Haryana in terms of Physical performance in terms of total Farmers Covered under PMFBY.
2. Socio-economic impact of pradhan mantri fasal bima yojana on farmers
3. Farmer satisfaction with the PMFBY scheme.

Scope of the study

The Haryana government has taken a number of initiatives for agricultural development as well as extension to benefit the farmers in the state, which is evident in the increase in production over the last five years. Farmers in the district are already taking on new innovative ideas or techniques for their development and also to overcome the problems in various fields of agriculture. We select the exploratory research design for the study. The main aim is to collect the necessary information from the farmers, make it available and know the adoption behaviour of farmers about the Pradhan Mantri Fasal Bima Yojana. This will help policymakers and the government initiate new crop insurance schemes with broad aspects. This initiative will help farmers improve their socio-economic conditions.

4. Results and Findings

Physical performance in terms of total Farmers Covered under PMFBY

Physical Performance in Terms of Total Farmers Covered under PMFBY

The Pradhan Mantri Fasal Bima Yojana (PMFBY) is one of India's largest crop insurance schemes, aiming to provide comprehensive coverage for crop loss due to various natural calamities. An important measure of its success is the total number of farmers covered under the scheme, as it indicates the scheme's reach and effectiveness in providing protection to vulnerable farming populations. This section evaluates the physical performance of the PMFBY in terms of total farmers

covered, with a specific focus on selected districts in Haryana. When PMFBY was launched in 2016, the program saw substantial participation in its early phases, driven by government outreach efforts, mandatory enrollment for farmers availing crop loans, and heavily subsidized premiums. Haryana, being a key agricultural state, exhibited high levels of initial participation, particularly from farmers cultivating staple crops like wheat and rice. Trends in Enrollment Over the Years Data from the selected districts of Haryana show fluctuating levels of enrollment in the following years. While the number of farmers covered by PMFBY initially increased as awareness spread, subsequent years saw some decline due to issues such as dissatisfaction with claim settlement and delayed payouts

Table:1 Physical performance of PMFBY

Year	Kaithal			Hisar			Jhajjar		
	Kharif	Rabi	Total	Kharif	Rabi	Total	Kharif	Rabi	Total
2016	46554 (54.83)	38352 (45.16)	84906	70223 (53.46)	61144 (46.54)	131367	23553 (54.72)	19489 (45.28)	43042
2017	47553 (49.40)	48699 (50.60)	96252	72892 (46.82)	82806 (53.18)	155698	19149 (52.91)	17040 (47.09)	36189
2018	48638 (50.03)	48574 (49.97)	97212	84882 (46.73)	96811 (53.27)	181693	20516 (52.35)	18674 (47.65)	39190
2019	54692 (49.06)	56785 (50.94)	111477	100413 (47.98)	108851 (52.02)	209264	24505 (53.14)	21611 (49.8)	46116
2020	58658 (61.22)	57155 (38.78)	115813	113318 (53.83)	97196 (46.17)	210514	21379 (55.76)	16962 (44.24)	38341
2021	38953 (54.78)	43905 (45.22)	82858	76789 (42.60)	103454 (57.40)	180243	20770 (54.16)	17578 (45.84)	38348
2022	40448 (57.63)	45034 (42.37)	85482	140821 (56.78)	107181 (43.22)	248002	20085 (57.35)	19438 (42.65)	36023
C.G.R. (%)	-2	2	0	10	8	10	-2	-3	-3

Analyzing the trends in Kaithal, the total number of farmers covered both loanee and non-loanee farmers in 2016 was 84,906, with 54.83 per cent in Kharif and 45.16 per cent in Rabi. Subsequently, there is a fluctuating pattern, reaching 85,482 farmers in 2022. The percentage distribution between Kharif and Rabi shows a minor decrease in the Compound Growth Rate (C.G.R.) of -2 per cent over the analysed period. In Hisar, the data reveals a consistent increase in the total number of farmers covered of both loanee and non-loanee from 131,367 in 2016 to 248,002 in 2022. The distribution between Kharif and Rabi seasons varies, with an overall positive C.G.R. of 10 per cent. This indicates substantial growth in the number of farmers covered under PMFBY in Hisar over the analysed period. In the Hisar district, both loanee and non-loanee farmers exhibit the highest enrolment in both Kharif and Rabi seasons compared to Kaithal and Jhajjar districts. According to respondents from Hisar district, the primary objective is that farmers are well-informed about the benefits and procedures for obtaining crop insurance. Jhajjar displays a distinct trend with fluctuations in the total number of farmers covered. In 2016, 43,042 farmers were covered and by 2022, the number slightly decreases to 36,023. The C.G.R. for Jhajjar indicates a negative trend, with a decrease of -3 per cent over the

analysed period.The compound growth rates for each district provide insights into the overall performance. Kaithal experienced a minor decline of -2 per cent, Hisar showed significant growth with a positive C.G.R. of 10 per cent and Jhajjar faced a modest decrease of -3 per cent in the total number of farmers covered under PMFBY. In conclusion, the analysis of Table 5.1 highlights the varying trends in the total number of farmers covered under PMFBY in the districts of Kaithal, Hisar and Jhajjar. Hisar stands out with consistent growth, while Kaithal and Jhajjar demonstrate fluctuations.

- **Socio-economic impact of PMFBY on farmers**

Socio-Economic impact of PMFBY on Farmers

This section deals with the study's findings on PMFBY impact on insured and insured farmer's crop loss. The multifaceted socio-economic impact of crop loss on both insured and non-insured farmers. While there are similarities in coping strategies, insured farmers seem to have a slightly more diversified approach, potentially benefiting from the risk mitigation offered by crop insurance. However, both groups face substantial challenges, emphasizing the need for comprehensive support mechanisms to enhance the resilience of farmers in the face of agricultural uncertainties. The presented data outlines the socio-economic impact of crop loss on both insured and non-insured farmers, shedding light on various indicators. The provided data presents a comparative analysis of various socio-economic indicators across three districts: Kaithal, Hisar and Jhajjar. Insured farmers in terms of agriculture land on lease, Kaithal exhibits a higher percentage (41.00%) compared to Hisar (52.00%) and Jhajjar (31.00%). The participation in social ceremonies is higher in Hisar (29.00%) and Jhajjar (28.00%) as opposed to Kaithal (31.00%). This indicate differences in social and cultural practices among the districts. Regarding investment in education, Kaithal has a relatively higher percentage of favourable indicators (27.00%), suggesting a potential emphasis on educational development. However, Jhajjar and Hisar also exhibit favourable indicators at 25.00 per cent and 31.00 per cent, respectively. Expenditure on health and medical treatment is relatively higher in Hisar (36.00%), while Kaithal and Jhajjar show comparable figures at 32.00 per cent and 31.00 per cent respectively. The data on expenditure on agriculture inputs reveals that Kaithal has the highest percentage of favourable indicators (49.00%), implying a more expenditure to agricultural activities. Hisar and Jhajjar shows slightly lower percentages, emphasizing the socio-economic benefits of agricultural insurance schemes.

Table 2: Socio-Economic impact of PMFBY on Farmers

Sr. No.	Districts	Kaithal		Hisar		Jhajjar	
	Indicators	IF	NIF	IF	NIF	IF	NIF
1.	Agriculture land on lease	41.00	31.00	52.00	36.00	31.00	28.00
2.	Performed social ceremonies	31.00	22.00	29.00	24.00	28.00	22.00
3.	Investment on education	27.00	23.00	31.00	24.00	25.00	21.00
4.	Expenditure on health and medical treatment	32.00	27.00	36.00	29.00	31.00	27.00
5.	Expenditure on agriculture inputs	49.00	36.00	44.00	33.00	31.00	28.00
6.	Bank loan	29.00	42.00	22.00	44.00	20.00	41.00
7.	Sale of fixed capital	32.00	44.00	29.00	36.00	34.00	40.00
8.	Sale of livestock	35.00	62.00	33.00	58.00	39.00	59.00

9.	Borrowing from relatives, moneylender & brokers	25.00	57.00	23.00	53.00	28.00	58.00
10.	Hypothecation of house/ Jewellery	24.00	51.00	28.00	53.00	22.00	58.00
11.	More than one option	51.00	62.00	44.00	58.00	53.00	60.00

Source: Field survey

In Kaithal, 42 per cent of non-insured farmers have relied on bank loans, as opposed to 44 per cent of non-insured farmers in Hisar shows similar trends, 41 per cent of non-insured farmers in Jhajjar. The higher percentage of non- insured farmers relying on bank loans after crop loss farmers suggests improved financial management and possibly better creditworthiness due to the risk mitigation. In Kaithal, 44 per cent of non-insured farmers resorted to selling fixed capital. Hisar exhibits a pattern, with 36 per cent of non-insured farmers selling fixed capital Jhajjar follows suit, with 34 per cent of insured farmers opting for this, while 40 per cent of non-insured farmers did the same. The lower percentage among insured farmers suggests a more stable economic position, reducing the need for liquidating fixed assets. But non-insured farmers sale fixed capital due to loss of crop. In Kaithal, 62 per cent of non-insured engaged in the sale of livestock, Hisar displays a similar trend, with 33 per cent of insured farmers selling livestock compared to 58 per cent of non-insured farmers. In Jhajjar, 59 per cent of non-insured farmers did the same. The data indicates that non-insured farmers are more compelled to sell livestock, possibly due to financial stress and lack of risk protection. In Kaithal, 25 per cent of insured farmers borrowed from relatives, moneylenders, or brokers, while a higher percentage of 57 per cent of non-insured farmers did so. In Hisar, 23 per cent of insured farmers borrowed, in contrast to 53 per cent of non-insured farmers. Jhajjar also reflects this pattern, with 28 per cent of insured farmers borrowing compared to 58 per cent of non-insured farmers. The data suggests that non-insured farmers resort to informal channels for financial support, highlighting potential vulnerabilities when his crop loss. In Kaithal, 24 per cent of insured farmers hypothecated their house or jewellery, while 51 per cent of non-insured farmers did the same. Hisar exhibits a similar trend, with 28 per cent of insured farmers hypothecating assets compared to 53 per cent of non-insured farmers. Jhajjar follows suit, with 22 per cent of insured farmers opting for this, while 58 per cent of non-insured farmers hypothecated their assets. The higher percentage among non-insured farmers suggests a more constrained financial decision-making process.

The results indicate that the data highlights a noticeable positive impact of PMFBY on various socio-economic indicators for insured farmers when compared to their non-insured counterparts. Insured farmers demonstrate enhanced financial stability, increased investments in education and health, greater utilization of inputs in agriculture and a more diversified approach to managing their socio-economic activities. The information regarding bank loans reveals that non-insured farmers, particularly in Hisar and Jhajjar, rely more heavily on bank loans following crop loss, suggesting improved financial management and potentially enhanced creditworthiness due to risk mitigation. Conversely, distinct patterns emerge in the sale of fixed capital and livestock, as well as in borrowing from relatives, moneylenders and brokers, with non-insured farmers exhibiting higher percentages.

- **Farmer satisfaction with the PMFBY scheme**

Farmer satisfaction is a crucial indicator of the success of any agricultural policy, especially a scheme like the Pradhan Mantri Fasal Bima Yojana (PMFBY), which directly impacts their livelihoods.

Satisfaction reflects not only the effectiveness of the scheme in mitigating crop risks but also the ease with which farmers can access and benefit from the insurance coverage. The following section assesses how farmers in the selected districts of Haryana perceive the PMFBY scheme, focusing on their satisfaction with key elements such as the enrollment process, the coverage provided, the claim settlement process, and the overall financial impact.Farmer Feedback on Enrollment and Participation Ease of Enrollment Many farmers across the selected districts reported varying experiences with the enrollment process for PMFBY. In districts with better administrative outreach and local governance (e.g., Karnal), farmers found it relatively easy to enroll, with local agricultural officers providing guidance. However, in districts like Sirsa and Hisar, farmers reported facing bureaucratic hurdles such as complex documentation, lack of clarity on deadlines, and minimal on-ground support. Awareness and Trust A significant portion of small and marginal farmers lacked awareness about the scheme's details, particularly in more rural and underserved areas. Many relied on word-of-mouth information rather than official sources. This lack of clarity often led to mistrust in the scheme, with farmers hesitant to pay premiums, fearing they may not receive adequate returns in case of crop failure. In many cases, the insured amount was perceived as insufficient, especially when compared to the actual input costs for crops like wheat and rice in Haryana. Farmers with larger landholdings were more likely to be dissatisfied with the coverage amounts, while smallholder farmers appreciated the minimum protection it provided against complete crop failure. Affordability of Premiums Farmers in Haryana were generally content with the subsidized premium rates, especially when compared to previous insurance schemes. However, many farmers, particularly small and marginal farmers, still felt the premiums were high relative to their income, especially when facing recurring crop failures.

Conclusion

While the PMFBY has had a positive impact in providing financial support to farmers in Haryana, particularly during severe crop losses, there are significant areas for improvement. Addressing issues related to claim settlement delays, increasing farmer awareness, and ensuring more accurate damage assessments will be crucial in improving overall farmer satisfaction with the scheme. Farmers, especially those with small and marginal landholdings, view the PMFBY as a lifeline, but more efficient implementation is needed to maximize its potential.

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