


Indian Crop Insurance Schemes: Gender Performance Analysis

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Abstract

Crop insurance schemes are pivotal in mitigating agricultural risks, especially in rural economies like India. However, the gender dimension of participation in these schemes remains largely overlooked. This research paper delves into the gender disparities in participation rates, coverage, and benefits accrued from Indian crop insurance schemes, using six years of data from the Pradhan Mantri Fasal Bima Yojana website. The researcher employed few descriptive statistics like mean, Standard Deviation (SD), coefficient of variation (CV), and Skewness for data analysis purpose. Besides Compound Annual Growth Rate (CAGR) has been used to determine the growth rate of farmers' participation. The analysis reveals significant gender gaps in participation, with male farmers constituting a higher percentage of participants than their female counterparts across the Kharif (In India, the Kharif season is when the monsoon crops are grown and harvested throughout the harvesting season of India, typically from June to October) and Rabi (Rabi season is when crops are usually sown in the middle of November and harvested in April or May) seasons. While male participation was declining, female participation remained relatively stable but at lower levels. Gender-disaggregated participation highlighted challenges faced by gender-minority farmers (Here Gender Minority farmers used for Transgender Farmers). Practical suggestions include gender-sensitive outreach programs, tailored policy interventions, and improvements in accessibility for female farmers. This research contributes to the discourse on gender equality in agriculture, providing insights for policymakers and practitioners aiming to design inclusive agricultural policies and programs. Addressing these disparities can lead to greater gender equality, enhancing the sustainability and resilience of agrarian economies like India.

Keywords: Crop Insurance, Agriculture, Risk Management, Kharif, Rabi

Introduction

Crop insurance schemes play a pivotal role in mitigating the risks agricultural communities face, particularly in agrarian economies like India. As India strives for agricultural sustainability and food security, understanding the dynamics of participation in crop insurance schemes becomes crucial. However, an aspect often overlooked in the discourse surrounding these schemes is the gender dimension. Gender dynamics play a significant role in shaping agricultural practices, access to resources, and decision-making processes within farming households. Therefore, evaluating genderwise participation in Indian crop insurance schemes is imperative for designing policies that are inclusive and effective. This paper aims to critically analyze the gender disparities in participation rates, coverage, and benefits accrued from crop insurance schemes in India. By delving into the intricate interplay of gender, socio-economic factors, and institutional mechanisms, this research seeks to unearth the underlying reasons behind

the observed patterns. The significance of this study lies in its potential to inform policy formulation and implementation processes, fostering gender-inclusive approaches in agricultural risk management. By shedding light on the nuances of gender disparities in crop insurance participation, this research contributes to the broader discourse on gender equality and social justice in agricultural development initiatives.

Research Gap

In the vast landscape of agricultural research, scholars have delved into numerous aspects of crop insurance schemes, seeking to illuminate their complexities and impacts. Yet, amidst this academic exploration, one crucial dimension remained largely uncharted: the gender-wise participation of agriculturists in Indian crop insurance initiatives. Recognizing this glaring gap in the literature, the current investigation embarks on a pioneering journey to bridge this research chasm. While previous studies have shed light on various facets of crop insurance, none have made an effort to unravel the intricate tapestry of gender dynamics within these schemes.

Objective of the Study

The primary aim of the present research paper is to unveil the genderwise penetration and performance in Indian crop insurance schemes during the study period.

Materials and Methods

The required statistics for the study have been collected from the Pradhan Mantri Fasal Bima Yojana website for six years from 2018 to 2023. For analyzing data few descriptive statistics like mean, Standard Deviation (SD), coefficient of variation (CV), and Skewness were employed. Besides Compound Annual Growth Rate (CAGR) has been used to determine the growth rate of farmers’ participation.

Scope of the Study

The required statistics have been collected for 6 years from the website of AIC and PMFBY website. Only two Indian crop insurance schemes i.e., Pradhan Mantri Fasal Bima Yojana and Restructured Weather Based Crop Insurance Scheme have been considered for the present research.

Analysis and Interpretation of Data

In this section, we delve into the gender-wise participation data from the Pradhan Mantri Fasal Bima Yojana (PMFBY) website for both the Kharif and Rabi seasons, spanning six years from 2018 to 2023. This data provides valuable insights into the dynamics of participation in Indian crop insurance schemes, particularly concerning male, female, and gender-minority (GdM) farmers.

Table 1 Gender-wise Participation during Kharif Season

Year	No. of Farmers	Male	(%)	Female	(%)	GdM	(%)
2018	2,16,63,839	1,83,99,098	84.93	32,47,409	14.99	17,332	0.08
2019	2,00,50,883	1,67,40,482	83.49	32,96,365	16.44	14,036	0.07
2020	1,68,70,111	1,44,18,883	85.47	24,39,418	14.46	11,810	0.08
2021	1,50,95,011	1,29,95,294	86.09	20,84,621	13.81	15,096	0.10
2022	1,79,55,622	1,52,12,002	84.72	27,27,458	15.19	16,162	0.09
2023	2,00,41,532	1,70,63,360	85.14	29,62,138	14.78	16,034	0.08

Source: Data compiled by the researcher from the PMFBY website

Table 2 Few Descriptive Statistics and CAGR

Particulars	Sum	Mean	SD	CV	Skewness	CAGR
Male	94829119.00	15804853.1667	1967503.77577	12.45	-.188	-0.01248
Female	16757409.00	2792901.5000	473199.37858	16.94	-.491	-0.01521
GdM	90470.00	15078.3333	1946.04313	12.91	-.914	-0.01289

Source: SPSS Output

The above table describes the data relating to gender-wise participation in crop insurance schemes. During this 6-year Kharif period, 94829119 Male participants enrolled in the crop insurance scheme which works out to 15804853.1667 participants per annum. The number of participants varied between 1,29,95,294 (2021) and 1,83,99,098 (2018) with a CV of 12.45% (and SD 1967503.77577 participants) indicating no wide variation in the number of male

participants enrolled in the crop insurance scheme from year to another during the research period. The CAGR is negative at -0.01248 denoting the overall reduction in the number of male participants enrolled in crop insurance schemes. This is also supported by the negative skewness value (-.188) signifying that the number of male participants enrolled in crop insurance is skewed towards the negative value rather than the positive value.

Table 3 Gender-Wise Participation during Rabi Season

Year	No. of Farmers	Male	(%)	Female	(%)	GdM	(%)
2018	1,46,85,273	1,25,13,321	85.21	21,61,672	14.72	10,280	0.08
2019	96,60,447	96,60,447	84.52	14,86,742	15.39	8,696	0.10
2020	1,00,07,561	82,87,261	82.81	17,12,293	17.11	8,007	0.08
2021	98,09,873	83,36,430	84.98	14,64,614	14.93	8,829	0.10
2022	1,08,81,229	91,50,025	84.09	17,21,410	15.82	9,794	0.09
2023	76,66,061	63,49,798	82.83	13,10,896	17.10	5,367	0.07

Source: Data compiled by the researcher from the PMFBY website

Table 4 A few Descriptive Statistics and CAGR

Particulars	Sum	Mean	SD	CV	Skewness	CAGR
Male	52801844.00	8800307.3333	2039400.48156	23.17	1.274	-0.1069
Female	9857627.00	1642937.8333	298831.54543	18.18	1.060	-0.07998
GdM	50973.00	8495.5000	1734.82619	20.42	-1.311	-0.10266

Source: SPSS Output

The descriptive statistics offered insights into the distribution of male, female, and gender-disaggregated (GdM) farmer participation during the Rabi season across the years covered in the dataset. For male participation, the minimum number of farmers is 6,349,798, while the maximum is 12,513,321, with a total sum of 52,801,844 farmers. The mean participation is approximately 8,800,307, with a standard deviation of 2,039,400. The coefficient of variation (CV) is 23.17%, indicating a relatively high variability in male participation. Skewness is slightly negative (-0.1069), suggesting a slight left-leaning distribution.

In contrast, female participation ranges from a minimum of 1,310,896 to a maximum of 2,161,672 farmers, with a total of 9,857,627 farmers. The mean female participation is approximately 1,642,938, with a smaller standard deviation of 298,832. The coefficient of variation is 18.18%, indicating a lower variability compared to male participation. Skewness is also slightly negative (-0.07998), implying a minor left-leaning distribution. For gender minority

participation, the minimum recorded is 5,367 farmers, while the maximum is 10,280 farmers, with a total of 50,973 farmers. The mean participation for gender-disaggregated farmers is approximately 8,495, with a standard deviation of 1,734. The coefficient of variation stands at 20.42%, suggesting moderate variability. Skewness is notably negative (-1.311), indicating a significant left-leaning distribution.

Findings of the Study

- Across both Kharif and Rabi seasons, there is a noticeable gender disparity in participation. Male farmers consistently constitute a significantly higher percentage of participants compared to female farmers.
- While there is a slight variation in the number of male participants enrolled in crop insurance schemes from year to year, the overall trend shows a negative Compound Annual Growth Rate (CAGR). This indicates a gradual reduction in the number of male participants over the years covered in the dataset.

- In contrast to male participation, female participation remains relatively stable across the years examined. Although there is variation in the absolute numbers, the percentage of female participants shows less fluctuation.
- The data also includes gender-disaggregated participation, which provides a nuanced understanding of gender dynamics in crop insurance schemes. While the absolute numbers for gender minority participation are relatively small compared to male and female participation, the skewness value indicates a significant left-leaning distribution, implying that a smaller proportion of farmers are identifying as gender-disaggregated.
- Descriptive statistics such as mean, standard deviation, coefficient of variation, and skewness offer insights into the variability and distribution of male, female, and gender minority participation. The higher coefficient of variation for male participation suggests greater variability compared to female participation, indicating potential disparities or inconsistencies in male farmers' access to crop insurance schemes across different regions or agricultural contexts.

Suggestions for the Study

Promote Gender-Sensitive Outreach

Programs: Develop and implement targeted outreach programs specifically designed to increase female participation in crop insurance schemes. These programs should address barriers such as lack of awareness, access to information, and cultural norms that may hinder female farmers' engagement.

Tailor Policy Interventions: Tailor policy interventions to address the specific needs and challenges faced by male and female farmers. This could include providing targeted support services, such as training programs and financial incentives, to encourage both genders to enroll in crop insurance schemes.

Enhance Accessibility and Affordability: Improve the accessibility and affordability of crop insurance schemes, particularly for female farmers who may face additional challenges in accessing financial services. This could involve reducing premium rates for female farmers, providing subsidies, or offering flexible payment options.

Promote Gender-Inclusive Policies: Advocate

for gender-inclusive policies and practices within the agricultural sector, including within crop insurance schemes. This could involve integrating gender perspectives into policy development processes, ensuring equal representation of male and female farmers in decision-making bodies, and promoting gender-sensitive monitoring and evaluation mechanisms.

Support Gender Minority Farmers: Provide tailored support and resources for gender minority farmers to ensure their inclusion and participation in crop insurance schemes. This could include targeted outreach, capacity-building programs, and ensuring the provision of non-discriminatory services.

Engage Stakeholders: Foster collaboration and partnerships between government agencies, agricultural organizations, civil society groups, and other stakeholders to collectively address gender disparities in crop insurance participation. Engaging stakeholders at all levels can help generate innovative solutions and ensure the sustainability of efforts to promote gender equality in agriculture.

Conclusion

This research paper addresses the gender disparities within Indian crop insurance schemes, shedding light on a critical yet often overlooked aspect of agricultural risk management. Through an in-depth analysis of six years of data from the Pradhan Mantri Fasal Bima Yojana website, significant differences in participation rates, coverage, and benefits accrued among male, female, and gender minority farmers have been unveiled. The findings underscore a consistent gender gap in participation, with male farmers comprising a significantly higher percentage of participants compared to their female counterparts across both the Kharif and Rabi seasons. Despite a declining trend in male participation over the study period, female involvement remained relatively stable, though at lower levels. Additionally, the data highlights the challenges faced by gender minority farmers, as evidenced by their limited participation rates. In response to these findings, the study proposes actionable measures to promote gender-inclusive approaches in agricultural risk management. Suggestions include the development of gender-sensitive outreach programs, tailored policy interventions, and improvements in the accessibility and affordability of crop insurance

schemes for female farmers. Advocacy for gender-inclusive policies, support for gender minority farmers, and stakeholder engagement are identified as crucial strategies to address these disparities.

Overall, this research contributes significantly to the broader discourse on gender equality and social justice in agricultural development initiatives. Uncovering the nuances of gender disparities in crop insurance participation provides valuable insights for policymakers, practitioners, and researchers aiming to design inclusive and effective agricultural policies and programs. Through concerted efforts to address these disparities, the agricultural sector can progress towards greater gender equality, thereby enhancing the sustainability and resilience of agrarian economies like India.

Future research on the economic impact and financial inclusion of crop insurance schemes should analyze the differential economic benefits for male and female farmers, focusing on improvements in income stability, agricultural investment, and overall economic well-being. Additionally, studies should examine how crop insurance contributes to the financial inclusion of women, including access to credit, savings behavior, and financial literacy. Comparative studies should evaluate the gender performance of crop insurance schemes across different Indian regions to identify best practices and areas needing improvement. Furthermore, international comparisons with gender-focused crop insurance schemes in other countries can provide valuable lessons and recommendations applicable to the Indian context.

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