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Participation and decision-making of agricultural activities in Birbhum District, West Bengal

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ABSTRACT

Women play a vital role in agricultural and dairy production systems, yet their contributions and involvement in decision-making often remain under-recognized. The present study was conducted to examine the participation and decision-making behavior of farm women in agricultural and dairy activities in Birbhum district of West Bengal. The study was carried out in Bolpur and Suri-I blocks using an ex-post facto research design. A total of 100 respondents were selected through random sampling from four villages, namely Surul, Ruppur, Daranda, and Sukhbazar. Data were collected through personal interviews using a structured schedule and analyzed using descriptive statistics, correlation, and multiple regression techniques. The respondents were characterized based on age, education, marital status, family type, farming experience, occupation, mass media exposure, land holding, annual income, and cropping intensity.

The findings revealed moderate levels of participation (mean = 1.49) and decision-making (mean = 2.56) among the respondents. Correlation analysis indicated that mass media exposure ($r = 0.445$) and land holding ($r = 0.392$) had significant positive relationships with participation, while farming experience ($r = 0.346$) showed a significant positive relationship with decision-making. Cropping intensity exhibited a significant negative association with decision-making ($r = -0.237$). Multiple regression analysis showed that the selected independent variables explained 52.21% of the variation in participation and 49.21% of the variation in decision-making. Land holding and annual income emerged as important predictors of participation, whereas age and occupation contributed substantially to decision-making behavior.

The study concludes that socio-economic, informational, and farming-related factors significantly influence the participation and decision-making status of farm women. Strengthening access to information, resources, and capacity-building programs can enhance the role of farm women in agricultural development and rural livelihood improvement.

Keywords: Agripreneurship, Rural Youth, Attitude, Knowledge, Perception, Scientific Orientation, Innovativeness, Risk Orientation, Extension Contact, Agricultural Entrepreneurship

Introduction

Women play a vital yet often under recognized role in agricultural and rural development. In India, rural farm women contribute substantially to agricultural production and allied activities, performing diverse tasks ranging from land preparation and sowing to harvesting, post-harvest processing, livestock management and household responsibilities. Their contribution is particularly important for sustaining family livelihoods, conserving natural resources and maintaining agricultural diversity. Despite their significant involvement, women's participation in agriculture has frequently remained inadequately documented and acknowledged, while agricultural development programmers and extension services have often been designed primarily with men in mind. Farm women also play an important role in decisions related to agricultural and dairy activities. However, in many rural households, major decisions continue to be dominated by men, limiting women's effective participation in farm management and resource utilization. Strengthening women's involvement in decision-making can contribute to improved household welfare, efficient resource management and sustainable agricultural development. Therefore, understanding the extent of farm women's participation, their decision-making behavior, associated personal and socioeconomic characteristics, and the constraints they face is essential for developing gender-responsive agricultural interventions. The present study was undertaken to examine farm women's participation and decision-making in agricultural and dairy activities and to identify the factors and constraints influencing their involvement.

Area of study

The area of investigation of this study is situated in the state of West Bengal located in the eastern part of India. The State of West Bengal in eastern India has a unique social, cultural and ecological background, which influence the living standard and behavioral patterns of the people in many ways. The area of investi

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gation belongs to the Bolpur block and Suri –I block of Birbhum district.

Selection of the respondents

Random sampling procedure was used for selection of respondents from the selected villages namely, Surul, Ruppur, Daranda, and Sukhbazar. 25 number of respondents were selected from each village. Thus, a total of 100 numbers of respondents were selected for the purpose of the study. The male head and female head were chosen for interview, this was done purposely for accurate collection of information

Variables

Variables are Age (X_1), Education (X_2), Marital Status (X_3), Family Type (X_4), Farming Experience (X_5), Occupation (X_6), Mass Media Exposure (X_7), Land Holding (X_8), Annual Income (X_9), Cropping Intensity (X_{10}) treated as independent variables and Participation of Respondent in Various Agricultural Activities (Y_1), Extent of Involvement of Farm Women in Decision Making (Y_2) treated as dependent variable.

Statistical tools

The statistical methods include Correlation, Regression Analysis, where applicable as per the characteristics of data.

Results

Table 1.1 presents descriptive statistics for 12 variables, including age, education, marital status, family type, farming experience, occupation, mass media exposure, land holding, annual income, cropping intensity, participation, and decision making. Respondents' ages ranged 21–75 years (mean 45.82 ± 17.08 ; CV 37.27%). Mass media exposure showed highest variability (CV 50.90%), followed by occupation (49.40%) and annual income (48.58%), indicating substantial heterogeneity. Marital status (CV 30.45%) and family type (33.50%) exhibited lowest variability. Dependent variables participation (CV 33.72%) and decision making (41.30%)—displayed moderate variation. Overall, respondents differed considerably across socio-economic characteristics, with greater heterogeneity in media exposure, occupation, and income, while demographic variables remained relatively uniform.

Table 1.1. Descriptive Statistics of Variable with respect to Minimum, Maximum, Range, Mean, Standard Deviation of Values, Variance, and Coefficient of Variance

Variable	Minimum	Maximum	Mean	Std. Deviation	Variance	CV (%)
Age (x1)	21.00	75.00	45.8200	17.08	291.66	37.27
Education(x2)	1.00	4.00	2.4400	1.14	1.30	46.72
Marital Status (x3)	1.00	2.00	1.6100	0.49	0.24	30.45
Family Type (x4)	1.00	2.00	1.5000	0.50	0.25	33.50
Farming Experience (x5)	1.00	4.00	2.4600	1.17	1.36	47.44
Occupation (x6)	1.00	6.00	3.4700	1.71	2.94	49.40
Mass Media Exposure (x7)	1.00	4.00	2.3400	1.19	1.42	50.90
Land Holding (x8)	1.00	4.00	2.3700	1.07	1.14	45.14
Annual Income (x9)	1.00	4.00	2.3200	1.13	1.27	48.58
Cropping Intensity (x10)	1.00	3.00	1.8900	0.84	0.70	44.42
Participation (y1)	1.00	2.00	1.4900	0.50	0.25	33.72
Decision Making (y2)	1.00	4.00	2.5600	1.06	1.12	41.30

Table 1.2. Coefficient of Correlation (r): Participation (y_1) with 10 Independent Variables

Sl. No.	Independent Variables	'r' Value	Remarks
1	Age (x1)	0.059	
2	Education(x2)	0.114	
3	Marital Status (x3)	-0.078	
4	Family Type (x4)	-0.020	
5	Farming Experience (x5)	0.060	
6	Occupation (x6)	0.176	
7	Mass Media Exposure (x7)	.445	**
8	Land Holding (x8)	.392	**
9	Annual Income (x9)	0.077	
10	Cropping Intensity (x10)	-0.062	

**Correlation is significant at the 0.01 level, *Correlation is significant at the 0.05 level

Relevance

The correlation analysis is relevant for identifying the independent variables that are associated with participation. The significant positive relationships of mass media exposure and land holding suggest

that access to information through mass media and possession of comparatively greater land resources may be important factors associated with participation. These variables therefore deserve attention in understanding the factors influencing participation among the respondents.

Table 1.3. Multiple Regression Analysis: Participation (y_1) Vs. 10 independent Variables

Sl. No.	Variables	Reg. Coef. B	S.E. B	Beta	t Value
1	Age (x1)	0.453	0	0.178	1.358
2	Education(x2)	-7.000	-0.001	0.995	-0.006
3	Marital Status (x3)	0.067	0.152	0.099	1.665
4	Family Type (x4)	-0.139	-0.136	0.132	-1.522
5	Farming Experience (x5)	0.035	0.035	0.694	0.395
6	Occupation (x6)	0.035	0.081	0.374	0.893
7	Mass Media Exposure (x7)	0.045	0.155	0.085	1.742
8	Land Holding (x8)	0.149	0.354	0.000	3.841
9	Annual Income (x9)	0.153	0.326	0.001	3.535
10	Cropping Intensity (x10)	0.016	0.037	0.677	0.418

R square: 52.21 %, The standard error of the estimate: 0.47592

The regression analysis is relevant because it identifies the combined explanatory power of the independent variables in relation to participation. The R^2 value of 52.21 per cent indicates that the selected vari-

ables collectively explain more than half of the observed variation in participation. The results particularly draw attention to land holding and annual income based on their reported regression statistics.

Table 6.4. Coefficient of Correlation (r): Decision Making (y_2) with 10 Independent Variables

Sl. No.	Independent Variables	'r' Value	Remarks
1	Age (x1)	0.065	
2	Education(x2)	0.037	
3	Marital Status (x3)	0.016	
4	Family Type (x4)	-0.152	
5	Farming Experience (x5)	.346**	**
6	Occupation (x6)	-0.019	
7	Mass Media Exposure (x7)	0.024	
8	Land Holding (x8)	-0.131	
9	Annual Income (x9)	0.102	
10	Cropping Intensity (x10)	-.237*	*

**Correlation is significant at the 0.01 level, *Correlation is significant at the 0.05 level

Relevance

The findings are relevant for identifying the factors associated with respondents' decision-making status. The significant positive association of farming experience suggests that accumulated practical experi-

ence may be related to greater involvement or ability in decision-making. The significant negative relationship between cropping intensity and decision making indicates that this variable may have an inverse association with decision-making status in the study population.

Table 6.5. Multiple Regression Analysis: Decision making (y_2) Vs. 10 independent Variables

Sl. No.	Variables	Reg. Coef. B	S.E. B	Beta	t Value
1	Age (x1)	2.528	0	0.001	3.285
2	Education(x2)	-0.001	-0.010	0.917	-0.104
3	Marital Status (x3)	0.071	0.077	0.448	0.763
4	Family Type (x4)	0.180	0.084	0.396	0.853
5	Farming Experience (x5)	-0.289	-0.137	0.156	-1.430
6	Occupation (x6)	0.289	0.319	0.002	3.223
7	Mass Media Exposure (x7)	0.024	0.039	0.689	0.402
8	Land Holding (x8)	-0.011	-0.013	0.900	-0.126
9	Annual Income (x9)	-0.155	-0.157	0.125	-1.550
10	Cropping Intensity (x10)	0.059	0.063	0.518	0.649

R square: 49.21 %, The standard error of the estimate: 0.5192

The regression analysis is important for understanding the combined contribution of the selected independent variables towards decision making. The R^2 value of 49.21 per cent demonstrates that nearly half of the variation in decision making was explained by the ten independent variables included in the model. The reported regression statistics particularly indicate the contribution of age and occupation within the model.

Conclusion

Based on the findings of the study, it may be concluded that the respondents possessed diverse socio-economic and farming characteristics, with considerable variation observed in variables such as mass media exposure, occupation, farming experience, annual income and land holding.

The study indicates that participation is significantly and positively associated with mass media exposure and land holding. This suggests that better access to information and greater resource availability may facilitate increased participation among respondents. Mass media can provide useful information regarding agricultural practices, programmes, technologies and opportunities, while landholding may provide greater scope and resources for involvement in agricultural and related activities.

The findings further indicate that farming experience is significantly and positively associated with decision making. This suggests that practical experience accumulated over the years may contribute to respondents' ability to make decisions related to farming and associated activities. At the same time, cropping intensity showed a significant negative relationship with decision making in the present dataset, indicating an inverse association that deserves further investigation.

The regression analysis demonstrates that the selected independent variables collectively explained 52.21 per cent of the variation in participation and 49.21 per cent of the variation in decision making. Therefore, although the selected variables provide substantial explanatory power, a considerable proportion of variation remains unexplained, indicating the possible influence of other factors not included in the present analysis.

In conclusion, strengthening access to agricultural information, improving opportunities for participation, enhancing farmers' practical knowledge and experience, and improving access to productive resources may contribute towards improving participation and decision-making outcomes. However, the specific causal mechanisms cannot be established from correlation and regression results alone.

Recommendations

To enhance participation and decision making, mass media exposure should be strengthened through television, radio, mobile communication and social media for disseminating agricultural information. Regular awareness programmes on improved practices, government schemes and technologies are essential. Participation can be encouraged through farmer groups, training, demonstrations and extension activities. Access to productive resources should be improved via collective farming and institutional support. Experienced farmers should share knowledge through peer-learning. Capacity-building training should cover farm planning, financial and risk management. The negative cropping intensity–decision making relationship requires investigation and guidance on crop planning. Extension services must provide need-based advisory support. Group-based learning and better institutional linkages should be promoted. Further research should explore additional variables influencing participation and decision making.

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