

CONTRACT FARMING AND ASSOCIATED PERCEIVED SOCIO-ECONOMIC REPERCUSSIONS: EVIDENCE FROM THE NORTHERN PART OF WEST BENGAL**Basu Anand^{1*}, K. Pradhan² and M. R. Bhatt³**

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Email : basuanand.edu@gmail.com**ABSTRACT**

This paper attempts to analyse the intra and inter-level relationships between the socio-economic profile of contract farmers and their perceived repercussions on employment generation and poverty reduction in the district of Coochbehar of West Bengal. An ex-post-facto research design has been taken in this study, and the data have been obtained from a hundred potato contract farmers as respondents from across ten villages through a purposive multistage random sampling method. In this study, the relationship between the nineteen predictor variables and the predicted variable- 'perceived repercussions of contract farming on employment generation and poverty reduction have been analysed by some statistical tools such as Karl Pearson's coefficient of correlation and multiple linear regression analysis. The results indicated that variables such as age ($r = 00.221$, $p < 00.05$), contract farming experience ($r = 00.445$, $p < 00.01$), personal possession ($r = 00.205$, $p < 00.05$), communication skills ($r = 00.281$, $p < 00.01$), and extension contact ($r = 00.210$, $p < 00.05$) were positively associated with the perceived repercussions. On the other hand, variables like annual family expenditure ($\beta = -00.334$, $p < 0.05$) and innovation proneness ($\beta = -00.249$, $p < 00.05$) had negative and contract farming experience ($\beta = 00.482$, $p < 0.05$) and communication skills ($\beta = 00.311$, $p < 0.05$) had positively contributed in case of characterizing the perceived repercussions of contract farming. The contract farming experience emerged as the strongest predictor, explaining 48.20% of the variations embedded with perceived repercussions of contract farming. These findings suggest that contract farming, particularly with increased experience and access to information, can be a viable pathway for improving livelihoods in the region.

Keywords: socio-economic profile, ex-post-facto research, contract farming, employment generation, poverty reduction**INTRODUCTION**

Contract farming has become increasingly important for the small farm sector in developing countries (Minot & Sawyer, 2016; Reardon *et al.*, 2009). Its welfare effects on smallholder farmers have garnered significant attention over the years (Barrett *et al.*, 2012; Ton *et al.*, 2018; Meemken & Bellemare, 2020; Chigadolli *et al.*, 2024; Thakor and Joshi, 2024; Rajput *et al.*, 2023; Das Rajput *et al.*, 2023). Studies have explored the impact of contract farming on the incomes and profits from contracted crops (Bidzakin *et al.*, 2019; Kumar *et al.*, 2019; Mishra *et al.*, 2018), farm income (Champika and Abeywickrama, 2015; Islam *et al.*, 2019), and total household income (Patel and Vinaya, 2022; Andersson *et al.*, 2015; Rao & Qaim, 2011). While most studies report positive welfare effects, the results are mixed, with some studies showing insignificant or even negative impacts (Meemken and Bellemare, 2020; Mwambi *et al.*, 2016; Narayanan, 2014; Ragasa *et al.*, 2018; Wang *et*

al., 2014). These variations can be attributed to differences in contractual agreements, crops, and geographical contexts (Bellemare and Bloem, 2018; Khan *et al.*, 2019; Otsuka *et al.*, 2016; Ton *et al.*, 2018). Challenges such as poor quality, high costs, and untimely raw material availability for processing and marketing often affect contract farming outcomes.

Since India's economic liberalization and the entry of domestic and multinational players into the agribusiness sector, contract farming has expanded from seed production to include perishable produce, becoming a dominant mode of raw material procurement (Desai *et al.*, 2022; Desai *et al.*, 2023). Smallholder farms have long been central to development efforts in low-income countries, with initiatives aimed at improving farmer-firm linkages to boost agricultural development and food security. Contract farming, by reducing capital and market access risks, offers smallholders a reliable mechanism for securing market access and stable income (Khalili *et al.*, 2024). It helps connect small farmers

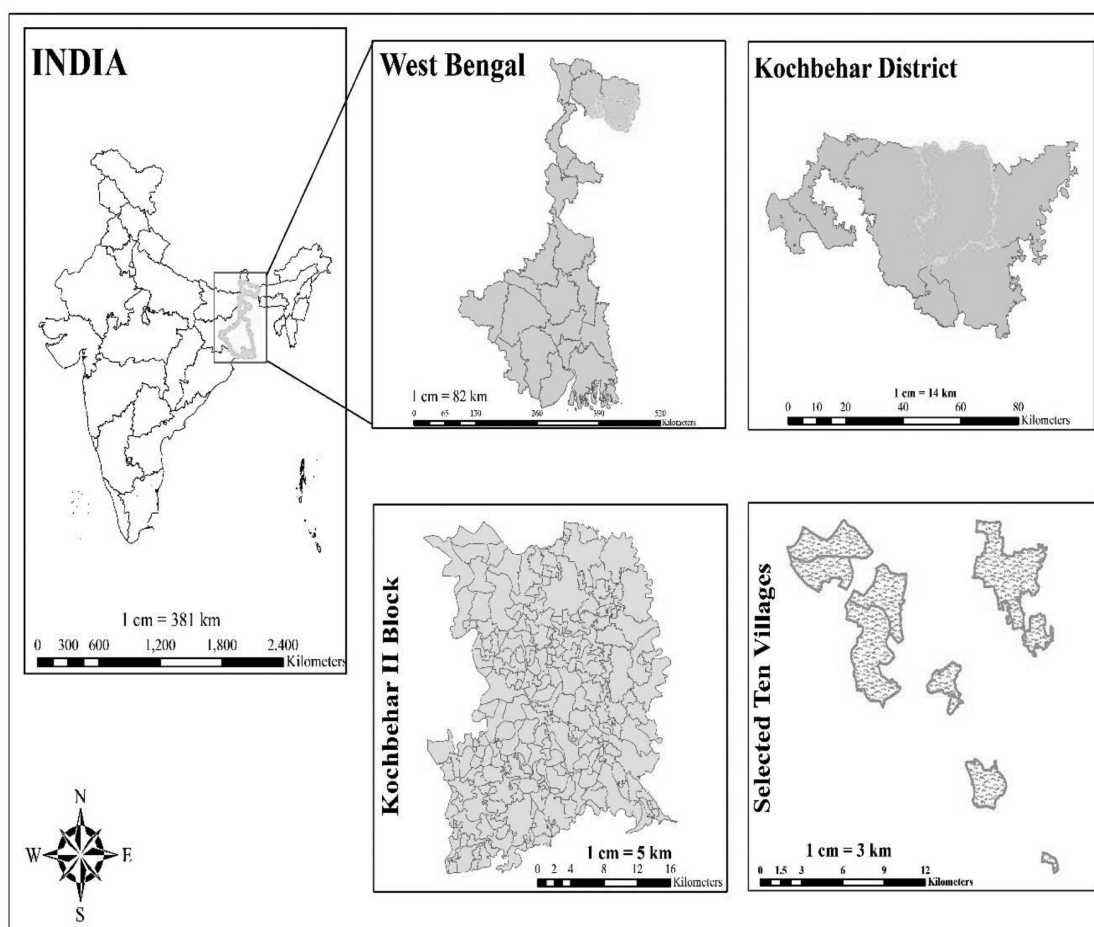


Fig. 1: Research Locale

to modern agribusinesses, facilitating crop diversification, capital risk reduction, and income improvement. Additionally, it generates spill-over benefits for local stakeholders, such as farm workers (German *et al.*, 2020; Kaur *et al.*, 2021; Vicol *et al.*, 2022; Adam & Agegnehu, 2023). This article focuses on contract farming's impact on employment generation and poverty reduction in West Bengal, India.

Contract farming is widely regarded as a key policy for improving the welfare of farmers in developing countries by addressing issues such as market failure, lack of access to credit, and inadequate insurance (Tuan, 2012; Kumar *et al.*, 2019). It empowers smallholders by providing access to resources, stable markets, and knowledge transfer (Meemken & Bellemare, 2020). In the short term, contract farming leads to higher productivity and stable incomes, while in the long term, it opens doors to broader markets, sustainable production practices, and insurance against crop loss. However, its success depends on fair and transparent agreements between farmers and agribusinesses, with strong governance and regulation to ensure a balanced partnership (Otsuka *et al.*, 2016).

OBJECTIVE

to analyse the intra and inter-level relationships among the perceived repercussions of contract farming on employment generation and poverty reduction and the important attributes of contract farmers.

METHODOLOGY

An *ex-post-facto* research design was adopted for the present study. Tuckman (1972) defined the term *ex-post-facto* to be: "an experiment in which the researcher examines the effects of a naturalistically occurring treatment after that treatment has occurred rather than creating the treatment itself. The experimenter attempts to relate this after-the-fact treatment to an outcome or dependent measure". The present study was carried out in the year 2022-2023. The northern district of West Bengal, Coochbehar was selected purposively for this cross-sectional study as it represents a diversified contract farming scenario of different crops, especially potatoes, and an abundance of smallholders exploring innovative contract farming opportunities.

The present study followed a purposive, multistage and random sampling procedure to select the location and the respondents. The Coochbehar II block of Coochbehar district was selected purposively because the farmers have been in contract farming arrangement for the last 10-12 years and there has been less research in the district. Out of the thirteen-gram panchayats, of the Coochbehar II block, five-gram panchayats, namely Patlakhawa, Dhang Dhinghuri, Pundibari, Ambari, and Marich Bari Kholta were selected randomly. One village was selected randomly from Marich Bari Kholta and Pundibari gram panchayat. Two villages were selected randomly from Dhang Dhinghuri and Ambari gram panchayats and four villages from Patlakhawa gram panchayat. The villages selected for the present study were Marich Bari, Dhalaguri, Ambari, Dhang Dhinghuri, Kachura Kuthi, Uttar Kalarayer Kuthi, Singimari Paschimpar, Chhat Singimari, Khagribari, Kalarayerkuthi Dakshin. So, the total number of villages counts to ten. A list of potato contract farmers was prepared exhaustively with the help of contracting firms, agro-input dealers, vendors, sub-vendors,

local people, etc. From the exhaustive list of potato contract farmers in the above-stated villages, ten contract farmers from all ten villages were randomly selected, summing up to a total of a hundred respondents. The data collection was done from January 2023 to April 2023 through a personal interview method using an interview schedule developed according to the objectives of the study by conducting farm and home visits. The collected data were tabulated in MS Excel and analysed by using SPSS software by applying various statistical tools like Coefficient of Correlation and Multiple Linear Regression.

RESULT AND DISCUSSION

Karl Pearson’s coefficient of correlation is widely used to measure the relationship between two variables, assuming a linear connection, causal dependency (with one independent and one dependent variable), and the influence of multiple independent causes leading to a normal distribution in both variables.

Table 1: Values of Correlation Coefficient of the dependent variable, “Perceived repercussions of contract farming on employment generation and poverty reduction” (Y₁) with the nineteen independent variables (X₁, X₂, X₁₉).

| Sr. No. | Variables | Coefficient of Correlation |
|-----------------|-----------------------------|----------------------------|
| X ₁ | Age | 0.221* |
| X ₂ | Education | -0.065 |
| X ₃ | Family Education Status | -0.013 |
| X ₄ | Contract Farming Experience | 0.445** |
| X ₅ | Annual Family Income | 0.191 |
| X ₆ | Annual Family Expenditure | 0.076 |
| X ₇ | Land Holding | 0.166 |
| X ₈ | Economically Active Member | -0.037 |
| X ₉ | Personal Possession | 0.205* |
| X ₁₀ | Communication Skills | 0.281** |
| X ₁₁ | Extension Contact | 0.210* |
| X ₁₂ | Mass Media Exposure | -0.054 |
| X ₁₃ | Extension Participation | 0.102 |
| X ₁₄ | Economic Motivation | 0.075 |
| X ₁₅ | Risk Preference | 0.035 |
| X ₁₆ | Innovation Proneness | -0.080 |
| X ₁₇ | Achievement Motivation | 0.074 |
| X ₁₈ | Scientific Orientation | -0.059 |
| X ₁₉ | Management Orientation | 0.140 |

* Significant at 5% level ** Significant at 1 % level

Pearson’s coefficient of correlation between the perceived repercussions of contract farming on employment generation and poverty reduction and the nineteen causal variables. The obtained results showed that the variables

Age (X₀₁), Contract Farming Experience (X₀₄), Personal Possession (X₀₉), Communication Skills (X₁₀), and Extension Contact (X₁₁) are positively and significantly correlated with the perceived repercussions of contract farming.

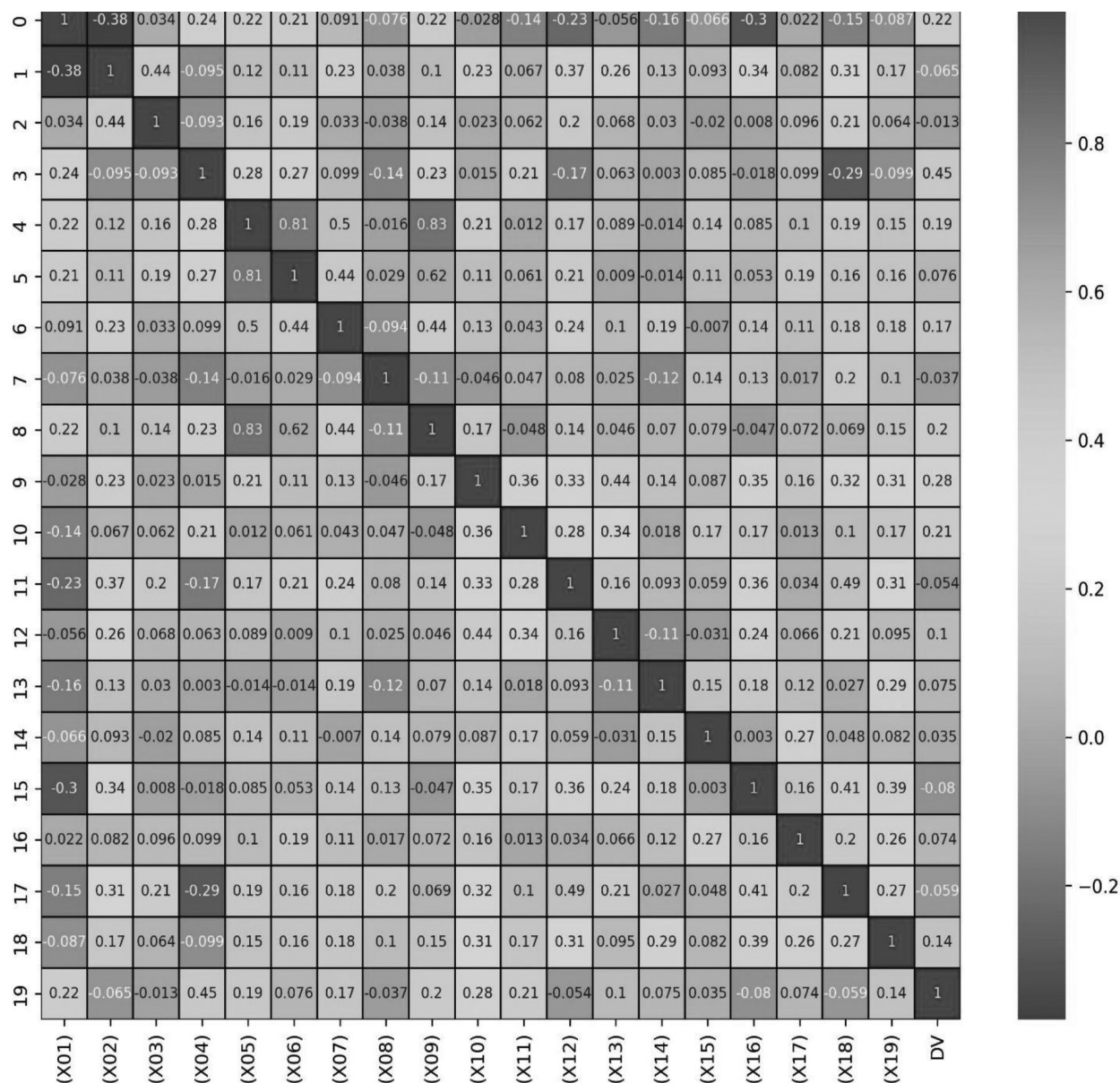


Fig. 2: Correlation heatmap indicating the values of coefficients of correlation of Independent Variables, X_{01} (Age), X_{02} (Education), X_{03} (Family Education Status), X_{04} (Contract Farming Experience), X_{05} (Annual Family Income), X_{06} (Annual Family Expenditure), X_{07} (Land Holding), X_{08} (Economically Active Member), X_{09} (Personal Possession), X_{10} (Communication Skills), X_{11} (Extension Contact), X_{12} (Mass Media Exposure), X_{13} (Extension Participation), X_{14} (Economic Motivation), X_{15} (Risk Preference), X_{16} (Innovation Proneness), X_{17} (Achievement Motivation), X_{18} (Scientific Orientation), X_{19} (Management Orientation), and the Dependent Variable DV (Perceived Repercussions of Contract Farming on Employment Generation and Poverty Reduction).

Age (X_{01}) and the perceived repercussions of contract farming on employment generation and poverty reduction

Age reflects personal growth, experience, and wisdom, enhancing decision-making and analytical skills. As farmers age, they maturely perceive contract farming’s benefits, impacting poverty reduction and employment generation.

Contract farming experience (X_{04}) and the perceived repercussions of contract farming on employment generation and poverty reduction

It enhances their understanding of its benefits, leading to positive perceptions of its impact on employment and poverty reduction. Experienced farmers efficiently manage activities, increase income, and engage in diverse

roles such as leasing land, supplying raw materials, or managing transportation and input sales. This experience positively influences their view of contract farming’s benefits.

Personal possession (X₀₉) and the perceived repercussions of contract farming on employment generation and poverty reduction

Personal Possession, or owning farming tools and equipment, reduces dependence on rentals and enhances farming efficiency. Farmers with higher personal possessions perceive greater income, reduced poverty, and more employment through contract farming, showing a positive association with these benefits.

Communication skills (X₁₀) and the perceived repercussions of contract farming on employment generation and poverty reduction

Communication skills, including effective listening, discussion, and analysis, help farmers share and receive information on new techniques and challenges/ in the study, farmers with strong communication skills have a positive view of contract farming’s impact on income and

employment. Their ability to convey managerial needs and problems to other stakeholders, such as input dealers and contracting agencies, is likely why communication skills are significantly linked to contract farming’s benefits in employment and poverty reduction.

Extension contacts (X₁₁) and the perceived repercussions of contract farming on employment generation and poverty reduction

Extension Contacts, involving frequent interactions with professionals and access to resources, enhance contract farming’s effectiveness. In the study farmers who regularly engaged with field executives and other stakeholders saw contract farming positively impacting income and employment. The system, where seeds and support are efficiently distributed through vendors and sub-vendors, and it’s a significant link to employment and poverty reduction.

Multiple Linear Regression is a statistical method used to analyse the relationship between two or more independent variables and a dependent variable. It seeks to predict how changes in the independent variables affect the dependent variable, assuming a linear connection between them.

Table 2: Multiple regression analysis of the perceived repercussions of contract farming on employment generation and poverty reduction (Y₁) with nineteen (19) predictor variables

| Sr. No. | Variables | Standardized Regression Coefficients | Unstandardized Regression Coefficients | | t-value |
|-----------------|---|--------------------------------------|--|------------|---------|
| | | Beta (β) | B | Std. Error | |
| X ₁ | Age (X ₁) | 0.058 | 0.001 | 0.001 | 0.522 |
| X ₂ | Education (X ₂) | -0.050 | -0.001 | 0.002 | -0.396 |
| X ₃ | Family Education Status (X ₃) | 0.070 | 0.003 | 0.004 | 0.639 |
| X ₄ | Contract Farming Experience (X ₄) | 0.482 | 0.008 | 0.002 | 4.411** |
| X ₅ | Annual Family Income (X ₅) | 0.181 | 0.011 | 0.015 | 0.744 |
| X ₆ | Annual Family Expenditure (X ₆) | -0.334 | -0.028 | 0.013 | -2.043* |
| X ₇ | Land Holding (X ₇) | 0.158 | 0.008 | 0.005 | 1.407 |
| X ₈ | Economically Active Member (X ₈) | 0.096 | 0.007 | 0.006 | 1.021 |
| X ₉ | Personal Possession (X ₉) | -0.008 | 0.001 | 0.003 | -0.045 |
| X ₁₀ | Communication Skills (X ₁₀) | 0.311 | 0.004 | 0.001 | 2.708** |
| X ₁₁ | Extension Contact (X ₁₁) | 0.062 | 0.001 | 0.002 | 0.559 |
| X ₁₂ | Mass Media Exposure (X ₁₂) | -0.063 | -0.001 | 0.002 | -0.553 |
| X ₁₃ | Extension Participation (X ₁₃) | -0.063 | -0.001 | 0.002 | -0.600 |
| X ₁₄ | Economic Motivation (X ₁₄) | 0.021 | 0.001 | 0.003 | 0.214 |
| X ₁₅ | Risk Preference (X ₁₅) | -0.053 | -0.001 | 0.003 | -0.532 |
| X ₁₆ | Innovation Proneness (X ₁₆) | -0.249 | -0.006 | 0.003 | -2.158* |
| X ₁₇ | Achievement Motivation (X ₁₇) | -0.005 | 0.001 | 0.003 | -0.045 |
| X ₁₈ | Scientific Orientation (X ₁₈) | 0.052 | 0.001 | 0.001 | 0.448 |
| X ₁₉ | Management Orientation (X ₁₉) | 0.189 | 0.002 | 0.001 | 1.788 |

R²= 0.400, F Value: 2.805** ** Significant at 1% level of significance * Significant at a 5% level of significance

Table 2: Multiple regression analysis of the predicted variable, “perceived repercussions of contract farming on employment generation and poverty reduction” with nineteen predictor variables. It is observable from the table that the variables Contract Farming Experience(X_4) and Communication Skills(X_{10}) are positively and

significantly contributing towards the characterization of the predicted variable while the variables like Annual family expenditure(X_6) and Innovation Proneness(X_{16}) significantly and negatively contributes towards the characterization of the predicted variable ‘the perceived effect of contract farming on employment generation and poverty reduction’.

Multiple regression analysis of the perceived repercussions of contract farming on employment generation and poverty reduction (Y1) with nineteen (19) predictor variables

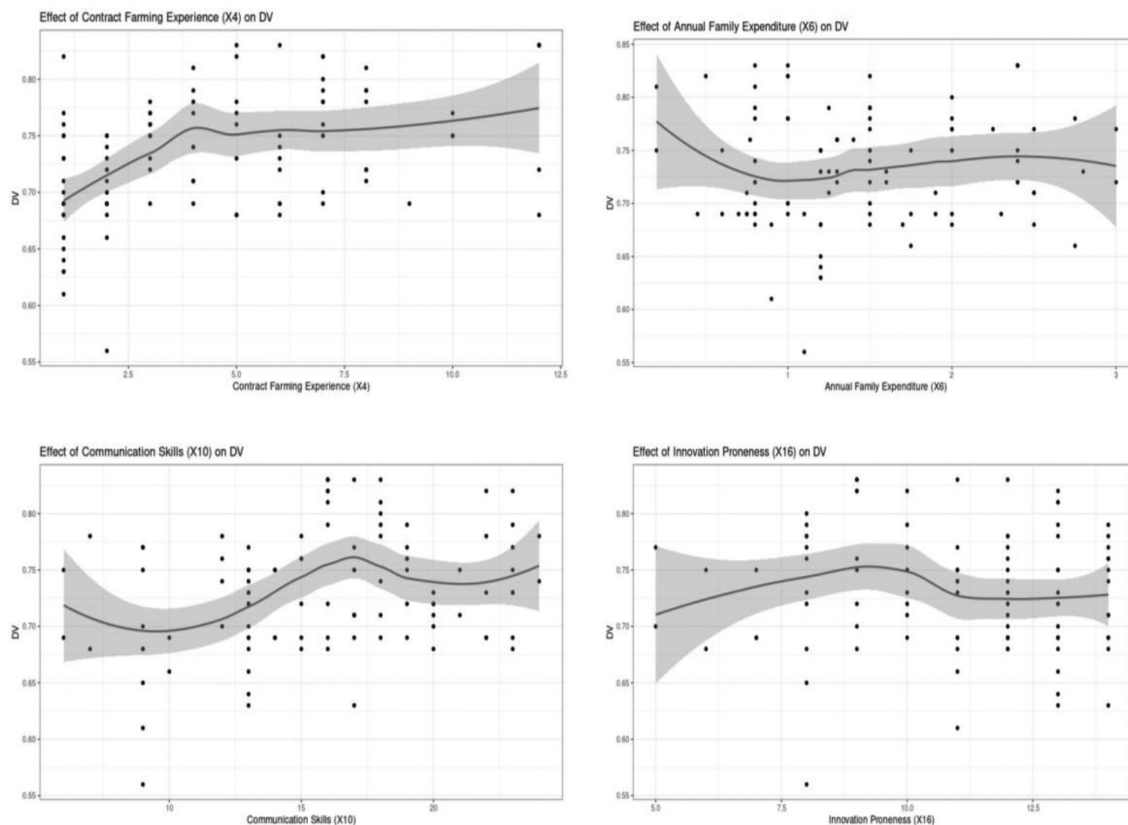


Figure 3: Multiple regression analysis of the predicted variable, “perceived repercussions of contract farming on employment generation and poverty reduction” with nineteen (19) predictor variables. It is observable from the table that the variables Contract Farming Experience(X_4) and Communication Skills(X_{10}) are positively and significantly contributing towards the characterization of the predicted variable while the variables like Annual family expenditure(X_6) and Innovation Proneness(X_{16}) significantly and negatively contributes towards the characterization of the predicted variable ‘the perceived effect of contract farming on employment generation and poverty reduction’.

Contract Farming Experience (X_4)

Farmers with more contract farming experience often help others get involved by sharing their knowledge and benefits. They receive extra income from providing inputs and transportation. Experienced farmers will enjoy a guaranteed produce price in the form of an amount slightly above the market price, at Rs. 10.70/kg in 2023, hence earning money and ensuring financial stability; this impacts their will to enter into contract farming based on employment

and diminishing poverty levels, accounting for 48.20% of the perceived repercussions.

Annual Family Expenditure (X_6)

Contract farming involves high costs for seeds, chemicals, labour, and farm operations, particularly for small and marginal farmers. Issues like unpaid transportation and rejected produce led to additional expenses. These high expenditures negatively impact the predicted variable, accounting for 33.40% of the effect.

Communication Skills (X_{10})

Effective communication skills are essential for contract farmers, allowing them to negotiate with the stakeholders and apply new agricultural ideas. This ability helps boost income and create local jobs. Communication skills account for 31.10% of the repercussions of contract farming on employment and poverty reduction.

Innovation Proneness (X_{16})

Innovation proneness refers to a farmer's ability to adopt and integrate new ideas into their farming practices. However, in contract farming, the rigid protocols and agreements with contracting firms limit opportunities for innovation. As a result, innovation proneness negatively impacts the perceived benefits of contract farming on employment and poverty reduction, contributing 24.90% to this effect.

The R^2 value of 00.400 indicates that the nineteen predictor variables together explain 40.00% of the variation in the perceived effect of contract farming on employment generation and poverty reduction. However, 60.00% of the variation remains unexplained. To enhance the model's explanatory power, it is suggested to include additional contextual variables that directly impact this effect.

CONCLUSION

This research illuminates the nuanced relationship between contract farming and its perceived socioeconomic repercussions on farmers in the northern district of West Bengal. While contract farming demonstrates a positive influence on employment generation and poverty reduction, creating sustainable income opportunities, the study reveals that experience is key. Farmers with longer contract farming tenure and stronger communication skills reported more pronounced benefits, highlighting the importance of knowledge transfer and farmer empowerment within these schemes. Interestingly, higher annual family expenditure negatively correlated with perceived benefits, suggesting that contract farming's impact might be more pronounced amongst economically vulnerable farmers. This underscores the need for targeted interventions and support mechanisms tailored to diverse socioeconomic groups. While the study's model explains a significant portion of the variance in perceived impact (40%), the remaining 60% underscores the complexity of this relationship. Future research should delve into the unexplored dimensions, such as market volatility, power dynamics within contracts, and the long-term ecological impact, to comprehensively assess contract farming's potential for inclusive and sustainable agricultural development. Policymakers should prioritize initiatives that

foster farmer literacy on contract terms, enhance access to affordable inputs, and promote farm-level innovation. By addressing these challenges and fostering an enabling environment, contract farming can serve as a powerful tool for uplifting rural livelihoods and fostering a more equitable and resilient agricultural landscape in India.

CONFLICT OF INTEREST

All the authors have given their consent and approval for carrying out the research work and its timely publication. They have no competing conflict of interest.

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