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Contract farming in northern district of West Bengal: A socio-economic profile study

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Abstract

This manuscript investigates the socio-economic profile of the contract farmers in the Coochbehar district of West Bengal, emphasizing the key attributes influencing their participation in contract farming. An ex-post-facto research design was adopted, utilizing a purposive, multistage, and random sampling procedure. The Coochbehar district was selected purposively. Among the thirteen gram-panchayats, five-gram panchayats of the Coochbehar II block such as Dhang Dhingguri, Pundibari, Ambari, Marich Bari Kholta, and Patlakhawa were selected randomly. A total number of ten (10) villages were selected randomly for this study. The researcher randomly selected hundred (100) respondents from ten (10) different villages. The study explored personal variables such as Age (X_1), Education (X_2), Family Education Status (X_3), Contract Farming Experience (X_4), some socio-economic variables such as Annual Family Income (X_5), Annual Family Expenditure (X_6), Landholding (X_7), Economically Active Member (X_8), Personal Possession (X_9), and some communication variables, Communication Skills (X_{10}), Extension Contact (X_{11}), Mass Media Exposure (X_{12}) and Extension Participation (X_{13}) and some psychological variables like, economic motivation (X_{14}), risk preference (X_{15}), innovation proneness (X_{16}), achievement motivation (X_{17}), scientific orientation (X_{18}) and management orientation (X_{19}).

Keywords: Socio-economic profile, contract farming, extension contact, communication skills

1. Introduction

Minot (2007) [12] describes contract farming as a form of agricultural production based upon a pre-agreed agreement, where the farmer agrees to grow a specific product under certain pre-determined conditions, and the buyer guarantees its purchase. Such arrangements can be commonly seen as a form of vertical integration within the agricultural commodity chains (Prowse, 2012) [15]. Contracting firms or buyers set specific requirements for the farmers concerning production process and product quality, while ensuring market access and offering a pre-agreed purchasing price. Depending on the contract terms, farmers may also receive additional benefits such as inputs (seeds, pesticides, and fertilizers), credit, logistical support, and technical assistance (Eaton and Shepherd; Will, 2013) [5, 26].

This research topic is significant because innovating with small-scale farmers who comprise most of the contractors in developing countries requires a finer understanding of their low resources, capabilities, and psychosocial aspects. This is because contract farming companies consider innovation a source of competitiveness and growth (Ravelosaona, 2023) [17]. Integration of small-scale farmers into innovation management within contract farming companies in developing countries. Contract farming can be viewed as one of the most important tools for the promotion of agricultural development in developing countries (Zhong, *et al.*, 2023) [27]. The expanding contract farming landscape in emerging economies has been widely documented (Prowse, 2012; Minot and Sawyer, 2016; Ton *et al.*, 2018) [12, 15, 22]. Researchers have acknowledged the potential of contract farming to stimulate rural development across various socioeconomic settings (Will, 2013; Bellemare and Lim, 2018; Chen and Chen, 2021) [26]. On the one hand, agricultural development enhances the potential to improve food security by significantly boosting employment in the large, labour-intensive, non-tradable rural non-farm sector. Price increases in agriculture, driven by trade liberalization, could benefit small farmers by increasing their income opportunities. However, on the other hand, rising prices of tradable goods may negatively affect the real income of small farmers, as they are often net food consumers.

The Model Contract Farming Act, of 2018, enhances small farmers' interests by promoting land ownership, productivity, and better price return through contract farming (Ncube, 2020; Mazwi *et al.*, 2019; Sauer and Nanakorn, 2021) [14, 10, 18]. It links farmers with bulk buyers to secure fair prices and reduce market risks while ensuring a steady supply of raw materials to industries. The act

includes insurance to protect farmers from crop failures and safeguards their land ownership. It also establishes a system for transparent registration and agreement recording to prevent contract violations. Additionally, it encourages small farmers to join Farmer Producer Organisations (FPO) for greater benefits from economies of scale. But in some cases, it may also increase the agriculture farming cost, require timely availability of costly hired labour, poor storage, and handling; poor technical guidance, poor quality seeds, *etc* (Kumar and Kaur, 2021; Milkias and Keba, 2021) [9, 11]. The objective of the study is to study the socio-economic profile of contract farmers in the study area.

Methodology

For this research study, the *ex-post-facto* research design was adopted. Tuckman defines *ex-post-facto* in the year 1972 as: "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 article includes studying both qualitative and quantitative variables. This cross-sectional study was undertaken in the northern district of West Bengal, named Coochbehar. The district was selected purposely for this study as it depicts a diversified contract farming scenario of different crops, particularly potatoes, and an abundance of small farm landholders that explore innovative contract farming opportunities. Purposive, multistage, and random sampling procedures have been followed in the study. The Coochbehar II block of the Coochbehar district has been purposively selected due to the highly responsive and expressive nature of the farmers because they are concerned with sustaining their livelihoods.

The researcher's familiarity with the region, the officials, and the farmers along with easy access to the area could ensure that the study is conducted appropriately. Through random sampling, five-gram panchayats of the Coochbehar II block like Dhang Dhingguri, Pundibari, Ambari, Marich Bari Kholta, and Patlakhawa were selected. Random sampling refers to the technique of selecting all members of the population with equal probability for inclusion in the study. One village was randomly selected from the Gram Panchayat of Marich Bari Kholta and Pundibari. Two villages were randomly selected from Dhang Dhingguri and Ambari gram panchayats, and four villages were randomly selected from Patlakhawa gram panchayat. Marich Bari, Dhalaguri, Ambari, Dhang Dhingguri, Kachura Kuthi, Uttar Kalarayer Kuthi, Singimari Paschimpar, Chhat Singimari, Khagribari, Kalarayerkuthi Dakshin are the villages selected for this study. So, the total number of selected 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 above-stated exhaustive list of potato contract farmers, ten potato contract farmers from all ten villages were randomly selected, summing up to a total of a hundred respondent potato contract farmers.

Some socio-demographic variables were taken into consideration in the study, which included personal variables such as age, education, family education status, and experience with contract farming. Socioeconomic variables include annual family income, annual family expenditure, land holdings, economically active members, and personal possessions. Communication variables include communication skills, extension contact, mass media exposure, and extension participation. Psychological variables include economic motivation, risk preference, innovation proneness, achievement motivation, scientific orientation, and management orientation. The data were collected through an interview schedule from January 2023 to April 2023. The data have been collected through personal interview methods by visiting farms and homes. The data so collected were tabulated in MS Excel and analyzed through SPSS software for descriptive statistics.

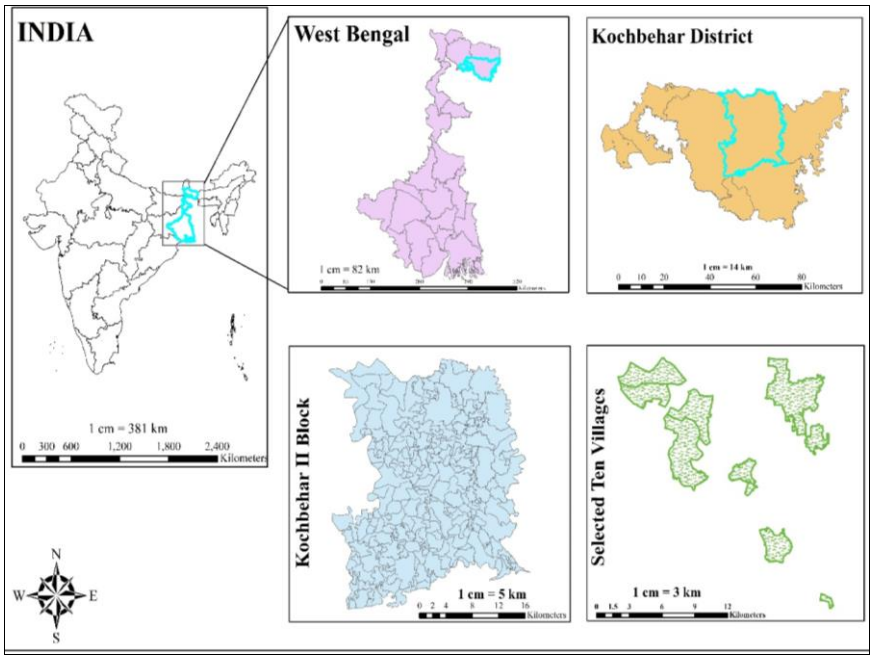

Fig 1: Research Locale

Results and Discussion

Distribution of the respondents according to their Age (X_1): The findings indicate that the respondent's ages ranged from 23 to 54 years, with an average age of 40.63 years and a standard deviation of 08.05. 62.00 per cent of the respondents fell into the middle-aged group (34-49 years), followed by 23.00 per cent in the young group (23-33 years) and 15.00 per cent in the older group (50-54 years). This suggests that the area is primarily composed of young and middle-aged farmers. These results align with previous studies by Das and Rahman (2018) [4], which reported 18.00 per cent of the farmers in the older age group, and studies by Gopala *et al.* (2017) [6], Sharma *et al.* (2018) [19], Kumar *et al.* (2020) [8], and Rajsri and Pradhan (2024) [20].

Distribution of the respondents according to their Education (X_2): The results indicate a range of 02.00 to 17.00, with an average of 08.47 and a standard deviation of 03.18. about 75.00 per cent of the respondents fell into the medium category (05.30-11.64), 21.00 per cent were in the low category (02.00-05.29), and only 04.00 per cent were in the high category (11.65-17.00). This suggests that most farmers have low to medium education levels, with a few highly educated individuals involved in contract farming. The absence of written contracts from firms might make more educated farmers wary of pre-agreed prices. These findings align with Bharti *et al.* (2022) [2].

Distribution of the respondents according to their Family Education Status (X_3): The results show a distribution between 02.25 to 09.40, with an average of 06.18 and a standard deviation of 01.43. 70.00 per cent were in the medium category (04.76-07.60), 17.00 per cent in the low category (02.25 to 04.75), and 13.00 per cent in the high category (07.61-09.40). This suggests that farmers with low to medium family education levels are more inclined to contract farming, likely seeing it as a stable income source. These findings are somewhat consistent with Waaswa *et al.* (2021) [25].

Distribution of the respondents according to their Contract Farming Experience (X_4): The results indicate a distribution of contract farming experience trends, which ranges from 01 to 12 years, with an average of 04.40 years and a standard deviation of 03.11. 62.00 per cent fell into the medium category (01.30-07.50 years), while 22.00 per cent were found to be in the low category (01.00-01.29 years) and 16.00 per cent in the high category (07.51-12.00 years). This suggests that contract farming, initially adopted by a small group of farmers, gradually expanded to include more participants over time. These findings are consistent with the research by Gopala *et al.* (2017) [6].

Distribution of the respondents according to their Family annual income (X_5): The results indicate a family annual income distribution in contract farming ranging from 00.90-04.50, with a mean of 02.04 and a standard deviation of 00.86. 66.00 per cent of the respondents fell into the medium category (01.19-02.89), while 20.00 per cent were in the high category (02.90-04.50) and 14.00 per cent in the low category (00.90-01.18). This suggests that the study area is largely comprised of farmers with medium to high levels of family annual income. These farmers are likely to engage in contract farming, which requires upfront investments in high-quality seeds, fertilizers, and labour, all of which can be costly.

Distribution of the respondents according to their Family Annual Expenditure (X_6): The results for farmer's annual agricultural expenditure show a distribution ranging from 00.20 to 03.00, with an average of 01.44 and a standard deviation of 00.65. 72.00 per cent fell into the medium category (00.80-02.08), while 17.00 per cent were in the high category (02.09-03.00) and 11.00 per cent in the low category (00.20-00.79). This suggests that the majority of farmers have medium to high annual expenditure indicating their capacity to adopt contract farming due to their spending habits and the ability to invest in higher-cost inputs.

Distribution of the respondents according to their Land Holding (in acres) (X_7): The results show a land distribution among potato contract farmers ranged from 01.25 to 06.00, with a mean score of 02.58 and a standard deviation of 01.11. 76.00 per cent fell into the medium category (01.48-03.68), while 18.00 per cent were in the high category (03.69-06.00), and 06.00 per cent in the low category (01.25-01.47) for land under potato contract farming. This suggests that the majority of farmers have medium to high landholdings, making them more likely to engage in contract farming, either individually or through farmer-producer organizations. These findings are consistent with the studies by Rajasri and Pradhan (2024) [20], Bharti *et al.* (2022) [2], and Verma *et al.* (2019) [24].

Distribution of the respondents according to their Economically active member (X_8): The results show a distribution ranging from 01.00 to 04.00, with a mean of 02.27 and a standard deviation of 00.78. the data revealed that 80.00 per cent of the respondents were in the medium category (01.50-03.04), 16.00 per cent were in the low category (01.00-01.49), and only 04.00 per cent were in the high category (03.05-04.00). This indicates that most farmers in the study area have a low to medium number of economically active members. This level of involvement suggests that contract farming serves as a significant source of employment and enables the farmers to pursue self-employment opportunities, such as becoming input dealers or vendors. These factors contribute to their engagement in modern contract farming practices.

Distribution of the respondents according to their Possession (X_9): The results indicate that the distribution ranged from 05.00-17.00, with a mean of 08.08 and a standard deviation of 02.69. 70.00 per cent of the respondents fell into the medium category (05.40-10.76) while 18.00 per cent were in the high category (10.77-17.00) and 12.00 per cent in the low category (05.00-5.39). This study suggests that the area is predominantly composed of farmers with farming activities. This enables them to engage in contract farming arrangements. The findings closely align with those of Rajasri and Pradhan (2024) [20].

Table 1: Socio-economic profile of potato contract farmers

Socio-economics profile of the respondents (N=100)							
Sr. No.	**Variables**	**Categories**	**Group/Score**	**f (%)**	**Descriptive Statics**		
					Range	**Mean**	**S.D.**
Personal Variables							
01.	Age (X_1)	Young Age	23-33 Years	23 (23.00%)	23.00-54.00	40.63	08.05
		Medium Age	34-49 Years	62 (62.00%)			
		Old Age	50-54 Years	15 (15.00%)			
02.	Education (X_2)	Low	02.00-05.29	21 (21.00%)	02.00-17.00	08.47	03.18
		Medium	05.30-11.64	75 (75.00%)			
		High	11.65-17.00	04 (04.00%)			
03.	Family Education Status (X_3)	Low	02.25-04.75	17 (17.00%)	02.25-09.40	06.18	01.43
		Medium	04.76-07.60	70 (70.00%)			
		High	07.61-09.40	13 (13.00%)			
04.	Contract Farming Experience (X_4)	Low	01.00-01.29	22 (22.00%)	01.00-12.00	04.40	03.11
		Medium	01.30-07.50	62 (62.00%)			
		High	07.51-12.00	16 (16.00%)			
Socio-Economic Variables							
05.	Annual Family Income (X_5)	Low	00.90-01.18	14 (14.00%)	00.90-04.50	02.04	00.86
		Medium	01.19-02.89	66 (66.00%)			
		High	02.90-04.50	20 (20.00%)			
06.	Annual Family Expenditure (X_6)	Low	00.20-00.79	11 (11.00%)	00.20-03.00	01.44	00.65
		Medium	00.80-02.08	72 (72.00%)			
		High	02.09-03.00	17 (17.00%)			
07.	Land Holding (X_7)	Low	01.25-01.47	06 (06.00%)	01.25-06.00	02.58	01.11
		Medium	01.48-03.68	76 (76.00%)			
		High	03.69-06.00	18 (18.00%)			
08.	Economically Active Member (X_8)	Low	01.00-01.49	16 (16.00%)	01.00-04.00	02.27	00.78
		Medium	01.50-03.04	80 (80.00%)			
		High	03.05-04.00	04 (04.00%)			
09.	Personal Possession (X_9)	Low	05.00-05.39	12 (12.00%)	05.00-17.00	08.08	02.69
		Medium	05.40-10.76	70 (70.00%)			
		High	10.77-17.00	18 (18.00%)			
Communication Variables							
10.	Communication Skills (X_{10})	Low	06.00-11.39	15 (15.00%)	06.00-24.00	15.93	04.54
		Medium	11.40-20.46	68 (68.00%)			
		High	20.47-24.00	17 (17.00%)			
11.	Extension Contact (X_{11})	Low	02.00-05.09	25 (25.00%)	2.00-17.00	08.34	03.25
		Medium	05.10-11.58	56 (56.00%)			
		High	11.59-17.00	19 (19.00%)			
12.	Mass Media Exposure (X_{12})	Low	01.00-03.59	18 (18.00%)	01.00-14.00	06.46	02.87
		Medium	03.60-09.32	65 (65.00%)			
		High	09.33-14.00	17 (17.00%)			
13.	Extension Participation (X_{13})	Low	02.00-03.85	08 (08.00%)	02.00-15.00	06.24	02.39
		Medium	03.86-08.62	73 (73.00%)			
		High	08.63-15.00	19 (19.00%)			
Psychological Variables							
14.	Economic Motivation (X_{14})	Low	06.00-08.14	24 (24.00%)	06.00-12.00	09.71	01.57
		Medium	08.15-11.27	61 (61.00%)			
		High	11.28-12.00	15 (15.00%)			
15.	Risk Preference (X_{15})	Low	11.00-13.46	18 (18.00%)	11.00-20.00	15.43	01.97
		Medium	13.47-17.39	70 (70.00%)			
		High	17.40-20.00	12 (12.00%)			
16.	Innovation Proneness (X_{16})	Low	05.00-08.68	18 (18.00%)	05.00-14.00	10.99	02.31
		Medium	08.69-13.29	69 (69.00%)			
		High	13.30-14.00	13 (13.00%)			
17.	Achievement Motivation (X_{17})	Low	11.00-14.51	18 (18.00%)	11.00-20.00	16.60	02.09
		Medium	14.52-18.68	62 (62.00%)			
		High	18.69-20.00	20 (20.00%)			
18.	Scientific Orientation (X_{18})	Low	18.00-27.27	15 (15.00%)	18.00-39.00	32.14	04.87
		Medium	27.28-37.00	73 (73.00%)			
		High	37.01-39.00	12 (12.00%)			
19.	Management Orientation (X_{19})	Low	23.00-38.01	15 (15.00%)	23.00-53.00	44.47	06.46
		Medium	38.02-50.92	69 (69.00%)			
		High	50.93-53.00	16 (16.00%)			
Where, *f*= frequency, %= percentage, S.D.=standard deviation, and C.V.= coefficient of variation							

Distribution of the respondents according to their Communication Skills (X_{10}): The results show a distribution from 06.00 to 24.00, with a mean of 15.93 and a standard deviation of 04.54. 68.00 per cent of the respondents were in the medium category (11.40-20.49), 17.00 per cent in the high category (20.47-24.00), and 15.00 per cent in the low category (06.00-11.39). Farmers with medium to high communication skills are likely to engage in contract farming, as it requires frequent information exchange from firms through vendors to farmers. These findings are similar to those of Raina *et al.* (2016) [16].

Distribution of the respondents according to their Extension Contact (X_{11}): The results indicate a distribution from 02.00 to 17.00, with a mean of 08.34 and a standard deviation of 03.25. 56.00 per cent of the respondents were in the medium category (05.10-11.58), 25.00 per cent in the low category (02.00-05.09), and 19.00 per cent in the high category (11.59-17.00). Issues such as unresolved disputes with local vendors, the firm's refusal to provide technical and advisory support, and poor behaviour from field executives may erode the farmer's trust in the contracting firm, contributing to the 25.00 per cent in the low category. These findings align with Rajasri and Pradhan (2024) [20].

Distribution of the respondents according to their Mass Media Exposure (X_{12}): The results, ranging from 01.00 to 14.00, have a mean of 06.46 and a standard deviation of 02.87. 65.00 per cent of the respondents fall into the medium category (03.60-09.32), 18.00 per cent are in the low category (01.00-03.59), and 17.00 per cent are in the high category (09.33-14.00). These findings align with Rajasri and Pradhan (2024) [20] and are similar to Kumar *et al.* (2020) [8].

Distribution of the respondents according to their Extension Participation (X_{13}): The results show a distribution from 02.00 to 15.00, with a mean of 06.24 and a standard deviation of 02.39. 73.00 per cent of the respondents fall in the medium category (03.86-08.62), while 19.00 per cent are in the high category (08.63-15.00) and 08.00 per cent in the low category (02.00-03.85). This indicates that the study area has a majority of farmers with medium to high levels of extension participation. The results are somewhat consistent with Gopi *et al.* (2020) [7].

Distribution of the respondents according to their Economic Motivation (X_{14}): The distribution of respondents according to their economic motivation in contract farming ranges from 06.00 to 12.00, with a mean of 09.71 and a standard deviation of 01.57. 61.00 per cent are in the medium category (08.15-11.27), while 24.00 per cent are in the low category (06.00-08.14) and 15.00 per cent in the high category (11.28-12.00). Low economic motivation among contract farmers may be due to delayed payments or agents not honouring agreed prices. These results align with Rajasri and Pradhan (2024) [20].

Distribution of the respondents according to their Risk Preference (X_{15}): The distribution ranges from 11.00 to 20.00, with a mean of 15.43 and a standard deviation of 01.97. 70.00 per cent are in the medium category (13.47-17.39), 18.00 per cent are in the low category (11.00-13.46), and 12.00 per cent in the high category (17.40-20.00). This suggests that the area is dominated by farmers with low to medium-risk preferences, likely due to their use of contract farming to mitigate farming and market price risks. These findings align with Rajasri and Pradhan (2024) [20].

Distribution of the respondents according to their Innovation Proneness (X_{16}): The distribution ranges from 05.00 to 14.00, with a mean of 10.99 and a standard deviation of 02.31. 69.00 per cent fall into the medium category (08.69-13.29), while 18.00 per cent are in the low category (05.00-08.68) and 13.00 per cent in the high category (13.30-14.00). This indicates that the research area has a majority of farmers with low to medium levels of innovation proneness. These results are closely aligned with Gopi *et al.* (2020) [7].

Distribution of the respondents according to their Achievement Motivation (X_{17}): The distribution ranges from 11.00 to 20.00, with a mean of 16.60 and a standard deviation of 02.09. 62.00 per cent are in the medium category (14.52-18.68), while 20.00 per cent are in the high category (18.69-20.00) and 18.00 per cent in the low category (11.00-14.51). To improve farmers' achievement motivation and retain them, contracting firms should address grievances and increase farmers' incomes. These findings are similar to Singh and Chouhan (2003).

Distribution of the respondents according to their Scientific Orientation (X_{18}): The distribution ranges from 18.00 to 39.00, with a mean of 32.14 and a standard deviation of 04.87. 73.00 per cent are in the medium category (27.28-37.00), while 15.00 per cent are in the low category (18.00-27.27) and 12.00 per cent in the high category (37.01-39.00). This suggests that the area has a majority of farmers with low to medium scientific orientation, leading them to adopt contract farming to boost production through scientific methods. These findings align with Rajasri and Pradhan (2024) [20] and Kumar *et al.* (2020) [8].

Distribution of the respondents according to their Management Orientation (X_{19}): The distribution ranges from 23.00 to 53.00, with a mean of 44.47 and a standard deviation of 06.46. 69.00 per cent are in the medium category (38.02-50.92), 16.00 per cent in the high category (50.93-53.00), and 15.00 per cent in the low category (23.00-38.01). This indicates that contract farmers have developed management skills through their contract farming arrangements.

Conclusion

The educational status of the respondents is moderately high, and so is the economic status, but moderation in contact with communication or extension services also exists. The mean age is 40.63 years (SD = 08.05), with 62.00% in the medium group (34-49 years). Education is predominantly medium (75.00%), with a mean score of 08.47 (SD = 03.18), family education status is also mostly medium (70.00%), with a mean of 06.18 (SD = 01.43). In contract farming experience, 62.00% have medium

experience (01.30-07.50 years), with a mean of 04.40 years (SD = 03.11). Annual family income is mostly medium (66.00%), averaging ₹ 02.04 lakhs (SD = 00.86). Annual expenditure follows a similar pattern, with a mean of ₹ 01.44 lakhs (SD = 00.65). The landholding is mostly medium (76.00%), averaging 02.58 hectares (SD = 01.11). economically active members are predominantly in the medium range (80.00%), with a mean of 02.27 (SD = 00.78). Personal possessions are also largely medium (70.00%), with a mean of 08.08 (SD = 02.69). Communication skills show 68.00% at a medium level, with a mean of 15.93 (SD = 04.54). Extension contacts and mass media exposure are similarly medium for most of the respondents (56.00% and 65.00%, respectively). Extension participation follows, with 73.00% in the medium range, averaging 06.24 (SD = 02.39). Psychological variables, economic motivation, and risk preferences are mostly medium, with mean scores of 09.71 (SD = 01.57) and 15.43 (SD = 01.97), respectively.

The result of this study might prove helpful for the policymakers and those organizations that are working in the field of extension for greater socio-economic development among the respondents by offering targeted interventions. Addressing these concerns is crucial for improving farmer engagement and satisfaction with contract farming arrangements. Strengthening Farmer Producer Organisations (FPOs) and providing timely technical assistance could further enhance contract farming's benefits. Policymakers and contracting firms should collaborate to improve transparency and ensure fair pricing mechanisms, ultimately contributing to sustainable agricultural development in the region.

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