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A STUDY ON THE BEHAVIOURAL ASPECT OF SMALL FARMERS TOWARDS SUBSCRIPTION OF CROP INSURANCE SCHEME IN CHITRADURGA DISTRICT

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Abstract:

Purpose – *This study examines solely the behavioural aspect of the small farmers' subscription to crop insurance schemes in Chitradurga district, Karnataka, focusing on the financial literacy and social factors determining subscription. Through this, we aim to determine the relationship between social factors such as friends, family, and neighbours, and their influence on the choices of small farmers to get crop insurance.*

Design/methodology/approach – *A Likert scale, a Five-point basis was adopted to standardise behavioural aspects. The 400 small farmers' data was collected through a structured questionnaire in December 2024 and January 2025 with a stratified random sampling technique for analysis. The study analysis has been conducted with descriptive statistics by establishing results from one-way ANOVA. Confirmatory Factor Analysis was performed using SPSS-22 and AMOS 26, the SEM Model was established to examine the hypothesis relationship.*

Findings – *The outcomes exhibit the correlation analysis's findings, which point toward a positive association between enrolment in crop insurance and financial literacy, underlining the status of financial literacy among small farmers. Social factors like friends, family, and neighbours will influence, indicating that each group influences small farmers uniquely, while enrolment in crop insurance is about small farmers of the Chitradurga district. Furthermore, the statistical model suggests that the data with the model are acceptable.*

Originality/value – *This study's significance is in clarifying the ways by which insurance literacy impacts insurance participation in Chitradurga. A sizable amount of cognitive insurance literacy is captured by perceived confidence in insurance providers, which is necessary for insurance literacy to affect insurance inclusion.*

Keywords *Small farmers, Chitradurga, Financial literacy, Crop insurance, Social-economic*

Paper type *Research paper*

Introduction:

The agricultural sector in India is the cornerstone of rural economies, providing livelihoods to millions, particularly small farmers. However, the region faces numerous challenges such as unpredictable weather patterns, pest attacks, fluctuating market prices, and natural calamities, as well as Crop insurance issues comprising the system's complexity and lags in claim settlement. (Banita & Gurung, 2023). In regions like the Chitradurga district of Karnataka,

where farming forms the backbone of the local economy, these challenges exacerbate the vulnerability of small farmers. Small farmers often lack the financial resilience to cope with the uncertainties of agriculture, making them highly susceptible to crop failures and income instability. The agricultural sector in Chitradurga faces numerous challenges, including erratic weather patterns and unpredictable market conditions, which make small farmers highly vulnerable to financial instability. Despite the government's efforts to promote crop insurance, the subscription among small farmers remains low. Most farmers cultivate traditional crops with a CSI score of 92%, which have unique risks not adequately addressed by current insurance schemes.

To address these difficulties, the Indian government created the Pradhan Mantri Fasal Bima Yojana (PMFBY) intending to offer financial help to agriculture in situations involving crop loss due to unforeseen natural disasters. Farming households have insured only 5% and the majority 77%, are unaware of the crop insurance benefit (Cariappa et al., 2021). Despite its potential, the endorsement of crop insurance schemes among small farmers in Chitradurga remains low. Unawareness is 72.27% which is greater in understanding farmers is complex, as it is related to psychology of farmers and also depends on various factors (Gaur & Sitaram, 2024), This discrepancy is often attributed to many factors such as limited awareness, trust issues with insurance providers, lack of tailored products for traditional farming, and socio-economic barriers that hinder their participation.

Literature Review

(J.Sundar & Ramakrishnan, 2015) This article explores crop insurance knowledge, purchasing benefits, and satisfaction levels. By this survey, more than 25% of respondents are unaware of crop insurance programs, and more than 15% believe there is no need for insurance for many reasons such as farmer education level and delayed payment of settlement.

(Sujarwo, 2017) The author discovered that 50% of the small-scale farmers in this region of Malang, Indonesia, took crop insurance, emphasizing the need for government assistance in assisting farmers to adapt to changing conditions and manage risk.

(Sibiko et al., 2018) A research was done in Kenya to determine why small-scale farmers in underdeveloped countries lack crop insurance. They discovered that, while WII might assist in easing problems, adoption has been less than expected. Better instruction, interaction, and contracts may boost adoption.

(Mbonane, 2018) researcher identifies farmers' preferred terms towards crop insurance, factors influence their conclusions, and identifies how best to protect farmers' livelihoods through agricultural risks. Findings suggested farmers in both regions have higher risk and uncertainties, thus, likely they are interested in purchasing sustainable risk strategies. It was also suggested that understanding farmers' crop insurance preferences is critical to improving insurance policies.

(Singh & Agrawal, 2020) The research assesses India's agricultural insurance systems, concluding that many farmers struggle to get insurance owing to their lack of expertise and desire for aid payments. Thus, these are the major initiatives that have been hindered due to implementation challenges at the state level. The article investigates the development of crop protection in India, its efficiency, and the assurance it has provided Indian farmers.

(Ranganathan, 2020) The researcher's study investigates the effects of crop insurance on debt and agricultural revenue in India. It revealed that only 5% of families insure their crops, and

87% do not get claims. According to the study, crop insurance decreases outstanding debt, lowers input costs, and enhances income.

(Ghosh et al., 2021) Researchers examined in India found farmers appreciate crop insurance less than in specific situations and have plans to pay rates for coverage. Above subsidized rates. However, the total number of covered farmers has declined by 14%, presenting policymakers with issues related to making indemnity payments. Insurance companies should investigate different coverage periods.

(Ankrah et al., 2021) Researchers reveal that smallholder farmers have limited access to crop insurance (14%), despite 90% valuing it. Factors contributing to this low adoption rate include lack of information about insurance products, availability in critical locations, gender, educational level, information asymmetry, lack of knowledge, and misconceptions about insurance products. The study suggests an initiative to increase farm insurance use and accessibility.

(Punia et al., 2021) The research looks at 240 farmers in six districts of Haryana, who participated in the study, which looks at crop insurance concerns. Non-borrower farmers deal with claims paid for losses evaluation and lack of trust, while borrowers deal with problems including inadequate yield calculation and claim settlement delays. The Indian government wants more people to get crop insurance, but it's important to understand what farmers want.

(Patil et al., 2021) researchers have examined that farmers in India prefer pre-sowing and market risks to full crop coverage, according to a survey of 3000 farmers in Odisha state. The Indian government plans to expand crop insurance coverage under PMFBY, but understanding farmers' preferences is crucial for product design.

(Chander et al., 2021) According to research conducted in Haryana's Kaithal district, a substantial contribution by the state made to Indian farming in 2018-19, generating 181.44 lakh tons of food grains. According to the poll, more than half of those who participated around the 50-year age group, three-quarters were of low social class, and a quarter were uneducated, with smaller land holdings being the most frequent.

(Okpukpara et al., 2021) According to researchers, small-holder farmers in Kogi State, Nigeria, encounter hurdles to participating in agricultural insurance schemes, the majority of farmers have spouses, are literate, and have low participation. The government should reduce bureaucratic processes and hurdles to promote access. Traditional risk-mitigation strategies are insufficient, and formalized insurance is required to decrease uncertainty.

(Kumari et al., 2021) Researchers' intention of this study looks at what farmers think of the Pradhan Mantri Fasal Bima Yojana in Salem district, awareness and response rates, with an emphasis. The findings support required crop insurance for farmers to safeguard against natural catastrophes and minimise financial losses, resulting in considerable crop loss reductions.

(Jha et al., 2021) This study presents a blockchain-based crop protection solution that is more inexpensive, efficient, and low-cost than existing insurance systems. The Ethereum-based method lowers the cost of insurance administration while also ensuring timely crop coverage. Tests on systems such as Google Cloud revealed a slow speed and an average delay of 31.2 seconds. The system is functional and will be offered on an open-source basis that is open-source for future enhancements.

(Nagesha et al., 2022) The Pradhan Mantri Fasal Bima Yojna, set in India in 2016, targeted at improving crop insurance policies. According to the study, farmers' attitudes have had an

important effect on the assumption of these actions. Between 2020 and 2021, the research will concentrate on the Tumkur region of Karnataka.

(Bhuiyan et al., 2022) The study looks at the effect of farmer income in Guangdong province, China, and agricultural insurance. The study analyzes crop insurance emphasis and per capita benefit using statistical approaches. The findings indicate a favourable relationship between income growth, higher agriculture insurance concentration and per-capita compensation.

(Munkombwe et al., 2022) According to the findings, 34.9% of small-scale farmers are ignorant of the government's attempts to give weather insurance measures. Best practices for manufacturing, shipping, advertising, and insurance education are recommended in the research. Although crop insurance can assist low-income nations in adapting to climate change, it is limited in its efficacy due to institutional restrictions and hazards.

(Bhagirath Prakash Baria & Shamurailatpam, 2022) The researchers' article investigates the factors influencing India's official agricultural loans for rural families between 1991-92 and 2018-19, emphasising the importance of active policy changes for financial stability and inclusive growth, as well as additional policy shocks and innovations in the current controlled allocation and distribution system.

(Devi Assistant Professor et al., 2022) Research article provides that crop insurance is highly used in India's agriculture industry, however, it is not widely adopted. Issues such as incorrect loss assessments and delayed claim pay-outs impede farmers' interests.

(Nagesha et al., 2022) The researchers' targeted Pavagada and Sira taluks in Tumkur district of Karnataka found that factors like farming experience, age, education, extension contact, land holding, and economic motivation positively influenced farmers' attitudes towards PMFBY. The scheme's promotion strategies included newspaper advertisements, broadcasts, and awareness campaigns.

(Biswal & Bahinipati, 2022) The researchers investigate the impact of financial determinants on agricultural insurance consumption in India, demonstrating that wealth and income influence adoption. However, credit limits and hefty rates impede adoption, as 80% of Indian farmers lack the funds to procure crop insurance. The study gazes at how social, structural factors, educational, and economic factors affect subscribing decisions of farmers into crop insurance.

(Tankiwala et al., 2022) The researchers looked at the economic features of Pradhan Mantri Fasal Bima recipients and non-beneficiaries and discovered that the majority were middle-aged, had a secondary education, and had a medium income. They were involved in several groups, had minor landholdings, and had moderate agricultural competence.

(Kutlar & Akcaoz, 2022) The researchers in the study look into the reasons for and attitudes toward agricultural insurance among greenhouse growers across 3 Antalya districts. Interviews were performed with 200 farmers, divided into two groups: those who had insurance and those who had not subscribed to insurance. According to the survey, farmers purchase insurance to protect crops, avert potential losses, ensure revenue, and handle catastrophe risk. The primary reasons for not subscribing to coverage are registration and land-sharing issues.

(Pellokila et al., 2023) The study investigates lowland rice farmers' views of farm loan risk and the factors influencing them, 77 respondents were examined utilizing a "Bernoulli Utility Function" technique of basic random sample procedure. Majority agricultural workers are threat averters, with 49.35% risk averters, 27.27% risk-free, and 23.38% seeking.

(Sharath et al. 2023) Pradhan Mantri Fasal Bima Yojana (PMFBY) aids as an Indian agricultural program insurance that provides farmers with financial security in a situation of loss to crop or damage. From 2016 to 2022, research analyzed the achievement of PMFBYS in Karnataka by assessing inputs and outputs. The results indicated that 12 districts outperformed the other 19, and there was a substantial association between insured and resolved claims. The study suggests that farmers' insurance benefits be improved.

(Priyadarsinee et al., 2023) The study sought to understand the farming insurance service system, stakeholders, responsibilities, and growers' knowledge and attitudes regarding agriculture insurance. Majority agricultural workers were aware and optimistic, with education, money, insurance expertise, risk aversion, and cosmopolitanisms all playing important roles. The study enhanced interaction among farmers and extension specialists in their villages.

(Loughrey & Vidyaratne, 2023) The researchers' Teagasc National Farm Survey data, this study investigates the relationship between unsubsidised and farm characteristics, in Ireland, crop insurance premium expenditure. The findings reveal a beneficial impact on insurance expenses by asset value, whereas the forestry and farming sectors have a substantial influence. Farm revenue and farmer age have a beneficial influence on insurance spending.

Study Objectives:

1. To examine the relationship between crop insurance enrolment and small farmers' financial literacy is related.
2. To evaluate the extent to which social factors – friends, family, and neighbours influence small farmers' choices to get crop insurance.

Research materials and methods

The study carried out by employing a structured questionnaire in December 2024 and January 2025 in the district Chitradurga, Karnataka, India, covering 400 small farmers with landholdings less than 5 acres. The probability sampling technique was used, a stratified random sampling technique was employed in the selected taluks of Chitradurga district. The study analysis has been conducted with descriptive statistics of F-test and t-test by establishing results from one-way ANOVA to test the established hypothesis concerning the question (1) Are you financially literate? and (2) Small farmers being financially literate will enroll in Crop Insurance. H0: enrolment in crop insurance is not significantly impacted by financial literacy. H1: Enrolment in crop insurance is expressively impacted by financial literacy. H0: The social factors such as friends, family, and neighbours will not influence the choices of small farmers to get crop insurance. H1: The social factors such as friends, family, and neighbours will influence the choices of small farmers to get crop insurance. Five-point Likert scaling techniques were used to determine farmers' behaviour towards subscription of crop insurance that comprises of Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree. Regression and coefficient of correlation tools were used to substantiate the relationship between factors.to examine the mentioned objectives. In the research, a Confirmatory Factor Analysis was undertaken with a sample of 400 small farmers from the Chitradurga district, who shared their views on subscribing to crop insurance schemes. Statistical analyses were performed using SPSS-22 and AMOS 26. Below are the results, beginning with the essential initial calculations for the Confirmatory Factor Analysis process. (a) KMO and Bartlett's Test of Sphericity, (b)

Communalities Matrix, (c) Principal Component Analysis, (d) Factor Loadings, and (e) Classification of Items based on Values of Factor Loadings.

Result analysis and presentation

In this study, the attributes of the small farmers behaviour towards enrolment of crop insurance scheme concerning the financial literacy and the social factors (friends, family and neighbours) influence the choice in enrolling into crop insurance, has been measured by collecting the data through questionnaire with five-point Likert scale which may significantly impacted the performance. The behavioural aspect of the 400 respondents of Chitradurga district has been analysed regarding the socio-demographic data in demonstrating the factors influencing. The data indicates that all 400 respondents in the study belong to the Chitradurga district, representing 100% of the sample. Since there are no respondents from other districts or missing data, the valid percentage is also 100%. The cumulative percentage further confirms that the entire dataset is focused exclusively on Chitradurga.

Table 1 Socio-demographic characteristics of respondents of Chitradurga district.

No.	Category	Frequency	Percentage	Valid Percentage
1.	**Age (in years)**			
	26 – 35	32	8.00	8.00
	36 – 45	112	28.00	28.00
	46 – 55	200	50.00	50.00
	56 and above	56	14.00	14.00
2.	**Size of family (members)**			
	Less than 3 members	8	2.00	2.00
	4 to 6	368	92.00	92.00
	7 to 9	24	6.00	6.00
	10 and above	0	0.00	0.00
3.	**Experience in farming (in years)**			
	Less than 10 Years	64	16.00	16.00
	11 to 30	208	52.00	52.00
	31 to 50	112	28.00	28.00
	Above 51	16	4.00	4.00
4.	**Landholding type**			
	Owned	352	88.00	88.00
	Leased in	48	12.00	12.00
5	**Crop cultivation details**			
	Traditional crop	368	92.00	92.00
	Commercial crop	16	4.00	4.00
	Horticulture	16	4.00	4.00
6.	**Sources of finance for agriculture activities**			
	Own savings	144	36.00	36.00
	Loan from Commercial bank	32	8.00	8.00
	Loan from Rural co-operative bank	24	6.00	6.00

	Loan from money lenders	200	50.00	50.00

Source: *Primary data 2024 – 25author's work.*

Table 1 no. 1 represents respondents' distribution of age, which indicates the majority, **50% (200 respondents)**, inside the age range of 46 to 55 years, after **28% (112 respondents)** under the 36 to 45 years group. Respondents aged 56 and above account for 14% (56 respondents), while the youngest group aged 26 to 35 years comprises only 8% (32 respondents). This shows that the sample is predominantly middle-aged, which may influence the study's findings, as age often impacts decision-making and behaviour toward crop insurance. **Table 1**, no.2 represents data of respondents' family size reveals that the majority of respondents, **92% (368 respondents)**, have families comprising of 4 to 6 members, indicating that medium-sized families dominate the sample. A smaller proportion, 6% (24 respondents), have larger families with 7 to 9 members, while only 2% (3 respondents) belong to families with less than 3 members. This distribution highlights that most respondents come from moderately sized households, which may influence their behaviour toward crop insurance, as family size can affect economic priorities and risk management decisions. **Table 1** no. 3 farming experience indicates that **52% (208 respondents**) have been involved in farming for 11 to 30 years, making this the largest group. **28% (112 respondents)** have 31 to 50 years of farming experience, while 16% (64 respondents) have less than 10 years of experience. The cumulative percentage represents that 96% of respondents have between 10 and 50 years of experience, suggesting the bulk of the sample consists of farmers with agricultural experiences that are significant. This experience may influence their perspectives on farming practices, challenges, and the adoption of crop insurance schemes, as more experienced farmers are expected to have a deeper understanding of agricultural risks and practices.

Table 1 no. 4 data on land-holding type reveals that the majority of respondents, **88% (352 respondents)**, own the land they farm, while 12% (48 respondents) lease land. The valid percentage matches the frequency, because there are no missing or invalid responses. This distribution highlights that land ownership is prevalent in the study population, which may influence the respondents' behaviour toward crop insurance, as landowners may have different priorities and concerns compared to those who lease land. **Table 1** no. 5 data on crop cultivation reveals that the majority of respondents, **92% (368 respondents)**, primarily cultivate traditional crops, indicating that these crops are the dominant form of agriculture in the sample. This suggests traditional crops are the most common agricultural practice among the respondents, traditional crops typically have different risk factors and insurance needs when compared to commercial crops or horticulture.

Table 1 no. 6 data on the source of finance for agricultural activities reveals that the majority of respondents, **50% (200 respondents)**, rely on loans from money lenders to finance their agriculture activities, highlighting a heavy dependence on informal credit sources. **36% (144 respondents)** use own savings as the primary source of finance, while 8% (32 respondents) obtain loans from commercial banks and 6% (24 respondents) turn to rural co-operative banks for financial support. This point indicates that a considerable sector of the sample depends on informal and personal finance options, which could be implications for their inability to access

formal financial products like crop insurance. The reliance on money lenders, in particular, may indicate limited access to more formal, affordable credit sources.

Table 2 Behaviour components towards subscription of crop insurance by small farmers

Behavioural components	**Strongly disagree (%)**	**Disagree (%)**	**Neural (%)**	**Agree (%)**	**Strongly Agree (%)**	**Total respondents**
I can reduce agricultural risk by making use of a crop insurance scheme	12.00	28.00	18.00	24.00	18.00	400
I possess appropriate information concerning the operation of crop insurance.	24.00	26.00	26.00	14.00	10.00	400
There are enough resources available to assist me in subscribing to crop insurance.	10.00	30.00	34.00	18.00	8.00	400
I actively seek information about crop insurance options available to me.	27.00	15.00	32.00	14.00	12.00	400
I maintain that crop insurance providers offer support at times of necessity.	14.00	34.00	22.00	20.00	10.00	400
Enrolment in the crop insurance program based on the suggestions of neighbouring farmers	16.00	40.00	24.00	18.00	2.00	400
In numerous rural regions, access to insurance advisors and offices is limited, affecting farmers' ability to obtain subscriptions.	8.00	32.00	30.00	18.00	12.00	400
Subscribing to crop insurance schemes is useful as a financial literacy in comparing other investments.	12.00	30.00	14.00	38.00	6.00	400

Source: *Primary data 2024 – 25 author's work.*

Behaviour towards insurance subscription" refers to the actions and decisions a person makes when considering and essentially deciding to join a crop insurance scheme, including their motivations, the process of researching, comparison of choices, and factors that influence their decision to procure a crop insurance scheme. The conception of planned behaviour is used to demonstrate that people's beliefs in social standards affect how much individuals purchase insurance (K Meenendranath Reddy, 2023).

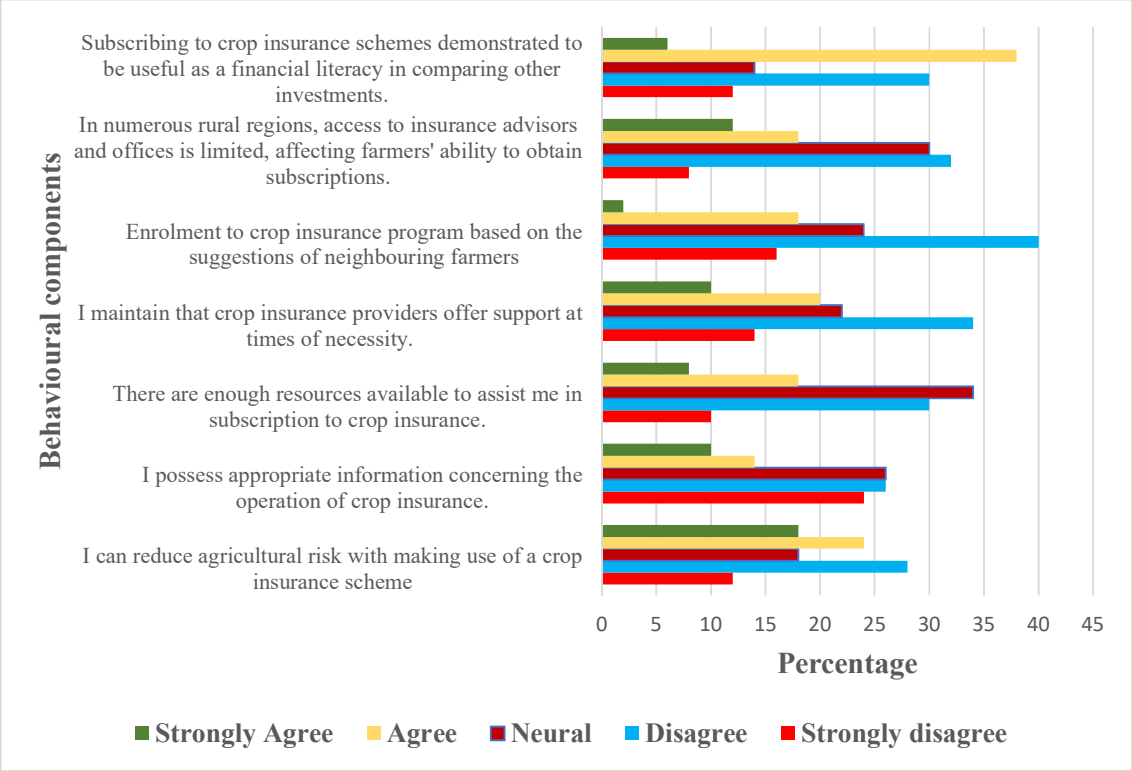


Figure 1 *Behaviour components towards subscription of crop insurance by small farmers in percentage.*
Source: *Created by author*

Analysis of Objective: (1) To examine the relationship between crop insurance enrolment and small farmers' financial literacy is related.

Questions:

1. Are you financially literate? (Subscribing to crop insurance schemes demonstrated to be useful for me when compared to other investments) financial literacy– Independent Variable.
2. A farmer being financially literate will enroll in crop insurance. (I enrol in a crop insurance program based on the suggestions of neighbouring farmers) enrolment– Dependent Variable.

Table 3 Descriptive Statistics representing the financial literacy computation.

Components	**Mean**	**Std. Deviation**	**N**
I enroll in a crop insurance program based on the suggestions of neighbouring farmers.	2.50	1.026	400
Subscribing to crop insurance schemes is useful as a financial literacy in comparing other investments.	2.96	1.184	400

Source: *the output from SPSS author's calculation.*

From the Descriptive **Table *3***, out of 400 observations, the mean value of enrolment to crop insurance is 2.50 with 1.026 standard deviation on a 5-point Likert scale, while 2.96 mean value of financial literacy is 1.184 with a standard deviation on the same scale.

Table 4 represents the Correlations between the social factor and financial literacy.

	Dependent and Independent Variables	I enroll in a crop insurance program based on the suggestions of neighbouring farmers.	Subscribing to crop insurance schemes is useful as a financial literacy in comparing other investments.
Pearson Correlation	I enroll in a crop insurance program based on the suggestions of neighbouring farmers.	1.000	0.281
	Subscribing to crop insurance schemes is useful as a financial literacy in comparing other investments.	0.281	1.000
Sig. (1-tailed)	I enroll in a crop insurance program based on the suggestions of neighbouring farmers.		0.000
	Subscribing to crop insurance schemes is useful as a financial literacy in comparing other investments.	0.000	
N	I enroll in a crop insurance program based on the suggestions of neighbouring farmers.	400	400
	Subscribing to crop insurance schemes is useful as a financial literacy in comparing other investments.	400	400

Source: *the output from SPSS author's calculation*

The Correlation **Table *4*** shows that the relationship between enrolment in crop insurance and financial literacy is 5% level significant, with a P-value of 0.000. The Pearson's correlation coefficient is positive (0.281), indicating a progressive relationship between enrolment in crop insurance and financial literacy, underlining the importance of financial literacy among the small farmers.

Table 5 Model Summary[b] representing the financial literacy and social factors.

Model	R	R square	Adjusted R square	Std. error of the estimate	Change Statistics					Durbin Watson
					R square change	F change	df1	df2	Sig. F change	
1	0.281[a]	0.079	.076	.0986	.079	34.012	1	398	.000	2.018

Source: *the output from SPSS author's calculation. Note: a. Predictors: (Constant), Subscribing to crop insurance schemes is useful as a financial literacy in comparing other investments. b. Dependent variable: I enrol in a crop insurance program based on the suggestions of neighbouring farmers.*

In the summary **Table *5***, the R value indicates the coefficient of multiple correlations. In a bivariate regression model, a correlation between Y and X is represented by R, with values ranging from -1 to +1. Higher R values suggest improved fit of regression model. The R value of 0.281 indicates a moderately good fit and a significant relationship between enrolment to crop insurance and financial literacy. Coefficient of determination, represented by R-square, shows the proportion of variance in the dependent variable determined by the independent variable. 0.079 R-square value indicates that financial literacy does not explain adequately the success rate of enrolment in crop insurance by small farmers.

The R-Square adjusted assesses contribution of a new variable to the model. An increase in adjusted R-square after adding a new variable indicates its significance. The table shows a 0.076 R-square value adjusted, which decreases after adding a new variable, suggesting that it may not improve the model fitted. The Durbin-Watson autocorrelation statistic quantifies in the regression model **d = Σ(e[i] - e[i-1])^2 / Σ(e[i]^2)** (Champion et al., 1998), with 2 as the ideal value lacking in auto-correlation. A score ranging from 0 to 2 shows positive autocorrelation, whereas 2 to 4 implies negative autocorrelation. The Durbin Watson value 2.018 confirms negative autocorrelation, indicating a good model and reliability.

Table 6 ANOVA[a] representing the regression model of dependent and constant variables.

Model		Sum of squares	df	Mean Square	F	Sig.
1	Regression	33.066	1	33.066	34.012	0.000[b]
	Residual	386.934	398	0.972		
	Total	420.000	399			

Source: *the output from SPSS author's calculation. Note: a. Dependent variable: I enrol in a crop insurance program based on the suggestions of neighbouring farmers. b. Predictors: (Constant), Subscribing to crop insurance schemes is useful as a financial literacy in comparing other investments.*

The ANOVA **Table *6*** presents F-test results for one way ANOVA. The P-value of 0.000 for the F-statistic (34.012) significance level is less than 5%, null hypothesis leading to rejection that enrolment in crop insurance is not significantly impacted by financial literacy with 95% confidence. This confirms financial literacy on enrolment in crop insurance of small farmers has a significant impact.

Table 7 Understanding Coefficients[a] of the constant component of crop insurance compared to other investments.

Model		Understanding Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant), Subscribing to crop insurance schemes is useful as a financial literacy in comparing other investments.	**1.780** **0.243**	**0.133** **0.042**	**0.281**	**13.397** **5.832**	**0.000** **0.000**

Source: *the output from SPSS author's calculation. Note: a. Dependent variable: I enrol in a crop insurance program based on the suggestions of neighbouring farmers.*

The Coefficients **Table** *7* provides the regression equation Y = 1.780 + 0.243(X), with a P-value for T-statistic of 0.000, thus the significance level is less than 0.05. Therefore, rejected the null hypothesis, concluding that financial literacy on enrolment in crop insurance of small farmers has a significant impact.

Analysis of Objective: (2) 1. To evaluate the extent to which social factors – friends, family, and neighbours influence small farmers' choices to get crop insurance.

Table 8 Descriptives of the social factors computation.

Social Factors	N	Mean	Std. Deviation	Std. error	95% Confidence interval for Mean		Lowest	Extreme	Between Component Variance
					Lower Bound	Upper Bound			
Friends	28	22.88	5.404	0.320	22.25	23.51	12	34	
Family	5	22.41	5.342	1.139	20.04	24.78	12	34	
Neighbours	22	21.84	5.535	0.574	20.70	22.98	12	34	
Model –	93	22.62	5.436	0.272	22.08	23.15	12	34	
Fixed Effects	40		5.431	0.272	22.08	23.15			
Random effects	0			0.366	21.04	24.19			0.107

Source: *the output from SPSS author's calculation.*

Adding to the descriptive ***Table 8*** insights for social factors, the analysis of variance among Friends, Family, and Neighbours group reveals significant differences in influencing the choices of small farmers to get crop insurance. This indicates that each group influences small farmers uniquely while selecting the crop insurance. Standard deviation values with the extreme and lowest values, provide an in-depth understanding of the spread and variability within each group's responses.

Table 9 Homogeneity of variances test

Levene statistic	df1	df2	Sig.
0.349	2	397	0.705

Source: *the output from SPSS author's calculation.*

Table *9* represents the Homogeneity of Variances test, also known as the Levene Test, is used to test the null hypothesis that all sample variances are the same (Gastwirth et al., 2009).

Individual absolute difference: **Zij = |Yij - Ȳi|**

Yij: The j^{th} observation in the i^{th} group

Ȳi.: The mean of the i^{th} group

Zij: The absolute difference between the observation and its group mean.

The output on social factors such as friends, family, and neighbours group shows the p-value (0.705) larger than 0.05, homogeneity among respondents exists, and their influence on the choices of small farmers to get crop insurance. Homogeneity of variance is a requirement for the One-way ANOVA test, and the **Table *10*** indicates the opinions by the groups.

Table 10 ANOVA representing the mean square of the social groups.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	77.632	2	38.816	1.316	0.269
Within Groups	11711.078	397	29.499		
Total	11788.710	399			

Source: *The output from SPSS author's calculation between the social factors.*

The calculated Value (P-value – 0.269) in the ANOVA **Table *10*** for social factors such as Friends, Family, and Neighbours group is more than the Significant Value 0.05 (5%) and the F-statistics value (1.316), F-statistics table value less than 3.95, null hypothesis to discard. Hence, at 95% confidence level, the null hypothesis of equal group variances cannot be accepted. Thus, it can be concluded that social factors such as friends, family, and neighbours will influence the choices of small farmers to get crop insurance.

Confirmatory Factor Analysis (CFA): is a specialised approach for determining if the observed patterns in a construct match with a researcher's theoretical knowledge of that notion or component. Below are results, beginning with the essential initial calculations for the CFA process.

(a) KMO and Bartlett's Test of Sphericity,
(b) Communalities Matrix,
(c) Principal Component Analysis,
(d) Factor Loadings
(e) Classification of Items based on Values of Factor Loadings

Table 11 KMO and Bartlett's Test of Sphericity results.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**.613**
Bartlett's Test of Sphericity	Approx. Chi-Square	**871.872**
	df	**28**
	Sig.	**.000**

Source: *Confirmatory Factor Analysis, SPSS, author's calculation.*

According to Kaiser, H. F., and Rice, J. (1974), the Kaiser-Meyer-Olkin (KMO) rating of 0.613 is considered "mediocre". The sample size is enough, and the data gathered are suitable for factor analysis. Furthermore, in **Table *11*** Bartlett's Test of Sphericity produces a chi-square value of 871.872 with a significance level of 0.000, supporting a strong correlation among the items tested in the study. This supports the continuation of the analysis despite the moderate KMO value.

Table 12 Results of Communalities Matrix related to behavioural independent variables

Independent Variable	**Initial**	**Extraction**
I can reduce agricultural risk by making use of a crop insurance scheme	1.000	0.715
I possess appropriate information concerning the operation of crop insurance.	1.000	0.746
There are enough resources available to assist me in subscribing to crop insurance.	1.000	0.769
I actively seek information about crop insurance options available to me.	1.000	0.479
I maintain that crop insurance providers offer support at times of necessity.	1.000	0.717
Enrolment in the crop insurance program based on the suggestions of neighbouring farmers	1.000	0.500
In numerous rural regions, access to insurance advisors and offices is limited, affecting farmers' ability to obtain subscriptions.	1.000	0.750
Subscribing to crop insurance schemes is useful as a financial literacy in comparing other investments.	1.000	0.721

Source: *Confirmatory Factor Analysis, SPSS, author's calculation*

Communalities represent the portion of every variable's variation explained by the underlying components or causes. **Table *12*** as highlighted, most communalities exceed 0.5, indicating that the extracted components effectively capture the variance of these variables. While there are a few exceptions, the overall high communalities suggest that the factor analysis results reliably represent the variables under consideration. Additionally, all elements exhibit significant values, reinforcing the robustness of the components.

Table 13 Total variance Principal Component Analysis.

Total Variances Explained									
Components	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	2.814	35.174	35.174	2.814	35.174	35.174	1.981	24.762	24.762
2	1.381	17.264	52.439	1.381	17.264	52.439	1.789	22.363	47.125

3	1.202	15.022	67.461	1.202	15.022	67.461	1.627	20.336	67.461
4	0.823	10.290	77.751						
5	0.668	8.355	86.106						
6	0.543	6.791	92.897						
7	0.326	4.069	96.966						
8	0.243	3.034	100.00						
Extraction Method: Principal Component Analysis.									

Source: *Confirmatory Factor Analysis, SPSS, author's calculation*

Table *13* result of Total Variance Explained - Factor analysis involves using a The correlation matrix is standardised, guaranteeing that each variable has a variance of one of them, and the overall variance represents the number of variables included in the study. It identifies that out of the eight variables, the first three latent variables account for over 67% of the total variation. Indicating a majority of the information is captured by these three components, making them the most significant contributors to the dataset. Summary findings suggest that 67% of respondents align more closely with the study's primary three components.

Table 14 Rotated Component Matrix

Rotated Components	**Components**		
	1	**2**	**3**
I can reduce agricultural risk by making use of a crop insurance scheme	0.843		
I possess appropriate information concerning the operation of crop insurance.	0.752		
There are enough resources available to assist me in subscribing to crop insurance.	0.608		
I actively seek information about crop insurance options available to me.		0.830	
I maintain that crop insurance providers offer support at times of necessity.		0.793	
Enrolment in the crop insurance program based on the suggestions of neighbouring farmers			0.824
In numerous rural regions, access to insurance advisors and offices is limited, affecting farmers' ability to obtain subscriptions.			0.517
Subscribing to crop insurance schemes is useful as a financial literacy in comparing other investments.			0.516
Extraction Method: Principal component analysis. Rotation Method: Varimax with Kaiser Normalisation.			
A rotation converged after 11 repetitions.			

Source: *Confirmatory Factor Analysis, SPSS, author's calculation.*

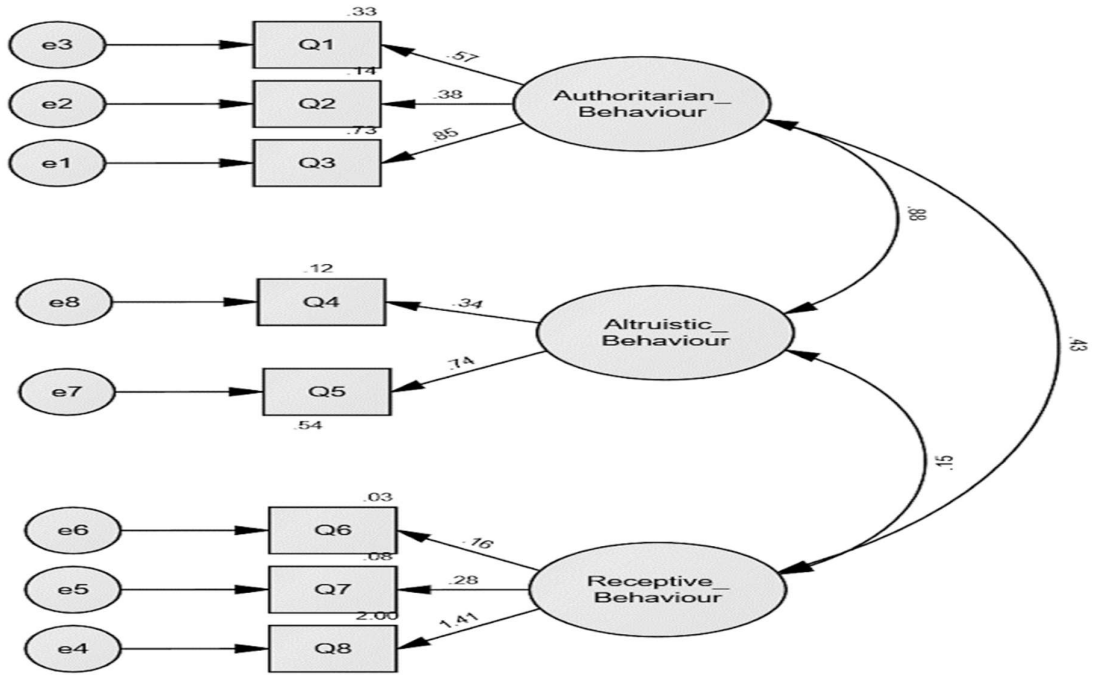
Meanwhile, Rotated Component Matrix **Table *14*** identifies three components with strong factor loadings, each supported by at least two items or questions. These well-defined and tested components served as the model's foundation. This method assures that the structure of the model is logical and consistent with the data.

Table 15 Factors Extraction / Loadings with Cronbach's Alpha

Factors	Items	Factor Loading Value	Cronbach's Alpha
Factor 1: Authoritarian Behaviour	I can reduce agricultural risk by making use of a crop insurance scheme	0.680	**0.741**
	There are enough resources available to assist me in subscribing to crop insurance.	0.617	
	Subscribing to crop insurance schemes is useful as a financial literacy in comparing other investments.	0.675	
Factor 2: Altruistic Behaviour	I possess appropriate information concerning the operation of crop insurance.	0.612	**0.651**
	I maintain that crop insurance providers offer support at times of necessity.	0.609	
Factor 3: Receptive Behaviour	In numerous rural regions, access to insurance advisors and offices is limited, affecting farmers' ability to obtain subscriptions.	0.395	**0.426**
	Enrolment in the crop insurance program based on the suggestions of neighbouring farmers	0.323	
	I actively seek information about crop insurance options available to me.	0.273	

Source: *Confirmatory Factor Analysis, SPSS, author's calculation.*

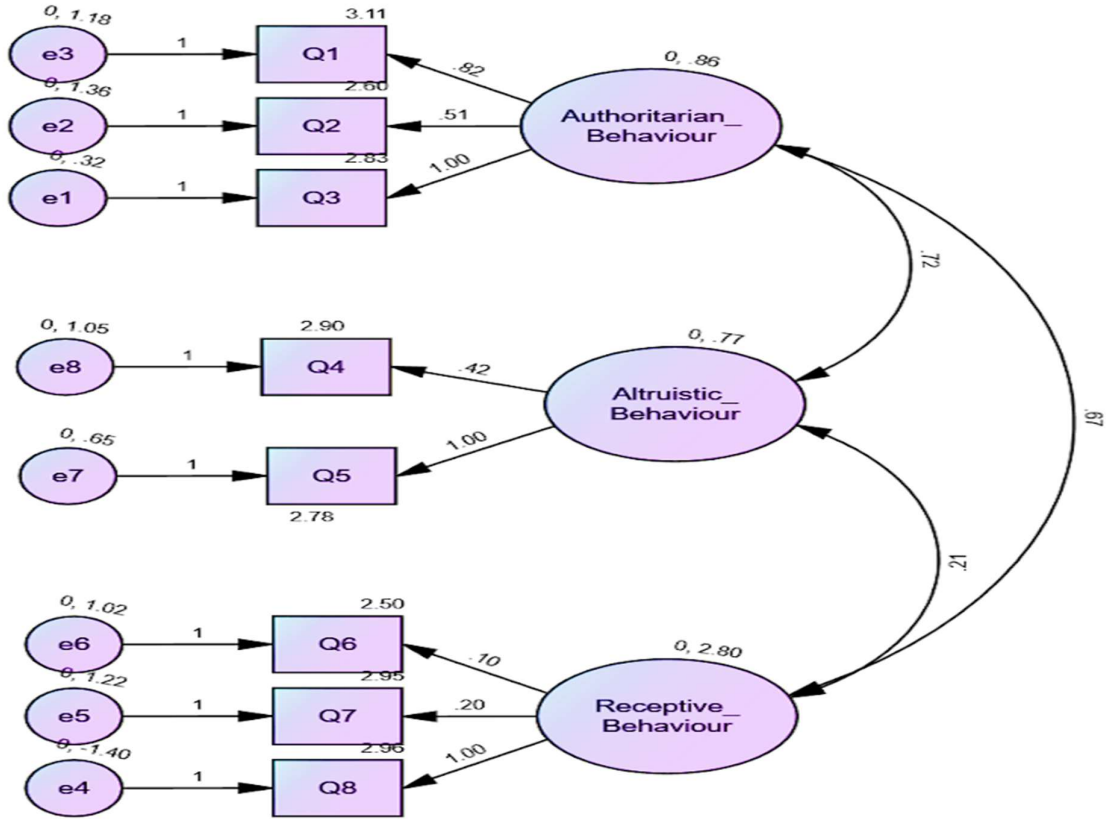
SEM Model for Unstandardized Estimates



Source: *AMOS Created by author.*

Figure 2 *SEM Model for Unstandardized Estimates.* ***Source:*** *Through AMOS created by author*

SEM Model for Standardized Estimates



Source: *Through AMOS created by author*

Figure 3 *M Model for Standardized Estimates*

Table 16 CMIN

Model	**NPAR**	**CMIN**	**DF**	**P**	**CMIN/DF**
Default model	27	271.776	17	.000	15.987
Saturated model	44	.000	0		
Independence model	16	879.588	28	.000	31.414

Source: *author's calculation.*

Table 17 Baseline Comparisons

Model	**NFI Delta1**	**RFI rho1**	**IFI Delta2**	**TLI rho2**	**CFI**
Default model	.691	.491	.705	.507	.701
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Source: *author's calculation.*

Table 18 Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.607	.420	.425
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

Source: *author's calculation.*

Table 19 NCP

Model	NCP	LO 90	HI 90
Default model	254.776	205.066	311.926
Saturated model	.000	.000	.000
Independence model	851.588	758.464	952.114

Source: *author's calculation.*

Table 20 FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	0.681	.639	.514	.782
Saturated model	.000	.000	.000	.000
Independence model	2.204	2.134	1.901	2.386

Source: *author's calculation.*

Table 21 RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.194	.174	.214	.000
Independence model	.276	.261	.292	.000

Source: *author's calculation.*

Figure 2 (unstandardised estimates) and **Figure 3** (standardised estimates) show a $\chi 2$ (chi-square) of 271.776, degree of freedom = 17, and p value = 0.000, showing the model fits the data well. However, because the chi-square statistic is very sensitive to sample size, it is preferable to examine alternative fit metrics. Unfortunately, additional fit measurements do not indicate the goodness of fit of the model, thus the model is unreliable. (CMIN/df = 15.987, NFI = 0.691, RFI = 0.491, TLI = 0.705, IFI = 0.507, CFI = 0.701, and RMSEA = 0.194).

Here's a brief interpretation of the reported statistics:

Table 16 CMIN/df (Chi-square/Degree of Freedom Ratio): A value closer to 2-3 is preferred for an acceptable fit. Your value of 15.987 is significantly higher, signalling poor fit.

Table 17 NFI (Normed Fit Index): above 0.90 values are ideal. At 0.691, this is far from satisfactory. **RFI (Relative Fit Index):** Similarly, values closer to or above 0.90 are desirable. Your value of 0.491 is below acceptable thresholds. **TLI (Tucker-Lewis Index):** above 0.90 values are considered an appropriate fit. At 0.705, it's insufficient. **IFI (Incremental Fit Index):** Again, should exceed value 0.90. Your result of 0.507 indicates poor fit. **CFI**

(Comparative Fit Index): A well-fitting model would yield values above 0.90. At 0.701, the model doesn't meet the benchmark.

Table *21* RMSEA (Root Mean Square Error of Approximation): below 0.06, a value indicates an appropriate fit, though up to 0.08 is acceptable. Your value of 0.194 is much higher, suggesting poor fit.

Table 22 Hypothesis – SEM Model: Analysis and Interpretation.

Hypothesis	S.E.	C.R.	P-Value	Conclusion
H_{01}: There is a substantial connection between Authoritarian behaviour and Altruistic behaviour ascribed to Small Farmers' decision making on the Crop Insurance Scheme.	**0.671**	**0.072**	***	Authoritarian behaviour and Altruistic behaviour are ascribed to Small Farmers' decision making on the Crop Insurance Scheme, are positively correlated and significant but not reliable as a model.
H02: There is a substantial connection between Authoritarian behaviour and Receptive behaviour ascribed to Small Farmers' decision making on the Crop Insurance Scheme.	**0.720**	**0.074**	***	Authoritarian behaviour and Receptive behaviour are ascribed to Small Farmers' decision making on the Crop Insurance Scheme, are positively correlated and significant but not reliable as a model.
H03: There is a substantial connection between Altruistic behaviour and Receptive behaviour ascribed to Small Farmers' decision making on the Crop Insurance Scheme.	**0.214**	**0.068**	**0.002**	Altruistic behaviour and Receptive behaviour ascribed over by Small Farmers decision making on the Crop Insurance Scheme, are positively correlated and significant but not reliable as a model.

Findings and Discussions

The study focuses solely on small farmers from Chitradurga District, with all 400 respondents belonging to the region. This highlights the exclusive regional focus of the research on understanding the behaviour of small farmers in Chitradurga towards crop insurance schemes. Majority respondents (50%) fall within the age group 46-55 years, followed by 28% in the 36-45 years category. 92% of respondents belong to families of 4 to 6 members. Nearly (52%) respondents have been involved in farming for 11 to 30 years, followed by 28% with 31 to 50 years of experience. A large proportion of respondents (88%) own the land they farm, with only 12% leasing land and a dominant 92% of respondents cultivate traditional crops. A major finding is that 50% of respondents rely on loans from money lenders, while 36% use their savings. The data analysis depicts that medium-sized families may have higher financial

demands, predominantly middle-aged, traditional methods, heavy dependence on informal credit sources (Kaur et al., 2021), and land ownership may influence respondents' inclined behaviour toward subscription of crop insurance. It is also noted that Correlation analysis depicts a positive relationship between enrolment to crop insurance and financial literacy (Saini et al., 2022), underlining the prominence of financial literacy among the small farmers. F-statistic (34.012) significance level is lower than 5%, hence rejecting the null hypothesis. Social factors like friends, family, and neighbour will influence, indicates that each group influences small farmers uniquely while selecting the crop insurance shows 0.05 is lower than p-value (0.705), homogeneity among respondents exists, F-statistics value (1.316) is less than table value 3.95 of F-statistics to reject null hypothesis in conformity that social factors influence the choices of small farmers towards subscription of crop insurance. Furthermore, SEM Model analysis and interpretation states that small farmers' decision making on the crop insurance scheme is positively correlated and significant but cannot be relied upon. Summary findings suggest that 67% of respondents align more closely with the study's primary three components. The overall high communalities suggest the factor analysis results reliably represent the variables under consideration. Additionally, all elements exhibit significant values, reinforcing the robustness of the components.

Recommendations

Crop insurance remains one of the most dependable strategies in mitigating risk and uncertainties associated with agricultural activities. Primary data collected from 400 small farmers with stratified random sampling technique. Education and awareness programs targeting both young and middle-aged farmers. Substantial farming experience can help in understanding crop insurance benefits (Chander et al., 2021b),

These programs should emphasize the role of insurance in mitigating risk associated with traditional crop cultivation. The reliance on money lenders shows that there is a need for increased access to formal, inexpensive financial solutions to improve financial literacy. Banks and cooperative societies should introduce a low premium on the crop insurance scheme and better financial products tailored to small farmers, facilitating their ability to invest in crop insurance schemes. Respondents cultivate traditional crops, crop insurance schemes should be designed to address the specific risks associated with these crops. This includes creating customized policies that account for the regional risk by farmers in Chitradurga, such as unpredictable weather conditions or crop-specific pest infestations (Ashoka et al., 2022).

Study recommends a multi-faceted approach to increase crop insurance participation by small farmers, including awareness programs, tailored insurance products, improved access to formal financial services, and monetary incentives for landowners. This research underscores the need for targeted interventions to help small farmers overcome barriers to crop insurance, thereby enhancing their resilience to agricultural risks and backing for long-term sustainability of farming in the region.

Most respondents own land, policy makers could introduce incentives for landowners to invest in crop insurance, such as subsidized premiums, tax breaks, or access to additional government support. This could help alleviate the financial burden associated with subscribing to crop insurance. Simplifying and improving the claims process will increase trust in insurance schemes. The government and insurance providers should focus on transparency, ease of access, and timely disbursement of claims to build farmers' confidence in insurance products (Okpukpara et al., 2021). Therefore, we propose that to lessen the administrative processes and obstacles farmers encounter when seeking to access subscription of crop insurance, promoting group-based insurance schemes, where farmers can pool their resources, could increase participation and reduce financial barriers and coordinated efforts by the government at all levels and other pertinent stakeholders through the Ministry of Agriculture & Farmers Welfare and should collaborate with private insurance companies and educational institutions (Rao, 2020) to enhance the reach of crop insurance schemes. These partnerships can help provide better coverage, reduce administrative costs, and create more farmer-friendly policies, which tailor to the necessities of Chitradurga's small farmers.

Conclusion

To address financial constraints, risk perceptions, and specific needs of small farmers in Chitradurga will be crucial for increasing crop insurance adoption and improving farmers' resilience to agricultural risks. Study highlights for significant factors behaviour influencing small farmers in Chitradurga towards crop insurance, emphasizing the role of age, family size, farming experience, land ownership, crop cultivation practices, and sources of finance. Findings, common among respondents, indicate they are middle-aged, with substantial farming experience, and predominantly cultivate traditional crops. However, a heavy reliance on informal credit sources, such as money lenders, and limited participation in formal financial products, such as crop insurance, suggest that small farmers face numerous barriers in accessing insurance schemes (Mukherjee & Pal, 2019). The results underline targeted interventions are necessary to raise crop insurance awareness benefits, develop access to formal financial services, and design tailored insurance products that may be suited for the specific risks of traditional farming (Sukanya, 2019). By overcoming these challenges, financial institutions and policymakers can foster greater adoption of crop insurance, enhancing the resilience of small farmers to environmental risks and contributing to long-term sustainability of agricultural practices in the region. If an adequate environment for families who rely on small farm economies is developed by developing technology, financial security, competent, commercial, human resources, and institutions (Garg & Saha, 2019).

In conclusion, a multi-faceted approach involving education, policy incentives, improved financial access, and tailored insurance products is essential to encourage small farmers in Chitradurga to embrace crop insurance, thus safeguarding their livelihoods and promoting economic stability in the agricultural sector. The study offers the possibility of additional research.

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