

Farmers' Satisfaction towards the Agriculture Insurance: A Case of Chitwan and Kaski Districts of Nepal

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Abstract

Purpose: Subsidy based agriculture insurance schemes is flagship insurance program of Nepal which was started in Nepal one decade before. This paper aims to identify the factors influencing the satisfaction of agriculture insurance policyholders.

Design/Methodology/Approach: Primary data were collected in Bharatpur and Pokhara metropolis of Nepal using structured questionnaire among 400 agriculture insurance policyholders who have already received claims or whose claim was in settlement process or whose claim was rejected by the insurer. Sample was selected using purposive and cluster sampling methods. Data were analysed through Mean, ANOVA, Wilk's Lamda and MANOVA tools.

Findings: Age, landholding size, self-reported perception of insurance companies' service quality, and agriculture insurance types are insignificant while location of respondents, education level, food sufficiency of family, size of the farming, and respondents' assets are significant factors for policyholders' satisfaction towards the agriculture insurance. Timely settlement of claims increases the level of satisfaction. Nepal Insurance Authority and the Ministry of Agriculture Development need to review the existing directives to improve the agriculture insurance program. Insurance companies are suggested to offer prompt and quality services to policyholders and carry out educational campaign to increase customer awareness.

Originality/Value: The study identified pertinent variables significant and indifference to farmers' satisfaction towards agriculture insurance. It also digs out the role of financial and nonfinancial aspects of insurance services. The study opens the door for further research on similar issues to enhance the existing body of knowledge.

Implications: The demand for agriculture insurance is not increased significantly even large amount of subsidy in premium was provided. Present study may be useful to insurance companies, agents, regulators, the Ministry of Agriculture Development, researchers, and practitioners. The study can be used as a reference by managers of insurers to formulate the future strategies to enhance the agriculture insurance market.

Keywords: Agriculture Insurance, Farmers, Risk Management, Satisfaction, Sum Assured.

JEL classification: G22, G32, O13

Introduction

Agriculture insurance (AI) is a risk mitigation tool that provides cushions for the shock of crop loss by assuring farmers protection against natural hazards beyond their control (Dandekar, 1976; Benami & Carter, 2021). It plays a vital role in developing agriculture (Chang, 2009; Nnadi et al., 2013). Crop-hail insurance began in Germany as early as the late 1700s through small mutual companies (Smith & Glauber, 2012); public participation in the agricultural insurance industry began in 1938 when the American Congress approved the Federal Crop Insurance Program. The popularity of AI increased gradually as more than half of the countries in the world had some form of agricultural insurance (Mahul & Stutley, 2010). Various risks like a hailstone, draught, attack of wild animals in farming, and other natural disasters destroy production and make farmers pessimistic about their work. In such a situation, agriculture insurance is a catalyst to reduce risk (Rao, 2002; Narayanan & Saravanan, 2011; Sundar & Ramakrishnan, 2015).

Agriculture insurance is essential in Nepal since more than 66 percent of people are engaged in agriculture activities (MoF, 2022). The government of Nepal introduced a regulated agriculture insurance program as a pilot program in the 1980s through government-run projects, developmental organizations, and farmers' cooperatives on a small scale within limited districts (World Bank, 2009). The World Bank (2009) suggested that agriculture insurance programs should be started nationwide, providing certain subsidies. As a result, Crop and Livestock Insurance Directives (CLID), 2013 was issued. Commercial insurers started to sell the agriculture insurance policy from 2013. During FY 2014/15, agriculture policyholders received a 50% subsidy on premiums, which was increased to 75% from FY 2015/16 to 2022 July 15, 50% from July 16 to October 14, and increased to 80% and continued till date. Compensation modality has been fixed any one among the three approaches viz. based on the cost of production, weather index, and yield of the products. During 2014-2022, the government provided almost Rs. 4 billion amount as a subsidy to agriculture insurance (MOF, 2022; NIA, 2023).

Mammoth efforts have been made to increase the demand for agriculture insurance by the Ministry of Agriculture Development, Nepal Insurance Authority, and general insurance companies. Still, the share of the agriculture premium on overall non-life insurance premiums was lowest among the different business portfolios (i.e. 5.19%) (NIA, 2022). What factors determine the policyholders' satisfaction towards the agriculture insurance, and to what extent does the claims settlement influence the farmers' satisfaction needs to be studied?

Some literature discussed farmers' perception of agriculture insurance in a particular place (Ghimire et al., 2016; Kaphle & Bastakoti, 2017; Adhikari & Bidari, 2018), but there is a lack of comparative study of farmers' satisfaction within two districts. A comparative study by Subedi et al. (2021) discusses the objectives of adopting only livestock insurance but needs to discuss crop insurance. Considering the gap in methodology and objectives of the study in previous studies, we have included livestock, crops, and two districts. The study tries to observe the farmers' perception of agriculture insurance and their satisfaction among the policyholders by comparing two districts. Furthermore, the study attempts to determine the factors influencing policyholders' satisfaction with agriculture insurance. Such a study is hardly carried out in the Nepalese context.

The study's objectives are to find out the level of satisfaction of policyholders towards agriculture

insurance and explore the factors that influenced policyholders' satisfaction among the insured residing in the Kaski and Chitwan districts of Nepal. The rest of the paper is divided into four sections. The second section reviews selected studies and proposes hypotheses, followed by the methodology. Results are presented, discussion is held in the fourth section, and the final section concludes the study.

Literature Review and hypotheses development

The universally accepted definition of customer satisfaction is difficult to find (McCullough, 2000). Per Kotler states (2000, p. 101), satisfaction is a person's pleasure or disappointment from comparing a product's perceived performance (or outcome) with expectation. If the performance or expectations fall short, the customer is dissatisfied, and if the performance matches the expectations, the customer is satisfied. If the performance exceeds expectations, the customer is delighted. Satisfaction is an overall customer attitude towards a service provider (Levesque & McDougall, 1996, p. 14). If the company provides superior value to the competitors, it has competitive excellence (Hasnelly & Yusuf, 2012). Customer satisfaction is likely to be even more critical online since keeping online customers loyal is harder (Beheshti et al., 2012). A study concludes that in many industries, including the higher education industry, competition leads to service innovation, which, in turn, leads to customer satisfaction. The need for service innovation can also be attributed to the growth in service activities across different industries (Danjuma & Rasli, 2012). The satisfaction of the farmers results in retention and loyalty to agriculture activities, which directly affect the long-term success of agriculture insurance (Yazdanpanah et al., 2013)

The satisfaction arises from two factors. These factors are financial (Sundar & Ramkrishnan, 2015) and non-financial (Mohammadi & Eshraghi, 2015). Financial satisfaction indicates the monetary benefits and losses from the insurance. In contrast, nonfinancial satisfaction means satisfaction with insurance companies' services, insurance terms and conditions, and government support. The detail of the satisfaction measurement is explained in the methodology section under the variables subsection.

Demographic and socio-economic characteristics and satisfaction level

According to demographic and economic status, those with better education, sound financial status, and some level of education are more satisfied. Various theoretical and empirical studies show that customer satisfaction is influenced by demographic, social, and economic factors (Joo & Grable, 2004). Gender (Kwok et al. 2016), age (Angelini, 2012; Seyed, 2010), ethnicity (Ueltschy & Krampf, 2001), education (Vila et al, 2005; Luo & Timothy, 2017), service qualities (Shemwell et al., 1998), and income (Vrhovec-Zohar, 2016; Sumarwan & Hira, 1993) are the significant predictors of the satisfaction (Ali et al, 2014; Woodyard & Robb, 2016).

As the literature shows, educated farmers were more inclined to purchase agriculture insurance than those who were illiterate because they did not know the benefits and losses of the insurance (Rathod et al., 2016). Aditya et al. (2018) posit that a lack of awareness about agriculture insurance causes less involvement in agriculture insurance. Those with training programs and higher income levels (Sadati et al., 2010) were more likely to be involved in agriculture insurance. However, those who lack that, have low socio-economic status, and are engaged in tenant farming are less likely to be involved and satisfied with agriculture insurance. Ghimire et al. (2016) also insisted that how much knowledge

farmers have obtained from their peers, farmer groups, and cooperatives also affects satisfaction. Kandel and Timilsina (2018) argue that awareness of government premiums also affects satisfaction. Cariappa et al. (2021) identified that less educated persons with extended family size and poor and low social standards were more likely to leave agriculture insurance as they did not get benefits and satisfaction from the insurance. Adhikari and Bidari (2018) also suggest the upliftment of the client's education level to increase the client's satisfaction level. Yoganandan, Rahman, Vasani, and Meero (2022) showed that agriculture insurance satisfaction of agribusiness owners is significantly influenced by demographic parameters like age, education, farming experience, intercropping, farm age, farm size, annual income, land ownership, and funding sources.

The following hypothesis has been developed based on the above literature and arguments.

H₁: *Agriculture insurance satisfaction is influenced by demographic (district, education, and age) and economic (food sufficiency, assets size, and land holding size) factors.*

Insurance-related factors and satisfaction level

We categorize insurance-related factors into three categories. They are claim status, agriculture insurance types, and insurance companies' services.

Claims status: An insurance policy is purchased to get the claims in case of property loss. So, a claim is regarded as a core function of insurance. According to Claim Settlement Guidelines (third revision), 2022 of Nepal Insurance Authority, agriculture claims should be settled within 35 days from the date of claim filed. Still, sometimes claims are not settled within this period. The status is called claim in progress. If the insurer finds the claim is not genuine, that is not paid by the insurer. The rejection of claims in agriculture insurance is common in cases of lack of documents or fraud (Just et al., 1999). So, the claim status has been categorized as a) Claim is already paid, b) Claim is in progress, and c) Claim was filed but still needs to be paid.

Types of agriculture insurance: As per the Crops and Livestock Directives 2013, issued by Nepal Insurance Authority, agriculture insurance products are divided into four broad categories: a) Cattle, b) Crops, c) Birds, and d) Fish insurance. Each product differs from another based on various factors like the rate of premium, the basis of calculation of the amount of risk coverage, and inclusion and exclusion criteria of risk.

Service of insurance company: Zeithaml et al. (1996) and Gautam (2011) reported that customers compare the services of the companies in relative terms. The respondents' self-reported perception of the insurance companies' service quality has been categorized as a) Similar to each other, b) somehow different, and c) entirely different. Based on these studies following alternative hypothesis has been developed.

Insurance is a complex financial instrument that is sold and realized the premium today from the customer, but the benefits to the customer are uncertain as it depends on the condition. If the loss happens, customers get the benefits. Otherwise, the premium is not refunded to the customers. In this

scenario, the insurance company's efficiency and timely services matter for client satisfaction. There are various terms used in agriculture insurance viz. premium, subsidy on premium, sum assured (amount of insurance coverage), loss amount, claim receipt (claim settlement services), support of staff and agents, terms and conditions of the policy, documents required to get the claims, and time taken to get the claim amount. Policyholders consider these factors while purchasing insurance as there is a significant role these factors play in policyholders' satisfaction. Some literature has already identified and tested these terms (Li, 2010; Aggelopoulos, 2012; Nebo & Okolo, 2016; Fleischer-Brock, 2020; Adhikari, 2021; Jha & Singh, 2021).

The claim has a significant role in policyholders' satisfaction among various factors. Claim needs to be paid within 35 days after filing the claims (NIA, 2023). Those clients who receive a claim timely (Taylor, 1994) get proper guidance from the companies and are more satisfied than clients who do not receive a claim in time. Ghimire et al. (2016) insisted that farmers' satisfaction depends on the claim settlement duration (Okparaka et al., 2022) taken by insurers and the procedures to be followed to get the claims. The insurance company should maintain trust among farmers by issuing timely insurance payouts and selling insurance through a local agent, which raises the possibility of crop insurance adoption (Biswal & Chandra, 2022). Further, if the claim settlement is not handled properly, agriculture insurance coverage will be limited (Singh & Agrawal, 2020).

Besides, Zeithaml et al. (1996) and Gautam (2011) reported that clients' perception of the company's service also affects satisfaction. If the client believes his company outperforms other existing companies in the market, he will be more satisfied with the services (Williams, & Naumann, 2011). Adhikari and Bidari (2018) focus on the company's best service to increase the satisfaction level of clients by reducing the procedures for issuing the insurance and time of claim settlement procedure to increase the popularity of agriculture insurance. Kandel and Timilsina (2018) also suggest adequate promotion, paperwork reduction, and fast claim payment service of the company to enhance client satisfaction with agriculture insurance. Similarly, the rapid resolution of farmers' problems and the easy service of insurance companies increased farmers' satisfaction (Ankrah et al., 2021). Government-specific support increases insurance (Dwijayana & Prajanti, 2021). Yoganandan, Rahman, Vasan, and Meero (2022) suggest increasing knowledge distribution, practical training, infrastructure, and technology adoption for the satisfaction and growth of insurance. They further argue that low participation in the livestock insurance program was correlated with inadequate promotion, complex paperwork, and a delay in claim payment.

H₂: *Insurance-related factors (claims status, insurance companies' services, and agriculture insurance types) significantly influenced agriculture insurance satisfaction.*

Research Methods

About the study area: The study was conducted in the Bharatpur Metropolitan City of Chitwan (*inner Terai*) and Pokhara Metropolitan City of Kaski (*mid-hill*) districts. These two cities have been selected randomly out of four Metropolitan cities outside the Kathmandu Valley. Kaski district suffers from multiple perils like hailstorms, heavy rainfall, and windstorms. Similarly, threats such as droughts, floods, storms, high humidity, high temperature, and floods are significant threats to agriculture in Chitwan (Ghimire et al., 2016). Both districts have good commercial agriculture practices, easy access to the

market, and agricultural support, and farmers have been found professionally engaged in agriculture insurance. The study covered ten administrative units (wad) out of 29 wads in Bharatpur and 14 wads out of 33 wads in Pokhara metropolitan city.

Population, sample size, and sampling techniques: Agriculture insurance policyholders are the population of the study. All existing agriculture insurance policyholders residing in the study area who either had claims from insurance companies against the agriculture loss or have already submitted claims that are in progress or the claim had been rejected are included in the study population. The population is assumed indefinite since it is impossible to count and prepare the list of the study population.

$$SS = [Z^2 p (1 - p)] / C^2$$

Where Z^2 = Z value as given in the table, p = Percentage of population, C = Confidence level.

The study's total sample is determined per the suggestion of Godden (2004), considering a 5 percent margin of error and 95 percent confidence interval, assuming the population is more than 100,000 (indefinite). The sample size (SS) is obtained at 400 using the following formula:

The entire sample size is divided equally into two districts, assuming the sample population in the two districts is equal. Respondents were selected using cluster sampling (municipality and wad) and purposive sampling (information reach) techniques.

Variables of the study: variables were selected based on previous studies. Predictors of satisfaction are classified into two financial and non-financial categories. Financial factors are satisfaction with the amount of premium, amount of subsidy, amount of sum assured, amount of loss assessed, and claim amount (Ginder, 2009). Likewise, non-financial factors included satisfaction due to the support of staff and agents (Joseph, 2003), policy terms and conditions, also known as policy contracts, documents required for the claim settlement, and time taken for the claim settlement (Shirsath et al., 2018).

Data collection tool and data collection period: A structured questionnaire was developed with reference to Yazdanpanah et al. (2013) slight modification considering the local context. The cross-sectional study was conducted from Dec 2021 to March 2022. Item of each construct has been measured using a point Likert scale ranging from strongly dissatisfied to strongly satisfied. The Cronbach's Alpha Coefficient is obtained at 0.773, ensuring the questionnaire's reliability. Permission for the study was obtained from the Nepal Insurance Authority (then, Insurance Board of Nepal). We followed the ethical guidelines of research, respected the anonymity of respondents, and the survey was obtained after informed consent from each respondent.

Data analysis techniques: Both descriptive (mean, mode, percentage, standard deviation) and inferential statistics (MANOVA, ANOVA, Wilk's Lamda) statistics have been applied. Hypotheses are tested based on the p-value of the respective statistics, taking 1 and 5% levels of significance. The average of each construct was calculated to examine the relationship among the variables.

Result and Discussion

Results

Demographic profile of the respondents: The number of male respondents was three fourth (75.3%), the most significant number of respondents (46%) belonged to the age group of 31-45 years, almost are from Brahmin / Chhetri community (91.5%), the highest number of respondents (39.5%) is literate. Almost one-fifth of the respondents have insufficient production for their consumption. In contrast, one-third (32%) have sufficient production over the year, and 29% of respondents have their own business (see Appendix A).

Economic status and satisfaction

This section deals with the satisfaction level of respondents based on their economic status, such as food sufficiency (indicating sufficient food production or not), asset size (which measures the value of the total assets of the farmers, including land, building, cattle, and other property, income from different sources, and land holding (that measures the size of the land owned by the farmers). The satisfaction based on economic variables (see Table 1) shows that the mean value is more than three in each case, indicating all the respondents were satisfied with the non-financial and financial services provided by the insurance companies.

Table 1: Economic status and satisfaction

Economic Status			Satisfaction due to services of Insurance companies			
	N	%	Non- financial Factor		Financial Factor	
			Mean	SD	Mean	SD
Food Sufficiency						
Insufficient for family	75	18.75	3.45	0.9	3.43	0.92
Sufficient for family	128	32.00	3.82	0.95	3.74	0.98
Slightly excess for sale	82	20.50	4.13	0.72	4.17	0.75
Business farming	115	28.75	3.76	0.84	3.48	0.94
Assets Size						
Small scale farmer	215	53.75	3.70	0.9	3.64	0.97
Medium scale farmer	138	34.50	3.86	0.85	3.71	0.96
Large scale farmer	47	11.75	4.09	0.9	3.91	0.82
Land Holding Size (ropani*)						
≤ 8	190	47.50	3.80	0.92	3.73	0.91
> 8	210	52.50	3.79	0.87	3.66	0.98

*1 ropani = 508.72 m²

The mean value of self-reported satisfaction under both non-financial factor and financial factor categories indicated that food having slight excess for sales reported most satisfied (mean = 4.13 and 4.17), implying that lower-income group farmers are less satisfied than higher-income group farmers. Large-scale farmers are most satisfied (mean 4.09 and 3.91), implying that they may have more access to

insurance services. Further, farmers with less land or up to eight companies reported being most satisfied (mean = 3.8 and 3.73). The value shows that farmers having lower amounts of land got insurance services in a better way. The mean difference must be statistically significant to justify the above arguments. We used one way ANOVA test taking food sufficiency, assets size, and land holding size as independent variables and satisfaction measured by financial and nonfinancial factors as dependent variables. The result of one-way ANOVA is exhibited in Table 2.

Table 2: Result of One-way ANOVA

Category	Factors			
	Non- Financial Factor		Financial Factor	
	F-Value	P-Value	F-Value	P-Value
Food sufficiency	8.30	0.0001***	11.44	0.001***
Size of Assets	4.35	0.013**	1.61	0.20
Size of landholding	0.007	0.93	0.498	0.481

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$,

Results show that food sufficiency is significant towards the farmer's satisfaction due to the financial and non-financial factors, assets are significant to non-financial factors, and landholding size has been found insignificant to both financial and non-financial factors. Farmers with different landholding sizes are indifferent to insurance services, but having different amounts of property (assets) have different satisfaction levels due to the nonfinancial factors towards agriculture insurance. Overall, the result implies that the insurance products satisfied the middle-income farmers. The agriculture insurance does not meet the expectations of lower- and upper-income farmers.

Demographic factors and satisfaction

The satisfaction level of respondents based on the financial and non-financial factors is categorized based on the district of respondents, education level, and age group, as shown in Table 3.

Table 3: Satisfaction of respondents

Demographic factor	Frequency		Non- financial Factor		Financial Factor	
	N	%	Mean	SD	Mean	SD
Age (year)						
≤44	201	50.25	3.80	0.95	3.63	0.93
> 44	199	49.75	3.90	0.96	3.72	0.87
Location						
Kaski	200	50.00	3.48	0.99	3.52	0.90
Chitwan	200	50.00	4.22	0.74	3.83	0.88
Education						
Literate	158	39.50	3.58	1.05	3.44	0.95
Up to SLC	109	27.25	4.20	0.75	3.92	0.94
Intermediate and above	133	33.25	3.88	0.88	3.76	0.75

The mean value of both financial and non-financial factors has been found to be more than 3.0, depicting that satisfaction towards agriculture insurance is higher than average. Categorically, residents of Chitwan are more satisfied, respondents with education up to SLC level are more satisfied, and respondents aged more than 44 years are more satisfied than others. Multi-variate analysis of variance (MANOVA) has been used to ensure the significance of the descriptive results using Wilks' Lambda test. Since the one-way ANOVA does not show the combined impact of financial and non-financial factors, it is desirable to use MANOVA to identify the combined effect. Further, we calculated separate F-value and p-value to identify if there is significant impact (see Table 4).

Table 4: Overall difference in satisfaction among the respondents

Factors	F-value	P-value
Age	0.64	0.54
Location	39.14	0.0001***
Education	0.82	0.0001***

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$,

The variation among the respondents' opinions on their satisfaction was tested based on education, district, and age. The F statistics show that respondents' age is insignificant while location and education are the significant factors towards agriculture insurance satisfaction. Wilk's lambda test does not indicate the most and least significant factors among the financial and non-financial factors. So, respondents' opinions have been tested, segregating them into financial and non-financial factors based on location, education, and age (see Table 5).

Table 5: Satisfaction based on financial and non-financial variables.

Factors	Non-Financial Factor		Financial Factor	
	F value	P-value	F value	P-value
Age	1.225	0.269	0.893	0.345
Location	70.198	0.0001***	11.751	0.0001***
Education	14.866	0.0001***	10.539	0.0001***

*** $p < 0.01$

Based on the p-value of each variable using the subject effect test, it has been found that location and education are significant, while age is found insignificant towards agriculture insurance satisfaction due to both financial and non-financial factors.

Insurance-related variables and satisfaction

Respondents were categorized into three categories based on claim status, types of agriculture insurance they purchased, and experience with insurance companies. The descriptive analysis and MANOVA results of insurance-related variables and financial and non-financial factors for insurance satisfaction are shown in Table 6.

Table 6: Satisfaction based on insurance-related factor

Factor	Factors					
	Frequency		Non- Financial Factor		Financial Factor	
	N	%	Mean	SD	Mean	SD
Claim status						
Claim received	291	72.75	3.85	0.83	3.66	0.98
Claim in progress	94	23.5	3.80	0.94	3.86	0.86
Claim filed but not paid	15	3.75	2.63	0.89	3.39	0.81
Type of agriculture insurance						
Cattle Insurance	349	87.25	3.82	0.88	3.70	0.95
Crops insurance	33	8.25	3.54	0.87	3.50	0.91
Bird Insurance	14	3.50	3.69	1.15	4.21	0.67
Fish Insurance	4	1.00	3.42	2.00	3.40	2.26
Services of insurance companies						
Similar	321	80.25	3.76	0.9	3.67	0.96
Somehow difference	57	14.25	4.04	0.8	3.97	0.88
Entirely difference	22	5.5	3.66	0.9	3.38	0.9

The results show that the mean value is more than average (mean 3.0) in almost all cases except the respondents who had not received the claim but had filed the claim. It indicated that respondents' level of satisfaction is higher than average. Due to financial reasons, claim recipients are most satisfied, and cattle insurance holders are most satisfied. Under the financial reasons, claims in progress are most satisfied; bird insurers are more satisfied. For both reasons, those who perceived that the services among the insurers are quite different are most satisfied. The difference in descriptive results has been tested using MANOVA and Wilks' Lambda test and presented the p-value of the F test in Table 6. As per the Wilks' Lambda test, satisfaction has been found significant based on claim status and types of agriculture insurance. However, no statistical difference has been found based on respondents' opinions regarding the insurance companies' service differences.

Table 7: Overall difference in satisfaction

Items	F-value	P-value
Claim status	12.05	0.001***
Types of agriculture insurance	2.94	0.003***
Service of insurance companies	2.11	0.077

*** $p < 0.01$

Wilks' Lambda test results exhibit that claim status and types of agriculture insurance have significant differences in satisfaction with agriculture insurance, but the difference is not found to be significant based on the perception of respondents towards the services of insurance companies. We found claim status significant on financial factors and the service of insurance companies significant under the non-financial factors while disintegrating the overall result into financial and non-financial factors. In contrast, the rest were found to be insignificant (Table 8).

Table 8: Satisfaction based on financial and non-financial factors

Items	Non-Financial Factor		Financial factor	
	F value	P-value	F value	P-value
Claim status	4.225	0.094	21.22	0.001***
Types of agriculture insurance	8.1	0.06	3.042	0.43
Service of insurance companies	6.61	0.025**	4.21	0.07

*** $p < 0.01$, ** $p < 0.05$

Summarizing the results of the study, we found mixed results of two sets of assumptions. We have formulated two alternative hypotheses and examined them using MANOVA and Wilk's Lamda test in 1 and 5 percent significance level. In the first hypothesis, "agriculture insurance satisfaction is influenced by demographic, social and financial factors of respondents", age, location, education, food sufficiency, assets size, and landholding size are considered as predictors of satisfaction. Age and landholding size are reported as insignificant factors, while education, location, food sufficiency, and size of assets have been found to be significant factors. Food sufficiency has been found significant to both financial and non-financial satisfaction, but the size of assets is significant only to non-financial factors, but the size of landholding is reported insignificant to both financial and non-financial factors.

The second hypothesis stated that insurance-related factors (such as Claims status, services of insurance companies, and types of agriculture insurance) are significant factors in agriculture insurance satisfaction. Food sufficiency to the family is found to be significant, while types of agriculture insurance are reported insignificant to satisfaction. Respondents' self-reported perception of insurance companies' service quality is found to be significant towards insurance satisfaction in nonfinancial factors only.

Discussion

In the descriptive analysis, satisfaction towards agriculture insurance has been found to be higher in cases of a higher age than a lower age. However, inferential statistics reported that age is not a significant factor for satisfaction. The findings are similar to Swain and Hembram (2020) in Odisha but contrast with Mukhopadhyay et al. (2019).

In our study, education is a significant factor of satisfaction, which agrees with Aditya et al. (2018) and Giné et al. (2008). Furthermore, results show that insurance-related factors such as claim status are a significant satisfaction factor. The significant difference is found more in non-financial factors of satisfaction among each category. The result of the study is consistent with the result of Yazdanpanah et al. (2013) and Ankrah et al. (2021) but contrasts with the result of Kumar (2011) and Yoganandan et al. (2022).

The study finds that delay in claim payment makes the farmers dissatisfied, supported by the study of Swain and Hembram (2020). In addition, farmers with large-scale production, having excess for sale, were more satisfied. The results infer that there is a significant difference found between large-scale farmers and small-scale farmers. This result shows information asymmetry (Ryu., Yang, and Yu, 2022) among the farmers about insurance. The results support the poor corporate governance theory as richer get more information and enjoy the benefits (Werlin, 2003). We can not predict the satisfaction of respondents based on farmer's age but can predict based on the education, location, claim status, and food sufficiency.

Conclusion

The study concluded that agriculture insurance makes wealthy and educated farmers more satisfied. Likewise, farmers who have more assets are more satisfied. Among the various categories of policyholders, farmers having excessive food production than family consumption has got more satisfaction. It means commercial farmers are more satisfied than the subsistence farmers. Farmers of a particular district (Chitwan) are more satisfied. It indicates that location matters for satisfaction with agriculture insurance. Farmers with cattle or bird insurance are more comfortable, meaning insurance services of cattle and bird is more customer-friendly than crop and fish insurance. The self-reported perception of farmers towards the service quality of insurers has been found that the mean value of satisfaction of respondents who said there is somehow a difference in service quality among the insurers is higher stipulate that farmers have compared the companies. On that basis, they perceive the satisfaction.

The finding infers that the service quality of insurers in the Chitwan district is better than in the Kaski district. The study further concluded that claiming settlement on time increases satisfaction. The finding designates that non-financial factors are more influential to satisfaction than financial factors.

Suggestions

Based on the findings and conclusions of the study and official documents of agriculture insurance, some suggestions are offered to regulators, insurers, and policyholders. The theme of agriculture insurance guideline is "appropriate amount of claim needs to be paid to policyholders within the prescribed period in case of loss due to included risk". Policyholders who received claims are more satisfied than those who did not receive claims. So, insurers are required to settle the claim as short a period as possible. The cattle and bird insurance loss assessment method is quite simple and farmers friendly than crop insurance, so the satisfaction of cattle and bird insurance policyholders is higher. In the coming days, NIA is required to simplify the loss assessment and claim amount determination procedures, and insurers also need to provide a fair amount of compensation against the loss. Since agriculture insurance is indemnity insurance, the loss should be indemnified based on the market value of the products.

Furthermore, it is suggested that insurance companies carry out awareness programs so that a maximum number of farmers will be attracted to agriculture insurance programs since less qualified farmers are less satisfied due to their lack of knowledge of insurance. Since smallholder farmers are less satisfied with the insurance, insurers need to pay proper attention to handling the grievances of smallholder farmers and farmers with insufficient food for their families. Insurers must provide sufficient information about agriculture insurance to potential buyers. Insurers must use advanced information technology to settle the claims promptly and accurately.

Scope of further research

The study covers two districts (representing two provinces), so further studies in the same area can include a sample from all provinces. The study limits farmers' satisfaction, taking limited variables; further study can be done on determinants of the demands and supply of agriculture insurance products. Besides, further study can be done following a qualitative approach.

Implication of the study

The study's objective is to identify the factors that satisfy the policyholders towards the government-supported nationwide agriculture insurance scheme of Nepal. The demand for agriculture insurance has not increased as per the expectation of policymakers and operators, even though the program was launched almost one decade ago. The present study may be useful to insurance companies, agents, regulators, the Ministry of Agriculture Development, researchers, and practitioners. The study identified some pertinent variables that stimulate agriculture insurance demand. It opens the door for further research on similar issues to enhance the existing body of knowledge.

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Conflict of interest

The authors have no conflict of interest in the study.

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Appendix A

Demographic profile of respondent (n=400)

Variables	Attributes	No.	%
Gender	Male	301	75.25
	Female	99	24.75
Age (year)	15-30	49	12.25
	31-45	183	45.75
	46-60	137	34.25
	61-75	31	7.75
Ethnicity	Brahmin / Chhetri	366	91.50
	Janajati	23	5.75
	Dalit	7	1.75
	Others	4	1.00
Highest Educational Qualification	Literate	158	39.50
	Up to SLC	109	27.25
	Plus two	103	25.75
	Bachelors	15	3.75
	Master and above	15	3.75
Food Sufficiency for family consumption	Insufficiency of food	75	18.75
	Sufficiency of food	128	32.00
	Little excess for sale	82	20.50
	Business farming	115	28.75

Source: Field Survey, 2021