Journal of Infrastructure, Policy and Development 2024, 8(6), 4697.
https://doi.org/10.24294/jipd.v8i6.4697

Article

Assessment of factors determining consumer satisfaction with crop insurance services

Rolandas Drejeris*, Martynas Rusteika

Faculty of Bioeconomy Development, Vytautas Magnus University Agriculture Academy, 53361 Kaunas, Lithuania
*** Corresponding author:** Rolandas Drejeris, rolandas.drejeris@vdu.lt

CITATION

Drejeris R, Rusteika M. (2024). Assessment of factors determining consumer satisfaction with crop insurance services. Journal of Infrastructure, Policy and Development. 8(6): 4697. https://doi.org/10.24294/jipd.v8i6.4697

ARTICLE INFO

Received: 20 February 2024
Accepted: 19 March 2024
Available online: 11 June 2024

Abstract: Consumer satisfaction can be defined as the user's response to a service or experience compared to the user's expectations and perceived practical benefits. After reviewing consumer satisfaction models, it can be argued that there is no single model of consumer satisfaction assessment that is suitable for every service and every region of the world, as the causes and outcomes of satisfaction often vary. The research is original in its methodology: at the beginning, a theoretical research model is presented, then hypotheses are formulated, and correlation, factorial, regression analyses were made, which results confirmed hypotheses. The crop insurance system consists of relations between the state institution regulates insurance activities, farmers, insurers and insurance intermediaries. The aim of this article is to identify the factors that determine consumer satisfaction with crop insurance and to assess their impact. The empirical study found that consumer satisfaction is determined by the factors of recognizable value, functional (process) and technical (result) quality, consumer expectations, and image. The most important factors that determine consumer satisfaction of crop insurance are recognizable value, functional quality, and consumer expectations. Consumer satisfaction can be assessed by the cost paid and the quality received, the quality expected, and the consumers' evaluation of the services. It was found that the socio-demographic elements of consumers do not have a decisive influence on the factors that determine service satisfaction and consumer satisfaction. It is also established that socio-demographic elements of consumers (farmer experience and insurance experience) have direct statistically significant but weak links with consumer satisfaction.

Keywords: consumer satisfaction; crop insurance; climate change; factors assessment; insurance system participants; insurance system development

1. Introduction

In today's world, insurance plays an important role in risk management, both in everyday life and in business, contributing to the vitality of the economy. Insurance can be seen as a safeguard for social and economic areas of public life. The behavior of companies that provide insurance services is therefore very sensitive, as it is directly linked to the relationship with the consumers of these services. According to Zwier (2021), Gąsiorkiewicz and Kruk (2019) also Batool and Sahi (2019) company's willingness to learn about and meet the needs of its customers determines the acquisition of new customers, customer satisfaction, the maintenance of long-term relationships and the company's performance with these customers. Also, Pachura and Smolarek (2019) with Biener et al. (2016) agree that an organisation's willingness to learn about and meet the needs of its customers determines the attraction of new customers, customer satisfaction, the maintenance of long-term relationships, and the performance of the organisation about it. Therefore, the determination of consumer

satisfaction factors becomes important and necessary for the development of the insurance system.

Crop insurance has become one of the fastest-growing areas of the insurance sector (Rusteika and Skinulienė, 2023). This area of insurance allows farmers to protect themselves against unfavourable and ever-changing meteorological conditions and ensure their financial stability. According to Issalillah and Khayru (2022), various studies have been conducted that emphasize the importance of crop insurance as a tool for the success of farmers' agricultural activities. Other authors (Issalillah and Khayru, 2022; Cappiello, 2020; Möhring et al., 2020) agree with this position and claim that surveys on consumer satisfaction with crop insurance would complement the concept of a crop insurance scheme and such information on consumer satisfaction would provide a roadmap for the development of the crop insurance system in general. Every insurance company strives to meet the needs of both existing and potential customers in order to grow. The determinants of user satisfaction of crop insurance services have not yet been studied, and this proves the importance of this research. The purpose of this article is to identify the factors that determine consumer satisfaction with crop insurance and to assess their impact.

2. Materials and methods

The article, based on a set of scientifically based hypothetical factors, aims to determine the influence of factors on consumer satisfaction with the insurance service. The study follows a model based on an analysis of the scientific literature. The study was conducted using a questionnaire survey. The questionnaire was created based on a rationale for the potential influence of individual factors, with new items added to reflect the current reality of crop insurance. The reliability of the questionnaire survey was calculated. Consumers were asked to answer questions about their attitude towards the service: how consumers perceive the value of the service, the technical and functional quality of the service, and the image of the service. They were asked to provide information about themselves (place of residence, age, agricultural experience, insurance experience, field of activity, size of business). This questionnaire for the farmers we have created by taking into consideration the specific situation of agriculture in Lithuania. The population of interest in Lithuania is farmers using crop insurance. The sample of this study consisted of 241 farmers. The sample of farmers was selected systematically. Every second farmer was selected and sent a questionnaire. The margin of error of the results with a 95% probability does not exceed 5%.

Semi-closed questionnaires were administered to farmers who have crop insurance. The data provided a better understanding of the current situation and the areas to be strengthened. The survey questionnaire was constructed based on scientific statements made by many authors (Ghazanfar et al., 2015; Grigaliūnaitė and Pilelienė, 2016; Gąsiorkiewicz and Kruk, 2019; Mavroutsikos et al., 2021; Limna and Kraiwanit, 2022; Rusteika and Skinulienė, 2023). Questionnaire was constructed based on the criteria for the individual factors, with the addition of new items that are in line with the current reality of the crop insurance services provided. The reliability of the survey questionnaire was calculated.

Respondents were asked to tick the statements that are most relevant to the current situation. Respondents were asked to rate each statement on one of the possible options. The ratings helped to calculate the scores for each statement and the overall attitude of the respondent to the factors presented.

The introductory part describes the purpose of the study, notes that the survey is anonymous, and provides instructions on how to complete the questionnaire.

The questionnaire consists of statements on the respondents' assessment of consumer satisfaction with the crop insurance service.

The questionnaire consists of questions on the demographic data of the respondents (place of residence, age, farming experience, insurance experience, field of activity). Consumers were invited to answer questions related to their perception of the service: their perception of the value of the service, their perception of the technical and functional quality of the service, their perception of the service's image, their satisfaction with and expectations of the crop insurance service provided.

At the end of the questionnaire, information is requested on the demographics of the respondents (place of residence, age, farming experience, insurance experience, field of activity).

Finally, thanks for your time.

Questionnaires were sent to farmers and workers by e-mail and post. The survey was carried out in September and November 2023. 329 questionnaires were sent out and 241 were returned. The return rate was 73%. Of these, 13 were incorrectly completed (personal details not provided, questions omitted, many blanks left blank. The following difficulties were encountered during the survey: the large size of the questionnaire intimidated respondents, and some were reluctant to take part in the survey (reason: I do not have the time or I do not want to take part in the survey).

Statistical data analysis was carried out using SPSS 22.0 and graphical analysis using MS Excel 2010. Depending on the nature of the variables, appropriate statistical methods were applied:

1) Factor Analysis: a statistical method that allows to classification of various variables based on their correlation among themselves, i.e., to obtain the internal structure of the phenomenon under study;
2) Reliability Analysis: showing how accurately a given scale measures a phenomenon;
3) Regression analysis: to predict the values of one interval variable from the values of another interval variable;
4) Descriptive statistics: percentages, averages.

Most of the previous studies are related to the research only on the quality of insurance services (Limna and Kraiwanit, 2022; Negara and Zaenal, 2023). To measure consumers' multidimensional satisfaction with a service, it was necessary for us to use complex research designs and to combine and also include service-specific research factors (Argento and Peda, 2015; Mavroutsikos et al., 2021). It is necessary to assess not only the significant elements that have the greatest influence on consumer attitudes but also the less significant ones. The scientific literature shows that the most commonly used models have four elements. This shows that consumer expectations are measured in measurable elements: expectations of quality, expectations of reliability, and expectations of consumer enjoyment. Perceived quality is measured by

the price paid for the quality received (or the quality received for the price paid). According to Schofield et al. (2020) and Yazdanpanah et al. (2009), consumer satisfaction is measured by overall satisfaction, fulfillment of expectations, and comparison with the ideal. Consumer loyalty is measured by the intention to purchase in the future and price tolerance (Evans and Lindsay, 2013; Shirsath et al., 2019). The variables of overall quality, reliability, and consumer convenience measure the element of perceived quality. This is the most commonly used model to measure consumer satisfaction with crop insurance. However, Yazdanpanah et al. (2013) and Ghazanfar et al. (2015) point out that it is necessary to combine more different groups of factors. They point out the need to include corporate image, consumer expectations, perceived quality, perceived value, and loyalty. According to Grönroos (2020), the corporate image element is measured in terms of social responsibility, business practices, and overall image. Perceived quality (of tangible products and services) is measured in terms of reliability, consumer friendliness, and overall product quality. Consumer satisfaction also depends on trust in the service. When assessing Lithuanian consumer satisfaction, the European model (ECSI) can serve as a basis by adding elements related to the quality of services and various consumer characteristics. Organizations should pay more attention to the quality of services and the evaluation and improvement of the system. Developing and implementing ongoing methods to measure customer satisfaction provides a way to evaluate current and future business performance, gives insight into consumer behavior, and gives companies a competitive advantage. There is a need to continuously analyze consumer expectations: how consumers perceive the quality and value of services and whether they are willing to pay the price that the service provider charges them. Therefore, when determining consumer satisfaction with a crop insurance service, the following key factors must be considered: consumer expectations in general, consumer satisfaction, expected and perceived quality of service, policyholder image and experience, and the characteristics of the consumer of the insurance service.

To develop a model for measuring consumer satisfaction with crop insurance services in Lithuania, one should draw on Mare et al. (2022), who argue that to measure consumer satisfaction with crop insurance services adequately, it is necessary to consider the socio-demographic characteristics of consumers, which can be used to assess changes based on age, experience with insurance and farming, the area in which they work, and the size of the farm. The consumer evaluation indices show that these elements of the model are necessary to distinguish between transactional and perceived satisfaction. Thus, the model of satisfaction with the crop insurance service (**Figure 1**) should be as follows, with dependent and independent variables.

The model (**Figure 1**) represents the factors that, according to Issalillah and Khayru (2022), Bisikwa (2021), Cappiello (2020), Yazdanpanah et al. (2009), Schofield et al. (2020), Shirsath et al. (2019), Kumar and Gupta (2019), Mare et al. (2019), Ghazanfar et al. (2015), lead to consumer satisfaction with crop insurance and also inform positive or negative consumer satisfaction. If one of the factors is perceived positively by the consumer, it can be assumed that the consumer is inclined to use crop insurance and has a positive attitude toward it. The dependent variables are consumer satisfaction with the crop insurance service and consumer loyalty. The

empirical study aims to uncover the relationship between the above factors, consumer socio-demographic characteristics, and consumer satisfaction and loyalty.

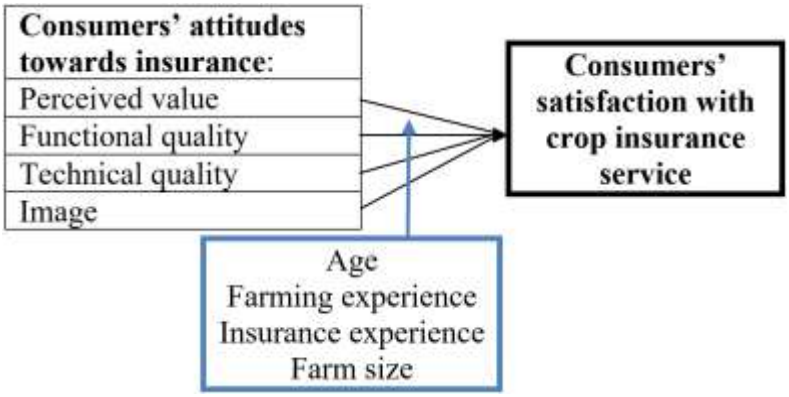

Figure 1. Model for assessing consumers' satisfaction with the Crop Insurance Service.

According to the model for assessing consumers' satisfaction with the Crop Insurance Service (**Figure 1**) we hypothesize whether these factors have a significant and positive impact on consumer satisfaction with crop insurance.

H1: The perceived value of crop insurance has a positive and significant influence on consumer satisfaction;

H2: the technical quality of the crop insurance service has a positive and significant impact on consumer satisfaction;

H3: the functional quality of crop insurance has a positive and significant impact on consumer satisfaction;

H4: the image of the crop insurance service has a positive and significant impact on consumer satisfaction;

H5: consumer attitudes towards the crop insurance service have a positive and significant impact on consumer satisfaction.

The next section is dedicated to confirming or refuting these hypotheses.

3. Results and discussion

In consumer satisfaction surveys, the reliability of the questionnaire must be checked. According to Pallant (2020), it is necessary to evaluate the questionnaire and the categories, subcategories, and statements that make it up for the data to be representative. According to Pallant (2020), and Cronk (2019), the most popular measure for the reliability of survey scales is Cronbach's alpha. Assessment of the reliability of the categories that make up the questionnaire (**Table 1**).

The block of satisfaction factors consists of 36 statements. The reliability analysis showed that this block is classified as reliable with a Cronbach's alpha of 0.864 (**Table 1**). In this block, the coefficients for all scales are rated as very reliable. The "Satisfaction Consequences" block consists of 10 statements covering the categories of loyalty and customer satisfaction. The Cronbach's alpha for this block is 0.801. It can be said that the categories that make up the block are rated as reliable. The individual categories are rated with values between 0.871 and 0.925. Next, a factor analysis was conducted to find out whether all statement categories fall under the

factors analyzed in the paper. The data was validated using the Kaiser-Mayer-Olkin measure. According to Pallant (2020), this data is necessary before analyzing the collected data. The survey instrument (model) is correctly and robustly constructed and allows correlations to be established to validate the different categories of relationships.

Table 1. Reliability of the categories making up the survey questionnaire.

Categories	Cronbach's Alpha	Number of statements
Consumer attitude factor	0.778	5
Technical quality factor	0.846	7
Functional quality factor	0.925	15
Image factor	0.841	5
Perceived value factor	0.866	4
Full questionnaire	0.864	36

Testing the relationships of the model construct (correlation, factorial, regression analyses). **Figure 1** shows the five main factors that determine consumer satisfaction with crop insurance. The study aimed to find out how these factors influence each other and whether there are relationships between the variables The data were compared using a correlation analysis of the aggregated structural components of the factors. A correlation analysis was conducted to determine the strength of the relationship between the variables. Pallant (2020), and Cronk (2019) point out that this relationship is expressed in numerical terms ranging from 0 for no correlation to 1 for an excellent correlation.

The study sought to determine how the factors identified in the model influence consumer satisfaction with crop insurance (**Table 2**).

Table 2. Correlation matrix of generalized structural components of the determinants of consumer satisfaction.

Factor groups	Expression of the correlation results by correlation coefficient *p*-value
Consumers' attitude	0.694** 0.000
Technical quality	0.650** 0.000
Functional quality	0.540** 0.000
Perceived value	0.851** 0.000
Image	0.653** 0.000

The study found that consumer satisfaction with crop insurance services is directly influenced by consumer attitudes, technical quality, functional quality, image, and perceived quality. Consumer satisfaction with crop insurance services is a direct determinant of customer loyalty. The survey revealed a particularly strong correlation between customer satisfaction and perceived service quality ($r = 0.851$**, $p < 0.05$). The attitude of consumers towards a service directly determines customer satisfaction

(r = 0.694**, p < 0.05). A strong correlation was found between these two variables, consumer attitude towards the service and customer satisfaction. There is also a strong correlation between technical quality and satisfaction (r = 0.658**, p < 0.05).

Two factors in the model correlate less strongly with satisfaction with crop insurance but are statistically significant.

There is a moderate correlation between the variables customer satisfaction and image (r = 0.653**, p < 0.05), while there is also a moderate correlation between customer satisfaction and functional quality (r = 0.540**, p < 0.05). We have evaluated the correlation of relations. The results of the evaluation are presented in **Table 3**.

Table 3. Evaluation of correlation relations.

			Consumers' attitude	**Technical quality**	**Functional quality**	**Perceived value**	**Image**
Spearman's rho	Consumers' attitude	Correlation Coefficient	1.000	0.535**	0.430**	0.743**	0.509**
		Sig. (1-tailed)		0.000	0.000	0.000	0.000
		N	228	228	228	228	228
	Technical quality	Correlation Coefficient	0.535**	1.000	0.712**	0.652**	0.542**
		Sig. (1-tailed)	0.000		0.000	0.000	0.000
		N	228	228	228	228	228
	Functional quality	Correlation Coefficient	0.430**	0.712**	10.000	0.538**	0.378**
		Sig. (1-tailed)	0.000	0.000		0.000	0.000
		N	228	228	228	228	228
	Perceived value	Correlation Coefficient	0.743**	0.652**	0.538**	1.000	0.621**
		Sig. (1-tailed)	0.000	0.000	0.000		0.000
		N	228	228	228	228	228
	Image	Correlation Coefficient	0.509**	0.542**	0.378**	0.621**	1.000
		Sig. (1-tailed)	0.000	0.000	0.000	0.000	
		N	228	228	228	228	228

**. Correlation is significant at the 0.01 level (1-tailed).

The study also tried to find out how the individual variables correlate with each other. The correlation analysis showed that there is a statistically significant strong correlation between the two consumer attitudes and perceived quality. Correlation coefficient (r = 0.743**, p < 0.05). This leads to the hypothesis that there is a statistically significant linear positive strong correlation between the perceived value of a crop insurance service and the perceived value of the service. It can be seen that the attitude of consumers towards the service is statistically significantly correlated with loyalty (r = 0.592**, p < 0.05). It can be assumed that there is a statistically significant linear positive correlation, which means that consumer loyalty increases as their attitude toward the service improves. The correlation analysis shows a strong correlation between functional and technical quality (r = 0.712**, p < 0.05). It can therefore also be assumed that there is a statistically significant correlation: as technical quality increases, so does functional quality. The analysis between the two variables technical quality and perceived quality revealed a moderate correlation.

Correlation coefficient ($r = 0.652^{**}$, $p < 0.05$). It can be hypothesized that there is a statistically significant linear positive correlation of moderate strength: The perceived value of the service increases with increasing technical quality. There is also a correlation between technical quality and loyalty ($r = 0.637^{**}$, $p < 0.05$). These results also lead to the hypothesis that there is a statistically significant moderate correlation: an increase in technical quality leads to an increase in customer loyalty. The calculations also showed This indicates that there is a statistically significant linear positive strong correlation, such the perceived value of the services increases as the image of the company improves. There is a strong correlation between image and perceived quality (correlation coefficient ($r = 0.621^{**}$, $p < 0.05$).

Regression analysis. According to researchers Pallant (2020) and Cronk (2019), regression analysis helps to determine how the mean values of the dependent variables will change depending on the values of the independent (in this case, causal) variables. The calculations showed that to properly evaluate the regression data, the R-squared value must be taken into account, which can be used to determine how well the regression line fits the data. According to Pallant (2020), the *R*-squared value is greater than 0.25 when it is appropriate. In this regard, the results are $R = 0.823$, which is more than recommended. The data in the ANOVA table is significant because it indicates that the model can be applied since the *p*-value is less than 0.005. According to Pallant (2020), the results of a regression analysis are significant if the *p*-value is less than 0.05, which proves that the influence of the independent variable on the dependent variable is statistically significant.

The Beta (β) value indicates the strength of the correlation, so the higher the Beta (β) value, the stronger the factors (consumer attitude, technical quality, functional quality, image, perceived quality) extracted from the literature analysis are in determining consumer satisfaction with the crop insurance service (dependent variable). The expression of the Beta (β) value is shown in **Table 4**.

Table 4. Regression analysis of factors influencing consumer satisfaction with crop insurance.

Independent variables	**Non-standard ratios**		**Standardized ratios**	**T**	***p*-value**
	B	**Standard deviation**	**BETA (β)**		
Consumers' attitude	0.196	0.055	0.188	3.565	0.000
Technical quality	0.220	0.075	0.177	2.929	0.004
Functional quality	0.221	0.069	0.167	3.221	0.001
Image	0.155	0.050	0.143	3.090	0.002
Perceived value	0.360	0.51	0.413	7.019	0.000

The regression analysis shows that the *p*-values for all independent variables are less than 0.05. These results show that all these factors (consumer attitude, technical quality, functional quality, image, perceived value) have a significant impact on consumer satisfaction with the crop insurance service. The data on the strength of attachment shows that perceived value is the most important factor for consumer satisfaction. The factors of consumer attitude, technical quality, functional quality, and image have a lesser influence (**Table 4**).

The study showed that the knowledge gained from the analysis of the scientific literature led to the formulation of corresponding hypotheses (H1–H5), which were confirmed after the regression analysis. It can be assumed that perceived value, consumer attitude, technical quality, functional quality, and image factors determine consumer satisfaction with the crop insurance service.

The analysis of scientific literature revealed that consumer satisfaction with crop insurance is influenced by the socio-demographic characteristics of consumers. The study attempted to verify this. The correlation analysis revealed that the socio-demographic characteristics of consumers have a statistically significant correlation with the determinants of consumer satisfaction (**Table 5**).

Table 5. Correlation between consumer satisfaction factors outcomes and socio-demographic consumer characteristics.

Satisfaction factors	Correlation results	Age	Duration of farming	Farm size	Duration of insurance
Consumer attitudes	Correlation ratio	0.136*	0.123*	0.030	−0.156**
	p-value	0.020	0.032	0.324	0.009
Technical quality	Correlation ratio	0.221**	0.184**	−0.057	−0.256**
	p-value	0.000	0.003	0.195	0.000
Functional quality	Correlation ratio	0.055	−0.025	−0.063	−0.217**
	p-value	0.203	0.355	0.170	0.000
Perceived value	Correlation ratio	0.214**	0.307**	0.118*	−0.162**
	p-value	0.001	0.000	0.038	0.007
Image	Correlation ratio	−0.013	0.058	0.101	−0.307**
	p-value	0.420	0.190	0.065	0.000

The correlation analysis revealed that the socio-demographic characteristics of consumers have an impact on the determinants and consequences of consumer satisfaction. The study showed that the duration of farming (0.332** $p < 0.05$) correlates with consumer satisfaction. A positive legal weak correlation has been established. Consumer satisfaction with crop insurance can be considered to be rising as the duration of farming increases. A statistically significant weak correlation between farming experience and perceived value ($r = 0.307$**, $p < 0.05$) was revealed. It can be assumed that the perceived value of crop insurance by consumers increases with the length of farming. A statistically significant weak positive correlation between age and perceived value ($r = 0.307$**, $p < 0.05$) was found. It can be assumed that the perceived value of crop insurance increases with age. The study found a statistically significant but weak relationship between age and technical service quality (0.221**, $p < 0.05$). It can be assumed that the perception of technical quality assessment increases with age. Most of the correlations relate to the insurance experience variable. The study found that consumer insurance experience (−0.161** $p < 0.05$) is correlated with consumer satisfaction. The legal negative correlation established is very weak. It can be assumed that consumer satisfaction with crop insurance decreases as the duration of insurance increases. The study reveals that insurance experience has a statistically significant weak negative correlation with image ($r = -0.307$**, $p < 0.05$). A statistically significant weak correlation was found

between insurance experience and technical quality (r = 0.256**, p < 0.05). It can be said that as the consumer's insurance experience increases, consumer satisfaction with the service, the image of the service, and the technical quality decreases. The correlation analysis revealed that the socio-demographic characteristics of consumers influence the determinants and consequences of consumer satisfaction. The study showed that the duration of farming (0.332** p < 0.05) correlates with consumer satisfaction. A positive, legally weak correlation was found. It can be assumed that consumer satisfaction with crop insurance increases with increasing duration of farming. A statistically significant weak correlation was found between farming experience and perceived value (r = 0.307**, p < 0.05). It can be assumed that the value of crop insurance perceived by consumers increases with the duration of agricultural activity. A statistically significant, weakly positive correlation was found between age and perceived value (r = 0.307**, p < 0.05). It can be assumed that the perceived value of crop insurance increases with age. The study revealed a statistically significant but weak correlation between age and technical service quality (0.221**, p < 0.05). The correlation analysis revealed that the socio-demographic characteristics of consumers influence the determinants and consequences of consumer satisfaction. The study showed that the duration of farming (0.332** p < 0.05) correlates with consumer satisfaction. A positive, legally weak correlation was found. It can be assumed that consumer satisfaction with crop insurance increases with increasing duration of farming. A statistically significant weak correlation was found between farming experience and perceived value (r = 0.307**, p < 0.05). It can be assumed that the value of crop insurance perceived by consumers increases with the duration of agricultural activity. A statistically significant, weakly positive correlation was found between age and perceived value (r = 0.307**, p < 0.05). It can be assumed that the perceived value of crop insurance increases with age. The study revealed a statistically significant but weak correlation between age and technical service quality (0.221**, p < 0.05). It c The correlation analysis revealed that the socio-demographic characteristics of consumers influence the determinants and consequences of consumer satisfaction. The study showed that the duration of farming (0.332** p < 0.05) correlates with consumer satisfaction. A positive, legally weak correlation was found. It can be assumed that consumer satisfaction with crop insurance increases with increasing duration of farming. A statistically significant weak correlation was found between farming experience and perceived value (r = 0.307**, p < 0.05). It can be assumed that the value of crop insurance perceived by consumers increases with the duration of agricultural activity. A statistically significant, weakly positive correlation was found between age and perceived value (r = 0.307**, p < 0.05). It can be assumed that the perceived value of crop insurance increases with age. The study revealed a statistically significant but weak correlation between age and technical service quality (0.221**, p < 0.05). The correlation analysis revealed that the socio-demographic characteristics of consumers influence the determinants and consequences of consumer satisfaction. The study showed that the duration of farming (0.332** p < 0.05) correlates with consumer satisfaction. A positive, legally weak correlation was found. It can be assumed that consumer satisfaction with crop insurance increases with increasing duration of farming. A statistically significant weak correlation was found between farming experience and perceived value (r = 0.307**, p < 0.05). It can be

assumed that the value of crop insurance perceived by consumers increases with the duration of agricultural activity. A statistically significant, weakly positive correlation was found between age and perceived value ($r = 0.307^{**}$, $p < 0.05$). It can be assumed that the perceived value of crop insurance increases with age. The study revealed a statistically significant but weak correlation between age and technical service quality (0.221^{**}, $p < 0.05$).

The study sought to find out whether socio-demographics affect consumer satisfaction with crop insurance. To this end, a multiple regression analysis was carried out. The calculations take into account the *R*-squared value, which is ($R = 0.818$). According to Pallant (2020), if *R* Square is more than 0.25, it is appropriate. The ANOVA table indicates that $p < 0.005$, therefore the model can be applied. The table (**Table 6**) shows the results of the regression analysis of the impact of socio-demographic characteristics on consumer satisfaction with the crop insurance service.

Table 6. The influence of socio-demographic traits on consumer satisfaction with crop insurance service regression analysis results.

Independent variables	Non-standard ratios		Standardized ratios	T	*p*-value
	B	Standard deviation	BETA		
Consumers' attitude	0.219	0.053	0.210	4.092	0.000
Technical quality	0.225	0.077	0.180	2.913	0.004
Functional quality	0.258	0.067	0.195	3.849	0.000
Perceived value	0.326	0.052	0.373	6.256	0.000
Image	0.181	0.051	0.168	3.576	0.000
Age	−0.090	0.023	−0.165	−3.853	0.000
Farming experience	0.097	0.023	0.180	4.142	0.000
Insurance experience	0.081	0.026	0.114	3.069	0.002
Farm size	−0.010	0.016	−0.023	−0.608	0.544

The regression analysis reveals that consumer satisfaction is directly related to farming and insurance experience. Age was found not to have a significant direct impact on consumer satisfaction. The length of time spent farming directly determines consumer satisfaction. Insurance experience is found to be negatively correlated with consumer satisfaction, but it is a direct determinant of consumer satisfaction with the crop insurance service. It can be assumed that consumers have a good knowledge of the insurance product and therefore make increasingly high demands.

The study aimed to investigate whether age, farm size, farming and insurance experience act as moderating factors in the moderating relationship between consumer satisfaction and consumer satisfaction with crop insurance. In an attempt to investigate this, new variables have been created, consisting of factors determining customer satisfaction and socio-demographic consumer characteristics. The dependent variable is consumer satisfaction with the crop insurance system, while the independent variables are consumer satisfaction factors (consumer attitudes, technical and functional quality, perceived value, image, socio-demographic consumer characteristics) and completely new variables have been created, consisting of consumer satisfaction determinants and sociodemographic consumer characteristics.

For this purpose, a multiple regression analysis was carried out (see **Tables 3–5**). The results showed that age, insurance and farming experience affect the relationship between the perceived value of the service and consumer satisfaction ($p < 0.005$).

Estimation of a model of factors influencing consumer satisfaction with a crop insurance service.

Summarising all the data, the most important factors were identified, which contributed to the working assumptions that consumer attitudes, technical quality, functional quality, image, and perceived quality can influence consumer satisfaction with a crop insurance service. Regression analysis was used to test these hypotheses. The correlation analysis revealed that the factors influencing customer satisfaction have a statistically significant relationship with each other. The perceived value factor is shown to have the strongest correlations with other variables. It reveals that technical and functional quality factors have a strong relationship in the inter-ratings of services. Correlation analysis showed that socio-demographic consumer characteristics have no or statistically significant weak or very weak relationships. Among the socio-demographic consumer characteristics, farming experience and age are the most important determinants of consumer satisfaction, while insurance experience has the opposite effect, as consumer satisfaction decreases with the longer the use of the insurance service. Summarising the impact of socio-demographic consumer characteristics on other determinants of consumer satisfaction, the correlations between them are statistically significant but weak or very weak. The characteristics of the location of the farm and the size of the farm do not correlate with consumer satisfaction and its determinants. Grigaliūnaitė and Pilelienė (2016) distinguish that socio-demographic characteristics of consumers influence consumer satisfaction and the correlation is calculated.

H1: the perceived value of crop insurance has a positive and significant impact on consumer satisfaction. The regression analysis confirmed the hypothesis that perceived value influences customer satisfaction. This factor was found to be the most important for customer satisfaction (0.771). Grigaliūnaitė and Pilelienė (2016) point to this factor as the most important and most frequent determinant of consumer satisfaction. In the descriptive analysis, the benefits of crop insurance were highlighted by consumers in terms of peace of mind and quality provided. According to consumers, they would most like to see changes in the assessment of premiums and benefits. However, consumers stress that being a customer of a crop insurance company is important to them.

H2: The technical quality of the crop insurance service has a positive and significant impact on customer satisfaction. The literature analysis confirmed that the quality of crop insurance services is an important factor for consumers. The service quality factor consists of technical quality, functional quality, and image (Gronroos, 2020). The regression analysis revealed that technical quality has an impact on customer satisfaction. This is supported by Pantouvakis and Bouranta (2013), who argue that this factor is a direct determinant of customer satisfaction. The literature refers to the technical quality factor as an outcome factor. The descriptive analysis revealed that consumers value good timing, communication, and cooperation, but expect changes in the activities related to the assessment of claims so that the whole crop insurance process is based on fairness.

H3: The functional quality of crop insurance has a positive and significant impact on consumer satisfaction. The correlation analysis confirmed that there is a relationship between the functional quality factor and customer satisfaction. The hypothesis that the functional quality factor has a positive and significant influence on customer satisfaction was confirmed by regression analysis. It is the second most important factor. The literature refers to the functional quality factor as a process factor. It consists of suppliers and the services they provide. The descriptive analysis reveals that the courtesy and reliability of suppliers (insurance advisors and managers) are the most valued by consumers. However, it stresses the need to focus more on knowledge of local damage and to increase knowledge of farming practices. According to consumers, the most valued qualities of damage assessors are courtesy and the ability to explain damage. However, they would like to see changes in activities related to knowledge of local damage and reliability.

H4: The image of the crop insurance service has a positive and significant impact on consumer satisfaction. Correlation analysis was used to assess the relationship between image and customer satisfaction. A statistically significant moderate relationship was found. The regression analysis method revealed that the image factor has a positive and significant influence on customer satisfaction. The survey showed that this factor has the lowest impact on customer satisfaction. This factor is most relevant in European countries. In other countries, image evaluation is not assessed. The descriptive analysis reveals that consumers value company image the most. Consumers value the fact that insurance services are provided by a specialized insurance company. Insurance consultants consider the image of the insurance company to be important for farmers, but the least important is the work culture and values promoted. It could be argued that suppliers rate individual activities lower than service users themselves.

H5: Consumer attitudes towards the service have a positive and significant impact on consumer satisfaction with the crop insurance service. Correlation and regression analyses confirmed the hypothesis that consumer attitudes influence consumer satisfaction with crop insurance. It is the third most important of all the factors. Studies by various researchers have shown that consumer satisfaction is positively influenced by the consumer attitude factor. Descriptive statistics have shown that consumers find the crop insurance service helpful, giving them security and peace of mind. Consumers do not see insurance as an additional cost or a way of charging.

If the main hypotheses (H1–H5) are confirmed, we can conclude that consumer satisfaction with a crop insurance service is determined by factors related to consumer attitudes, technical and functional quality, perceived value, and image.

After processing the attitudinal data using correlation and regression analysis and descriptive statistics, a structure emerged that allows us to reasonably assert that, in principle, we have succeeded in identifying the groups of factors that determine consumer satisfaction with the crop insurance service. The study produced a model of consumer satisfaction with crop insurance in Lithuania (**Figure 2**).

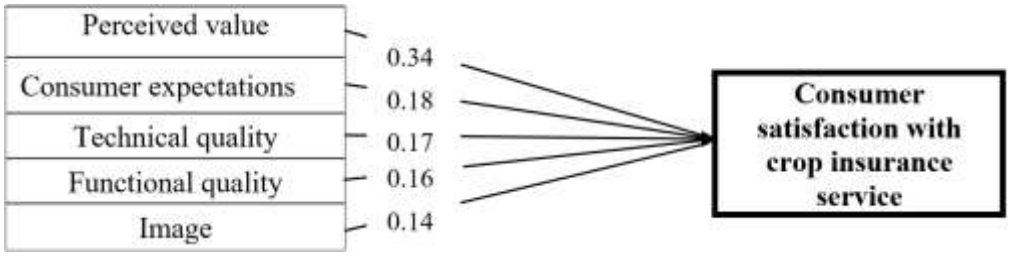

Figure 2. A model of the factors influencing consumer satisfaction with crop insurance.

The model identifies five main factors that directly determine consumer satisfaction with crop insurance.

4. Discussion

The model is suitable for measuring cause-and-effect relationships that influence consumer satisfaction: consumer attitudes, technical quality, functional quality, image, perceived value, and socio-demographic consumer characteristics. The study identifies the correlations between factors and concludes that consumer satisfaction with crop insurance is mainly determined by perceived value, functional (process) quality, consumer attitude towards the service, technical (outcome) quality, image, and socio-demographic (insurance and farming experience) factors.

The research is original in its methodology: at the beginning, a theoretical research model was presented, then correlation, factorial, and regression analyses were made, and based on their results, hypotheses were formulated, which were confirmed.

The findings of the study suggest that more attention should be paid in the future to the influence of socio-demographic characteristics of consumers on the identification of new crop insurance schemes. It is necessary to assess these factors more frequently, as they are constantly changing, which would provide more detailed data and help insurance companies to provide better quality insurance services. The study found that various factors contribute to consumer satisfaction. Conducting such studies to assess specific services would help organisations to obtain more information on consumer satisfaction and help them to claim a better quality of service in the interests of consumers. The model developed provides a wealth of information on the most important factors and indicates which factors are the most important and which actions companies need to take most quickly to achieve the desired outcome. Our further research will focus on a study for measuring the impact of insurance service user satisfaction on other earlier-mentioned participants of this insurance system.

5. Conclusion

Crop insurance is a process involving two stakeholder groups, service providers and consumers. Crop insurance is a form of risk management used to protect against crop losses caused by relative weather events. It is a special and specific type of insurance, requiring specific knowledge and skills to provide services.

As a result of the analysis of the scientific literature, a model of the determinants of consumer satisfaction with the crop insurance service was developed. Four constructs were identified in the model. The first construct consists of the reasons for

consumer satisfaction, broken down into six categories and indicating the direct influence on consumer satisfaction. The second construct consists of consumer satisfaction. This variable depends on the causal factors of consumer satisfaction and the socio-demographic characteristics of consumers. The socio-demographic characteristics of consumers constitute the third construct. Loyalty is reported as a consequence of consumer satisfaction and constitutes the fourth construct.

The empirical study tests the validity of the theoretical model developed. It reveals that consumer satisfaction is determined by perceived value, consumer attitude, technical quality, functional quality, and image. Perceived value was found to be the most important factor, with image being the least important. The socio-demographic characteristics of consumers determine the value of crop insurance services. Increasing farming experience and age were found to lead to higher consumer satisfaction with the service and higher perceived value of the service. However, increasing experience with crop insurance decreases consumer satisfaction with the service. Age, insurance, and farming experience were found to moderate the relationship between the perceived value of the service and consumer satisfaction wD and MRith no other relationships found.

The results of the research on user satisfaction with crop insurance services will undoubtedly influence the modeling content of other crop insurance system elements and their development, the modeling of other elements of the system is also the direction of our further research.

Author contributions: Conceptualization, RD and MR; methodology, MR; software, RD; validation, RD and MR; formal analysis, MR; investigation, RD and MR; resources, MR; data curation, MR; writing—original draft preparation, RD; writing—review and editing; supervision, RD; project administration, RD. All authors have read and agreed to the published version of the manuscript.

Conflict of interest: The authors declare no conflict of interest.

References

Argento, D. & Peda, P. (2015). Interactions fostering trust and contract combinations in local public services provision. International Journal of Public Sector Management, 28(4/5), 335-351. doi:10.1108/IJPSM-08-2015-0154.

Batool, A., Sahi, C. A. (2019). Determinants of Financial Performance of Insurance Companies of USA and UK During Global Financial Crisis (2007–2016). International Journal of Economics and Business Administration, 5(1), 23-33.

Biener, C., Eling, M., Wirfs, J. H. (2016). The determinants of efficiency and productivity in the Swiss insurance industry. European Journal of Operational Research, 248(2), 703-714.

Bisikwa, B. (2021). An evaluation of customer retention strategies at UAP old mutual insurance [PhD thesis]. Makerere University Business School.

Cappiello, A. (2020). The digital (r) evolution of insurance business models. American Journal of Economics and Business Administration, 12(1), 1-13.

Cronk, B. C. (2019). How to use SPSS®: A step-by-step guide to analysis and interpretation. Routledge.

Evans, J. R., & Lindsay, W. M. (2013). Managing for quality and performance excellence. Cengage Learning.

Gąsiorkiewicz, L., & Kruk, M. (2019). Process Management in Insurance Companies. Management, 7(5), 486-495.

Ghazanfar, S., Qi-wen, Z., Abdullah, M., et al. (2015). Factors Hindering Pakistani Farmers' Choices Towards Adoption of Crop Insurance. Journal of Northeast Agricultural University (English Edition), 22(2), 92-96.

Grigaliūnaitė, V., & Pilelienė, L. (2016). Emotional or rational? The determination of the influence of advertising appeal on advertising effectiveness. Scientific Annals of Economics and Business, 63(3), 391-414.

Grönroos, C. (2020). service marketing research priorities. Journal of Services Marketing, 34(3), 291-298.

Issalillah, F., & Khayru, R. K. (2022). The Effect of Insurance Premiums and Brand Image on Interest To Be An Insurance Customer. International Journal of Service Science, Management, Engineering, and Technology, 2(1), 31-35.

Kumar, A., & Gupta, H. (2019). Financial inclusion and farmers: Association between status and demographic variables. International Journal of Recent Technology and Engineering, 8(4), 5868-5879.

Limna, P., & Kraiwanit, T. (2022). Service quality and its effect on customer satisfaction and customer loyalty: A qualitative study of Muang Thai Insurance Company in Krabi, Thailand. Journal for Strategy and Enterprise Competitiveness, 1(2), 1-16.

Mare, C., Manaţe, D., Mureşan, G. M., et al. (2022). Machine Learning Models for Predicting Romanian Farmers' Purchase of Crop Insurance. Mathematics, 10(19), 3625.

Mavroutsikos, C., Giannakas, K., & Walters, C. (2021). The role of premium subsidies in crop insurance. PLoS ONE, 16(4), e0250129.

Möhring, N., Dalhaus, T., Enjolras, G., & Finger, R. (2020). Crop insurance and pesticide use in European agriculture. Agricultural Systems, 184, 102902. https://doi.org/10.1016/j.agsy.2020.102902

Negara, M. R. A. (2023) Manage Insurance Customer Satisfaction with Premiums and Perceived Quality Assessments. Journal of Jabar Economic Society Networking Forum, 1(1).

Pachura, A., & Smolarek, M. (2019). Employer Branding in Creating of an Organization's Image-Example of SME's. Hradec Economic Days 2019. doi: 10.36689/uhk/hed/2019-02-019

Pallant, J. (2020). SPSS survival manual: A step-by-step guide to data analysis using IBM SPSS. McGraw-hill education (UK).

Pantouvakis, A., & Bouranta, N. (2013). The interrelationship between service features, job satisfaction and customer satisfaction: evidence from the transport sector. The TQM Journal, 25(2), 186-201.

Rusteika, M., & Skinulienė, L. (2023). Expectations of the Participants of the Crop Insurance System and Their Implementation. Agriculture, 13(3), 649.

Schofield, P., Coromina, L., Camprubi, R., & Kim, S. (2020). An analysis of first-time and repeat-visitor destination images through the prism of the three-factor theory of consumer satisfaction. Journal of Destination Marketing & Management, 17, 100463.

Shirsath, P., Vyas, S., Aggarwal, P., & Rao, K. N. (2019). Designing weather index insurance of crops for the increased satisfaction of farmers, industry and the government. Climate Risk Management, 25, 100189.

Yazdanpanah, M., Zamani, G. H., & Rezaei, M. K. (2009). Farmer's satisfaction about crop insurance: Application of path analysis. Journal of Agricultural Economics and Development, 17(2(66)), 139-164.

Yazdanpanah, M., Zamani, G. H., Hochrainer-Stigler, S., et al. (2013). Measuring satisfaction of crop insurance a modified American customer satisfaction model approach applied to Iranian Farmers. International Journal of Disaster Risk Reduction, 5, 19-27.

Zwier, S. (2021). Insurance-based marketing (IBM): a prevalent marketing strategy. Journal of Financial Services Marketing, 26(3), 160-168.