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Analyzing The Factors Affecting Farmer Engagement in Farm Insurance in Karangsari, Banyumas

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ABSTRACT

Agriculture is a sector characterized by uncertainty and high risk. One of the government policies aimed at mitigating this risk is the farm insurance program. Karangsari Village in Kembaran is one of the areas that actively implements this program. However, participation in farm insurance in Karangsari Village is not optimal. This study aims to analyze the influence of age, education, farmers' activeness in groups, farming experience, land area, and land ownership status on participation in farm insurance. These characteristics are considered distinguishing variables that are thought to affect farmer participation. The samples for this study were determined using Taro Yamane. The analysis method employed is logistic regression to assess how age, education, farmers' activeness in groups, farming experience, land area, and land ownership status impact participation in farm insurance. The results showed that age, education, and farming experience did not have a significant effect on farmers' participation in farm insurance, while farmers' activeness in groups, land area, and land ownership status did have a significant effect. In this context, farmers with potential agricultural assets are more likely to participate in farm insurance.

· ***Keywords:*** *agriculture, farmer, insurance, land*

INTRODUCTION

Indonesia is an agricultural country because most of its population works as farmers. Indonesia is also a country that has abundant natural resources and is scattered throughout the region. The fertile soil structure and tropical climate makes land in Indonesia suitable for farming (Leimona et al., 2015).

The agricultural sector is one sector that has been relied on by the Indonesian state because the agricultural sector is able to provide recovery in overcoming the current crisis. This situation constitutes the agricultural sector as one of the reliable sectors and has great potential to act as a trigger for national economic recovery (Junaidi & Jannah, 2020).

Agricultural development is one of the most important issues today. Agricultural development is not merely about providing sufficient food for the Indonesian people. The issue of national identity, honor and dignity, even national sovereignty, is an inseparable part of all concepts of nation-building. Thus, food sovereignty has finally become an issue that has surfaced along with the emergence of food supply problems (Sampson et al., 2021).

The importance of the agricultural sector in the context of the Indonesian economy needs more attention. Developing an agricultural sector that has the comparative advantage is not an easy task. Because in reality, the agricultural sector is a sector that always faces risks and uncertainties. Climate problems such as the long dry season, erratic rain (extreme climate change), unavoidable pest and plant disease attacks, and unpredictable natural disasters, show that the agricultural sector is actually subject to risks and uncertainties (Barokatuminalloh et al., 2021).

Food availability is increasing along with the increasing population growth in Indonesia. Food availability is very dependent on the agricultural sector, which is currently being improved by the government so that food sufficiency can be fulfilled. If food availability can be fulfilled then prosperity will be achieved. Building food sovereignty is very important because food is a basic need that must be fulfilled every day. Food security requires the achievement of sufficient production of an adequate area accompanied by high plant productivity (Alta et al., 2023).

The majority of Indonesia's population lives are supported by the agricultural sector, especially the food crop subsector in Indonesia. Indonesia is the third largest rice producing country in the world, with a total rice harvest area of 10.20 million hectares with rice production of 53.63 million tons of dry milled grain and a consumption rate of 30.90 million tons of rice per year (BPS 2023). This also supports the goal of Indonesia to become the world's rice barn country by 2045. Therefore, increasing rice production is the government's top priority. The government has a food sovereignty program as one of the priorities which is contained in the Nawa Cita program. It is written on the 7th agenda of Nawa Cita which states "Realizing economic independence by mobilizing strategic sectors of the domestic economy". Based on the data from the Ministry of Agriculture in 2018, Indonesia is expected to be able to solve the food crisis with 1). Food security, food from domestic production, 2) food policy, and 3) the ability to prosper Farmers and fishermen (Safitri & Sihaloho, 2020).

The largest agricultural distribution is in Java. With a favorable soil structure and climate, Java is one of the regions in Indonesia that is very suitable for agriculture, especially rice. It is not surprising that Java has a large agricultural land. Table 1 presents the agricultural land area on Java from 2019 to 2023.

Table 1. Agricultural land area in Java 2019 – 2023

No.	Province	Agriculture Land Area				
		2019	2020	2021	2022	2023
1.	Jakarta	623	934	578	414	542.93
2.	West Java	928,218	1,586,889	928,218	1,660,000	1,580,000
3.	Central Java	1,049,661	1,670,000	1,696,712	1,690,000	1,640,000
4.	East Java	1,214,909	1,700,000	1,747,481	1,704,759	1,698,000
5.	DIY	76,273	95,575	106,271	112,150	105,390
6.	Banten	204,335	325,333	318,250	337,240	311,200

Table 1 shows that the area of agricultural land in Java has experienced continuous changes, since agricultural land in Java has been displaced by the development of the industrial sector and residential areas. Table 1 also shows that each province tends to experience changes in agricultural land area. Central Java is the region with the second largest agricultural land area compared to other regions in Java after East Java. This shows the huge agricultural potential of the region.

Central Java is one of the agricultural centers, especially rice. Rice commodity is produced by farmer groups commonly known as association of farmer groups (g*apoktan*). *Gapoktan* indicates that agriculture is an important livelihood in the region. *Gapoktan* has goals and programs in accordance with the planning carried out by its members, so that agriculture runs in a structured manner (Muhtarom et al., 2021). Therefore, the program and the allocation of government assistance can be easily realized through the *gapoktan*. There are a large number of g*apoktan* in the Central Java region, one of which is Banyumas. Due to the wide spread of agricultural land, it makes Gapoktan in Banyumas have many members and active programs.

Agriculture is a sector that has a high risk of uncertainty. In recent years, crop failures have occurred in several regions. Long drought and pest attacks have made *gapoktan* farmers in Banyumas lose money. Banyumas Regency is an area in Central Java whose agricultural sector is ranked third in the contribution of the income of Banyumas Regency (Novia & Zulkifli, 2021). Table 2 presents the total production of agricultural commodities in Banyumas Regency in 2019 to 2023

Table 2. Production of Agricultural Commodities in Banyumas Regency 2019 – 2023 (tons)

No.	Commodities	2019	2020	2021	2022	2023
1.	Rice	364,948.72	368,438.86	372,909.33	370,625.48	374,618.09
2.	Upland Rice	4,008.53	3,388.58	3,173.37	1,050.82	893,24
3.	Corn	34,052.33	31,784.60	27,741.50	32,492.26	29,392.71
4.	Soy	1,124.06	298.51	1,783.20	437.20	2,210.20
5.	Green Beans	395.55	268.81	290.98	228.95	718.50
6.	Peanuts	6,014.97	3,057.34	3,506.97	3,263.09	3,272.71
7.	Sweet Potato	3,517.78	1,997.73	1,539.51	1,000.50	1,577.34
8.	Cassava	18,061.61	21,902.29	19,888.50	20,208.75	20,854.82

Table 2 shows that rice is the largest commodity in Banyumas. However, the total production of rice fluctuates from 2020 to 2023, as well as other commodities that fluctuate every year. The total production of rice in 2019 was 364,948.72 tons, increasing until 2021 of 372,438.86 tons, but in the following year rice production decreased by 2,283.85 tons so that rice production in 2022 was 370,625.48 tons. Rice paddy production in Banyumas increased again in 2023 to 374,618.09 tons. Based on this comparison, the decline in production is relatively large and needs improvement to maintain the stability of rice production in Banyumas. The rice commodity in Banyumas is spread across various sub-districts, Table 3 presents seven districts with the highest rice production, from 2020 to 2023

Table 3. Seven Districts with the highest rice production in 2020 – 2023 (tons)

No.	District	2020	2021	2022	2023
1.	Cilongok	24,509.72	26,627.51	23,029.28	28,450.40
2.	Sumbang	21,820.69	20,976.57	20,382.00	17,979.50
3.	Kemranjen	21,770.91	20,981.92	21,343.60	23,031.45
4.	Tambak	20,774.66	20,207.02	19,628.30	21,964.80
5.	Kembaran	17,078.40	18,166.16	16,129.10	18,897.20
6.	Sokaraja	17,458.25	17,736.96	18,706.20	18,916.10
7.	Wangon	17,397.33	17,170.77	18,463.80	18,344.14

Table 3 shows that rice production in the sub-districts in Banyumas tends to fluctuate. Here is an increase and decrease in production which is caused by several factors. This proves that the agricultural sector is a sector with uncertainty and high risk.

The risk and high uncertainty, including the potential damage to farming and the likelihood of crop failure, allow farmers to switch to other commodities that have higher economic value and lower risks. If the situation continues, due to the transition of rice agricultural commodities to other commodities, the stability of national food security will be disrupted, given that rice is the biggest the staple foodstuffs consumed by the Indonesian people (Elfriede, 2022). According to Pasaribu, (2014) national food stability will be disrupted if there are no special efforts for farmers to increase the production of staple food commodities such as rice. With the uncertainty of the agricultural sector and the risk of crop failure being faced, a way is needed to ensure food security at a certain level to meet national food security (Bairwa et al., 2016).

Farm insurance is mandated by Law 19 of 2013. Article 37, paragraph (1), states that the Government and Regional Governments, in accordance with their authority, are required to protect farming businesses conducted by farmers through farm insurance. In terms of farm insurance employment prospects, the Financial Services Authority (OJK) has officially appointed an insurance BUMN, namely PT Jasindo (*Persero*), as the sole insurance guarantor for farmers who experience crop failure. Jasindo has prepared the best schemes and mechanisms that make it easier for farmers to manage this insurance (Siswadi & Syakir, 2016).

The implementation of Law Number 19 of 2013, concerning the protection and empowerment of farmers, has been followed by the issuance of Minister of Agriculture Regulation Number 40 of 2015, which addresses farm insurance facilities. This insurance serves as a risk transfer mechanism that can compensate for farmer losses, thereby ensuring the sustainability of farming and facilitating the development of farms. To mitigate farmers' losses, the government supports their protection efforts in the form of farm insurance. The distribution of the farm insurance program is carried out in stages, with counseling provided by the agricultural extension team. Agricultural extension is a learning process offered by extension workers to agricultural businesses to enhance productivity, income, and welfare. Agricultural extension also aims to increase awareness of environmental conservation (Rahmanida et al., 2019). In the farm insurance program, agricultural extension is not only carried out by socializing the program, but also by monitoring and collecting data on the sustainability of the program.

One of the areas where farm insurance is active is Kembaran sub-district, Banyumas Regency, Central Java Province. Kembaran has a fairly large agricultural land compared to several surrounding sub-districts, and the majority of the population work as a rice farmers Table 4 presents the grouping of farmers in Kembaran District in 2023.

Table 4. Classification of Farmer Membership in Kembaran District 2023

No	Classification	Total
1.	*Gapoktan* (Group)	16
2.	Farmer group (Group)	4
3.	Farmer (Persons)	4200

Based on data from the Kembaran District Agricultural and Fisheries Extension Agency, majority of the livelihoods of the Kembaran sub-district people are rice farmers. In Kembaran sub-district there are 16 g*apoktans* and some of them are active *gapoktan*. Active g*apoktan* means that the g*apoktan* has an active program plan, while *gapoktan* that is not active is only limited to gathering farmer groups to facilitate information sharing and running programs. Active *gapoktan* often conducts regular gatherings to discuss *UPJA* (Agricultural Equipment Service Business) participation, selection of planting seeds, and participation in government programs, while *gapoktan* which is not active only acts as a medium to facilitate the distribution of information between farmers.

Within the *gapoktan* there are 40 farmer groups from various villages in Kembaran sub-district. There are ± 4200 farmers in Kembaran. Farmers in Kembaran are divided into owner farmers and *sakap* farmers. Farmer who owns the land means that the farmer has full power to manage his land, while *sakap* farmers are farmers who work on other farmer's agricultural land and share profit with the land owner. The large number of farmers who are supported by extensive agricultural land, does not reduce the risk of crop failure that occurs. A major crop failure occurred in Kembaran at the end of 2019 which caused farmers to lose money due to the drought Therefore, the farm insurance program is very important in order to reduce the uncertainty.

Farm insurance has been widely adopted in various developed countries, including the United States, China, Vietnam, Japan, and others. This type of insurance is growing rapidly and has proven effective in protecting farmers. In developing countries, farm insurance has also started to be implemented, although it has not produced satisfactory results. In Taiwan, farm insurance is developing well, while in India, Bangladesh, and the Philippines, it is still progressing slowly. These countries have enacted mandatory laws requiring farmers to participate in farm insurance, yet some farmers demonstrate a high level of awareness regarding the risks associated with this sector (Ntukamazina et al., 2017). Agriculture is inherently risky. The exposure to a wide variety of complex risks can make it one of those rare activities where the risks outweigh the rewards, particularly for smallholder farmers. Various agricultural problems arise from this susceptibility, such as the risk of too much or too little rainfall. Additionally, while extreme weather events may be rare, they can lead to substantial losses. Farmers'

exposure to weather risks also varies significantly based on their choice of crops. Each plant requires different amounts of water at various stages of planting, processing, and maturation. Crop yields can be significantly reduced when there is insufficient water during any of these phases (Jing, 2021).

The suboptimal participation of farmers in farm insurance in Karangsari, Banyumas, presents an intriguing research phenomenon. Despite the various benefits that farm insurance offers to rice farmers, including protection against the risk of crop failure, participation in the program remains low. The focus of this research is to identify the factors that influence farmer participation in farm insurance, as evidenced by the significant number of farmers who do not join the program. According to Juliantara, (2004), participation theory explains the involvement of individuals who have rights in decision-making through the intermediation of groups that represent common interests. Farmer participation in a program is closely tied to the agricultural extension efforts implemented. Agricultural extension plays a crucial role in enhancing the quality of farmers' resources. The agricultural extension program is a systematic initiative designed to guide farmers toward greater productivity (Tambunan, 2020). However, extension services aim to introduce programs and encourage farmers to participate in agricultural initiatives. This often results in farmers facing the choice of whether to join the farm insurance program, which can lead to non-optimal participation among farmers in Karangsari, Banyumas. Therefore, this study focuses on the factors that are believed to influence farmers' participation in farm insurance in Karangsari, Banyumas.

Research on farm insurance continues to grow. The provisions of the farm insurance program directly affect the area of land managed. The size of the land is the most significant factor influencing the decision to participate in the farm insurance program. Research conducted by Nahvi et al., (2014); Taufiqurrahman et al., (2022); Martadona & Elhakim, (2020); Hardiana, (2018) revealed that land area significantly affects farmers' participation in farm insurance. Additionally, farmer characteristics such as age and education also influence this participation. Research conducted by Sayugyaningsih et al., (2022); Gusti et al., (2022); Marphy & Priminingtyas, (2019) it was stated that age and education have a significant effect on farm insurance participation. Both age and education indicate maturity in thinking, suggesting that farmers are better equipped to make decisions regarding their participation in farm insurance programs. Another variable believed to affect farm insurance participation is farming experience. Marphy & Priminingtyas, (2019); Hardiana, (2018) farming experience has a significant influence on farm insurance participation. It reflects the insights that experienced farmers have regarding agriculture. These farmers tend to consider various agricultural prospects more thoroughly, with farm insurance being a viable option in the face of agricultural uncertainty. In research on farm insurance, other factors also play a role, such as a farmer's involvement in groups and their land ownership status. Farmers in Karangsari Village, Kembaran, are organized into groups that regularly hold meetings, where program socialization and the introduction of agricultural policies by the extension team typically occur. As a result, farmers who actively participate in these groups are better positioned to receive important information. Moreover, farmer participation is influenced by the dynamics within these groups, particularly in rice farming. In addition to group involvement, land ownership status is a crucial factor determining participation in farm insurance. The farmers in Karangsari Village include both landowners and tenants, which affects the levels of farm insurance participation within the community. Based on the background description previously described, this study was conducted with the aim of analyzing the factors that influence farmers' participation in farm insurance in Karangsari Village, Kembaran. Factors that are thought to influence farm insurance participation include age, education, activeness of farmers in groups, farming experience, land area, and land ownership status.

METHODS

This type of research is a quantitative approach. Data in this study will be obtained using the interview method based on a questionnaire. Interviews will be conducted directly with respondents in order to gather the required information. Interviews were conducted on a questionnaire consisting of a series of questions required in the study by including variables such as age, education, farming experience, farmer activeness farmers in groups, land ownership status, and land area.

This research is conducted in Kembaran district. This location was chosen purposively, because throughout the year farmers always plant rice in this area, the risk of crop failure in this area is quite high due to rats, flooding and plant pests (OPT), causing uncertainty of yields. The target of this research is rice farmers, in Karangsari Village, Kembaran District.

Karangsari Village was chosen as the research location, because during the planting season period of October-March 2023, Karangsari Village is the only village that participates in farm insurance in Kembaran district. The population of farmers in Karangsari village is 141 farmers. From the number of farmers, samples were taken using Taro Yamane formula (Hamidi, 2010).

$$n = \frac{N}{N.d^2+1} \quad \text{(1)}$$

$$\frac{141}{141.0{,}05^2+1} = 104{,}25 \quad \text{(2)}$$

Sampling was done by proportionate random sampling. There are 49 farmers participating in the farm insurance in Karangsari Village, while 92 farmers do not participate in the farm insurance. Proportionate sampling is carried out in each group using the formula.

$$n_t = \frac{N_t}{N} N \quad \text{(3)}$$

Based on these calculations, the following results were obtained.

Table 5. Population and Sample

No	Group	Classification	Total
1.	Participate in Farm Insurance	49	(49/141) × 104 = 37
2.	Not participating in Farm Insurance	92	(92/141) × 104 = 68
Total		141	105

To determine the factors that influence farmer participation in rice farming insurance in Kembaran District, Banyumas Regency, the primary data obtained are analyzed using logistic regression analysis.

The logistic model is a modeling procedure used to analyze a categorical response variable (Y) based on one or more predictor variables (X), which can be either categorical or continuous. The formula for this logit method.

$$ln\frac{P}{1-P} = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 \quad \text{(4)}$$

The logit model is a non-linear regression model that produces an equation with dichotomous variables. The most basic values of these variables are binary values, namely 0 and 1. The logit model has the advantage of an easy-to- understand result interpretation. The level of participation of farmers in the affected variable (dependent variable) is defined such that farmers who join farm insurance are assigned a value of 1, while those who do not are assigned a value of 0. This distinction arises from the uneven participation in the farm insurance program in Karangsari, Banyumas, as evidenced by the presence of farmers who have not enrolled in the program. Therefore, this research explores the reasons why some farmers choose to join farm insurance and also investigates additional findings beyond this participation.

Table 6. Probability in The Logit Model

No	Yi	Probability
1.	0	1 – Pi
2.	1	Pi
Total		1

Nagelkerke R Square is a modification of the Cox and Snell R Square coefficient that ensures the value ranges from 0 to 1. This is achieved by dividing the Cox and Snell R Square values by their maximum values. A small value indicates that the independent variables have limited ability to explain the dependent variable. Conversely, a value close to one suggests that the independent variables provide nearly all the information needed to predict the dependent variable (Ghozali, 2018).

The feasibility of the regression model was assessed using Hosmer and Lemeshow's goodness-of-fit test. This model tests the null hypothesis that the empirical data fits the model, indicating that there is no significant difference between the model and the data, and thus the model can be considered a good fit (Ghozali, 2018).

This statistical test aims to determine whether all the independent variables in the logistic regression simultaneously affect the dependent variable, similar to the F test in linear regression. The overall model fit test is based on the statistical value -2LL, or the likelihood ratio (LR) value. The simultaneous test of the logistic model regression coefficients is calculated using the difference in the -2LL value between a model that includes only constants and the estimated model that includes both constants and independent variables (Ghozali, 2018). The test is conducted by comparing the difference between the values of -2 Log likelihood (referred to as the calculated chi-square). If the calculated chi-square value is greater than the chi-square table value or if the significance value is smaller than alpha, it can be concluded that there is a simultaneous influence of the independent variables on the dependent variable.

Logistic regression uses the Chi-Square value to assess the difference between the -2 Log likelihood before and after an independent variable enters the model. This test is also known as the Maximum Likelihood test. The odds ratio (OR) measures the relationship between exposure and outcome, indicating the likelihood of an outcome occurring given a particular exposure compared to the likelihood of that outcome occurring in the absence of that exposure (Ghozali, 2018).

In logistic regression, the Wald test is used to determine whether there is an effect of the independent variable on the dependent variable. This is done by comparing the Wald statistical value with the chi-square critical value at degrees of freedom (df) = 1, using an alpha level of 5%. Alternatively, the significance value (p-value) can be compared to an alpha of 5%; if the p-value is smaller than alpha, it indicates that the null hypothesis is rejected, suggesting a significant effect of the independent variable on the dependent variable (Ghozali, 2018).

RESULTS AND DISCUSSION

Karangsari Village is located in Kembaran District, Banyumas Regency, covering an area of 131.02 hectares and situated at an altitude of 74 meters above sea level. It is bordered by several surrounding villages: Bantarwuni to the north, Bojongsari to the south, Linggasari and Kembaran to the east, and Karangsoka to the west. Karangsari Village is a lowland area with an average temperature ranging from 24.9°C to 27°C.

The research was conducted through a survey to farmers in *Gapoktan Mukti Rahayu* which consisted of *Sri Rahayu 1* and *Sri Rahayu 2* farmer groups. Data were collected by interviews based on the questionnaire. The following are the characteristics of the respondents presented in the following Tables.

Table 7. Distribution of Respondents

No.	Characteristics	Category	Frequency	Percentage
1.	Age	27 – 44	6	5.77
		45 – 62	49	47.11
		63 – 80	45	43.27
		81 – 98	4	3.85
		Total	104	100
2.	Education	Not completed in primary school	4	3.85
		Elementary School	69	66.35
		Junior High School	7	6.73
		Senior High School	17	16.34
		College	7	6.73
		Total	104	100
3.	Farming Experience	1 – 14	21	20.19
		15 – 28	35	33.65
		29 – 42	37	35.58
		43 – 56	11	10.58
		Total	104	100
4.	Land Ownership	Owned Land	49	47.11
		Tenants	55	52.89
		Total	104	100

Based on the characteristics of respondents as measured by various categories, the results showed that the age of respondents was dominated by the age group 45 - 62 years with a frequency of 49 persons and a percentage of 47.11 percent. In measuring the last educational aspect, the majority of respondents were elementary school graduates with a frequency of 69 persons and a percentage of 66.35 percent. Apart from that, most respondents had 29 - 42 farming experience as farmers with a frequency of 37 persons and a percentage of 35.58 percent. Respondents in land ownership status were dominated by tenants as many as 55 person and the percentage was 52.89 percent more than owned land

This study used logistic regression to analyze the effect of age, education, group activeness, farming experience, land area, and land ownership status on farmer participation in farm insurance in Karangsari village. The results of the logistic regression analysis are shown at Table 8.

Table 8. Logistic Regression Analysis Result

No	Variables	B	S.E.	Wald	Sign	Exp(B)
1.	**CONSTANT**	-3.810	3.84	1.432	0.231	0.022
2.	AGE	-0.035	0.067	0.280	0.597	0.965
3.	EDU	0.066	0.139	0.224	0.636	1.068
4.	ACTV	0.753	0.205	13.547	0.000	2.123
5.	EXPR	-0.096	0.068	2.027	0.155	0.908
6.	LAND	1.987	0.778	6.519	0.011	7.295
7.	OWN	3.365	1.017	10.955	0.001	28.925
-2 Log likelihood		42.683	-2 Log Likelihood at the start (block number = 0)			121.158
Cox & Snell R Square		0.530	-2 Log Likelihood at the end (block number = 1)			42.683
Nagelkerke R Square		0.770	Final -2 Log Likelihood			78,475
Hosmer and Lemeshow (Sign)		0.558	Hosmer and Lemeshow (Chi Square)			6.801

Information: AGE = Age, EDU = Education, ACTV = The activeness of farmers in groups, EXPR = Farming Experience, LAND = Land Area, OWN = Land Ownership Status.

Based on Table 8, the results of the logistic regression data processing are presented. The coefficient of determination (Nagelkerke R-Square) is used to determine how much the independent variables can explain the dependent variable. More details are described in Table 8. The Nagelkerke R-Square value is 0.770, meaning that 77% of the variation in farmer participation in farm insurance can be explained by age, education, farmer group activity, farming experience, land area, and land ownership status. Meanwhile, 33% is explained by other variables, such as farm type, farming techniques, climate, and others are not included in the research model.

The overall model fit test is based on the statistical value -2LL or the LR value. The simultaneous test of the logistic regression coefficients is calculated from the difference in the -2LL value between models consisting only of constants and the estimated model that includes both constants and independent variables. This information is further described in Table 8. As seen in Table 8, the ratio of the initial value of -2 Log Likelihood (block number = 0) to the final value of -2 Log Likelihood (block number = 1) is 121.158 for the initial value. After the variables are freely entered into the regression model, the value of -2 Log Likelihood at the end (block number = 1) is 42.683. Based on the output, there is a decrease of 78.475 between the initial and final -2 Log Likelihood values. The decrease in the -2 Log Likelihood value indicates that the addition of independent variables into the model can improve the model fit and demonstrate a better regression model, meaning that the hypothesized model aligns more closely with the data.

Goodness of Fit is used in every study that employs logistic regression analysis. It assesses the feasibility of the regression model used in the study, with more details provided in Table 8. The chi-square value is 6.801, with a significance level of 0.558. Since this value is greater than 0.05, the null hypothesis is accepted. This indicates that the model is acceptable and can predict the observed values, as it aligns with the observational data. Therefore, this model can be used for further analysis. Logistic regression utilizes the chi-square value, which represents the difference between the -2 Log Likelihood before the independent variables enter the model and the -2 Log Likelihood after they enter. Further details are described in Table 10.

Based on Table 10, the Chi-Square value is 78.745 with a significance (Sig) value of 0.000. Since the Sig value is below 0.05, this indicates that the variables of age, education, activeness in the farmer group, farming experience, land area, and ownership status simultaneously affect farmer participation in farm

insurance. However, age does not have a significant effect on farmer participation in farm insurance. This result is not in line with research conducted by Suindah et al. (2020) which states that age significantly positively affects farmer participation in farm insurance. Marphy & Priminingtyas, (2019) also found that age has a positive effect on farmer participation in farm insurance. As farmers get older, their probability of participating in farm insurance increases. Research conducted by Birinci & Tumer, (2006) shows that age is not a factor in determining farmer participation. A person's age is not a benchmark for farmers to have the mindset of the importance of insurance for crop failure. In addition, farmers think about the high premiums that must be paid even though the land area is small. Age in this study has no effect because the participation of farm insurance in Karangsari Village depends on the farmer group's decision. In an association held by a farmer group, the participation of farmers in a program is carried out in groups, meaning that if the results of the association say to participate in farm business insurance, then all members in the group must participate in farm business insurance. The age distribution in a farmer group in Karangsari Village is of course diverse; some are new farmers and young farmers, and some are senior farmers and old farmers. Many older farmers still use traditional methods of farming, while younger farmers have not yet dared to spend money on farm insurance because they think of other more important production costs. The age of participants in this study does not affect farmers' participation in farm insurance.

Table 10. Omnibus Test

	Chi Square	df	Sign.
Step	78.475	6	0.000
Block	78.475	6	0.000
Model	78.475	6	0.000

Farmers in Karangsari, Banyumas, vary in age. While many farmers over the age of 40 have joined the farm insurance program, others have chosen not to participate. Despite extension services being offered to farmers of all ages in Karangsari, participation in the agricultural program has not yielded optimal results. As explained by Birinci & Tumer, (2006), age is not a determining factor for farmers when deciding to participate in a program that reduces the risk of crop failure. Farmers in Karangsari, Banyumas, weigh the cost advantages and disadvantages of participating in farm insurance.

Education does not have a significant effect on farmer participation in farm insurance This result is not in line with Siswadi & Syakir, (2016) who found that education has a significant positive effect on farmer participation in farm insurance. Likewise, what is described in the study of Turangan et al., (2017) stated that education is positive for farmer participation in farm insurance. Research conducted by Akinola, (2014) also found that farmers with high average education pay attention to the risks faced from the farming business. Research conducted by Gitosaputro et al., (2023) explains that formal education is not related to the perception of farmers in the farm insurance program. Farmers' perceptions of farm insurance are influenced by other factors such as the level of social interaction, fulfillment of needs, and knowledge of the program. However, other research conducted by Hudiyani et al., (2017) mentioned that the perception of farmers correlates with the level of education both formal and non-formal. Farmers' perceptions of farm insurance can be influenced by the characteristics of the farmer's education level. If the guarantee of crop failure is obtained, then the farmer will benefit greatly from the harvest achieved. The higher the level of education is, the higher the probability of farmer participation in farm insurance is. Farmer education in Karangsari Village has no effect on farmer participation in farm insurance; farmers do not need high education to determine farming decisions. Farmers only need experience and important programs related to farm development. Similar to farm insurance, the farm insurance program does not require farmers with a certain level of education to participate. Agricultural extension officers make efforts so that farmers can join the program. However, farmers refused for various reasons.

As with farmers' age, education has no effect on their participation in the farm insurance program in Karangsari, Banyumas. Farmers with higher levels of education, such as high school and university graduates, have diverse mindsets. Some consider the costs associated with insurance, while others view the benefits of joining farm insurance as protection against crop failure. This finding is further supported by Gitosaputro et al., (2023), who state that formal education is less relevant to farmers' perceptions of participating in such agricultural programs. Many farmers acquire specific education aimed at improving agricultural quality through non-formal channels, such as training and extension programs.

The activeness of farmers in groups significantly affects their participation in farm insurance. These results are in line with Wahyungingsih & Hasan, (2019) research in Pilangkenceng Village. The activeness of farmers in groups has a positive effect on farmer participation in farm insurance. The research conducted by Nahvi et al., (2014) explained that the activeness of farmers is very important in seeking information about the development of farmers' creativity and innovation. Active farmers certainly expect the best from the desired farming output. Moreover, farmers are aware of the importance of guaranteeing a sector full of uncertainty. Farmer participation is important to reduce financial problems due to crop failure. The more active farmers are in participating in associations and programs organized by farmer groups, the higher the probability of farmer participation in farm insurance. As explained earlier, the role of groups in Karangsari Village is very important in participating farmers in farm insurance. Farmer groups in Karangsari village are active farmer groups with clear programs, but not all farmer groups in Karangsari village participate in farm insurance. Through associations held by farmers in a group, they routinely show the seriousness of farmers in every farmer program that will be carried out, one of which is participation in the farm insurance program. It can be concluded that activeness in farmer groups has a positive effect on farmer participation in farm insurance. Rianti et al., (2020) explained that farmers' active participation in the group plays an important role in effectively absorbing agricultural programs. Not only does it enhance farmers' knowledge and skills, but it also increases their involvement in the program.

Farming experience does not have a significant effect on farmer participation in farm insurance. This result is not in line with the research of Hardiana, (2018); Mulyati et al., (2016) stated that farming experience has a significant effect. Likewise with the research of Marphy & Priminingtyas, (2019); Sayugyaningsih et al., (2022) that farming experience has a positive influence on farmer participation in farm insurance. The longer the farmer does farm, the higher the probability of the farmer participating in farm insurance. Farming experience has no effect on farmer participation in farm insurance because a farmer group in Karangsari Village has a diverse distribution of farmers, including new farmers, young farmers, senior farmers, elderly farmers, and others. So that farming experience is not a reference for farmer participation in farm insurance. As for other factors, from the point of view of senior farmers and elderly farmers who of course have more experience, they consider that crop failure is a common thing and a risk that must be accepted without any effort to reduce the risk of crop failure or to overcome it. They believe that their farming will always be successful as long as they do it right. In addition, related to other factors such as age and education which are in line with farming experience, this is in the same direction because all three have no effect on farmers' participation in farm insurance. In other words, farm insurance programs need special attention regarding the demands for awareness and knowledge of the risks of agricultural uncertainty. Farming experience in Karangsari, Banyumas, is linked to the duration for which farmers have cultivated rice. Farmers with over 10 years of experience exhibit varying levels of interest in farm insurance. Some have begun to recognize the importance of such insurance due to climate uncertainty and changing weather patterns, while others overlook the risk of potential crop failures and continue to manage their farms as usual. Wahyungingsih & Hasan, (2019); Margiati et al., (2022); Ramdani et al., (2022) explain that farming experience does not significantly influence farmers' participation in farm insurance. Therefore, farming experience is not a strong determinant in farmers' decisions regarding participation in farm insurance.

Land area has a significant effect on farmer participation in farm insurance. This result is in line with the research of Turangan et al., (2017); Margiati et al., (2022); Nahvi et al., (2014) stated that land area has a significant positive effect on farmer participation in farm insurance. The research conducted by Marphy & Priminingtyas, (2019) also said that the larger the area of land cultivated by farmers, the higher the probability of farmers participating in farm insurance. Land area has a significant positive effect because farmers in Karangsari Village think that land area is an important factor that must be controlled in farm insurance. The larger the agricultural land in Karangsari Village that is cultivated by farmers, the higher the likelihood of farmers participating in farm insurance. Land area is an indicator of the success of the farm insurance program. Farmers who are members of rice farming insurance in Karangsari Village are farmers who have a larger land area equal to 1 hectare while farmers with narrow land tend not to be interested in the program. Farmers with large land areas think that the larger the land they own, the greater the output they will receive, but the greater the losses obtained in the event of crop failure. The government provides 80 percent of subsidies for premium payments, which were initially IDR 180,000 to IDR 36,000 for one hectare per planting season with a maximum price per dependency of IDR 6,000,000 per hectare.

The status of farmers' land ownership to farmers' participation in farm insurance states that landowner farmers themselves have a higher chance of following farm insurance than land tenant farmers. Research conducted by Adjabui et al., (2019) shows that farmers in general have an indifferent attitude towards crop insurance in the region, but landowner farmers are willing to participate in crop insurance programs, and are willing to pay between 7.5 and 12.5 percent of the cost of planting as a premium for crop insurance. Farmers in Karangsari Village own their own land by 47.12%, while the remaining 52.88% are tenant farmers. Landowner farmers themselves tend to participate in farm insurance because the land is self-managed, so that landowner farmers understand the losses that must be borne in case of crop failure compared to tenant farmers. Decision making in managing agricultural land is done directly and does not require the approval of other farmers so that the tendency of landowners to participate in farm insurance is higher. The status of land ownership concludes that landowner farmers themselves have a higher probability of following farm insurance than land tenant farmers.

CONCLUSION

Age, education, and farming experience do not have a significant effect on farmer participation in farming insurance in Karangsari Village, Kembaran. Farmer characteristics are not the main aspects in determining farm insurance participation. This is because farm insurance is imposed on agricultural land, not life insurance for farmers. Meanwhile, farmer activity in groups, land area and land ownership status have a significant effect on farmer participation in farming insurance. Conventional farming relies heavily on inputs used in farming, one of which is land. Therefore, land characteristics are important in determining farmer participation in farm insurance in Karangsari Village, Kembaran. The findings of this study indicate that land ownership status influences farmers' participation in farm insurance. Farmers who own land have the right and freedom to decide whether to participate in agricultural improvement programs. Consequently, landowners recognize the importance of farm insurance in protecting their farmland.

The lack of optimal participation of farmers in farm insurance requires serious attention. Erratic climate change and the risk of crop failure can lead to significant losses for farmers and threaten food security. The government must implement various strategies to increase farmers' participation in the farm insurance program, such as conducting more engaging and sustainable outreach and education initiatives. Additionally, the government should provide financial incentives and recognition to farmers for their involvement in the farm insurance program, as well as strengthen partnerships and collaboration with stakeholders to better integrate the program.

BIBLIOGRAPHY

Adjabui, J. A., Tozer, P. R., & Gray, D. (2019). Willingness to Participate and Pay for Index-Based Crop Insurance in Ghana. *Agricultural Finance Review*, *79*(4), 491–507.

Akinola, B. D. (2014). Determinants of Farmers' Adoption of Agricultural Insurance: the Case of Poultry Farmers in Abeokuta Metropolis of Ogun State, Nigeria. *British Journal of Poultry Sciences*, *3*(2), 36–41. https://doi.org/10.5829/idosi.bjps.2014.3.2.83216

Alta, A., Auliya, R., & Fauzi, A. N. (2023). Hambatan dalam Mewujudkan Konsumsi Pangan yang Lebih Sehat Kasus Kebijakan Perdagangan dan Pertanian. *Makalah Kebijakan*, *54*(54), 123.

Bairwa, S. L., Khuswaha, S., & Bairwa, S. (2016). Managing Risk and Uncertainty in Agriculture - a Review. *Agricultural Education, Research and Extension in India*, *14*(1), 212–214. www.nabard.org

Barokatuminalloh, Purwaningsih, Y., Mulyaningsih, T., & Darobi, A. (2021). Perception and Adaptation Capacity of Farmers to Climate Change. *Annals of the Romanian Society for Cell Biology*, *25*(3), 5373–5382.

Birinci, A., & Tumer, I. E. (2006). The Attitudes of Farmers Towards Agricultural Insurance: The case of Erzurum, Turkey. *Bodenkultur*, *57*(1–4), 49–55.

Elfriede, D. P. (2022). Strategi Ketahanan Pangan Global di Masa Ketidakpastian. *Forum Manajemen Prasetiya Mulya*, *36*(2), 25–30.

Ghozali, I. (2018). *Aplikasi Analisis Multivariate dengan Program IBM SPSS 25*. Badan Penerbit Universitas Diponegoro.

Gitosaputro, S., Nurmayasari, I., & Rangga, K. K. (2023). Persepsi Petani terhadap Program Asuransi Usaha Tani Padi (AUTP) di Kabupaten Lampung Selatan. *Jurnal Penyuluhan*, *19*(02), 335–345. https://doi.org/10.25015/19202345426

Gusti, I. M., Gayatri, S., & Prasetyo, A. S. (2022). The Affecting of Farmer Ages, Level of Education and Farm Experience of the farming knowledge about Kartu Tani beneficial and method of use in Parakan Distric, Temanggung Regency. *Jurnal Litbang Provinsi Jawa Tengah*, *19*(2), 209–221. https://doi.org/10.36762/jurnaljateng.v19i2.926

Hamidi. (2010). *Metode Penelitian Kualitatif*. UMM Press.

Hardiana, J. (2018). Faktor-faktor yang Mempengaruhi Keputusan Petani dalam Mengikuti Program Asuransi Usahatani Padi (AUTP) di Kabupaten Tanjung Jabung Timur. *Journal Of Agribusiness And Local Wisdom*, *3(1)*, 224–234.

Hudiyani, I., Purnaningsih, N., & Asngari, P. S. (2017). Persepsi Petani terhadap Hutan Rakyat Pola Agroforestri di Kabupaten Wonogiri, Provinsi Jawa Tengah. *Jurnal Penyuluhan*, *13*(1), 64–78.

Jing, Z. (2021). Agriculture insurance. *The Regulation of Insurance in China*, *1*(77), 1087–1158. https://doi.org/10.4324/9781351122863-18

Juliantara, D. (2004). *Mewujudkan Kabupaten Partisipatif, Pembaruan*. LAPPERA Pustaka.

Junaidi, E., & Jannah, M. (2020). Dynamics of Economic Growth in Agriculture Sector and Farmers Term of Trade in Indonesia. *Journal of Applied Economics in Developing Countries*, *5*(2), 60–67.

Leimona, B., Amaruzaman, S., Arifin, B., Yasmin, F., Hasan, F., Agusta, H., Sprang, P., Jaffee, S., & Frias, J. (2015). *Indonesia's 'Green Agriculture' Strategies and Policies: Closing the Gap between Aspirations and Application* (23 ed.). World Agroforestry Centre.

Margiati, D., Sari, D., & Nurhadi, E. (2022). Studi Ketertarikan Petani Terhadap Program Asuransi Usahatani Padi Sebagai Upaya Perlindungan Petani Dari Risiko Gagal Panen. *Jurnal Ilmiah Mahasiswa Agroinfo Galuh*, *09*(02), 408–421. https://media.neliti.com/media/publications/464510-none-34cd44e2.pdf

Marphy, & Priminingtyas. (2019). Analisis Faktor-Faktor yang Mempengaruhi Tingkat Partisipasi Petani Dalam Program Asuransi Usahatani Padi (AUTP) di Desa Watugede, Kecamatan Singosari, Kabupaten Malang. *HABITAT*, *30(2)*, 62–70.

Martadona, I., & Elhakim, S. K. (2020). Faktor - Faktor Yang Mempengaruhi Partisipasi Petani Terhadap Keberhasilan Implementasi Program Asuransi Usaha Tani Padi (AUTP) di Kota Padang : Analisis SEM-PLS. *Jurnal Hexagro*, *4*(2), 97–107.

Muhtarom, A., Djuharyanto, T., & Sulaiman, A. I. (2021). Farmers Empowerment on Food Security Program in Enggal Maju Farmers Group Association of Kebumen Regency. *Agrisocionomics: Jurnal Sosial Ekonomi Pertanian*, *5*(1), 110–125. https://doi.org/10.14710/agrisocionomics.v5i1.8415

Mulyati, S., Rochdiani, D., & Yusuf, M. N. (2016). Pengaruh faktor sosial ekonomi petani dan partisipasi petani dalam penerapan teknologi pola tanam padi (Oryza sativa L) jajar legowo 4:1 (studi kasus pada Kelompoktani Gunung Harja di Desa Kalijaya Kecamatan Banjarsari Kabupaten Ciamis). *Agroinfo Galuh*, *3*(1), 1–9.

Nahvi, A., Kohansal, M. R., Ghorbani, M., & Shahnoushi, N. (2014). Factors Affecting Rice Farmers to Participate in Agricultural Insurance. *Journal of Applied Science and Agriculture*, *9*(4), 1525–1529.

Novia, R. A., & Zulkifli, L. (2021). The Impact of Crop Failure on Food Security of Rice Farming Households in Banyumas District. *Jurnal Agrisep*, *20*(2), 239–250.

Ntukamazina, N., Onwonga, R. N., Rubyogo, J.-C., Mukankusi, C. M., Mburu, J., & Kariuki, R. (2017). Index-based agricultural insurance products: challenges, opportunities and prospects for uptake in sub-Sahara Africa. *Journal of Agriculture and Rural Development in the Tropics and Subtropics*, *118*(2), 171–185.

Pasaribu, S. (2014). *Penerapan Asuransi Pertanian di Indonesia*. IAARD Press.

Rahmanida, Y., Hanafie, U., & Aid, A. (2019). Peranan Penyuluh Pertanian Terhadap Program Asuransi Usaha Tani Padi (AUTP) Di Kelurahan Cempaka, Kecamatan Cempaka Kota Banjarbaru. *Frontier Agribisnis*, *3*(4), 192–197.

Ramdani, R., Ifdal, I., & Khairati, R. (2022). Analisis Keikutsertaan Petani dalam Mengikuti Program Asuransi Usahatani Padi (AUTP) di Kecamatan Lubuk Basung Kabupaten Agam. *Jurnal Ekonomi Pertanian dan Agribisnis*, *6*(2), 375–387.

Rianti, S. Y., Sudrajat, J., & Imelda, I. (2020). Hubungan Antara Keaktifan Dalam Kelompok Tani dan Manfaat yang Diperoleh Petani (Studi Kasus : Desa Rasau Jaya Dua, Kecamatan Rasau Jaya, Kabupaten Kubu Raya). *Jurnal Sains Pertanian Equator*, *9*(1), 1–12.

Safitri, D. R., & Sihaloho, E. D. (2020). Lumbung Padi Indonesia dan Kemiskinan: Studi Kasus Kabupaten Kota di Jawa Timur. *Ekonomis: Journal of Economics and Business*, *4*(1), 56. https://doi.org/10.33087/ekonomis.v4i1.109

Sampson, D., Cely-Santos, M., Gemmill-Herren, B., Babin, N., Bernhart, A., Bezner Kerr, R., Blesh, J., Bowness, E., Feldman, M., Gonçalves, A. L., James, D., Kerssen, T., Klassen, S., Wezel, A., & Wittman, H. (2021). Food Sovereignty and Rights Based Approaches Strengthen Food Security and Nutrition Across the Globe: A Systematic Review. *Frontiers in Sustainable Food Systems*, *5*(September). https://doi.org/10.3389/fsufs.2021.686492

Sayugyaningsih, I., Suprehatin, & Mahdi, N. N. (2022). Faktor-Faktor Yang Memengaruhi Petani Mengikuti Asuransi Usahatani Padi (Autp) Di Kecamatan Kaliori, Rembang. *Risalah Kebijakan Pertanian dan Lingkungan, Rumusan Kajian Strategis Bidang Pertanian dan Lingkungan*, *9*(2), 104–122. https://doi.org/10.29244/jkebijakan.v9i2.33746

Siswadi, & Syakir. (2016). Respon Petani Terhadap Program Pemerintah Mengenai Asuransi Pertanian. *Jurnal FP Universitas Brawijaya*, *44(1)*, 169–177.

Suindah, N. N., Darmawan, D. P., & Suamba, I. K. (2020). Analisis Faktor-Faktor yang Memengaruhi Partisipasi Petani dalam Asuransi Usahatani Padi (AUTP) di Kecamatan Penebel Kabupaten Tabanan. *Agrisocionomics: Jurnal Sosial Ekonomi Pertanian*, *4*(1), 22–32. https://doi.org/10.14710/agrisocionomics.v4i1.5298

Tambunan, F. P. (2020). *Rekam Jejak Penyuluh Pertanian*. Media Nusa Creative.

Taufiqurrahman, M. ., Nikmatullah, D., & Syarif, Y. A. (2022). Partisipasi Petani Padi dalam Program Asuransi Usaha Tani Padi di Desa Bulukarto Kecamatan Gadingrejo Kabupaten Pringsewu Rice Farmers Participation on Rice Farming Insurance Program in Bulukarto Village, Gadingrejo District, Pringsewu Regency. *Journal of Extension and Development ISSN*, *4*(01), 62–68.

Turangan, Katridango, & Olfie. (2017). Partisipasi Anggota Pada Kelompok Tani Kalelon Di Desa Kauneran Kecamatan Sonder Kabupaten Minahasa. *Agri-SosioEkonomiUnsrat*, *13(1A)*, 77–90.

Wahyungingsih, & Hasan. (2019). Persepsi dan partisipasi petani terhadap asuransi usaha tani padi di Kecamatan Pilangkenceng Kabupaten Madiun. *Journal of Social and Agricultural Economics*, *12(3)*, 11–21.