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FACTORS INFLUENCING FARMERS' INTENTION TO PARTICIPATE IN CROP INSURANCE

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ABSTRACT

The objective of this research was to investigate the factors influencing farmers' intention and characteristics of their intent to participate in crop insurance. Therefore, primary data was obtained through questionnaires to 110 farmers in 14 villages in Sliyeg, Indramayu, West Java, Indonesia. The questionnaire was based on the theory of planned behavior framework. However, the data obtained was analyzed using Structural Equation Modelling to identify the characteristic and factors influencing their intention to participate in crop insurance by pulling out the latent variable score. The result of this research showed that behaviors are significantly influenced by subjective norms and mostly by intention. The dominant indicators of each variable are the people considered important by respondents, their behavior, and determination to purchase crop insurance. The characteristics of farmers with the highest tendency of intention and behavior compared to other categories are male, aged 60 and above, the level of education is junior high, married with four dependents, land tenant with more than 5 years of farming experience and 20,000 hectares of land.

KEY WORDS

Theory of planned behavior, crop insurance, intention to participate.

According to the Indonesia Agricultural Census in 2013, the number of households specifically for crops were 5 percent declining from 17.7 to 16.9 million in 2003 and 2013 respectively (BPS-Statistics Indonesia 2013). In addition, based on the country's intercensal agricultural survey conducted in 2018, the figure was 2% declining to 16.5 million (BPS-Statistics Indonesia 2018). Meanwhile, the farmers population are aging and for any given youth, the low incomes, insufficient gains compared to the effort required, and the risk of crop failure make the practice a poor proposition (Umunnakwe 2014). Unlike other sectors, agriculture is associated with high risks and uncertainties to the extent that the products and services are highly dependent on natural processes, biological assets, and plant diseases (Girdžiūtė 2012). Risks in this sector can be divided into five categories, which are product, marketing, credit, personal, and environmental (Baquet *et al.* 1997). The environmental risk, especially climate change, is one of the greatest challenges faced by humanity at this time because a shift in weather pattern is a threat to the process of global food production. Climate uncertainties such as floods, drought, and pests have an impact, both directly and indirectly on the level of crop yield (PSEKP 2012). However, one way to manage the risk is through the implementation of crop insurance (Kahan 2008).

In Indonesia, the insurance is mandated by Law Number 19 of 2013 regarding Farmer Protection and Empowerment. To carry this out, the Government of Indonesia (GoI) launched a program known as Rice Farmers Business Insurance (AUTP) in 2015, administered by a state-owned enterprise namely PT Asuransi Jasa Indonesia (Persero) to cover paddy farm risk. Furthermore, the benefit of the AUTP program is to provide protection for one planting season to the paddy farmers with a sum insured of IDR6 million per hectare and a premium of IDR180,000. Considering that the amount was too expensive, the GoI then provides subsidies of 80 percent such that farmers only need to pay a premium of IDR36,000. Although, a substantial subsidy have been provided to increase farmers' participations in AUTP, their interests were still low. Until 2019, the target of 1 million land protected by the program set by the GoI each year has not been achieved.

Table 1 – Land protected by AUTP, 2015 - May 2020

Year	Land insured (hectares)	Land insured compare to target
2015	233,499	23.3%
2016	518,506	51.9%
2017	997,960	99.8%
2018	901,420	90.1%
2019	971,218	97.1%
May 2020	333,505	33.3%

Source: PT Asuransi Jasa Indonesia (Persero) (June 2020), recalculated.

Therefore, the low farmers' participation level in AUTP were the problem discussed in this research. Meanwhile this condition has resulted in the low performance of the implementation, even though the government has provided a sizeable subsidy for crop insurance premiums. Consequently, this research aimed to investigate factors influencing the intention, and the characteristic of farmers' intent to participate in crop insurance.

THEORETICAL REVIEW

The theory of planned behavior (TPB) is aimed at predicting individual behavior more specifically (Ramdhani 2011). Also, this was developed by Ajzen (1985) from the theory of reasoned action (TRA) proposed by Fishbein and Ajzen (1975). According to TPB, behavior is an expression of intention influenced by attitude, subjective norm, and perceived behavioral control. The relationship between the three dimensions is seen in Figure 1.

Figure 1 – Theory of Planned Behavior Framework (Source: Ajzen, 2005)

Ajzen (2005) argued that attitudes (behavioral beliefs) are determined by beliefs about the consequences of a behavior. While confidence is related to the individual's subjective assessment of the world around him and the understanding of himself and his environment, carried out by connecting certain behaviors with various benefits or losses to be obtained. Especially when an individual does or does not perform an action. However, subjective norms are the perceptions of the expectations of the most important and influential people in

their life regarding an action or inaction. Meanwhile, behavioral control are individual notions about the ease or difficulty of realizing certain actions. Ajzen (2005) suggests that this control together with the intention is closely related to whether an action is performed. According to this research, willingness to participate is the intention that triggers farmer behavior (Pouta and Rekola 2001), while the expected behavior is that farmers will purchase AUP.

Furthermore, studies about the intention to buy insurance products using TPB have been conducted by several researchers, but the crop insurance specified was limited. However, previous results showed that generally, attitude, subjective norm, and perceived behavioral control was used to predict intention to purchase insurance product even though in some researches, certain dimensions are more significant (Mai *et.al* 2020, Brahmana *et.al* 2018, Aziz *et.al* 2017, Pratiwi and Hartoyo 2014). A study specifically about crop insurance conducted by Aziz *et.al* (2015) showed that perceived behavior control were the most significant factors in influencing the farmers' intention to participate in the program.

According to the TPB framework, the hypotheses to be tested in this research are as follow:

- H1: Attitude influences Intention;
- H2: Subjective Norm influences Intention;
- H3: Perceived Behavioral Control influences Intention;
- H4: Intention influences Behavior;
- H5: Perceived Behavioral Control indirectly influences (through Intention) Behavior.

METHODS OF RESEARCH

This research adopted a descriptive approach which was carried out by using primary data obtained through questionnaires to 110 farmers of landowners and tenants in 14 villages in Sliyeg subdistrict, Indramayu regency, West Java province as the unit of analysis. In addition, the samples were obtained by purposive method and the determination of respondents was done by simple random techniques. Also, the process of filling out the questionnaire was carried out from March 23 to April 6, 2020 through direct interview method while the total number returned and completed are 103. However, after the sorting process, there were 5 respondents who were categorized as unresponsive cases and were excluded because the answers given are almost or completely uniform for all questions which are not good result. Therefore, the total number of respondents used in the analysis was 98.

In addition, the research consists of exogen latent variables that points to another. Meanwhile, the endogen types are pointed to by different variable. In this research, Attitude (X1), Subjective Norms (X2), and Perceived Behavioral Control (X3) are the exogens, however the endogens are Intention (Y1), and Behavior (Y2). More so, in assessing the responses gotten, the Likert scale was applied. Also, structural Equation Modelling (SEM) technique was used to test the relationship between research variables, while the hypotheses are tested with the farmers as the analysis unit. The significance check is done by looking at the t-count value, which must be greater than 1.64 (with 10 percent error rate). Therefore, in testing the H5, the mediation relationship test will be conducted with the following structure.

Figure 2 – Mediation Relationship Structure

Before the mediation relationship test, there are two conditions to meet which are, $A \rightarrow B$ relationship is significant when C is not in the model, and $A \rightarrow C$ and $C \rightarrow B$ relationship are significant. Therefore, the checking process was done by looking at the t -count value, which must be greater than 1.64 (with 10 percent error rate). The first requirement must be met before the second condition. When either of the two conditions is not met, it was concluded that there was no mediation relationship among the variables A , B , and C .

Furthermore, to investigate the characteristic of farmers intent to participate in crop insurance, this research analyzed the respondents in relation to the influencers by sorting the Latent Variable Score (LVS) based on the highest result.

RESULTS AND DISCUSSION

As shown in the Table 2, respondents are dominantly male which are in the age of 40 to 49 and 50 to 59, therefore it can be concluded that farmers in this area are an aging population. Also, the respondents are mostly married with 2 to 4 dependents, while 42 percent have completed their high school and 41 percent only finished elementary. However, almost all the respondents have more than 5 years of farming experience and mostly landowners who owned 10,000 hectares of land or less.

Table 2 – Respondents Characteristics

Variable	Category	Total	Percentage
Age	< 30	2	1.9
	30 – 39	10	9.7
	40 – 49	37	35.9
	50 – 59	37	35.9
	≥ 60	17	16.5
Sex	Male	99	3.9
	Female	4	96.1
Level of Education	Elementary	41	39.8
	Junior High	20	19.4
	High School	42	40.8
Marital Status	Married	100	97.1
	Single	3	2.9
Number of Dependents	0	2	1.9
	1	11	10.7
	2	27	26.2
	3	27	26.2
	4	24	23.3
	5	7	6.8
	6	3	2.9
	7	2	1.9
Land Ownership Status	Land Tenant	40	38.8
	Landowner	63	61.2
Farming Experience	1-5 years	7	6.8
	>5 years	96	93.2
Land Area	≤ 5,000	45	43.7
	5,001 – 10,000	42	40.8
	10,001 – 15,000	4	3.9
	15,001 – 20,000	8	7.8
	> 20,000	2	1.9

Source: Primary Data Analysis.

Table 3 – Path Coefficient of the Structural Model

Hypothesis	Correlation	Path Coefficient	t-count	Significance	Hypothesis Conclusion
H1	$X1 \rightarrow Y1$	-0.19	-0.86		Rejected
H2	$X2 \rightarrow Y1$	0.74	1.75	*	Accepted
H3	$X3 \rightarrow Y1$	0.35	1.31		Rejected
H4	$Y1 \rightarrow Y2$	0.97	2.52	*	Accepted

Significance is calculated based on 10 percent error rate, which is significant (*) if t -count ≥ 1.64 .

Hypothesis is accepted if significance is fulfilled.

Before further analysis, this research tested the convergent validity, construct validity and reliability, and the goodness of fit to the SEM model. The result of the tests confirmed

that convergent validity is fulfilled for all indicators, also almost all latent variables meet the requirements of construct validity and reliability, and SEM model is fit for all indicators.

Based on the result of the hypothesis test, it can be concluded that:

- Only the Subjective Norm variable has a significant effect on Intention. Therefore, the influence given has a positive direction;
- The Intention variable has a significant influence on Behavior. Consequently, influence given has a positive direction.

However, in testing H5, the two conditions must be met. The first prerequisite test is done by setting aside the Intention (mediating variable) from the SEM model, followed by calculating the t-count value for the direct relationship between Behavior and Perceived Control with the following results.

Table 4 – The results of the prerequisite test for the first condition of the mediation test

Relationship	t-count	Significance	Condition 1
$X3 \rightarrow Y2$	4.00	*	Fulfilled

Symbol (*) in the Significance column indicate significant relationship value in 10 percent error rate, i.e. t-count is higher than 1.64.

From the results in the Table 4, the first condition has been met, therefore the next step is to check the second condition. This prerequisite test was carried out by looking at the t-count value of each relationship based on the path coefficient value and the calculated t-count value with the following results

Table 5 – The results of the prerequisite test for the second condition of the mediation test

	Relationship	t-count	Significance	Condition 2
$X3 \rightarrow Y2$ through $Y1$	$X3 \rightarrow Y1$	1.31		Not fulfilled
	$Y1 \rightarrow Y2$	2.52	*	Fulfilled

Symbol (*) in the Significance column indicate significant relationship value in 10 percent error rate, i.e. t-count is higher than 1.64.

According to the results in the Table 5, the second condition was not fulfilled because the $X3 \rightarrow Y1$ relationship was not significant. Therefore, because one of the conditions was not fulfilled, it was concluded that there was no mediating relationship between Perceived Control Behavior and Behavior through Intention; as a result H5 was rejected. With the standardized solution value, the SEM diagram is as follow:

Figure 3 – SEM Diagram with Standardized Value Solution (Source: Primary Data Analysis)

As shown in the Figure 3, the dominant indicators of each influencing variable are X2.1, Y1.3, and Y2.2 with the scores of 0.92, 0.39, and 0.72, respectively. With reference to Table

6, those indicators are the influence from the people who are considered important by the respondents, their determination and behavior to purchase AOTP.

Table 6 – The dominant indicators of each influencing variable

No.	Dimension	Statements in questionnaire	Score
X2.1	Subjective Norm	Influence from the people who are considered important by respondents	0.92
Y1.3	Intention	Respondents' determination to purchase AOTP	0.39
Y2.2	Behavior	Behavior to purchase AOTP	0.72

Source: Primary Data Analysis.

From the model, this research also showed the LSV to identify the characteristics of the farmers that have the highest intention to participate in AOTP. According to table 7, the category in the first place has the tendency of being the highest Intention compared to other ones. Also, the characteristics of farmers that have the highest tendency of intention compared to other categories are male aged 60 and above, the level of education is junior high, married with four dependents, land tenant with more than 5 years of farming experience and 20,000 hectares of land.

Table 7 – Level of Intention Based on Respondent Characteristics

Variable	Category	Total	Average LSV	Rank
Age	≥ 60	15	1.14	1
	50 – 59	34	1.10	2
	< 30	2	1.08	3
	40 – 49	37	0.90	4
	30 – 39	10	0.81	5
Sex	Male	94	1.02	1
	Female	4	0.42	2
Level of Education	Junior High	19	1.24	1
	High School	42	1.02	2
	Elementary	37	0.86	3
Marital Status	Married	95	1.00	1
	Single	3	0.89	2
Number of Dependents	4	24	1.46	1
	5	7	1.38	2
	7	2	1.17	3
	3	26	0.93	4
	6	3	0.89	5
	2	26	0.73	6
	0	2	0.66	7
	1	8	0.47	8
Land Ownership Status	Land Tenant	37	1.16	1
	Landowner	61	0.90	2
Farming Experience	>5 years	91	1.04	1
	1-5 years	7	0.54	2
Land Area	> 20,000	2	1.23	1
	≤ 5,000	41	1.12	2
	15,001 – 20,000	8	1.11	3
	10,001 – 15,000	5	0.94	4
	5,001 – 10,000	42	0.86	5

Source: Primary Data Analysis.

Furthermore, this research also identified the characteristics of the farmers that have the tendency of behavior to purchase AOTP. According to the Table 8, the category in the first place has the highest tendency to perform behavior compared to other ones. Also, the characteristics of farmers that have the highest tendency to purchase AOTP compared to other categories are male aged 60 and above, the level of education is junior high, married with four dependents, land tenant with more than 5 years of farming experience and 20,000 hectares of land.

Table 8 – Level of Behavior Based on Respondent Characteristics

Variable	Category	Total	Average LSV	Rank
Age	≥ 60	15	0.51	1
	50 – 59	34	0.49	2
	40 – 49	2	0.43	3
	30 – 39	37	0.38	4
	< 30	10	0.38	5
Sex	Male	94	0.45	1
	Female	4	0.06	2
Level of Education	Junior High	19	0.55	1
	High School	42	0.42	2
	Elementary	37	0.40	3
Marital Status	Married	95	0.44	1
	Single	3	0.37	2
Number of Dependents	4	24	0.62	1
	5	7	0.60	2
	7	2	0.55	3
	3	26	0.43	4
	2	26	0.31	5
	0	2	0.28	6
	6	3	0.26	7
	1	8	0.25	8
Land Ownership Status	Land Tenant	37	0.50	1
	Landowner	61	0.40	2
Farming Experience	>5 years	91	0.45	1
	1-5 years	7	0.23	2
Land Area	> 20,000	2	0.50	1
	15,001 – 20,000	8	0.50	2
	≤ 5,000	41	0.49	3
	10,001 – 15,000	5	0.48	4
	5,001 – 10,000	42	0.37	5

Source: Primary Data Analysis.

However, the result of farmers intention is derived by the subjective norm mostly influenced by the people they feel are important. This research placed the important people like friends in the farmers' group, chairman, headman, and religious leader but respondents tend to choose important people in general. The result also showed that older respondents have higher intention to purchase AUP compared to others, and the tenant compare to the landowner. These results are therefore beneficial to the government when conducting socialization to easily target the right segment.

CONCLUSION

In conclusion, the result of the analysis in this research showed that behaviors are significantly influenced by subjective norms and mostly by the intention with a path coefficient of 0.97. The dominant indicators of each influencing variable are the people considered important by respondents, their determination and behavior to purchase AUP. The characteristics of farmers that have the highest tendency of intention and behavior compared to other categories are male farmers aged 60 and above, the level of education is junior high, married with four dependents, land tenant with more than 5 years of farming experience and 20,000 hectares of land.

However, the results from this research are slightly different from the one conducted by Aziz et.al (2015). But in general, attitude, subjective norm, and perceived behavioral control are used to predict intention to purchase insurance product even though some dimensions are more significant. Consequently, the research of crop insurance demand using the theory of planned behavior is extremely limited. Therefore, further research needs to be conducted on a more significant number of respondents in the broader area using the questionnaire to obtain better generalizations on the factors influencing farmers' intention to purchase crop insurance.

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