

# Behavior Analysis of Farmers in Tidal Swamp Land towards Agricultural Insurance

Muhammad Alif<sup>1,2,\*</sup>, Sumardjo<sup>3</sup>, Sarwititi Sarwoprasodjo<sup>3</sup>, Anna Fatchiya<sup>3</sup>

<sup>1</sup>Communication Studies Study Program, Universitas Lambung Mangkurat, Banjarmasin, Indonesia

<sup>2</sup>Doctoral Student of Development Communication, IPB University, Bogor, Indonesia

<sup>3</sup>Department of Community Development and Communication Sciences, IPB University, Bogor, Indonesia

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**Abstract** In many studies, communication and social cognitive theories have been used to investigate people's behaviors toward agricultural insurance programs resulting in varied conclusions on how and why people react to such programs. However, few of them have explicitly investigated the role of social cognitive theory in escalating insurance literacy levels on agriculture and cultural factors. Thus, the purpose of this study is to identify and analyze the behavioral factors of tidal swampland farmers in Barito Kuala Regency, South Kalimantan province, towards agricultural insurance in the perspective of analyzing farmers' knowledge of agricultural insurance products and determinants of community behavior. Under the instrumental case-study research design, the data were collected through interviews and Focus Group Discussion (FGDs) with 35 informants, consisting of the Head of the South Kalimantan Provincial Agriculture Service and the Barito Kuala District Agriculture Service, opinion leaders, academics, representatives of farmer groups, and farmers. Documentation data related to the implementation of the agricultural insurance program were used to complete the interview and FGDs data. The results of this study indicate that tidal swampland farmers are trapped in hoax information or negative issues related to Agricultural Insurance which makes them reluctant to participate in agricultural insurance. Farmers prefer to be resigned and surrender to the state of their agricultural land than to participate in agricultural insurance. Besides, farmers feel there is no point in participating in agricultural insurance,

especially those who think the registration and insurance claim process is convoluted. Low insurance literacy is a key problem of the misinformation that is formed.

**Keywords** Tidal Swap, Farmer, Communication, Agricultural Insurance, Behavior

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## 1. Introduction

The harvested area throughout Indonesia in 2018 was 11.37 million hectares. In 2019 it was 10.68 million hectares, and in 2020 it was 10.66 million hectares or a decrease of 0.19 percent [7,22]. Meanwhile, for the South Kalimantan region, based on data from the Central Statistics Agency of South Kalimantan, rice production in 2020 was 677.10 thousand tons, a decrease of 113.34 thousand tons or 14.34 percent compared to 2019 of 790.45 thousand tons [8]. Based on these data, there was a decline in harvests. The decline was presumable due to high rainfall and erratic weather. Changes in climate can usually cause a decrease in rice quality, the development of pests and diseases, and a shift in the planting season. Thus, such phenomena can increase the occurrence of rice harvest failures in Indonesia, impacting the decrease of harvested area, rice production, and farmers' income [15,28,32,38].

In 2018-2020, attacks by pests or plant-disturbing organisms and floods caused the increased rice damage.

Based on the agricultural data and information system center, in 2020, the area of rice fields in Indonesia affected by floods, droughts, and pest attacks was recorded at 612,944.86 ha. The estimated yield loss in 2020 on land affected by floods, droughts, and attacks by plant pest organisms was 3,143,181.24 tons [35]. Based on the data in 2017, China, India, and the United States spent an average of nearly \$18 billion per year on agricultural insurance management in their countries [14]. Research conducted in Vietnam found that 20% of farmers lost their annual income due to extreme weather changes [34]. If this is not anticipated, the consequences will negatively affect farmers' income, production stability, and domestic rice availability.

Such problems mentioned above can be overcome by carrying out risk management through the application of agricultural insurance as an effort to protect rice farming. Agricultural insurance can effectively manage production risk by transferring small holder production risk to other parties [19,29,10]. As a form of farmer protection, the Indonesian government has issued an agricultural insurance program [20]. Agricultural insurance is new for farmers because the program itself is new. However, it is considered as a valuable scheme to protect farmers from crop failure and become a supporting tool for farmers' economic resources. Participating farmers have a positive impact on their income and can absorb the risk of production and agricultural inputs [25,36].

The agricultural insurance program in Indonesia named "Asuransi Usahatani Padi" (AUTP) is an assistance program from the government. In this program, farmers bear the premium burden of Rp. 180,000.00 per hectare in each planting season. However, the Indonesian government provides premium assistance of Rp. 144,000.00 per hectare, so farmers are only charged Rp.36,000.00 per hectare. If they experience crop failure, farmers will obtain an insurance claim up to Rp. 6,000,000.00 per hectare. In the implementation, the government cooperates with Financial Services Insurance Company or in Indonesia named "Jasa Asuransi Indonesia" (Jasindo) as its provider of insurance services. Jasindo is a state-owned company that aims to provide services for the public interest.

The task of the insurance services is to attract the attention of farmers. Nonetheless, the data of farmers' participation in agricultural insurance in Indonesia is relatively low. In 2020, there was 1,000,000 ha of agricultural land compared to the areas of raw rice fields in Indonesia, which were 7,463,948 hectares [5]. These data showed that only 13.39 percent of the existing lands were paddy field areas. Moreover, compared to the harvested area in 2020, which was 10.66 million hectares, farmers' participation in the agricultural insurance program was 9.3 percent. It illustrated the relatively low level of farmer participation.

One of the areas in Indonesia that have good potential

for rice farming is South Kalimantan Province. This province is dominated by tidal swamp agricultural land [31]. The definition of tidal rice fields is rice fields that depend on rivers, which are influenced by the ebb and flow of seawater, as a source of irrigation [16]. This type of tidal soil will regulate the amount of water that enters when sea levels rise, usually at night. Farmers begin to plant tidal rice fields in the dry season when the water conditions decrease, usually between July to September. The land cannot be planted from December to May because the water discharge is high, and it is difficult to recede because it coincides with the rainy season [21]. South Kalimantan is one of the food centers, which becomes the center of rice/rice development. In 2020, the rice harvest area was estimated at 292,027 hectares.

Furthermore, swamp land dominates the agricultural land in South Kalimantan. The area of swamp land is recorded at 4,969,824 ha [8]. Crop failure in South Kalimantan often occurs because of this condition. In fact, swamp land depends much on weather conditions. In addition to the existence of swamp land, other obstacles to agriculture in South Kalimantan might include the inadequate supporting infrastructures, such as farming roads, drainage channels and the extent of land ownership, limited farming capital, farmers' knowledge about the characteristics of swamp land, supply of production facilities, post-harvest, and marketing of products [33,30]. The area of agricultural land in South Kalimantan is 334,681 ha [23]. However, the data from the food crops agriculture service of South Kalimantan Province showed that participation in the agricultural insurance program in 2020 amounted to 3,347.17 ha or 1 percent. These data indicate that the participation of farmers in the agricultural insurance program is low.

Many studies on insurance showed a trend that knowledge of insurance was an essential factor contributing to community participation in the program. Concerning farmer participation in an agricultural insurance program, Jin et al. [19] found a close and unidirectional correlation between people's perceptions of agricultural insurance and farmers' risk preferences. In other words, the higher the farmers' perception of an agricultural insurance program, the better their participation in the program. In line with these findings, the research results of Hidayati et al. [17] showed that the lack of information about the agricultural insurance program in Indonesia caused rural farmers not to participate in the program.

Besides perception, agricultural insurance literacy is also considered an important factor influencing individual decisions to use or not to use agricultural insurance [6]. In fact, not all rice farmers have the same awareness of the importance of using agricultural insurance and planning for rice farming in Indonesia. This situation occurs particularly in rural communities in developing countries. The low level of literacy and limited access to agricultural insurance

information is likely to have contributed to the low awareness of rural communities on the importance of rice farming planning [3]. Moreover, it is undeniable that the value system adopted by farmers is believed to affect participation in agricultural insurance, as found in Anggraini's research [2]. Thus, literacy positively influences farmers' willingness to adopt agricultural insurance schemes [1,4,37].

Communication can also be the cause of low participation in an insurance program. According to Masara and Dube [25], the low participation of farmers is caused by the intensity of communication from extension officers, who are less and not optimal. The research by Fahad et al. [13] states that one of the factors for farmers' participation in agricultural insurance is the farmers' good perception due to agricultural extension workers who work well. Conceptually, social cognitive theory can be used to identify factors that contribute to individual decisions related to farmer behavior.

According to Littlejohn and Foss [24], the social cognitive theory explains that humans learn from observation and confirmation or punishment for certain behaviors that affect individual behavior. Based on this theory, Macfayden and Hastings [19] describe the dominant factors in a person's behavior as personal and environmental factors. Concerning the farmers' behavior towards the Agricultural Insurance program, the researcher believes there is potential for applying social cognitive theory in the context of agricultural communication to see the tendency of factors that influence people's behavior in the program. Additionally, the researcher conducted this study because several previous studies have not explicitly looked at the role of insurance literacy levels on agriculture and cultural factors.

This study expands social cognitive theory and communication factors. It also explores personal and situational factors that affect farmers' participation in tidal swamp areas by communicating the agricultural insurance program to farmers.

## 2. Materials and Methods

Through an instrumental case study design, this research uses several data collection techniques, namely interviews and focus group discussion (FGDs) with 35 informants, consisting of the Head of the South Kalimantan Provincial Agriculture Office, the Head of the Barito Kuala Regency Agriculture Office, opinion leaders, academics, farmer groups, and farmers in Barito Kuala Regency. The data collection was conducted for 4 months, from January 2022 to April 2022. In addition, data collection techniques in the form of documents related to the policy and implementation of Agricultural Insurance were also employed in the South Kalimantan Province. The underlying reason for using the instrumental case study

method is the uniqueness of the low community participation phenomenon in the Agricultural Insurance program, especially among people whose agricultural land is tidal swamp land. This study takes a case that occurred in Barito Kuala District, especially in the Rantau Badauh sub-district, especially in the Rantau Badauh sub-district, to describe the determinants of community behavior related to the agricultural insurance program. As stated by Creswell [12], an instrumental case study is carried out when there is a particular issue by taking one case to be used instrumentally to describe the issue. Then, the data analysis used in this research is to arrange all the data collected systematically and integrate so that the data is easy to understand and the findings can be informed and formulated.

## 3. Result and Discussion

Social cognitive theory departs from the idea that humans learn from observation and confirmation or punishment of specific behaviors that affect individual behavior [24]. Specifically, in communication studies, the social cognitive theory is widely used in conjunction with social marketing strategies to formulate social campaign strategies on various issues such as anti-drugs or other social campaign programs [11]. In this study, it will be seen from the communication side of social development how social cognitive theory can be used in agricultural development activities

### 3.1. Finding

In this research, the findings on the behavior of tidal swamp land farmers towards agricultural insurance are divided into three parts: first, the misinterpretation of Agricultural Insurance; second, the characteristics of tidal swamp land farmers and their behavior towards agricultural insurance information; and third, the cultural construction and myths about agricultural insurance.

### 3.2. Misinterpretation of Agricultural Insurance Program/"Asuransi Usahatani Padi" (AUTP)

The findings of this research showed that farmers in tidal swamp land in South Kalimantan have an inaccurate understanding of agricultural insurance products. This condition can be identified as farmers' lack of knowledge regarding agricultural insurance products and the importance of insurance for their rice farming system. The farmers' low initiative to extract information and cross-check rumors/issues makes understanding of the agricultural insurance program increasingly out of control. Insurance registration, considered too long and convoluted, causes farmers not to register for insurance. Additionally, rumors or issues are developing. In more detail, the findings are described in Table 1 below.

**Table 1.** Categorization of findings of misunderstanding about agricultural insurance

Category	Findings
Farmers' understanding of agricultural insurance	<ol style="list-style-type: none"> <li>1. Farmers do not understand whether agricultural insurance is free assistance or assistance with paying premiums</li> <li>2. Farmers do not understand the importance of agricultural insurance in their farming activities</li> </ol>
Rumors related to the agricultural insurance program / "Asuransi Usahatani Padi" (AUTP)	<ol style="list-style-type: none"> <li>1. Insurance registration is too convoluted</li> <li>2. Some farmers think that legal insurance is Haram in Islam</li> <li>3. Farmers think plant organism control officer / Jasindo officers are not balanced in assessing the damage</li> <li>4. Financial services insurance company or Jasindo is too picky about participants, so farmers cannot register</li> <li>5. Farmers who have been compensated cannot return to the agricultural insurance program</li> </ol>
Farmers' efforts in seeking and receiving information about agricultural insurance	<ol style="list-style-type: none"> <li>1. Lack of motivation</li> <li>2. Farmers tend to easily accept rumors or hoax information related to agricultural insurance</li> <li>3. Farmers do not have the effort to double cross-check on credible sources of information such as extension workers, insurance agents, and officer's pest</li> <li>4. Boring information delivery method</li> </ol>
The role of information sources in providing agricultural insurance	<ol style="list-style-type: none"> <li>1. extension workers provide information through formal extension activities</li> <li>2. Lack of promotional attributes from various parties</li> <li>3. The intensity of socialization among extension workers and insurance agents is very less</li> <li>4. Lack of preparation from extension officers</li> <li>5. Lack of socialization from Financial Services Insurance Company / Jasindo</li> <li>6. No involvement of public figures, both formal and non-formal</li> </ol>

### 3.3. Typical Characteristics of Farmers and their Behavior towards Agricultural Insurance Information

Tidal swamp land farmers in the Barito Kuala district still think that agricultural investment in the form of insurance is far from being a priority because they think that insurance is not something important. In addition, many farmers think that following agricultural insurance is not profitable. This condition is exacerbated by the condition of farmers who tend to accept information circulating rumors easily. Although the actual premium charged to farmers is not too large, namely Rp. 36,000.00 / 2.40 US dollars per planting season, per hectare, and if the agricultural land fails to harvest, the agricultural insurance company / Jasindo in Rp. 6,000,000.00 or 400 US Dollars per hectare will replace it. In terms of premium costs, it may not be too burdensome, but agricultural insurance is not a priority for farmers in their farming planning. In more

detail, the findings are described in Table 2.

### 3.4. Cultural Constructs and Myths

Research findings show that farmers still tend to believe in issues that develop in the community, thus affecting participation in agricultural insurance. In addition, there is still confusion about whether this agricultural insurance is haram under Islamic law or not, making farmers hesitant to participate. In addition, they are in the culture of tidal swamp land farmers dominated by the Banjar ethnic community and do not know the term insurance in their culture. The culture that surrenders to nature is also a dominant factor in the low participation of farmers in agricultural insurance, the very communal tidal swamp land community is a contributing factor, as well as information that develops related to myths related to agricultural insurance. In more detail, the findings are described in Table 3.

**Table 2.** Typical characteristics of tidal swamp land farmers and their behavior towards agricultural insurance information

Category	Findings
Attitudes towards agricultural insurance	<ol style="list-style-type: none"> <li>1. Just knowing information, without any desire to make changes in farming planning by following agricultural insurance</li> <li>2. Lack of awareness of the importance of agricultural insurance</li> <li>3. Some farmers think that their agricultural land is rarely affected by disasters, so they are reluctant to participate in agricultural insurance</li> <li>4. Within the farmer group, many farmers do not want to take agricultural insurance, causing other farmers to follow, because they think that the product is not important and not profitable for them</li> </ol>
Economic Condition of Farmers	<ol style="list-style-type: none"> <li>1. On average, farmers do not mind the premium cost of Rp. 36.000,- / 2.40 US Dollars</li> <li>2. Correlate the benefits of participating in agricultural insurance with material benefits</li> <li>3. Some farmers will only become aware of agricultural insurance if their agricultural land is affected by a disaster</li> </ol>
Typical characteristics of farmers in receiving agricultural insurance information	<ol style="list-style-type: none"> <li>1. Tend to believe rumors or issues circulating</li> <li>2. Receiving information is not balanced with cross-checking information</li> </ol>

**Table 3.** Categorization of cultural constructs and myths about agricultural insurance

Category	Findings
Myths that exist among farmers about the agricultural insurance program	<ol style="list-style-type: none"> <li>1. Farmers view it as a loss to pay premiums if their agricultural land is safe and not affected by disasters</li> <li>2. Among farmers, some farmers respond that agricultural insurance is haram because it is not Sharia insurance</li> <li>3. Agricultural insurance is only for areas prone to disasters, such as farmland near rivers</li> <li>4. Many farmers have an understanding that this nature belongs to God if a disaster occurs, then nature wants it and we as humans must surrender</li> <li>5. Insurance culture does not exist in the construct of the local culture of farmers</li> </ol>
The efforts of the agricultural extension center at the sub-district level to fight the myth	<ol style="list-style-type: none"> <li>1. Extension workers actively provide information to farmers</li> <li>2. Inviting “Jasa Asuransi Indonesia” (Jasindo) insurance agents to socialize the agricultural insurance program</li> </ol>

### 3.5. Discussion

Based on the entire data mining process, several key findings were successfully extracted through all the procedures in this research. The low community participation in the agricultural insurance program was influenced by the low literacy of the products offered by the government, in this case, the Ministry of Agriculture. Jensen and Barrett [17] contend that there is a positive correlation between farmers' perceptions of the agricultural insurance program and that the lack of information about it makes farming communities participate. This study found that public knowledge of Jasindo products and the ministry of agriculture under the agricultural insurance program was shallow. This finding is not a specific case that only applies to the Rantau Bedauh sub-district, Barito Kuala Regency, but to other tidal swamp land farmers in South Kalimantan.

Previously, Mutaqin and Usami [26] found that knowledge of insurance was one of the factors causing the low number of registrants for farming insurance. Additionally, based on the findings of research conducted by Fahad et al. [13], the main factor that significantly influences farmers' decision to adopt agricultural insurance was extension services and increasing farmers' awareness about agricultural insurance products and procedures so that farmers can receive better benefits from insurance.

The findings in this study indicate that the low interest of tidal swamp land farmers to register for the agricultural insurance program stems from the assumption that the products offered by extension workers or Jasindo are free assistance programs. However this agricultural insurance program still requires farmers to pay a premium of 20% of the total dependents, which was only Rp. 36,000.00. Therefore, many farmers did not feel the need to register

for the agricultural insurance program, which burdened them with dues per planting season. As the results, they prefer to surrender to nature or God on the state of their agricultural land. Public awareness of investing in rice farming was also very low. Surrendering to nature is not good, especially when climate change happens very massively nowadays. According to Hazell and Varangis [15], the impact of climate change on the agricultural sector is very impactful. Climate change has also caused several epidemics around the world, thereby increasing the biotic pressure of plants and the cost of managing them.

Furthermore, the findings of this research are also in line with the findings of Bautista [6]. His research in the Philippines found that the literacy level of agricultural insurance could affect their farming behavior. In addition, Ntukamazina et al. [27] stated that lower literacy level caused a low understanding of farmers on agricultural insurance, coupled with a low level of education and a lack of reading culture. Receiving confusing information about agricultural insurance by tidal swamp land farmers in Rantau Bedauh District is also inseparable from the low socialization to the farmers regarding its registration procedures and use. Based the data, it was found that insurance agents never conducted direct socialization with farmers; they only conducted socialization with the head of farmer groups or agricultural extension workers in the district, therefore the level of community knowledge regarding agricultural insurance was also low.

On the other hand, many interested parties also think that with the advanced conditions, the community should be able to take the initiative to search for information online. The reality was that the people the researchers met were still relatively new in the field of information technology, which made their understanding and knowledge low. In the end, tidal swamp land farmers are considered a passive group in terms of seeking information. Culturally, the people in the tidal swamp land in Barito Kuala very adhere to their culture and religion. This condition has become one of the cultures that has been going on for a long time and has become the community's mindset, especially in actively accessing information from community leaders, in this case, religious leaders, community leaders, or traditional leaders.

Concerning the findings of the researcher's data, the passive attitude shown by tidal swamp land farmers in seeking agricultural insurance information is often highlighted on the low side of socialization to farmers. On the other hand, people are currently being asked to seek information by asking questions and seeking information online actively. The communal bond system to form local solidarity with tidal swamp land farmers leads to the formation of local solidarity through surrendering to nature, surrendering to God, and following what is conveyed by community leaders, which indicates that farmers are obedient to their culture, religion, and leadership. In other words, farmers are taught in their daily life to be obedient

and submissive to the culture, religion, and instructions of their leaders. In the context of this study, the concept of surrender makes people tend to be passive because they depend on the information provided by their leaders. It is difficult for the community to be asked to actively seek information independently because they are accustomed to the availability of information provided by their leaders, in this case, the head of the agricultural group and the leaders of the farmers.

This joint decision-making effort is based on the consideration that the need to ensure agricultural land is not only personal interest but based on a common interest, so the decision-making effort is also based on consultation with farmer groups. Moreover, the registration process begins by registering with the head of the farmer group. With the collaborative decision-making process among the farmer group members, it is hoped that other farmers can find out accurate information about agricultural insurance.

## 4. Conclusions

Based on the data exposure and discussions mentioned in the previous sections, it can be concluded that the low literacy of agricultural insurance occurs in tidal swamp land farmers in Barito Kuala Regency, resulting in insufficient knowledge of farmers on agricultural insurance/“Asuransi Usahatani Padi” (AUTP). Furthermore, the low level of knowledge of farmers on agricultural insurance has resulted in the low willingness of tidal swamp farmers in Barito Kuala Regency to participate in this activity. Tidal swamp farmers are trapped in myths created from hoax information about agricultural insurance. In addition, the efforts to provide information are low by extension workers and insurance agents from the district to the provincial level. The low level of literacy about insurance is directly proportional to the low participation of farmers.

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