



Structure Requirements for Developing the Insurance Program Adoption for the Rice Farming Business in Banyuwangi Regency

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ABSTRACT

Background: The farming businesses play an essential role in contributing to Banyuwangi Regency's standard of living. Agriculture is also associated with food security. Rice plants are the most extensively cultivated food crop in the community. It is the background of why the Indonesian government established Asuransi Usahatani Padi (AUTP) or Rice Farming Insurance (RFI). RFI program is designed to help protect farmers from crop failure-related losses. This study intends to analyze the requirements that must be met to establish the RFI in Banyuwangi.

Methods: Observation and research during 2020-2022. The focus of the investigation is farmers who use and do not use agricultural insurance in Kabat District, Banyuwangi Regency. Combining quantitative and qualitative approaches. 35 farmers and stakeholders were selected to collect data and 7 experts with knowledge and capacity to understand rice cultivation and social issues were involved in the evaluation using the analytical tool Interpretive Structural Modelling is a research method.

Result: The indicated that systemically implemented extension services, the simplicity of RFI financing techniques and procedures and the strengthening of agricultural institutions and partnerships are essential for promoting RFI adoption.

Key words: Community empowerment, Farming, Insurance program, Interpretive structural modeling analysis, Rice.

INTRODUCTION

Rice is the primary source of sustenance for the people of Indonesia and the rest of the world (Putro *et al.*, 2021) therefore, rice farming is vital to the Indonesian people. Rice cultivation became a cultural and economic activity (Chamuah and Singh, 2022; Sajja *et al.*, 2021). The farming of rice is strategic for Indonesia (Gautam *et al.*, 2023; Maman *et al.*, 2021).

As with other commodities, rice cultivation is not simple because it is still dependent on nature and climate (Elahi *et al.*, 2021; Fahad and Jing, 2018). Crop failure results from climate and weather extremes, lengthy droughts, heavy rainfall and flooding and plant-disturbing organisms (Alam *et al.*, 2024; Fahad *et al.*, 2018). Crop failure risks food security (Bairagi *et al.*, 2020; Hansen *et al.*, 2022). Flood conditions and other challenges require an adaptive attitude of farmers (Chikopela *et al.*, 2024; Kakkavou *et al.*, 2024; Li *et al.*, 2024; Manda *et al.*, 2024) and the role of extension innovation (Alam *et al.*, 2024; Feisthauer *et al.*, 2024; Jamil *et al.*, 2021, 2023; Le *et al.*, 2024).

The Agricultural Insurance instrument is one of the measures to minimize business inefficiencies (Dey *et al.*, 2024; Guan *et al.*, 2024; Jamil *et al.*, 2018; Tong *et al.*, 2024). The Indonesian government implements it through the Rice Farming Insurance program. The RFI program is a funding and risk-sharing initiative. The objective is to protect rice farmers from losses in their agricultural businesses. The Indonesian Ministry of Agriculture has designated PT Indonesian Insurance Services (Jasindo) as the chief administrator.

Agricultural development programs, including Agricultural insurance, necessitate the active participation

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of farmers (King and Singh, 2020; Zakaria *et al.*, 2020), as well as the participation of local governments (Saliem *et al.*, 2021) in terms of willingness to pay and governance structure. In reality, farmers have not received the RFI in its entirety. Several concerns contribute to the condition. Internal issues regarding farmers' perceptions, attitudes, values and beliefs regarding insurance (Liang and Meng, 2024; Liu and Liu, 2024). Perception and confidence impact farmers' propensity to pay. In addition, farmers do not yet comprehend the process of disaster-related reimbursement services. Other socialization and institution coordination issues have not optimally impacted the effectiveness of services, including technical services for submitted land claims.

RFI are protected for farmers. It is necessary to comprehend farmers as subjects and their physical, social and institutional environments. Understanding farmers' sociodemographic and psychological preferences is required to facilitate the institutional analysis of society on RFI. Identifying critical program development factors will facilitate preparing priority strategies and determining RFI implementation actions. In addition, RFI will be approved to institutionalize and expand producers' participation in the short and long term.

The purpose of insurance is to protect farmers against the possibility of crop failure. When farmers experience crop failure due to a variety of causes, insurance provides them with a safety net. Insurance is a component of the modern agricultural system's management activities (Akintunde *et al.*, 2023; Meena *et al.*, 2024; Mullaivendhan *et al.*, 2024; Nagarajan *et al.*, 2024). The capacity to implement insurance is a component of farmers' business management planning skills. The risk management segment (Alam *et al.*, 2020; Farzaneh *et al.*, 2017) and the coping mechanism of the agricultural business activities conducted are relevant.

Farmers' adoption of agricultural insurance, such as RFI, has strategic significance. Adoption requires policy facilitation (Murthy *et al.*, 2024) and a supportive environment (Ahmed *et al.*, 2024; Li *et al.*, 2024; Pronti *et al.*, 2024; Rabaoarisoa *et al.*, 2017). This strategic value relates to vulnerability and risk in agricultural enterprises, particularly crop farming. Due to climate and extreme weather, agricultural businesses face vulnerabilities and risks directly impacting food security.

Many insurances from foreign nations flourished here. In 2016, the Indonesian government implemented RFI or AOTP. The placement and implementation of RFI are based on the rice fields' irrigation and water availability conditions. Additionally, RFI focuses on regions where the vast majority of rice farmers have received agricultural intensification policies, particularly rice.

Rice farming insurance is anticipated to be a deterrent due to natural disasters induced by extreme rainfall, drought and attacks by plant-disturbing organisms, with a mechanism for transferring risks (Lan *et al.*, 2024; Pietrobon, 2024) to other parties through the use of agreed-upon insurance. As a risk transfer instrument, RFI will empower farmers. Empowerment relates to the implementation capability to manage rice fields and the intelligence department's ability to make decisions in risk management (Pan *et al.*, 2020). The function of agricultural insurance in protecting farmers as a form of risk transfer could raise farmers' standard of living.

Farmers' participation in implementing modern agriculture will affect business capabilities (Muksin *et al.*, 2018, 2022; Senapati, 2020), including the viability of rice cultivation. Successful agriculture will affect food security. Food security is dependent on the availability of adequate rice supplies.

However, the capacity of farmers to embrace innovations, particularly regarding insurance adoption, is deemed suboptimal. This condition is also related to the need for additional knowledge (Anggita *et al.*, 2022) and other methods that support (Haryastuti *et al.*, 2021; Knapp *et al.*, 2021). The suboptimal adoption of RFI is allegedly attributable to many institutional and value-related factors. Based on these conditions, this study aims to idealize the requirements for the adoption of RFI and to develop a structured model based on these requirements.

MATERIALS AND METHODS

This research has been carried out from the end of 2020 to 2022. The focus of the investigation is Kabat District, Banyuwangi Regency. Identification and mapping of farmers by identifying the characteristics and requirements of adoption development will facilitate the social engineering process of identifying crucial factors for farmer empowerment in the development of AOTP. This research uses quantitative and qualitative methodologies. This study determines information about farmers' attitudes through structured interviews guided by questionnaires. The findings of the structured interviews were then used to collect initial data through focused group discussions with 35 people consisting of farmers, farmer group administrators, joint farmer group administrators, agricultural extension workers, village governments, agricultural offices and Jasindo insurance institutions. Based on the findings agreed in the Focus group Discussion (FGD), as many as 7 experts were asked to conduct an evaluation to determine the feasibility of the aspects needed for the development of the RFI program. The next stage involves proving the structure through comparative evaluation using the Interpretive Structural Modeling (ISM) method. ISM is applied to structure problems in complex system (Chen *et al.*, 2021; Yadav *et al.*, 2021; Zhang *et al.*, 2024), include of agribusiness systems (Alam *et al.*, 2023; Arsyad *et al.*, 2023). The evaluation process involves the participation of seven people who have expertise related to expert agricultural insurance.

RESULTS AND DISCUSSION

The program requirements

The purpose of analyzing the program's requirements elements is to determine the systemically related factors in developing the RFI program. The need for program management is a condition of the behavioral, institutional and prerequisite support required for the optimal operation of program activities. Based on the findings of interviews and focus group discussions, twelve sub-elements of RFI development requirements were determined to exist. Tabulated in Table 1 are the sub-elements of development requirements.

On the basis of the results of the matrix of impact cross multiplication applied to classification (MICMAC) analysis of the program's requirements elements, there are five

Table 1: Sub-elements of requirements from the RFI program development.

Elementor code	Attribute
E1	The capability of rice farmers' human resources to conduct modern agriculture.
E2	Guarantee of rice farming business insurance safety
E3	Local government policies in facilitating the AOTP adoption
E4	Institutional assistance for farmers
E5	Easiness in AOTP financing techniques and processes
E6	Competence in managing business and farmer finances
E7	Systemic continuation of AOTP counseling
E8	Farm business administration/agribusiness and marketing information system
E9	Partnership with industries operating in the agricultural sector
E10	A commitment of relevant institutions to facilitate the rice farming businesses development
E11	Harmonization and conformity of rural indigenous knowledge (local values) with AOTP implementation
E12	Participation of farmers directly in the implementation of the AOTP program

sub-elements in the independent sector with strong driving forces and weak dependencies. Sub-elements in this sector are essential to formulating a model, which means that all sub-elements in this sector are prerequisites for developing farmer interest and participation programs for RFI in Kabat District, Banyuwangi Regency. Included in the independent sector's program requirements are the continuation of systemic RFI counseling, the simplicity of RFI financing techniques and procedures, the guarantee of RFI security, the competence of business management and farmer finances and the direct participation of farmers in the implementation of the RFI program.

According to the results of MICMAC's analysis of the program's requirements elements, there are two sub-elements in the linkage sector with a strong driving force and a strong dependence. Due to the unstable nature of the relationships between elements, this sector's sub-elements require careful examination. The fulfillment of program requirements in this sector is possible after the completion of program requirements in the independent sector because if the program's basic requirements have been met, it will have an effect on the fulfillment of program needs in the linkage sector. Farmers' participation in implementing the RFI program necessitates the linkage sector's program due to the local government's policy of facilitating the adoption of RFI and institutional support at the farmer level.

The results of MICMAC's analysis of the program's needs elements indicate five sub-elements in the dependent sector, *i.e.*, those with weak driving forces and strong dependence. Sub-elements in this sector are dependent sub-elements that are easily influenced by other sub-elements; this indicates that meeting the requirements of this sector is not a priority, but is possible if different conditions are met first or if they are in the independent sector and the needs of the linkage sector have been met. Included in the dependent sector's needs are the ability of rice farmers' human resources to engage in modern agriculture, the suitability and harmonization of rural indigenous knowledge (local values) with the

implementation of RFI, the commitment of related institutions to facilitate the development of rice farming businesses, information systems for farm business management/agribusiness information systems for farm business management/agribusiness and marketing and partnerships with industries leading to employment.

The results of the MICMAC analysis indicate that there are no sub-elements in the autonomous sector, *i.e.*, sectors with sub-elements that have weak driving power and weak dependence, sub-elements in this sector that are not related to the system and can be removed from the model, so it is known that all factors of needs used in research have a relationship with the system and must be met to develop an interest in the model, so it is known that all factors of needs used in research have Based on this, it can be seen that all aspects of requirements used in the study that have a relationship with the system must be met in order to increase farmer interest in the model and participation in RFI Kabat District, Banyuwangi Regency.

The results of a structural analysis using a Directional Graph (Digraph) of program requirements elements indicate that there are nine levels of program development. This result suggests that all of the program's conditions can be met gradually by focusing on fulfilling the requirements at the lowest level, or level 9, as depicted in Fig 1.

Adjusting to the conditions of the resources provided for the development of the program, such as human resources, budget, revenue and other resources, can meet the program's requirements in nine stages. Consequently, the implementation of satisfying requirements must be carried out sequentially, beginning with the priority requirements factor and has a significant impact on the program of increasing farmers' interest in and participation in RFI Kabat District, Banyuwangi Regency.

The program's requirements can be implemented in nine stages, beginning with implementing level 9 elements, which assures the systemic continuity of RFI counseling. This necessitates that agricultural extension agents in Kabat District, Banyuwangi Regency, provide RFI-related counseling continuously and on a predetermined basis.

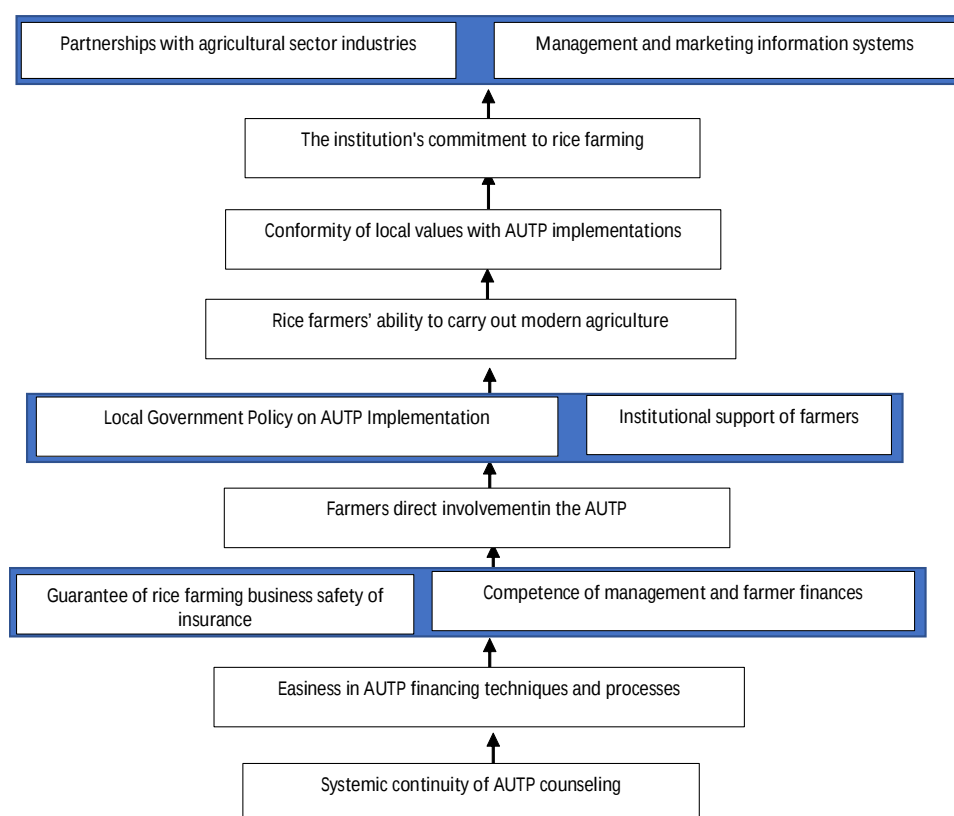


Fig 1: Structure of requirements for RFI or AUP program development.

Counseling materials should be able to explain the overall goals of the RFI program and their delivery should be as straightforward as feasible to encourage farmers to participate in the RFI program.

If RFI counseling is or has been operating systemically and continuously, the following requirement to be met is to provide straightforward RFI financing techniques and processes. Farmers are typically more interested in participating in government- and private-sector programs whose technical implementation is straightforward (Susilowati *et al.*, 2021) and whose financing calculations are simple for farmers to comprehend.

The following requirement that can be met simultaneously is ensuring the security of the RFI and enhancing farmers' business management and financial skills. These two requirements are on the same level and interconnected or influenced by each other; they can be satisfied simultaneously. So that RFI security guarantees do not encounter obstacles in the middle of their implementation, business management and farmers' finances are required so that no condition of unpaid premiums or insufficient insurance results in losses due to a lack of business and financial management.

Farmers are both objects and subjects of the RFI program, so the following requirement is to assure their direct participation in the program's implementation. Participating farmers in the RFI are required to adhere to a series of

directives from the insurer regarding cultivation techniques, agricultural management and agricultural product management. In order to reduce the risk of crop failure, producers must be directly involved in the RFI program's implementation.

The local government's policy to facilitate the adoption of RFI and institutional support at the farmer level is a need that can be met simultaneously with other conditions at the level above it (*i.e.*, levels 9, 8, 7 and 6). In this instance, the local government policy is issued by the Banyuwangi Regency Government through the Banyuwangi Regency Agriculture and Food Service regarding the ease of adoption of the RFI program. Additionally, the institutional support at the farmer level is the support provided by farmer groups (Poktan) and the Association of Farmer Groups (Gapoktan) in relation to organizing the implementation of the RFI program.

The following requirement that can be met is the ability of rice farmers' human resources to carry out modern agriculture, which can be met through continuous counseling provided by agricultural extension workers from the government and extension workers appointed by insurance agencies. It should be noted, however, that in order to facilitate the fulfillment of these requirements, the continuity of systemic counseling must first be established.

Suppose farmers are able to practice modern agriculture. In that case, the following requirement step is to adjust and actualize the harmonization of rural

indigenous knowledge (local values) with the implementation of the RFI. So that there are no disputes between farmers and RFI organizing institutions, achieving RFI's harmonization of actual local values is necessary. If this requirement has been satisfied, the following requirement is to secure the commitment of relevant institutions to facilitate the growth of rice farming enterprises. Implementing RFI in conformity with the local values adopted by farmers in Kabat District, Banyuwangi Regency, such as the value of mutual aid, mutual respect and other values, will allow both relevant institutions and farmers to fulfill their commitments to facilitate the development of rice farming businesses and follow to existing contracts, respectively.

At the completion of the program, the requirements that can be met include optimizing the information system for managing farming/agribusiness and marketing and partnerships with agriculturally engaged industries. These two requirements can be satisfied simultaneously because they are on the same level and related. Optimization of the information system for farm business management or agribusiness and marketing can be easily achieved if farmers already have a solid foundation in farm business management and a solid comprehension of level 7 management concepts. Optimal local government policy in facilitating the adoption of RFI and institutional support at the farmer level will also make establishing partnerships with industries involved in the agricultural sector more straightforward. On this basis, it is clear that satisfying basic needs can affect and facilitate fulfilling higher-level requirements.

In order for farmers to be interested in purchasing insurance, it is essential that extension employees receive consistent counseling on the benefits and guarantees of insurance. At least once per month, RFI program counseling activities can be conducted at least once per month to promote a strong perception in farmers' minds. According to this study's findings, counseling activities are essential and must be performed consistently. In the empowerment process, institutional counseling will provide the necessary insights and attitudes for making the right decisions.

CONCLUSION

According to the findings of this study, extension activities are the primary requirement for the development of the RFI program. Incorporating insurance program innovations necessitates the implementation of RFI with ease and simplicity as the second most crucial requirement for program development. Strengthening the counseling will have an effect on persuading farmers that the RFI implementation period is secure. Counseling will also contribute to the enhancement of farmers' farming abilities.

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Conflict of interest

The authors have declared no conflict of interests exist in this article.

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