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The Adoption Model of Technological Innovations That Have an Impact on the Welfare of the Community in the Village of Koto Masjid, Riau Province

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ABSTRAK

Penelitian ini mengkaji adopsi inovasi teknologi di bidang perikanan yang telah berhasil memberikan kontribusi bagi peningkatan dan perubahan mata pencaharian masyarakat. Kajian ini bertujuan untuk menganalisis secara mendalam dan komprehensif untuk membangun model adopsi inovasi teknologi yang berlangsung dan dapat memberikan kontribusi bagi kesejahteraan masyarakat. Metode yang digunakan dalam penelitian ini adalah paradigma penelitian kualitatif dengan pendekatan studi kasus yang menjadi pilihan peneliti dalam melakukan penelitian dengan tema adopsi inovasi. Hasil penelitian ini menemukan bahwa model adopsi inovasi teknologi bidang perikanan di kawasan Minapolitan Desa Koto Mesjid, Provinsi Riau, Indonesia ternyata telah memberikan kontribusi bagi peningkatan dan perubahan mata pencaharian masyarakat. Keberhasilan masyarakat dalam mengadopsi inovasi teknologi di bidang perikanan secara bertahap meningkatkan kondisi ekonomi masyarakat. Konstruksi model adopsi inovasi teknologi disusun mulai dari adanya nilai-nilai lokal sebagai mata rantai dalam proses adopsi, adanya bukti dan janji manfaat (imbalan) dalam proses, adanya karakteristik daerah, masyarakat, dan variabel personal pendukung, adanya faktor yang dapat menjadi pendorong bagi masyarakat untuk dapat menerima inovasi teknologi di bidang perikanan dan memiliki alur pengambilan keputusan yang jelas.

ABSTRACT

This research examines the adoption of technological innovations in the field of fisheries that have successfully contributed to the improvement and change of livelihoods for the community. This study aims to analyze in-depth and comprehensively to construct a model for the adoption of technological innovations that takes place and can contribute to the welfare of society. The method used in this study is a qualitative research paradigm with a case study approach being the choice of researchers in conducting research with the theme of innovation adoption. The results of this study found that the adoption model of technological innovation in the field of fisheries in the Minapolitan area of Koto Mesjid Village, Riau Province, Indonesia turned out to have contributed to the improvement and change of livelihoods for the community. The success of the community in adopting technological innovations in the field of fisheries has gradually improved the economic conditions of the community. The construction of the technological innovation adoption model is arranged to start from the existence of local values as a link in the adoption process, the existence of proof and promises of benefits (rewards) in the process, the existence of regional characteristics, community, and supporting personal variables, the existence of factors that can be a stimulus for the community to be able to accept technological innovations in the field of fisheries and have a clear decision-making flow.

1. INTRODUCTION

The rapid development of science and technology has had a major impact on various activities of human life in various aspects of human life, such as: industry, agriculture, education, health, and so on (Muzakki et al., 2016; Rohida, 2018). Technology is used to assist various activities related to improving people's welfare (Anuradha et al., 2021; Marginingsih, 2021). Along with the importance of the role of technology, various innovations have been made to be able to develop the role of technology in various fields (Muzdalifa et al., 2018; Nurohman et al., 2021). The aim is to facilitate work and improve people's welfare.

The Koto Mesjid Village community is the result of a local transmigration program carried out by the Regional Government as a result of the construction of the only Hydroelectric Power Plant (PLTA) in

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Riau Province (Elida & Vaulina, 2015; Hamidi, 2016). Prior to participating in the local transmigration program, the residents of this village were people who lived in an area with lowland characteristics and were in a watershed (DAS) along the Kampar River that connects West Sumatra Province with Riau Province (Hasibuan et al., 2019; Martina, 2021). Area characteristics like this provide the community's main livelihood such as fishing in the river, namely capture fisheries, such as catching fish, netting or trawling, and installing traps. Fishing activities in the river are the main source of income for the community to meet the needs of their family life (Kurniati, 2016; Sofyani & Yolandika, 2021). The uniqueness of the area owned by Koto Mesjid Village with a hilly base that is difficult to water and artesian valleys or a sloping base has a major impact on the speed and smoothness of the community in deciding to adopt technological innovations in the fisheries sector.

There are 257 catfish cultivators in this village, the majority of whom are spread in Hamlet III Kampung Baru 1 and Hamlet IV Kampung Baru 2. Meanwhile, Hamlet I Pincuran Bilah and Hamlet II Pincuran Gading are still classified as a minority. The uneven distribution of cultivators occurs because not all of the potential land owned by the community is good for starting cultivation. The community's decision to adopt catfish farming technological innovations was made after there was evidence and promises of benefits shown from the cultivation practices carried out (Hamidi, 2016; Hasibuan et al., 2019). This is due to the failures that society experienced before. So far, the community has failed to cultivate the same commodity, due to ignorance of the correct catfish cultivation techniques. The ongoing adoption process is not hindered by personal characteristics, such as education level, age, number of families, pool area, income level, and ownership assets. However, they were constrained by a large enough initial capital to grow crops because all the equipment for farming was initially brought in from outside the village area (Martina, 2021; Sofyani & Yolandika, 2021). However, after several innovations were discovered by innovators, such as fish nurseries and fish feed production, which were able to reduce the cost of cultivating catfish, people gradually began to adopt them.

The stages of society in adopting innovations show that the speed at which society adopts them varies (Van Oorschot et al., 2018; Wisdom et al., 2014). The difference in the speed of community adoption in a social system certainly depends on the driving or motivational aspects that arise in people's lives. The characteristics of life that exist in a social system greatly support a person or individual in the decision-making process to accept or reject innovation (Silvestre & Ţîrcă, 2019). This is because these characteristics can be a requirement for individuals in facilitating decision making to accept or reject innovations. Adoption of innovation is a mental process or behavioral change, whether in the form of knowledge (cognitive), attitudes (affective), and skills (psychomotor) in a person since he knows the innovation until he decides to adopt it after receiving the innovation (Silvestre & Ţîrcă, 2019; Van Oorschot et al., 2018).

Model construction built in the theory of innovation adoption is carried out by individuals in their social environment (Aboelmaged & Hashem, 2019; Talebian & Mishra, 2018). Rogers' findings have been the ideal standard in any innovation adoption studies conducted by several researchers. However, research on the adoption of technological innovations in the field of fisheries in the Minapolitan area of Koto Mesjid Village, Riau Province found a different model construction. The difference in model construction may be due to Rogers ignoring the local values of the local community, regional characteristics, and factors that support adoption. So that in the end it will have an impact on the ongoing process of adopting technological innovations. This research examines the adoption of technological innovations in the field of fisheries that have successfully contributed to improving and changing people's livelihoods. This study aims to analyze in depth and comprehensively to build a model for the adoption of technological innovations that are ongoing and can contribute to the welfare of society.

2. METHODS

This study uses a qualitative research approach with a case study method (Hoppey & McLeskey, 2013). This research focuses on issues of adopting technological innovations in the field of fisheries that have contributed to improving or changing people's livelihoods. This case is unique because the ongoing adoption process requires direct evidence or practice from the innovator and the promise of tangible rewards from the innovation introduced to convince the public to adopt it. In addition, the homogeneous community in the Minapolitan area of Koto Mesjid Village also has strong local values among one another. Thus, in the process of adopting innovation, local values owned by the community can be a determining factor for the smooth adoption of innovation by the community. The selection of informants was carried out by understanding the informants' perspectives and understanding of the adoption of technological innovations in the field of fisheries in the Minapolitan area of Koto Mesjid Village, Riau Province. The informants' experiences and arguments are not to be judged as right or wrong, but are placed as subjective actions that have meaning.

Data collection in this study was carried out using interview techniques and enriched with data that required closed instruments with more structured questions, in line with surveys. The survey was conducted on 257 farming communities by selecting a census technique. The survey was conducted to determine the characteristics of the cultivators in Koto Mesjid Village which included education level, age, number of families, number of ponds, pond area, level of income, and ownership assets. The survey process carried out involved research assistants who were local people to make it easier for cultivators to fill out the prepared questionnaires. The survey process took a long time, approximately one month, due to the busyness of the cultivators in carrying out their activities and their reluctance to fill out the questionnaires that had been prepared for the survey. Farmers' reluctance to fill out questionnaires was due to survey time when farmers were busy with their activities. Therefore, the survey time must be adjusted to the farmer's spare time in order to be able to fill out the survey questionnaire. Data analysis was carried out using the Miles and Huberman 1994 analysis method, namely data collection, data reduction, data presentation, and drawing conclusions.

3. RESULTS AND DISCUSSIONS

Results

The values of the local community are habits and traditions that have developed as a result of continuous adaptation to the environment in which they live. These values grow from cultural customs that develop as a result of the ethnic grouping of society. These local values are the determining factors for the adoption of innovations that take place in society. Local values that become social capital in the process of adopting technological innovations are family values, togetherness values, and sharing the same destiny. The existence of these local values is an encouragement for the community to be able to learn about innovation, build access, and receive guidance to convince themselves in deciding to adopt technological innovations in the fisheries sector.

The existence of evidence and appreciation is a belief and trust for the community to dare to decide to adopt technological innovations in the field of fisheries. In contrast to Rogers' model, which becomes information as trust for the community in adopting innovations. According to Rogers, sources and communication channels provide stimulation or information to someone during the innovation decision process. Someone usually seeks information because they want to seek reinforcement for the adoption decision they will take. So that with the amount of information needed, there will be no mistakes in making innovation adoption decisions. In empirical findings, recommendations from fish commodity extension officers that are appropriate to the characteristics of the village area owned have become information for the community. However, because the recommended fish commodities had been cultivated by the community and failed, the community was reluctant to accept the information provided by the extension workers. Finally, to convince and give confidence to the public about the technological innovations introduced, it is necessary to prove the success of cultivation and the results of cultivation must have rewards. These two key factors provide confidence and trust to the public in the decision-making process of adopting technological innovations in the fisheries sector.

Regional, community, and personal characteristics variables are a requirement to facilitate the process of adopting technological innovations carried out by the community. The characteristic of the area that is a condition for the smooth running of the adoption process is the potential of the cultivated land. Not all areas in this village have the potential for artesian land and can continue to be used for farming. The characteristics of the community that are a prerequisite for the smooth adoption process are ethnicity and ethnicity or existing homogeneity that fosters local values that can become social capital in the adoption of technological innovations. The personal variable that is not an obstacle in the smooth adoption process is the level of education one has. Supporting factors in the process of adopting technological innovations are the incentives that make individuals successful in following an innovation. This factor consists of internal factors, namely achievement motivation, and external factors, namely agents of reform and policy innovation. Supporting factors originating from internal and external factors turned out to be able to provide a strong impetus for the community to be able to successfully implement technological innovations in the field of fisheries in cultivating catfish commodities. The emergence of these supporting factors turned out to be able to give confidence and trust to the community to be able to decide to adopt the introduced technological innovations.

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cultivating catfish commodities. The emergence of these supporting factors turned out to be able to give confidence and trust to the community to be able to decide to adopt the introduced technological innovations. The decision-making process for the adoption of technological innovations is the stages carried out by the community in deciding to accept or adopt an innovation. The decision-making process for adopting technological innovations occurs after there is evidence and promises of benefits offered to provide confidence and trust to the public. The decision-making process for the adoption of ongoing technological innovations has the following stages. a) The decision-making stage is an individual process in studying and understanding an innovation that is introduced, giving rise to the individual's interest in adopting it.

Discussion

Agent of Changes' Roles

Change agents play a very large role in spreading innovation so that it can eventually be adopted by the majority of society. The agent of change in this case is the extension agent who resigns to prove the findings obtained directly to the community. This is done so that the community believes and believes that the findings recommended can be used as livelihood solutions and new sources of income. Without real and concrete evidence to the public, the innovations found and introduced will not be accepted by the community. Moreover, innovation is an activity that has previously been carried out by the community but has failed. Therefore reform agents will try to invite or seduce the community to be able to participate in the innovation activities they carry out to find new livelihoods and new sources of income, it is illustrated that innovation determines the future of village development (Prasetyanti & Kusuma, 2020; Sari & Retnaningsih, 2020).

To increase competitive advantage and competitiveness of regional superior products, technological innovation is certainly needed. Facts from developed countries show that regional economic development can be maximized through technological innovation of superior regional products, local government synergy with the community, business world, universities, and the media in the form of the Penta Helix Collaboration Model (Sari & Retnaningsih, 2020; Yunas, 2019). One of them is being encouraged to be able to develop various innovations and synergize with academia, private sector, government and media (Penta helix). Through this model, it is hoped that the development of village potential will have an impact on the welfare and independence of village communities (Yunas, 2019). With the success of the reform agent in cultivating, the family of the reform agent's wife began to be interested in participating in practicing catfish farming. while others are still not interested in the innovation. This happened not without reason: First, before innovation was introduced by the reformed institutions, the community had already cultivated pond systems but failed. Second, because initially for the innovation of cultivating catfish commodities, all cultivation equipment was introduced which was still obtained from outside the village, such as fish seeds and fish feed. So it required a fairly large initial capital, while the economic conditions of the people at that time were at an apprehensive level.

However, over time, reform agents also innovated, especially in fish breeding and fish feed manufacturing to reduce operational costs in implementing innovations. The discovery of fish breeding technology with the term temperature shock technology engineering opened the door for the community to reduce operational costs in aquaculture. This is because catfish commodity seeds can be obtained from the village area itself, as well as the discovery of fish feed manufacturing technology that can meet the needs of fish feed for each cultivator. The discovery of reform agents to reduce the operating costs of aquaculture began to attract the attention of some people who were categorized as early adopters.

Motivation in Adopting Technological Innovations

This motivation is shown by the community to answer the economic problems they face. Because the drive to succeed in farming cannot be separated from family encouragement, economic pressure, and the promise of profits in farming. The urge that appears makes people motivated to excel in cultivation. The community's need to excel in cultivation cannot be separated from meeting the needs of the family's economic sector. Because at that time the community's need to adopt innovations in the field of fisheries was carried out to answer the discovery of new sources of income to meet the needs of family life. Every community who sees an opportunity in the cultivation of catfish commodities will not hesitate to develop it even more. This is evidenced by the large number of community ponds with a large area, to obtain high profits in cultivation activities. So that later the cultivation activities carried out can match the successes that have been carried out by innovators and their predecessors.

The results of the research show that there are many factors to improve agricultural performance and make competent human resources for farmers. In conclusion, agricultural empowerment counseling is a transfer of agricultural technology innovation to the community with village development efforts

(Sabrina, 2021). The low level of public knowledge in the cultivation of pond systems in hilly areas makes policy innovations not obtain maximum results. The failure experienced by the community in cultivating the pond system has made the community's anxiety in finding new livelihoods and new sources of income even greater. In the end, policy innovations carried out by following the findings of extension workers who changed their role as agents of change as innovators in aquaculture with a catfish pond system were successful and made a significant contribution to change and improvement of livelihoods. for society and has implications for improving the welfare of the general public. One of the strategies for accelerating community economic progress in facing global competition is accelerating development through community empowerment efforts in various fields of life through the application of appropriate technology. The role of Appropriate Technology (TTG) when used effectively is believed to be able to increase people's income, provide added value to products, improve quality, and help realize productive business efficiency.

The findings of this study are that digital technology is relevant for overcoming poverty in upland agriculture because it can reduce production costs and indirectly have an impact on farmers' financial management (Krismono & Nasikh, 2022). Based on the explanation and analysis that has been done, it is known that the adoption of technological innovations in the field of catfish aquaculture has succeeded in contributing to improving and changing people's livelihoods, supported by change agent factors, achievement motivation factors, and policy innovation factors.

4. CONCLUSION

The successful adoption of technological innovations in the field of fisheries provides an opportunity for the Regional Government to develop the area as one of the cluster areas for the development of the freshwater fisheries sector. Finally, the Regional Government of Kampar Regency revealed this success through a regional policy in the form of a Decree from the District Head of Kampar Regency. The findings of this study recommend the area as a cluster or pilot in the freshwater fisheries sector, which can later become a benchmark area for other regions that will develop similar innovations in the fisheries sector. This finding also initiated the birth of consensus or policy products from lower groups or society which is often referred to as the bottom-up approach in policy.

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