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Wetland farmer's adoption stage of agribusiness system in Hulu Sungai Selatan Regency, Indonesia

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Abstract

The agribusiness system is suitable to be used as a development strategy. To formulate an appropriate pattern of agribusiness system for development, we need to understand the stage of adoption of the community. This is very important to help policy makers formulate an appropriate society coaching patterns, which matches the socio-cultural of the region. This study aims to determine the stage of community adoption of the agribusiness system and the percentage of people who are at each stage of adoption. The study also examines the differences in adoption stage of society based on their differences in farming experience. The study will formulate a society coaching pattern that is in accordance with social conditions and the stage of community adoption stage. The results shown that the adoption stage of people in Hulu Sungai Selatan Regency is majority at the assessment or evaluation stage. The research also found that a longer farming experience tend to lead to a higher adoption stage. A more appropriate society coaching patterns includes a package of policies to: eliminate obstructing factors, develop driving factors, promote group pioneering and design agribusiness of community interest.

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Introduction

The term of agribusiness was first used in Indonesia in 1950 to describe part of industries which utilized bio resources. Essentially all of its activities cover all aspects of agricultures (Kartasapoetra, 1994), however its focus on agribusiness makes the meaning becomes widespread and varies. The meaning of agribusiness narrowly is activity of production process in farm areas, but in broader meaning it is a system which consists of several sub-systems including:

1. Subsystem of production and distribution of agricultural supports and facilities
2. Subsystem of farm production which produces various agricultural products
3. Subsystem of gathering, processing, packaging, distribution and marketing of agricultural products and its processed form to bring them to the consumers
4. The relation between one subsystem to another is closed and tight as such so a disturbance on one particular subsystem will influence the others. Agribusiness is purposed to utilize natural biotic resources for production of livestock or crop cultivation, and further to process these products become food and other useful products for human beings through agroindustry (ADB-FAO-DitJenBun, 2002; Siagian, 1977).

In agribusiness there will be a relation between human being and environment. Human being put an effort to utilize and to manage the environment for their benefit. The effort of utilizing includes applying fertilizer for crop, developing irrigation, maintaining land fertility, while the effort of managing includes utilizing resources in un-comfortable situation such as cultivating in wet season, harvesting in dry season, planting perennial crops in sloping land etc (chambers, Pacey and Thrupp, 1989). Agribusiness includes several activities from growing mushroom up to producing palm oil, from cultivating silk to cultivating rice, or from agribusiness of tobacco to agribusiness of pineapple (Siagian, 1977).

The agricultural development needs to be more directed toward an increase in participation, efficiency and productivity of the people. In other words, development approaches that suppress the participation, initiatives and creativity of farmers and other economic actors need to be replaced by new approaches. For this purpose, the agribusiness approach is expected to be used as a strategy in agricultural development (Silitonga *et al*, 1995). In agribusiness approach, the target is not to increase agricultural production but rather to emphasize the increased welfare of farmers and the resilience of the agricultural sector as a whole. Therefore, commodities are more viewed as instruments, not goals for achieving the above goals. The notion of commodities has become very broad. What commodities are cultivated depends on the decisions of farmers and other economic actors. The freedom of farmers to choose the type of crop in their farming business is guaranteed by Law No. 12 of 1992 (Bongiwe, Kirsten, Masuku, 2014).

The concept of agribusiness itself has been used by experts in marketing agricultural products since the 1970s, this situation is driven by the nature of the agricultural commodity itself, which is easily damaged, seasonal and easily controlled by humans. With the application of the agribusiness approach, the nodes of farming, agro-industry and marketing are expected to integrate well (Chambers, Pacey and Thrupp, 1989).

Agribusiness development is actually an appropriate approach of agricultural development in Indonesia because of its roles:
(1). Able to increase the income of farmers,
(2). Able to increase the absorption of labor,
(3). Able to increase exports,
(4). Able to increase the growth of other industries, and
(5). Able to increase added value (Soekartawi, 1995)

The success of developing agricultural productivity and farmer welfare depends on the success of technology transfer and farmer adoption. The success of technology transfer is determined by the compatibility between technology, how to shift technology, farmer culture, and farmer environment (Geertz, 1976).

The adjustment of the four factors requires effective coordination which is currently problematic. The basic problem of technology transfer today is the weak coordination between development agents and the low understanding of development agents about the culture and environment of farmers. Those problems in principle are problem of the effectiveness of: communication, information exchange and mutual understanding (Downey and Steven, 2016).

Many technologies are available to be studied or modified and diverted but are very difficult for farmers to adopt (Farley, 1990). On the other hand, in certain areas the adoption of technology although slight but there is a desire of farmers to accept it. Likewise, there are also residents who develop traditional technologies and accept new technologies as long as they do not cause severe social conflicts (Fatah, 2013 and Mubyarto, 1982). That potential can be realized and the aforementioned problems can be overcome if the methods of technological assessment are rooted in traditional culture (Eilers, 1992).

Therefore, knowledge and information about the stage of adoption of the community and the factors that can influence it are very important to help policy makers formulate appropriate society coaching patterns while also matching the socio-cultural conditions of the region. According to Farley (1990) this knowledge also important in determining commodities that are suitable for their geographical conditions. Information that is able to provide a more transparent picture of the conditions of adoption of the farming community in relation to the farming activities of the agribusiness system is very useful for related parties to formulate a further development strategy (Fatah, 2016 and Kulshreshtha, 2020). It is because of these considerations that this research is very necessary.

Therefore, the objectives of this study are:

1. To investigate the stage of community adoption of the agribusiness system in general, and to investigate the percentage of people who are at each stage of adoption
2. To analysis whether there are differences in community adoption stages based on their farming experiences
3. To formulate an appropriate agribusiness system development pattern that is relevant with social conditions and the adoption stage of community

Materials and methods

This research was carried out by survey method in three villages of Hulu Sungai Selatan Regency. The three villages are Balanti in Kalumpang subdistrict, Kalumpang in Kalumpang subdistrict and Hamayung in North Daha subdistrict. Research started in March 2022 to September 2022.

For the analysis and formulation of prescriptions this research utilizes primary data and secondary data. Primary data was obtained by interviews with selected respondents as well as by direct observation of the research site. Secondary data was collected from other agencies and informants who knew about some of the information needed in this study. Also from some of the relevant previous research and other publications.

Respondents for primary data were selected purposively as many as 60 people from the three villages as the research locations in Hulu Sungai Selatan Regency. Each village contributed 20 respondents. Respondents were farmers as producers of farm products. This was intended so that the data obtained was more valid and unbiased, and could represent the overall population of this study area

The types of variables in this study were:

1. Community adoption of the agribusiness system
2. Differences in adoption stages
3. An appropriate agribusiness system development pattern that is relevant with social conditions and the adoption stage of community

The collected data are then analyzed qualitatively and for some types of quantified data, a descriptive statistical analysis is applied. The analysis is supported by tabular, graphical and diagrammatic analysis.

Results and discussion

The data obtained from the implementation of this research activity is then processed and the results of

data processing are presented in these following sections. The results obtained will also be followed by their respective discussions. The discussions carried out were organized into three parts, namely the community adoption stage, the difference in the adoption stage according to farmers' experience and the discussion of an appropriate agribusiness system development pattern.

Community adoption stage

How did the community at the study site understand about agribusiness? This was studied through interviews with respondents. From the processing and analysing data obtained, the state of the Hulu Sungai Selatan Regency community adoption stage of the agribusiness system is as follows.

Table 1. Community Adoption Stage.

No	Stage	Number (people)	Percentage
1	Awareness	15	25
2	Interest	6	10
3	Evaluation	24	40
4	Trial	12	20
5	Adoption	3	5
	Total	60	100

In the table, it can be seen that the largest percentage of Hulu Sungai Selatan Regency people is at the evaluation or assessment stage. Most of them have heard about the existence of agribusiness. Basile, Dowling and Solomon (2011) described that the existence of agribusiness attracts them to further know and understand it. After they went through the stage of finding out more about agribusiness, they finally reached the stage of evaluating or assessing this agribusiness system. (Gudykunst, 1991, Geertz, 1979 and Kartasaputra, 1994). Accorrding to Kulshreshtha (2020) The farmer will assess whether this agribusiness system is profitable for them or not, what are the consequences that they have to go through when adopting this system, whether their resources are sufficient to support the implementation of this agribusiness system, and whether they can obtain the capital and so on.

Based on data obtained as many as 40% of the Hulu Sungai Selatan community is still at the evaluation stage. Next is as many as 25% of the people are in the awareness stage. As many as 20% of people are at the trial stage, 10% are at the interest stage and the least are the people who are at the adoption stage.

The structure of the adoption stage like this indicates that the people in this area have been quite well aware of what the agribusiness system is. The people here have also shown their interest in implementing the agribusiness system later. But before that, according to Nasution (1990) and Bollman and Ferguson (2019) they want to do an assessment first, whether this new innovation in the form of an agribusiness system is indeed beneficial for them, it needs to be studied further.

With the knowledge and skills they have, the people in the Hulu Sungai Selatan Regency conduct evaluations and assessments. They want to get justification on whether they will implement an agribusiness system or they will abandon it. According to Pambudy (2016) and Said (2001) in general, a community will participate in implementing new innovations in the form of this agribusiness system if from the assessment process they gained confidence that this innovation brought more benefits to them than the burden they have to carry out in implementing it, both in the form of costs, production level, price calculations, revenue and others.

In this study it is assumed that people who have been at a higher stage of adoption were considered to have passed the adoption stage under it. This is an easy-to-understand logic of understanding. Deller, Tsai and Marcouiller and English (2001) belived that a person who has adopted a new technology, of course, has gone through the process of being aware of the existence of the new technology, growing his interest in knowing more about the technology, conducting an assessment of the technology and then trying it. Through this series of processes, finally the person was convinced that the new technology was indeed suitable for its application.

Differences in Adoption Stages Based on Farmer Experience

Seeing the differences in adoption stages among farmers raises a sense of curiosity about why these differences occur, what caused them and how to

influence this stage of adoption so that it can be accelerated to the highest adoption stage (Soekartawi,2015). In this research, observations are focused on farmer experience factor. The data that has been collected is then analyzed to see how the experience of farmer has a relationship with the stages in the adoption process. Based on data processing, the results are presented in Table 2 below.

Table 2. Adoption Phase Based on Farm Experience.

No	Stage	<1	1-5	5-10	>10	Amount	%
1	Awareness	5	7	3	0	15	25
2	Interest	2	3	1	0	6	10
3	Evaluation	2	6	7	9	24	40
4	Trial	0	3	5	4	12	20
5	Adoption	0	0	1	2	3	5
Amount		9	19	17	15	60	100
Percentage		15	32	28	25	100	

This Table 2 is a more detailed breakdown of the number of farmers at each stage of adoption. This Table shows that for groups of people who are at the adoption stage, the average farming experience has been high. This is inline with Saragih (2020) and Sapuan (2014). As many as 5% of the people who are at the adoption stage are have five years of farming experience or more.

There are 40% of the people categorized at the evaluation stage. This is the majority people in the Hulu Sungai Selatan Regency. Their farming esperinces mostly more than ten years.

There are 25% of people in Hulu Sungai Selatan Regency who have farming experiences more than ten years. About 28% have less than ten years of experience. When viewed based on this length of experience of farming, it shows that people whose farming experiences long, they tend to be at a higher stage of adoption. The longer the experience, the better the adoption rate. Fakayode and Rahji (2009) laso have found this fact.

Appropriate pattern of agribusiness system development

In fostering the community in the Hulu Sungai Selatan Regency, the goal to be achieved is how the community is willing to adopt and implement agribusiness farming system. The adoption of agribusiness farming system is the right solution for promoting community's businesses that are dominated by agriculture (Bongiwe, Kirsten and Masuku, 2014).

Causes of slow agribusiness system adoption

To be able to formulate the right agribusiness development pattern that is in accordance with the stage of community adoption, it is necessary to understand why people are reluctant or even unwilling to implement the agribusiness system for their farming business (Faayode and Rahji, 2009). Based on data processing in this study, the results were as in the following Table 3.

Table 3. Causes of slow adoption of agribusiness system.

Observational Aspects	Amount	Percentage
a. They don't know what "Agribusiness" is	33	55
b. They do not know the advantages of "Agribusiness"	60	100
c. They feel comfortable with the old way they have on farming	60	100
d. They do not know how to run "Agribusiness"	60	100
e. None of the farmer's friends worked on it	57	95
f. The obtained results do not differ much	6	10

We interviewed 60 respondents using a closed questionnaire. For this aspect we had 7 (seven) main options and allowed the respondents to choose more than one option. The Table illustrates number of respondents who conveyed information about what factors that influence the adoption of the agribusiness system among the people of the Hulu Sungai Selatan region. The results depict on Table 10 above.

On Table 3 we see that the cause of the slow adoption of agribusiness system in Hulu Sungai Selatan Regency majority are 1) the community does not know the advantages of agribusiness, 2) people have been comfortable with the way they have been farming, and 3) people don't know how to run an agribusiness system. These three factors are the dominant factors, because based on the findings obtained from interviews with respondents, it turns out that these three factors are choosen by the whole respondents.

In addition to these three factors, other factors that also affect the slow adoption of the agribusiness system in Hulu Sungai Selatan Regency are that the community does not know what agribusiness is. As many as 55% of respondents emphasized that the cause was because the public was not aware of agribusiness system. In addition, community assumes that the total results obtained from running the agribusiness system were not much different from the farming system that they had been running in the Hulu Sungai Selatan Regency so far. There were 10% respondent that chose this as the cause why the adoption of agribusiness system was low. Another aspect causing low adoption of agribusiness system was none of the farmer's friends worked on and implementing agribusiness system (Kulshreshtha, 2020). The respondent majority said that they were more confident to adopt if they had seen the success of their collegues in implementing agribusiness farming system.

Driving Factors for Agribusiness Farming System Adoption

In order for the agribusiness system to adopt quickly, it is necessary to understand factors that drive acceleration for adoption of the agribusiness farming system among the people of the Hulu Sungai Selatan Regency. Based on the results of this study, these drivers can be seen as presented in Table 4 below.

Table 4. Drivers for agribusiness system development.

Observational Aspects	Amount	Percentage
a. Extension	60	100
b. Pilot	60	100
c. Capital	60	100
d. Guidance	60	100
e. Benchmarking	60	100
f. Training	57	95

Table 4 is compiled based on community opinions reflected in the respondents interviewed. They were given observational aspects in the form of factors that can be a driver and accelerate the development of the agribusiness system in the Hulu Sungai Selatan Regency. Then they were asked their opinion, whether they agreed that it was a driving factor for the development of agribusiness systems in their region. Based on that tabulation was carried out and arranged into frequency distributions as in Table 4.

From the table it can be seen that about the driving factors for the development of agribusiness, the people of the Hulu Sungai Selatan region almost all have the same opinion. According to them, there are six aspects of the driving factors, namely:

1. Extension
2. Pilot
3. Capital
4. Guidance
5. Benchmarking
6. Training

All of these factors are needed to accelerate the adoption of the agribusiness system. Each has a share in the large agribusiness system development space. However, if everything can be presented as a package of synchronous and synergistic policies, then the impact of the resulting thrust will be doubled and the effect of acceleration will be much greater.

The extension process is intended to build public awareness about the agribusiness farming system (Geertz, 1976). When people started to realize and their interest grew and they started to find out more about the agribusiness system, they were provided with pilot packages. They were introduced to examples of successful development of agribusiness farming systems. These pilots can be made on their own sites, but according to Bollman and Ferguson (2019) they can also be accelerated by bringing benchmarking to other locations whose agribusiness system development has proven to be successful.

Accompanying this stage, the community is then trained for improving their skills so that the concepts of the agribusiness farming system can be implemented properly. At this stage, the training provided should be site-specific and directed so that they are able to develop by utilizing the potential resources and technologies available in their area or available in other locations but they have access to those areas.

Furthermore, the community will reach the stage of trial of an agribusiness farming system that they have. For this stage, farmers are facilitated with the availability of easy capital and they can access the capital.

Furthermore, when they felt confident and began to implement an agribusiness farming system, the farmer was provided with guidance and assistance. In the early days of growing their business it was necessary to be given some kind of incubation. When they are facing difficulties, the guidance helped to show a way out for overcoming the difficulties (Basile, Dowling and Solomon (2011).

Thus, if for all these driving factors, an authority can enclose them into one simultaneous policy package then the hope of adopting and even scaling out of the agribusiness farming system will be more easily accomplished.

Responsibility for Agribusiness Farming System Development

The next consideration for the adoption of this agribusiness system is related to a good and also correct understanding of who should be responsible for the purpose. The results of data collection and processing related to these considerations are presented in Table 5 below.

Table 5. Agribusiness system development responsibilities.

Observational Aspects	Amount	Percentage
a. Formal leaders (Kades, Ka RW, Ka RT)	60	100
b. Non-formal leaders (community leaders)	60	100
c. Youth	60	100
d. The Have	60	100
e. Extensions and other coaches	60	100
f. Religious leader	39	65

On Tabel 5, it can be seen that there are six community groups that have responsibilities and are desired by the community to come forward to take initiatives and pioneers for the development of agribusiness farming systems. This are:

1. Formal leaders (Kades, Ka RW, Ka RT)
2. Non-formal leaders (community leaders)
3. Youth
4. The Have
5. Extensions and other coaches
6. Religious leader

In an effort to accelerate adoption of agribusiness farming system for Hulu Sungai Selatan Regency, not only extensions or other coaches from the government, but also it need the involvement and leadership of several other elements in the community. This includes formal leaders, non-formal leaders, youth and they have, who are classified as having more capital and resources, including scholars and religious leader.

Formal leaders are needed in order to bridging government policies at higher stages (Regency, Provincial and National) to village community. Non-formal leaders act as elements that provide legitimacy so that a top down program from the government at a higher stage, can be well received among the people of the Hulu Sungai Selatan Regency.

Youth, as the next generation and future leaders needs to be presence so that the innovations developed are also well understood by them. Not only that, with their enthusiasm as passionate youth, supported by their excellent energy, the involvement of youth is very important, for the successful implementation of a program and for guaranteeing its sustainability, including the adoption of agribusiness farming system (Chambers, Pacey and Thrupp (1989).

The upper middle class of people and classified as they have, can take a role as a catalyst for agricultural development in the community through the development of this agribusiness system. They can produce examples and can facilitate the development and adoption of innovations in the early days of their introduction. This will help accelerate the adoption of the community in the wider circle.

Extensions and other coaches certainly take on their usual roles and have been well structured so far. They are actually the key to technical success, because they are the ones who better understand the innovations.

At least they can know to where referrals must be made, or from where information must be obtained regarding problems around the innovations they want to develop, including the adoption of agribusiness systems.

Appropriate Agribusiness System Development Pattern

Next is the concern regarding what form of agribusiness system more favourable to be developed in Hulu Sungai Selatan Regency. For this concern the 60 respondents were interviewed with a closed quesionaire. There were six main options offered for respondents to choose. They were allowed to choose more than one option. The results of this study provided facts as given in Table 6 below.

Table 6. Agribusiness suitable for development.

Observational Aspects	Amount	Percentage
a. Combination of several commodities	15	25
b. Food crops (Rice, Palawija)	54	90
c. Plantation crops	45	75
d. Animal Husbandry	48	80
e. Fisheries	9	15
f. Processing of Agricultural Products	12	20

As understood, agribusiness is a farming system that includes not only the cultivation of the commodities but also all aspects of the business to obtain value added from the commodities. These include cultivation, a series of activities before the cultivation process, as well as a series of activities after the cultivation process. Agribusiness orientation is how to obtain better welfare from business by increasing agricultural commodities value added.

Thus, what is meant by the agribusiness system is the combination of several commodities and the whole following process to increase the added value of these commodities. The process includes cultivating it with various better technologies and innovations, packaging it with various forms of packaging that are more attractive, processing it into derivative products that have a higher selling value, or distributing it with a marketing process so that it can reach a wider range of consumers, and so that it can obtain a good marketing profit margin.

Not only are those, efforts to manage farm inputs for these commodities in various possible and profitable ways also part of the agribusiness system.

From Table 6, it can be seen that based on community preferences, the agribusiness system that is most in demand to be developed is the rice based agribusiness system. As many as 90% of respondents stated this. This number is the highest. Followed by the next one is the livestock-based agribusiness as much as 80%. For this farm the public interest is for cows, ducks and chickens. Next is the development of an agribusiness system based on plantation crops, especially rubber and coconut, as much as 75%. As many as 25% are interested in developing an agribusiness system by combining several commodities, depending on what sells well in the market, especially chili, Eggplant and Coconut. Only 20% are interested in specializing in the processing of agricultural products. The less preferable agribusiness system is fisheries with only 15%.

Conclusion

The stage of community adoption in Hulu Sungai Selatan Regency, for agribusiness farming systems in general is still in the assessment or evaluation stage. The stage of adoption is different when viewed based on their farming experiences. This research shows that longer farming experiences tend to have a higher adoption stage of agribusiness farming systems. The pattern of coaching that is more suitable with the social conditions and the adoption stage in Hulu Sungai Selatan regency comprises a package of policies that eliminate the hindering factors of adopting agribusiness farming system, promoting driving factors, and encouraging certain community groups to lead the way and also choosing agribusiness systems that are of community interest.

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