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Local Wisdom in the Management of Natural Resources in the Swamp Land

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Abstract:

Civil society who lives dependent on nature and is able to protect the environment with their own local knowledge, can handle economic crises better than people whose lives are greatly influenced by modern life. Therefore, it is important to preserve local wisdom in order to maintain balance and preserve the environment. so that it can carry out swamp land management as a livelihood field. This research has analyzed the successful implementation of the empowerment program in the Swamp Land of Ogan Ilir, South Sumatra. This research was conducted on rice farmers whom received funding from the program. The success can be seen from the success of farmer groups in managing finances from the programs, so that an agribusiness microfinance institution is formed with one of its businesses being savings and loans. The data analysis method have used qualitative and quantitative, the method of determining the sample with the purposive sampling. The data was analyzed using SPSS Multiple Linear Regression Analysis. The results showed, the Revenue of farmers increased (1-2.5 million). Multiple correlation values at 0.912, shows a close positive relationship between independent dan dependent variables. Adjusted R2 is 0.804, shows that the model can explain the variation in the data at 80.4%. Based on the F Test, together there are significant influences between independent variable (Capital, Land, Dependents, Time, Labor) and dependent variable (Revenue). Based on the results of the t test, Capital, Land, and Labor have a positive and significant impact, while Dependent, Diversify and Time have no significant impact,

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I. INTRODUCTION

Swamp land is a potential land for agricultural and fisheries development. Swamp land with relatively high organic matter content and alluvial deposits have a relatively good potential fertility. However, swamps are prone to land degradation if not managed properly and carefully. Therefore, local wisdom by paying attention to site-specific conditions is especially needed in the development of swamp land for agriculture and fisheries. Several studies have been, are being and will be carried out by [1, 2, 3, 4, 5] to develop appropriate technology to improve soil and water fertility of swamps by taking into account specific characteristics of swamps such as organic matter content, pyrite layer depth, and groundwater conditions. It is hoped that the development of swamps for agriculture and fisheries by applying technology based on specific land characteristics

can be sustainable and profitable for swamp farmers.

Utilization and development of swamp land can be optimized with the application of appropriate technology, so that it can be used as a source of major agribusiness growth in order to support national food security. This has been demonstrated by local farmers who have successfully developed various agricultural business models in several wetland locations by applying local knowledge [6]. Agriculture in wetlands has been running for a long time and has been able to give life to farmers in a long time, to manage agricultural land under conditions of wetlands that are quite dynamic so that farmers are able to understand well about conditions and land character. This good understanding can create knowledge/environmental wisdom or local wisdom.

The environmental conditions of wetlands are very dynamic and different in each region. Therefore, the knowledge learned is more specific for each location to bring "local wisdom". Local knowledge is already in the field, to promote agriculture, especially in wetlands, this is usually a source of inspiration for technological innovation. Thus, the resulting technological innovation can be better understood and carried out by local farmers.

Efforts made to improve the economy of farmers include: developing agricultural technology based on agroecosystems; and increase the productivity of agricultural resources with the principles of conservation, environmental sustainability, and local wisdom. Local wisdom or local genius or national cultural identity, is a cultural personality that is able to absorb and cultivate foreign cultural dispositions. This paper is based on the author's research on the use and management of natural resources, especially in swamp land.

II. RESEARCH METHODs

Respondents who were the object of this study were 45 rice farmers and all of them were taken as research samples. Respondents have received funding from an empowerment program that is used to increase revenue. Research location in Ogan Ilir District. The purpose of this study is to analyze the success of farmers implementing local wisdom in management of farming in swamp land.

The data analysis method have used qualitative and quantitative analysis, population and sample were 45 rice farmers who are members of farmer groups. This study was conducted in 2014-2018 Data analysis have used multiple regression analysis of the SPSS program [7]. Research variables consist of independent variables (Capital, Land, Dependents, Time, Diversify, and Labor) and the dependent variable (Revenue). Data collection has used questionnaire techniques and participatory observation, so that in addition to the data used for regression analysis, general data from respondents are taken, namely educational data, main livelihoods and types of business as observational material.

Assumption of regression test multiple linear regression analysis requires very strict testing requirements, testing is usually called a classical assumption such as normality test, multicollinearity test, heterocedasticity test and correlation test.

II.RESULTS AND DISCUSSION

Based on Fig.1. shown the multicollinearity test, it is known that stretches above and below the 0 on the Y axis, so it can be concluded that there are no problems heteroscedasticity in the regression model.

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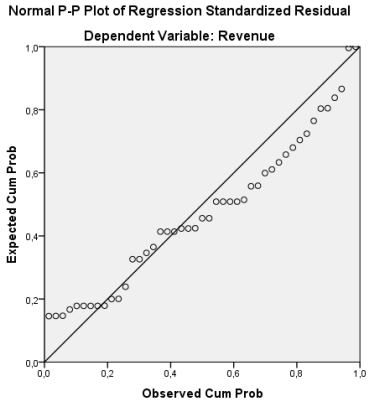

Fig.1. Heterocedastisity test results

Multicollinearity testing in this study was conducted by looking at the value of Variance Inflation Factor (VIF) with the equation VIF = 1 / tolerance. If the VIF value is less than 10 then there is no multicollinearity. Table 1. shown that the highest VIF value is 2,218 so that there is no multicollinearity.

TABEL 1

MULTICOLLINEARITY TEST RESULTS

	Collinearity Statistics	
	Tolerance	VIF
Capital	0,731	1,368
Land	0,657	1,522
Dependent	0,870	1,149
Diversify	0,472	2,120
Time	0,624	1,603
Labor	0,451	2,218

Most of farmers are in the age range >24-55 years, young farmers want to know what they do not know, so they try to adopt innovation more quickly, although usually they are still not experienced in the adoption of these innovations. In this study, farmers in the productive age category have sufficient physical abilities and have a higher level of productivity. Increasing age, will improve farming experience, so that it will be better in managing the business. Although on the other hand, getting older, it will reduce its physical maturity so that it needs help from the family.

Based on the results of the study, according to male sex as many as 76 % and female 24 %. Women are still not involved in agricultural activities, while women are potential labor (both as managers and implementers) in agricultural activities but have not received equal attention with men. Most of respondents education only junior high school, some senior high shool and view are graduate school. Education will affect behavior and the level of adoption of an innovation, someone who is highly educated tends to be more open to accepting and trying new things. Person's level of education can change the mindset, the power of reasoning better, so that the longer a person's education the more rational.

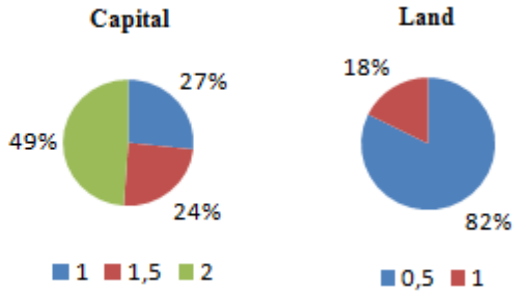

Fig. 2 Diagram for Capital and Land Respondent

Respondents who are members of farmer groups using empowerment program funds, usually manage agricultural businesses without the help of labor from outside the household. In this study 49% of the farmer used external labor, while 51% of them used internal labor, due to the narrow area of land (about 0,5 ha) managed and low capital only 1-2 million (Fig. 2.). Farmers have free time to work on other businesses, due to rice planting is only once a year, so they have time to do other job.

The agricultural area is important because it is related to the amount of Revenue (1-2.5 million) received by farmers. The area of land can affect the attitude of farmers to accelerate the transfer of technology according to the scale of the economy so that agriculture becomes efficient. Small farmers have paddy fields between 0.5-1 ha. so that it is not easy for them to influence the market.

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Based on the results of the study, the number of dependents of the respondents was 2-5 people. The number of family members is closely related to the availability of labor in the family who can help carry out agricultural management. Thereby reducing the use of labor from outside which will reduce production costs and increase revenue

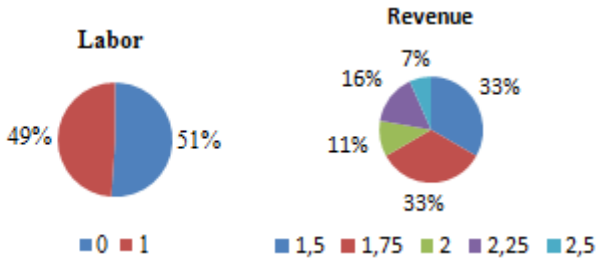

Fig. 3 Diagram for Labor and Revenue Respondent

Based on the results of research, members of farmer groups have good morals so that they are responsible for returning loans, public awareness is high enough to return loan funds because they are able to generate other revenue generated from additional job with additional Revenue around 1 - 2.5 million [Fig. 3.]. Reference [8] shows, the percentage increase in revenue of the respondents reached 200 % compared to the main revenue as a rice farmer. This is due to the community has local knowledge, local knowledge can be defined as behavior that is always wise to use the intellect, experience and knowledge of people in certain geographical areas. Geographically, the research area is swamp land, farmers must have specific experience and knowledge (local wisdom) to survive.

Thus group dynamics have evolved towards more advanced diversified respondents as many as 64 %, while 36% do not diversify [Fig. 4.]. Farmers whom received funding, carry out diversification which doing farming other than the main farming. Respondents in this study were rice farmers and the conditions of the area were swamp land areas.

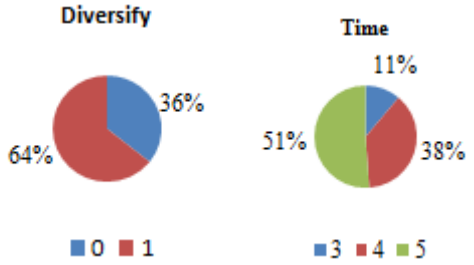

Fig 4. Diagram for Diversify and Time for Respondent

The empowerment program caused farmers to take advantage of their free time, usually they only use about 4 hours to manage the rice fields. Based on Fig. 4, the average time allocation used is 3-5 hours for other farming, such as farmers who have chosen as vegetables collector and sale it to the market. Such respondent can ensure the continued availability of products on the market. Agricultural diversification is believed by many agricultural economists, as an agriculutral pattern that can increase production surplus. Because this pattern is a process to transform traditional (subsistence).

Agriculture oriented to meet their own needs (independent) into a market-oriented business that requires surplus, continous and efficiently produced production and is able to compete in the market, both in the dosmetic and international market.

TABLE 2.
ANALYSIS OF VARIANCE[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.701	6	0.617	31.177	0,000[b]
	Residual	0.762	38	0.020		
	Total	4.463	44			

a. Dependent Variable: Revenue

Table 2. shown, the F-count.value is 31.177 and P value is 0.000, the value of $P < \alpha$, then H_0 is rejected. That is, at the test level of 5% it can be stated that there is a significant correlation

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between independent variable with dependent variable (revenue).

$$R = 0.769 + 0.169C + 1.303L + 0.018D + 0.000Div(D_1) - 0.037T + 0.268L(D_2)$$

Based on Table 2. the partial test (t test), the value of constant is 0.769, if the Revenue is not influenced by all the independent variables and constant, then the amount of Revenue will be 0.769. Based on the results of the analysis, Capital, Land, and Labor have a positive and significant impact while Dependent, Diversify, and Time have no significant effect.

TABLE 3.

COEFFICIENT OF DETERMINATION

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Sig. F Change
1	0.912[a]	0.831	0.804	0.14066	0.000[b]

a. Predictors: (Constant), Labor, Dependent, Capital, Land,
Time, Diversify

b. Dependent Variable: Revenue

Table 3. shown the value of multiple correlation is 0.912, indicating, there is a close relationship between Independent Variabel (Capital, Land, Dependents, Diversify, Time, Labor) and Dependent Variabel (Revenue). Adjusted R^2 is 0.831 shows that the model can explain data variations of 83,1%. In other words, the influence of Independent Variable to Revenue is 83.1%, the rest is influenced by ohter factors

. TABLE 4.

REGRESSION COEFFICIENT[a]

Model	Unstd. Coefficients		Std Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0,769	0,200		3.843	0.000
Capital	0.169	0,058	0.225	2.890	0.006
Land	1.303	0,135	0.792	9.626	0,000
Dependen	0,018	0.029	0.044	0.617	0,541
Diversify	0.000	0,066	0.000	0.006	0.996
Time	-0.037	0.039	-0.021	-0.936	0.355
Labor	0.268	0.062	0.496	4.294	0.000

a. Dependent Variable: Revenue

Table 4. shown Capital, Land, and Labor have a positif and significant impact, meaning that every additional each unit of Capital, Land, and Labor will have an impact an increasing Revenue repectively 0,169, 1,303 and 0,268. The area of land managed at the research location is included in the category of narrow land (about 0.5 ha), with a capital about 1-2 million, suitable only for the management of horticulture farming. Although the result of the diversification analysis have no significant effect, in this case, the selection of other type of farming other than the main farming is in accordance with the average area of land and capital owned by respondents. The number of dependents has no significant effect but there is a direct relationship with labor variable that has significant effect. In this study, labor is a dummy variable, based on the result of a regression analysis, the use of labor from the house generates higher revenue compared to the use of labor from outside the house. The land used is swamp land which has very complex problems, but the community has local wisdom in land management because they have been cultivating it for generations so that they are able to adapt and have local knowledge or local wisdom. Time has a negative and insignificant effect. The respondent's main occupation is rice farmers, the land managed is swamp land. Rice cultivation is only once a year, because the main problem in swamp area is water. So, farmers have plenty of time to manage other farming.

This has an impact on farmers who have free time even though the use of time will require additional costs but not too significant. The labor force used is mostly from families with 2-5 people dependents, it can be said that the production factor is low. That is why the efforts carried out by

the community can be successful, even though on one side the land is problematic, but water is available throughout the year, the type of farming is suitable, the community has local wisdom.

Empowerment programs are directed at community empowerment, including capital assistance for socio-economic development of productive activities; supporting facilities and infrastructure that support socio-economic activities; human resource development assistance to support strengthening socio-economic activities; assistance for institutional strengthening to support the process of developing the results of sustainable socio-economic activities through strengthening community groups and financial management units; and support the development of a reporting system to support the preservation of the results of productive social and economic activities. Empowerment is an effort to build strength itself, by encouraging, motivating and increasing awareness of the potential and effort to develop it. Furthermore, these efforts are followed by strengthening the potential or strength possessed by the community itself (local wisdom). In this context there needs to be more positive steps, not only creating a conducive climate and atmosphere but also strengthening includes concrete steps, involves providing various inputs, and opening up access to various opportunities that will make people more empowered. Community empowerment is a basic element that allows people to survive, and dynamically develop themselves in order to achieve progress. Empowerment of the community itself is a source of insight into what in politics is called national security. This means that the community has high economic capacity, so that it is part of the national economic resilience. In the context of community empowerment efforts must begin by creating an atmosphere that enables the potential of the community to develop. The point is the recognition that every human being has the potential to be developed, that is to say, no society is trully without strength.

IV.CONCLUCION

The success of the empowerment program carried out at the research location is because the community has local wisdom by utilizing local knowledge in managing the farming and having high commitment to implement the program, being honest in managing finances and utilizing land according to the type of farming, land area, capital and labor. Based on the results of the regression analysis, the Revenue of farmers increased (1-2.5 million).

Multiple correlation values at 0.912, indicates a close positive relationship between independent dan dependent variables. Adjusted R^2 is 0.804, meaning that the model can explain the variation in the data at 80.4 %.

Based on the F Test, together there are significant influences between independent variable (Capital, Land, Dependents, Time, Labor) and dependent variable (Revenue).

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