

The Effect of Multi Aren Products to the Environmental Function, Economic Function and Welfare of the Aren Farmers

Idris¹, Hasdi Aimon², Zul Azhar^{3*}, Mardi⁴, Hari Setia Putra⁵

^{1, 2, 3, 5} Universitas Negeri Padang, Padang, Indonesia

⁴ Universitas Negeri Jakarta, Jakarta, Indonesia

*Corresponding Author. Email: zulazhar@fe.unp.ac.id

ABSTRACT

This article aims to determine the effect of multi-product Aren on economic functions, environmental functions and welfare of Aren farmers in Nagari Andaleh Baruh Bukik, Tanah Datar Regency in West Sumatra, Indonesia. The analysis method uses the Smart PLS technique from 4 latent variables (X, Y1, Y2, Y3) and 24 manifest variables. Latent variable X (multi-product Aren) consists of nine (9) dimensions, latent variable Y1 (economic function) consists of 3 types, latent variable Y2 (environmental function) consists of 5 dimensions, latent variable Y3 (welfare of Aren farmers) consists of 7 dimensions. who were surveyed to the research location with a questionnaire of 94 sample respondents. The results showed; Multi Product Aren has positive and insignificant effect on economic function. Multi Aren Products have a positive and significant effect on the function of the Palm Environment. Multi Product Aren has a positive and significant effect on the welfare of Aren farmers. In order for Multi Aren Products to have economic value of all types of products, then Aren farmers must focus on managing all Multi Aren Products, not only taking one type of product. This also improves the quality of work so that agricultural products have value Added, it needs to be managed collectively - the same for every head of the family.

Keywords: *multi product, economic function, environmental function and welfare.*

1. INTRODUCTION

Aren plants function as a source of income for the people of Nagari Andaleh, Baruh Bukik, Tanah Datar Regency in West Sumatra, Indonesia. They breed from generation to generation Aren, so that Aren trees grow a lot on every slope and hill, even growing a lot near people's homes. Since the Aren plant has grown, many have enjoyed it for the welfare of the community. Aren as a source of economic income for the community, to Aren for environmental functions.

The development opportunities of rural areas for the development of Aren plantation are very potential [1], besides that it can absorb labor and improve the welfare of rural communities. What is the reason that there are still many unemployed workers in rural areas, is it possible that Aren farmers are due to hereditary, or have not found downstream products based on Aren?

The urgency of research according to [2] model of environmental studies and development of palm sugar to solve the problem of palm-based downstream development as an economic source to improve the welfare of people who are environmentally sound in

rural areas. There are two policy strategies from model development, namely (i) strategies to improve community welfare [3], (ii) strategies for Pre-Disaster Mitigation [4]. The strategy to improve the economic welfare of rural communities is to multiply the downstream potential of palm-based economic sources, while the strategy for pre-disaster mitigation is for Aren plant conservation policies as an environmental function in order to prevent landslides and floods in the rainy season and hydrological functions to wet the soil during the dry season.

This article is to determine the positive and significant effect of multi-product Aren on economic functions and environmental functions as well as the welfare of Aren farmers in Nagari Andaleh Baruh Bukik, Tanah Datar Regency in West Sumatra, Indonesia. The analysis method uses the SmartPLS technique from 4 latent variables (X, Y1, Y2, Y3) and 25 manifest variables. From variable X (multi product Aren) consists of nine (9) dimensions, latent variable Y1 (economic function) consists of 3 dimensions, latent variable Y2 (environmental function) consists of

5 dimensions, latent variable Y3 (welfare of Aren farmers) consists of 7 dimensions. surveyed through a

questionnaire to the location. So that you can output the path coefficient as shown in Figure 1 below;

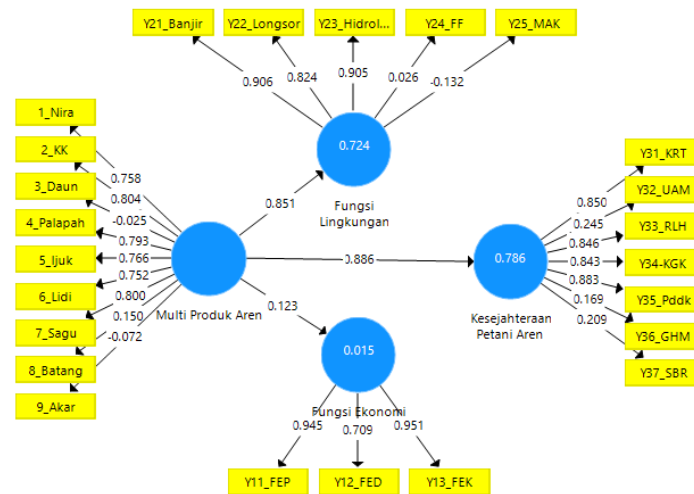


Figure 1 Output Line Coefficient

Description of the research results, from Figure 1 the output path coefficient indicator that has a loading factor ≤ 0.7 is removed from the model to get a fit path coefficient output. So that of the 9 types of multi-product indicators of Aren, only 6 types of Aren products (sap, kolang kaling, palapah, palm fiber, sticks, sago) are used by the community economically, while the leaves used to be for cigarettes, stems are used for floors and walls of chin or barung-barung (house), the roots to make horse whip bendi (dokar) and medicine are no longer used by the community. Furthermore, of the 5 types of environmental functions, only 3 types are used to reduce (landslides, floods, soil hydrological function during the dry season so that the

soil does not dry out), while the three types of economic function indicators (Y2) form very strong constructs. Finally, of the 7 manifest indicators of latent variable Y3 (welfare of Aren farmers), only 4 have loading factors that are more than ≥ 0.7 while 2 types of loading factor ≤ 0.7 are discarded from the model.

Furthermore, data processing is carried out by using the Calculate PLS Algorithm, so the output of the fit path coefficient is obtained as shown in Figure 2 below;

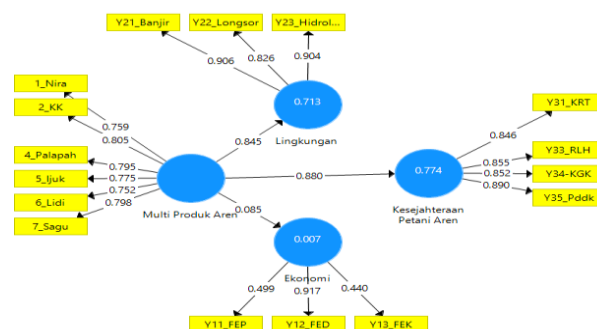


Figure 2 Output Path Coefficient fit

Table 1. Path Coefficients

Path Coefficients

	Mean, STDEV, T-Values, P-Val...	Confidence Intervals	Confidence Intervals Bias C...	Samples	Copy to Clipboar
	Original Sam...	Sample Me...	Standard Devia...	T Statistics (...)	P Values
Multi Produk Aren -> Ekonomi	0.085	0.019	0.128	0.661	0.509
Multi Produk Aren -> Fungsi Lingkungan Aren	0.845	0.844	0.032	26.042	0.000
Multi Produk Aren -> Kesejahteraan Petani Aren	0.880	0.880	0.023	37.640	0.000

Source: Processed Calculate Algorithm Latent Variable Sub Latent Variable Correlation, 2020

Based on table 1 above, the following hypothesis testing can be done;

First Hypothesis: Multi Aren Products (X) have a positive and significant effect on the economic function (Y1), the result of t statistic is $0.616 \leq 1.96$ and P Value $0.509 \geq 0.05$. So it can be concluded that there is a positive but insignificant effect of Multi Aren Products on the economic function in Nagari Andaleh Baruh Bukik Tanah Datar Regency.

Second Hypothesis; Multi Produk Aren (X) has a positive and significant effect on the environmental function (Y2), the result of t statistic is $26.042 \geq 1.96$ and P Value $0.000 \leq 0.05$. So it can be concluded that there is a significant effect of Multi Aren Products (X) on the function of the environment in Nagari Andaleh Baruh Bukik Tanah Datar Regency.

First Hypothesis: Multi Aren Products (X) have a positive and significant effect on the Welfare of Aren Farmers (Y3), the result of t statistic is $37.640 \geq 1.96$ and P Value $0.000 \leq 0.05$. So it can be concluded that there is a significant effect of Multi Aren Products on the Welfare of Aren Farmers in Nagari Andaleh Baruh Bukik, Tanah Datar Regency.

2. RESULT AND DISCUSSION

Multi Aren Products have a positive but not significant effect on the economic function of the Aren farmer community in Nagari Andaleh Baruh Bukik, this shows that they do not focus on managing the multi-product Aren products. From the results of observations in the field that Aren Farmers own Aren gardens, their habit of selling products is still above the stem to buyers. Like selling fruits and palm fibers, which take the buyer directly to the tree trunk and the owner receives what the buyer gives, in contrast to the product of sap tapped onto the stem, the sap is cooked until it becomes palm sugar.

When compared to palm farmers as well as sap tappers, the family directly makes palm sugar, the results are very profitable. This is presumably because the sample of this research is the head of the Aren Farmer family, so when the management of Aren-based yields is not profitable, if only Aren products are sold on their stems. The head of the family as Aren farmers, as well as sap tappers and palm sugar makers know firsthand how much sap is obtained from the stem to be made into palm sugar.

As the yield of palm sap varies from region to region, for example in South Tapanuli Regency it is 6.82 liters per stick per day, in Minahasa it reaches 10-20 liters per stick per day, in Fifty Kota Regency the average is 15 liters per stem at a time. tapping, as well as in East Kutai an average of 12.14 liters per day [5]. In Central Java, one palm tree can produce 20-40 liters of sap per day. The average palm oil processing industry farmer in one day gets around 20-30 liters of sap per tree. In Nagari Analeh Baruh Bukik, West

Sumatra, Indonesia the average yield of sap is 12-19 liters per day, from 7-8 liters of sap to obtain an average of 1 kg of palm sugar, this depends on the level of sugar concentration in the sap. However, the results of the researcher interview with Jepira Irma, the color of the sap with quality into palm sugar is brownish.

According to [6], the number of Aren leaf children is the most influential on the production of sap. The more number of saplings will affect the production of these palm plant sap. Furthermore, according to [6], sap production is not only influenced by leaves, but is also influenced by other factors such as panicle level, stem size, male flower size, number of female flowers, climate, slope of land, and altitude. From the point of view of the economic function Multi Product Aren has a positive but insignificant effect. It is hoped that in the future the head of the family must manage together to make it significantly profitable.

Multi Aren Products have a positive and significant effect on environmental functions. The field survey shows that the indicators that form the construct of the environmental function are Aren Trees with thick tops which can be used as an absorber for rainwater falling on the leaves through palapah not falling directly to the earth, which can be used as flood control. The function of the roots of Aren tree fibers that are big, strong, long can absorb water and hold soil from landslides. The results of the survey show that the research area has a lot and densely packed Aren trees and likes to grow on slopes (cliffs), so that it helps the land not slide easily. The results of interviews with local people who have been producing palm sugar from generation to generation, that in the 1980s this area was rainfed rice fields (drought), if it did not rain water was very difficult for MCK (bathing, washing latrines) and rainfed rice farmers, because at that time Aren still rarely grows. Now the Aren trees grow in groups because they are planted mostly with wild boar and civets (results of interviews with the community; Sugono; 2019). This is said by the Aren Tree Root as a function of the hydrological cycle to regulate groundwater, in line with the results of research [7] in overcoming the problem of natural disasters, various studies have been carried out to conserve nature. One of the research results shows that the palm tree (*Arenga pinnata*) is a type of palm that has various uses in life after the coconut tree (*Cocos nucifera*). Apart from its material use, *Arenga pinnata* can be used to conserve nature and prevent floods and soil erosion. Knowing these uses, the government has intensified the cultivation of palm trees. The government will develop palm tree planting as a national program. This is because the benefits of palm trees are so great, especially in the field of environmental preservation. Sugar palm trees have the longest and most ability to hold the volume of rainwater on the tree. When it rains, each leaf midrib can hold 1-2 liters for several hours. At the age of 5-7 years, palm trees have midribs from

the base of the trunk to the tips of the tree, thus giving the soil under the tree a long time to absorb more water, and by itself will store the most groundwater. Temporary research from geologists in (Mulyanie and; Romdani n.d.), palm trees can store and absorb 200 liters of water. To further investigate whether the soil is not prone to drought, further research is needed.

While the indicators; the benefits of Aren trees as a place to protect the biodiversity of flora and fauna so that plants and animals reproduce, and Aren trees to preserve nature and beauty do not significantly form their construct.

Multi Produk Aren has a positive and significant effect on the welfare of Aren farmers. The field survey shows that the indicators that form the construct of Welfare of Aren Farmers because; Their household needs are well fulfilled, the house where they live is a decent house, the health and nutrition of their family has been fulfilled, their children can continue their education. While three indicators; Sugar palm farming business is fun, has been followed by a lifestyle in participating in the community and there is already an opportunity for recreation and cultural activities, not yet strong construct of Aren Farmer Welfare.

Thus Nagari Andaleh Baruh Bukik has the potential to develop Aren plants to become the center of Aren production in West Sumatra. If Aren is a regional superior product in West Sumatra, then this region becomes a growth center (growth Poles) that can support the welfare of the community to get out of the poverty circle. Palm tree plants are predicted to be prime income for the future, to support regional economic growth (Pro-Growth), can absorb rural labor (Pro-Job), so that the farming community is no longer poor (Pro-poor). In line with the research [5] the financial analysis of sugar palm plantations is feasible because the value of $B / C > 1$. Besides, the welfare of the community is not only seen from the economic value of the potential of Aren, but the welfare of the community is also measured from non-economic values such as Aren functions as an environmental function (Pro-Environment), in line with research (Mulyanie and; Romdani nd) Aren trees as a function conservation. Furthermore, according to [2], before development is carried out there needs to be an environmental study and development planning so that it does not have a negative impact after development takes place.

3. CONCLUSION

The results showed of this paper show that Multi Produk Aren has positive and insignificant effect on economic function. Multi Aren Products have a positive and significant effect on the function of the Palm Environment Multi Produk Aren has a positive and significant effect on the welfare of Aren farmers.

Suggestions that in order to improve the welfare of Aren farmers from multi-product Aren, it is suggested that Aren farmers focus on managing and improving the quality of work to get agricultural products from multi-product Aren managed together with the family. So that it adds to the added value of economic value for all types of multi-product Aren.

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