Analysis of Pure Coconut Oil Businesses on Community Welfare in The Village of Gunung Tua Baru, North Padang Lawas District

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Abstract
Indonesia has great potential in the coconut industry to improve regional and national economies through coconut production and its derivative products, although coconut production by small farmers is still low. With an annual production of 18.30 million tons and a market share of 30.24% of world coconut production, Indonesia is one of the largest coconut producers in the world. Coconut production is concentrated in large islands such as Sumatra, Java, and Sulawesi, with an average productivity of 11.36 tons per hectare in 2014. Virgin Coconut Oil (VCO), which has been proven to be beneficial for health, is increasingly in demand along with the trend of natural and pure health foods. However, in Gunung Tua Baru Village, Padang Bolak District, this great potential has not been fully exploited due to various obstacles such as technology, capital, and uneven market absorption. This study aims to determine which factors (price, production, distribution, labor, technology, capital, skills, potential) are relevant in improving the welfare of the community in Gunung Tua Baru Village, North Padang Lawas Regency. With a sample size of 134 respondents collected by distributing questionnaires and data processing using Confirmatory Factor Analysis (CFA) and Multiple Linear Regression. Confirmatory Factor Analysis (CFA) analysis shows that of the eight factors analyzed, there are four factors that have a significant effect on the welfare of the community in Gunung Tua Baru Village, namely production, labor, capital, and technology. The results of multiple linear regression show that these four factors have a significant effect on improving community welfare. Simultaneous hypothesis testing shows that production, labor, capital, and technology positively and significantly affect the welfare of the community in Gunung Tua Baru Village. Thus, increasing production, labor, capital, and technology is very much needed to optimize the potential of coconuts and improve the welfare of the community in this village.

Keywords: Production, Labor, Capital, and Technology and Public Welfare.

Introduction

Indonesia as an archipelagic country has enormous potential in the development of the coconut industry, but unfortunately the optimization of this potential is still not optimal, especially in areas that have traditional coconut plantations [1]. This is reflected in the low

productivity and added value generated from coconut processing at the farmer level. One of the main factors that is an obstacle is the lack of knowledge and skills of farmers in applying more modern coconut processing technology, as well as limited access to capital [2] and wider markets. In Gunung Tua Baru Village, North Padang Lawas Regency, the potential for developing the coconut industry, especially in the production of pure coconut oil (VCO), is very strategic considering the abundance of raw materials and the availability of local labor [3]. However, VCO business actors in this village still face various challenges, ranging from limited production technology to difficulties in marketing their products to a wider market. This condition requires serious attention from various stakeholders, especially the local government, to provide support in the form of a comprehensive empowerment program [4]. The development of the VCO industry at the village level not only has the potential to increase farmers' income, but can also create *a multiplier effect* for the local economy through the creation of new jobs and increasing other supporting economic activities [5]. For this reason, an integrated approach is needed in developing the VCO business, starting from aspects of coconut cultivation, processing technology, to effective marketing strategies [6].

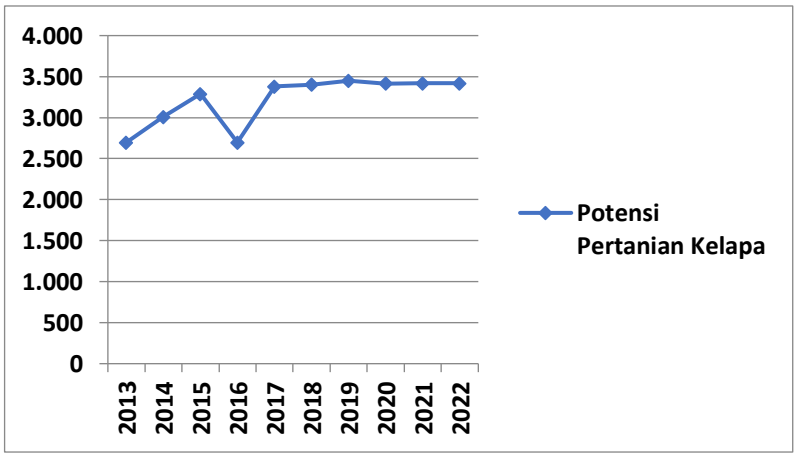
The implementation of the VCO business actor empowerment program needs to pay attention to sustainability aspects, both from the economic, social, and environmental aspects. This can be achieved through strengthening farmer institutions, increasing human resource capacity, and developing mutually beneficial partnership networks with various parties, including the private sector and research institutions. Indonesian coconut production is one of the largest in the world with a production of 18.30 million tons per year and a market share of 30.24% of world coconut production [7]. Indonesian coconut production is currently concentrated in several large islands, namely Sumatra, Java, and Sulawesi with an average productivity in 2014 of 11.36 tons/hectare [8].

Pure coconut oil or commonly called VCO (short for *Virgin Coconut Oil*) which has been proven to be beneficial for health, is currently starting to be sought after by many people to solve health problems. In addition to being supported by the growing trend of health food, it is now starting to move towards ingredients that come from nature and are pure. Especially for people who have a high dependence on chemical drugs and feel no change [9].

So that the increasing public demand makes business people rush to steal the start to produce VCO so that in a short period of time various brands and qualities of VCO have been circulating in the market. Like a battlefield, entrepreneurs fight to carry their respective brands. Various technologies are offered to produce quality virgin oil, such as fishing techniques, fermentation, adding acid and others. For large companies, they do not hesitate to collaborate

with research institutions to test products so that their quality is prime. Not infrequently some manufacturers include research institutions as a guarantee that their products are of good quality [10].

Coconut (*Cocos Nucifera*) is an important commodity for the Indonesian people and can be a driver of the people's economy [11]. This can be seen from the management of coconut plantations in Indonesia, most of which are managed by farmer households. Around 96.60% of coconut plantations are managed by farmers with an average ownership of 1 hectare/family. Almost all parts of the tree, roots, stems, leaves to the fruit can be used for daily needs. Coconut is one of the plantation commodities that is quite widely cultivated in North Padang Lawas Regency. In Padang Bolak District, farmers still rely on Coconut Production as their main livelihood as a source to support family welfare. Although the price of coconuts on the market still fluctuates, sometimes up and sometimes down, farmers can still survive. The reason farmers are trying to work in coconut farming is because coconuts in their productivity in one year there are 4 (four) harvests, so they are different from other agricultural activities. The potential for coconuts in North Padang Lawas Regency is quite varied so that it provides a fairly large head production.



Tabel 1. Coconut Farming Potential in Padang Bolak District

It can be seen that in the table above the potential for coconut farming in Padang Bolak sub-district is very fluctuating, meaning that the highest potential position for coconut farming was in 2019, which was 3,450 tons, while the lowest was in 2013, which was 2,698 tons. The potential for downstreaming coconut plantation capabilities in distributing *multiplier effects* and added value both in terms of economic aspects, increasing employment, and welfare of residents. [12]Coconut sugar has profitable potential and an important role in the rotation of the economy and the welfare of the community in Pangandaran Regency, West Java [13]. *Virgin Coconut Oil* (VCO) is pure coconut oil made from fresh coconut meat which is processed at low temperatures or without heating. The important content in the oil can still be maintained,

and the oil has a clearer color and can last for two years without going rancid [14]. Virgin coconut oil (VCO) is a high-quality coconut oil that has a low water content and free fatty acid content, is clear in color, has a fragrant odor, has a shelf life of more than 12 months, does not contain cholesterol, and its lauric acid is converted into monolaurin so that it is anti-viral [15]. It is located in the North Padang Lawas Regency which is an area producing virgin coconut oil (*Virgin Coconut Oil)*, namely in Gunung Tua Baru Village, Padang Bolak District. The virgin coconut oil business is one of the potential businesses to be developed.

Despite its great potential, only a handful of farmers in Gunung Tua Baru Village are able to make a living from coconut farming, while most of the others are still not prosperous and are considered to be left behind. The potential of coconut has not been optimally utilized due to various constraints, especially related to technology, capital, and uneven market absorption [16]. Limited equipment causes low coconut productivity, which has an impact on decreasing farmers' income. The age of the coconut plant also greatly affects production results. If the plant is in optimal condition, farmers' income will increase, conversely if the plant is old or poorly maintained, production results will decrease, as will farmers' income. In addition, changes in people's mindsets have caused a decrease in the number of workers in the coconut plantation sector, most of which are still dominated by family members. The lack of technical understanding in managing plantations, such as land clearing, fertilizer use, and coconut plant maintenance, is also a major obstacle to increasing productivity [17]. The relationship between farmers and the coconut processing industry is still inefficient, so the synergy needed to solve the problem of diversification and differentiation of coconut derivative products has not been formed. Faster adoption of technology and innovation in the industrial sector is needed to increase the selling value of coconut products [18].

The income of coconut farmers in Gunung Tua Baru Village is currently still inadequate to meet decent living needs, due to low productivity and fluctuating coconut prices. In addition, the economic value of coconut has not been fully utilized, either by farmers or by coconut processing companies. This potential is often ignored due to a lack of understanding of the business value of coconut products and their potential markets. Currently, the economic benefits of coconut are generally limited to household needs, even though coconut can be a broader and more significant source of income [19]. Therefore, it is necessary to diversify coconut derivative products into products with higher selling value so that the economic potential of coconut can be utilized optimally.

Research Methods

This study uses the Confirmatory Factor Analysis (CFA) and Multiple Regression methods, this study lasted for 5 months from May to September 2024 starting from preparation to preparation of the research report, the data used uses primary data taken using a questionnaire, the sample in this study was 134 respondents who work as managers of pure coconut oil businesses in Gunung Tua Baru Village, North Padang Lawas Regency, the research location is in Gunung Tua Baru Village, Padang Bolak District, North Padang Lawas Regency, North Sumatra Province .

Research Result

The results of data analysis using the CFA method by analyzing pure coconut oil business actors and reviewed from the factors of price, production, distribution, labor, technology, capital, skills, potential to improve community welfare . Significant results can be seen from the following Rotated Component Matrix table:

Table 2. Rotated Component Matrix [a]

	Component			
	1	2	3	4
Price	-.657	-.224	.260	.082
Production	.748	-.103	.042	-.110
Distribution	.185	.188	.132	-.720
Labor	.047	.671	-.044	-.121
Technology	-.063	.023	. 228	.742
Capital	-.030	.007	.752	-.251
Skills	-.021	-.765	-.051	-.045
Potential	-.318	.365	.126	.439
Public welfare	.521	.046	.169	.583

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.
Source: SPSS Processing Results Version 26

Based on the results of the component matrix values, it is known that of the eight factors, the four factors that are suitable for increasing community welfare are:

1. Largest component 1 : Production of 0.748
2. The 2nd largest component : Labor force of 0.671
3. 3rd largest component : Capital of 0.752
4. The 4th largest component : Technology at 0.742

So that it can conduct hypothesis testing and simultaneous testing on factors relevant to community welfare. The results of the influence of the anterior variables on the independent variables can be seen from the following t-Test table (Partial Hypothesis Test):

Table 3. t-Test (Partial Hypothesis Test) Coefficients [a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	7,449	1,687		4.415	.000		
Production	.052	.072	.228	2,667	.009	.983	1,017
Labor	.038	.071	.142	3,672	.007	.989	1.011
Capital	.041	.072	.125	2.291	.002	.967	1,034
Technology	.028	.063	.135	2.285	.006	.957	1,045

a. Dependent Variable: Community Welfare
Source: SPSS Processing Results Version 26

The table above shows the influence of the depanden variable on the following independent variables:

1. The effect of production on community welfare is t_{count} 2.667 > t_{table} 1.150 (n-2 = 134-2 = 132 a 5%) and significant 0.009 < 0.05, so Ha is accepted and Ho is rejected, which states that production has a significant effect on community welfare.
2. The influence of labor on community welfare t_{count} 3.672 > t_{table} 1.150 (n-2 = 134-2 = 132 a 5%) and significant 0.007 < 0.05, then Ha is accepted and Ho is rejected, which states that labor has a significant influence on community welfare.
3. The influence of capital on community welfare t_{count} 2.291 > t_{table} 1.150 (n-2 = 134-2 = 132 a 5%) and significant 0.002 < 0.05, then Ha is accepted and Ho is rejected, which states that capital has a significant influence on community welfare .
4. The influence of technology on community welfare t_{count} 2.285 > t_{table} 1.150 (n-2 = 134-2 = 132 a 5%) and significant 0.006 < 0.05, then Ha is accepted and Ho is rejected, which states that technology has a significant influence on community welfare.

F test (simultaneous test) is conducted to see the effect of independent variables on the dependent variables simultaneously. The method used is to see *the level of significance* (=0.05). If the significance value is less than 0.05 then H0 is rejected and Ha is accepted.

Table 5. F-Test (Simultaneous Hypothesis Test) ANOVA [a]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	11,026	4	6,756	5,687	.004 [b]
Residual	132,348	129	1,026		
Total	143,373	133			

a. Dependent Variable: Community Welfare
b. Predictors: (Constant), Technology, Labor, Production, Capital
Source: SPSS Processing Results Version 26

Based on the table above, it can be seen that the $_{calculated\ F}$ of 5.687> F_{table} of 2.65 and significantly much smaller than 0.05, which is 0.004<0.05, then Ha is accepted that production,

labor, capital and technology simultaneously have a significant effect on the welfare of the community in Gunung Tua Baru Village. Thus, this determination coefficient analysis is used to determine the percentage of the large variation in the influence of the independent variable on the dependent variable.

Table 6. Determination Coefficient R [2] Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.277 [a]	.577	.548	1.01289	1,261

a. Predictors: (Constant), Technology, Labor, Production, Capital

b. Dependent Variable: Community Welfare

Source: SPSS Processing Results Version 26

Based on the table above, it can be seen that the *adjusted R Square figure* is 0.548 which can be called the coefficient of determination which in this case means 54.8% of the welfare of the Gunung Tua Baru Village community can be obtained and explained by production, labor, capital and technology. While the remaining 45.2% is explained by other factors or variables outside the model that are not studied.

Discussion

This study aims to identify factors that influence the welfare of people who work as managers of pure coconut oil businesses in Gunung Tua Baru Village, North Padang Lawas Regency. Based on the results of data analysis using **Confirmatory Factor Analysis (CFA)** and **Multiple Regression** , there are four main factors that have a significant influence on community welfare, namely **production** , **labor** , **capital** , and **technology** . In this section, we will discuss these findings by referring to relevant theories in the context of economic development and social welfare.

1. The Influence of Production on Community Welfare

Based on the results of the t-test, the **production variable** is proven to have a significant effect on community welfare with a t-count value of 2.667 which is greater than the t-table (1.150) and a significance value of 0.009 which is smaller than 0.05. This means that the better the management and increase in production of pure coconut oil, the greater the increase in community welfare.

a. **Neoclassical Production Theory** states that productivity is influenced by a combination of production factors such as labor, capital, and technology. Increasing the production of virgin coconut oil, which is the main output of the business, can directly contribute to increasing community income. By increasing the volume and

quality of production, business actors can gain greater profits which have an impact on community welfare.

b. In addition, **Solow's Theory of Economic Growth** (1956) underlines the importance of productivity in driving economic growth and improving welfare. In this context, increasing production is one of the main factors that can improve the economic conditions of the community in Gunung Tua Baru Village.

2. The Influence of Labor on Community Welfare

The results of the t-test show that **the workforce** has a significant influence on community welfare, with a t-count of 3.672 and a significance of 0.007 which is smaller than 0.05. This shows that the quality and quantity of the workforce greatly influence the improvement of community welfare.

a. **The Human Capital Theory** proposed by **Gary Becker** (1964) explains that improving the quality of the workforce through education and training will increase productivity and individual ability in creating better output. In this study, skilled and trained workers in processing virgin coconut oil have the potential to increase production efficiency and product quality which ultimately contributes to improving community welfare.

b. In addition, the **Demographic Dividend theory** also shows that a productive workforce will drive increased economic output. As the number of skilled workers increases, there will be more opportunities for people to get better jobs and incomes.

3. The Influence of Capital on Community Welfare

a. **Capital** also shows a significant influence on community welfare with a t-value of 2.291 and a significance of 0.002 which is smaller than 0.05. This shows that the existence of sufficient capital will increase business capacity and improve product quality which in turn affects community welfare.

b. **The Capital Accumulation Theory** proposed by **Harrod-Domar** (1939) states that investment in capital is the key to economic growth. In the context of this study, capital functions as a tool to increase production capacity, improve technology, and meet the needs of raw materials and labor. Sufficient capital allows business actors to develop their businesses, buy better equipment, and increase production which has an impact on improving community welfare.

c. **The Social Capital Theory** developed by **Pierre Bourdieu** (1986) is also relevant in this context, where social capital created from good relationships between business

actors and the community can increase productive cooperation, as well as accelerate the flow of capital and information that supports the development of pure coconut oil businesses in the village.

4. The Influence of Technology on Community Welfare

Technology shows a significant influence on community welfare with a t-count of 2.285 and a significance of 0.006 which is smaller than 0.05. These results indicate that the application of appropriate technology can increase efficiency in the production and distribution of virgin coconut oil, which leads to increased community welfare.

a. **Schumpeterian Innovation Theory** states that technology and innovation are the main drivers of economic growth and social change. **Joseph Schumpeter** (1942) argued that innovation including the application of new technology can change the way goods are produced and distributed more efficiently, leading to increased income and welfare. In this study, the application of technology in the production process of virgin coconut oil can improve the quality and quantity of products produced, as well as efficiency in business operations.

b. **The National Innovation System theory** is also relevant here, emphasizing the importance of technology in improving economic competitiveness. Technology not only functions in the production process but also in introducing new, more valuable products, and opening up wider markets, which in turn improves the welfare of society.

5. Simultaneous Hypothesis Testing (F Test)

Based on the results of the F test (Simultaneous Hypothesis Test), it was found that simultaneously the variables **of production** , **labor** , **capital** , and **technology** had a significant effect on **community welfare** , with an F-count value of 5.687 which is greater than the F-table (2.65) and a significance value of 0.004 which is smaller than 0.05. These results confirm that the combination of the four factors has an important role in improving community welfare in Gunung Tua Baru Village.

a. **The Theory of Economic Development** asserts that development is not only influenced by individual factors, but also by the interaction between various factors working simultaneously. In this context, factors such as production, labor, capital, and technology interact to create a greater impact on the welfare of society. Improvements in one factor can strengthen the influence of other factors, thus creating a positive cycle that drives sustainable economic growth.

6. Coefficient of Determination (R^2)

Based on **the coefficient of determination (Adjusted R Square) of 0.548, it was found that around 54.8% of the variation in community welfare in Gunung Tua Baru Village can be explained by production** factors, **labor**, **capital**, and **technology**. Meanwhile, the remaining 45.2% is explained by other factors not examined in this study. This indicates that although the factors studied make a significant contribution, there are still other factors that influence community welfare.

Conclusion

From the results of research on factors that influence the improvement of community welfare in Gunung Tua Baru Village, North Padang Lawas Regency, several conclusions can be put forward as follows:

1. The results of the *Confirmatory Factor Analysis* (CFA) analysis in the *component matrix table* show that of the eight factors, there are 4 factors that have a significant influence on the welfare of the community in Gunung Tua Baru Village, namely production, labor, capital and technology.
2. The results of multiple linear regression show that production has a significant effect, so that people's welfare will increase. Labor has a significant effect **,** so that people's welfare will increase. Capital has a significant effect, so that people's welfare will increase and technology has a significant effect, so that people's welfare will increase. The results of the simultaneous hypothesis test show that production, labor, capital, and technology have a positive and significant effect on the welfare of the community in Gunung Tua Baru Village.

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