

The Influence of Pure Coconut Oil Business on the Welfare of Coconut Farmers in Padang Bolak District, North Padang Lawas Regency

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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. Pure coconut oil (Virgin Coconut Oil or VCO), which has been proven to be beneficial for health, is increasingly in demand along with the trend of natural and pure healthy foods. The community of Padang Bolak District, this great potential has not been fully utilized due to various obstacles such as technology, capital, and uneven market absorption. This study aims to identify factors (price, production, distribution, labor, technology, capital, skills, potential) that 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 through questionnaires and data processing using Confirmatory Factor Analysis (CFA) and Multiple Linear Regression, the results of the CFA analysis showed that of the eight factors analyzed, there were four factors that significantly influenced the welfare of the community in Gunung Tua Baru Village, namely production, labor, capital, and technology. The results of multiple linear regression showed that these four factors significantly influenced the improvement of community welfare. Simultaneous hypothesis testing also showed that production, labor, capital, and technology positively and significantly influenced 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 Padang Bolak District.

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INTRODUCTION

Indonesia has great potential in the coconut industry to boost regional and national economies, although coconut production by smallholders is still low. Optimization of coconut plantations through accelerated seedling and plant renewal as well as farmer assistance is urgently needed. Indonesia is one of the largest coconut producers in the world with a production of 18.30 million tons per year and a market share of 30.24% (Sangadji et al., 2022). The main production areas include Sumatra, Java, and Sulawesi, with an average productivity of 11.36 tons per hectare in 2014 (Ministry of Agriculture, 2016).

Virgin coconut oil (VCO) is increasingly in demand as a health solution, especially for those who want to switch from chemical drugs. VCO has been proven to be able to overcome various diseases such as diabetes, high blood pressure, to coronary heart disease, creating new business opportunities for producers. The simple and cheap VCO production process makes it suitable as a home industry.

Coconut is an important commodity for the people of Indonesia, especially in Padang Lawas Utara Regency. Most of the management is carried out by small farmers, with 96.60% managed by farmer households (Ahmad, 2017). In addition to being a raw material for VCO, all parts of the coconut can be used economically, such as the shell for charcoal fuel, fiber for doormats, and coconut water for nata de coco. The diverse potential of coconut makes coconut a leading commodity in Padang Lawas Utara Regency.

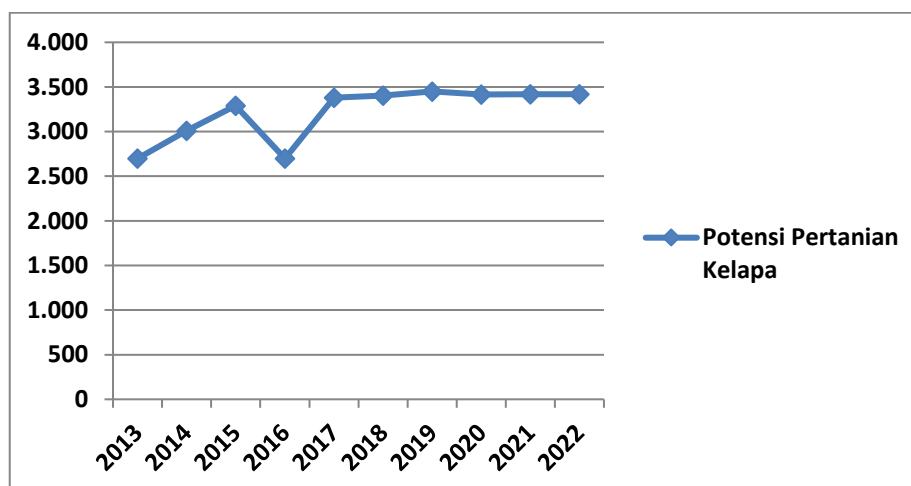


Figure 1. Coconut Farming Potential in Padang Bolak District

Source: BPS Padang Bolak District 2022

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 opportunities, and community welfare (Muflihah Ramadhia and Revi Sesario 2020). Coconut sugar has profitable potential and an important role in the rotation of the economy and community welfare in Pangandaran Regency, West Java (Abidin, Sukardi, Djumali Mangunwidjaja and Muhammad Romli).

The area of coconut plantations, production and productivity in Padang Bolak District, North Padang Lawas Regency over the last ten years.

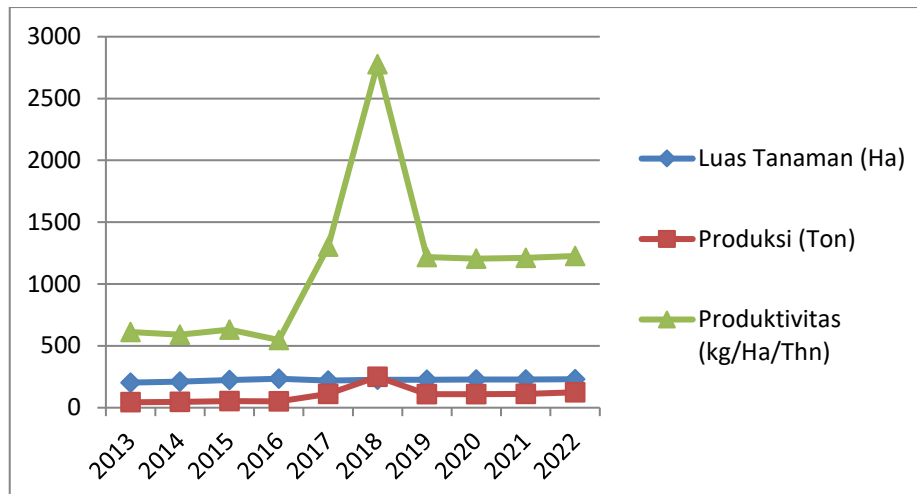


Figure 2. Plantation Area, Production and Productivity of Coconut in Padang Bolak District
Source: DISBUNAK.SUMUTPROV Padang Bolak District 2023

From the data above, it shows that coconut production in Padang Bolak District fluctuated in 2013-2016, where coconut production in 2013-2015 continued to increase with land that continued to be expanded along with increasing production and productivity levels, but in 2016 coconut production decreased by 50 tons with a land area of 234.00 ha, it can be seen that the land area continues to increase but production decreases. In 2017, coconut production in Padang Bolak District experienced a fairly drastic increase of 112 tons with a land area that continued to increase by 234.00 ha. In 2018, coconut production was the highest at 250 tons with a land area of 225.00 ha. And in 2019-2022, the agricultural production of the head in Padang Bolak District experienced fluctuations where in 2019-2020 coconut production was 110.34 tons per year, while in 2021 coconut production was 111.04 tons and in 2022 coconut production increased again by 124 tons with a land area of 230.00 ha.

Virgin Coconut Oil (VCO) is oil coconut pure produced from meat fresh coconut without warmup high, maintain content its nutrition and ability endure up to two years without rancid (Anonymous, 2015). VCO has water and free fatty acid content low, colored clear, odorless fragrant, and has antiviral properties because content sour its changing laurate into monolaurin (Rindengan, 2015). In Gunung Tua Baru Village, Padang Bolak District, North Padang Lawas Regency, the VCO production has potential big, but Not yet utilized optimally.

Obstacles such as limitations technology, capital, and markets are obstacles utilization full potential coconut in the village This. The lack of equipment and age old plants impact on low productivity and income farmers. Shift interest public to profession farmer coconut as well as lack of knowledge technical management also contributes to the problem this. In addition, the relationship is less efficient between farmers and industry hinder necessary market synergy For diversification product derivative coconut.

Income farmer coconuts in Gunung Tua Baru Village are still low, no capable support welfare they. Potential unripe coconut utilized due to low adoption technology, lack of innovation industry, and the lack of understanding public about mark economy product coconut. For increase income farmers, diversification product coconut become product worth sell height is very necessary.

Literatur Review

Public welfare

Welfare or welfare can have four meanings (Indonesian Dictionary), In general terms, welfare refers to a good state, a human condition where people are prosperous, healthy and peaceful. In economics, welfare is associated with material benefits. Welfare has a special official or technical meaning, such as in the term social welfare function. In social policy, social welfare refers to the range of services to meet the needs of society. This is the term used in the idea of a welfare state.

Pareto's theory (1895) states that farmer welfare is Pareto superior. In conditions where an increase in a person's welfare will not reduce the highest welfare of others. According to Pareto's theory, when the condition of community welfare has reached an optimal welfare condition, there are no more government policies that can be implemented.

Nurkse's 1953 theory states that low social welfare is partly caused by high levels of poverty. Based on Nurkse's theory, low levels of welfare are caused by market imperfections, lack of capital, and underdevelopment of human resources causing low productivity.

Low Productivity will result in low income. Low Productivity results in low income, low income results in decreasing community welfare because the capital to meet the needs of life is not optimal, so a community empowerment program is needed so that there is no more backwardness in human resources, so that the community will be more productive. With the Nurkse theory, the village government can improve community empowerment programs, existing human resources will be more productive and can meet their needs optimally, so that the cycle of poverty will decrease and community welfare can increase.

Production

Production is an activity to increase benefits by combining production factors of capital, labor, technology, managerial skills. Production is an effort to increase benefits by changing the form (form utility), moving the place (place utility), and storing (store utility).

David Ricardo (1750), stated in his book entitled principles of political economy and taxation, explained a law of diminishing returns or in Indonesian known as the law of diminishing returns. The law of diminishing returns is one of the laws related to production theory, which states "if one type of production factor (variable input) is added continuously, while other production factors are fixed (fixed input), then the additional output (MP) produced as a result of the addition of each unit of the production factor initially increases, but then will decrease.

The production system is a relationship between one component (input) and another component (output) and also concerns the 'process' of interaction between one and another to achieve a goal. One of the economic environments is the production system. The components in the production system are input, process and output.

Virgin Coconut Oil (VCO)

Virgin coconut oil (VCO) is oil extracted from fresh coconut flesh through a mechanical or natural process without the use of chemicals or excessive heating. This method ensures that the nutritional content and bioactive components in coconut oil, such as medium-chain fatty acids (MCFAs) especially lauric acid, are maintained, providing various health benefits. VCO has a distinctive coconut aroma and taste and a clearer appearance compared to coconut oil produced through heating or refining processes.

In terms of composition, VCO is mostly composed of saturated fatty acids with a lauric acid content of around 45-55%, which is known to have antimicrobial, antiviral, and antifungal properties. MCFAs in VCO are more easily digested and absorbed by the body, and can be directly converted into energy, so they are not easily stored as body fat. The health benefits of VCO include improving the immune system thanks to its antimicrobial properties that can fight bacteria, viruses, and fungi. In addition, VCO also helps improve digestive function and nutrient absorption because it is easily digested and can increase metabolism. In the beauty sector, VCO is often used in skin and hair care products because of its moisturizing properties and ability to repair damaged skin tissue. VCO is also associated with weight loss because MCFAs can increase calorie burning and reduce hunger.

From an economic and industrial perspective, VCO is a high-value-added product whose demand continues to increase in both domestic and international markets, especially in the health and beauty sector. VCO production can be done on a small scale with simple technology, making it a promising business option for rural communities. In addition, VCO contributes to the diversification of coconut products, provides added value for coconut farmers, and encourages economic sustainability in coconut-producing areas. In product development, VCO is often processed into various products such as massage oil, skin care products, and food supplements. This product

innovation can increase economic value and expand the market. The development of the value chain from coconut cultivation to VCO products involves various aspects such as farming, processing, marketing, and distribution, all of which affect the success of the VCO industry as a whole.

RESEARCH METHOD

Study This use method mixed method (quantitative and qualitative) for analyze influence business oil coconut pure (VCO) against welfare community in Gunung Tua Baru Village, North Padang Lawas Regency. Deep sample study This is the community that manages oil coconut pure as many as 134 respondents. With using collected primary data through observation and interviews.

Data analysis was performed with Confirmatory Factor Analysis (CFA) for simplify variable become factors main influencing factors welfare farmers. In addition, using method multiple linear regression used For measure influence significant from factors like production, power work, capital and technology to welfare public.

RESULTS

Confirmatory Factor Analysis (CFA) Analysis

To analyze the research data, the researcher conducted and applied descriptive analysis techniques, namely by analyzing and grouping, then interpreted so that a true picture of the problem being studied will be obtained. Furthermore, factor analysis is carried out which aims to find a way to summarize the information in the original (initial) variables into a set of new dimensions or variables (factors).

The results of the Barlett's test of Sphericity and Kaiser-Meyer-Olkin (KMO) with the help of SPSS 26 software are shown in the table below.

Table 1. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.509
Bartlett's Test of Sphericity	Approx. Chi-Square	48,596
	Df	36
	Sig.	.007

Source: SPSS Processing Results Version 26

The results of data analysis using the CFA method by analyzing factors of price, production, distribution, labor, technology, capital, skills, potential and 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

the component matrix values, it is known that of the eight factors, the three factors that are worthy of influencing community welfare are:

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

Multiple Linear Regression Analysis t-test (Partial Hypothesis Test)

Table 4. 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

Based on table 4.41 above, it can be seen that:

- a) Influence production to welfare public t count 2.667 > t table 1.150 (n-2=134-2=132 a 5%) and significant 0.009 < 0.05, then Ha is accepted and Ho is rejected, which states production influential significant to welfare public.
- b) Influence power Work to welfare public 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 power Work influential significant to welfare public.
- c) 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 an effect significant to welfare public.
- d) Influence technology to 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 technology influential significant to welfare public.

F-Test (Simultaneous Hypothesis Test)

F test (simultaneous test) is conducted to see the effect of independent variables on their 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.
1 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 is significantly much smaller than 0.05, namely $0.004 < 0.05$, so H_a is accepted that production, labor, capital and technology simultaneously have a significant effect on the welfare of the community in Gunung Tua Baru Village.

Test of Determination Coefficient R^2

This determination coefficient analysis is used to determine the percentage of the 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

Confirmatory Factor Analysis (CFA) Analysis Results

Based on the results of the CFA analysis, four main factors were identified that significantly influence the welfare of the community in Gunung Tua Baru Village, namely production, labor, capital, and technology. These factors show positive interactions in increasing production results and community income, which ultimately have an impact on increasing welfare.

- 1) Production proven influential significant to welfare society, with loading factor value of 0.748. Efficient production not only create field work but also improve income society, which can be used for fulfill need basic. Improvement production is also usually accompanied by an increase per capita income and development technology, which contributes to growth economy in a way overall. Economic theory as the Solow model supports view this, shows that capital accumulation and progress technology through improvement production is key for welfare long-term.
- 2) Labor also has an impact significant to welfare society, with the loading factor value is 0.671. Human Capital Theory explains that power skilled and educated work tend get work with higher wages good, which improves welfare they. Empirically, these studies show that decent work and wages adequate allow individual fulfill need basic and improve access to service health and education. In addition, stable employment contribute to mental and social well-being public.
- 3) Capital shows influence significant to welfare public with loading factor value of 0.752. Investment in physical and human capital play role important in increase productivity and welfare. Endogenous Growth Theory emphasizes importance investment in human and physical capital for push growth economy sustainable. Good infrastructure and advanced technology can increase efficiency economy and quality life society. Research show that investment in infrastructure relate direct with improvement welfare public.
- 4) Technology influential significant to welfare public with loading factor value of 0.742. Technology allow improvement productivity through automation and innovation, as well as increase access to education, information and services health. According to Human Capital

- Theory, Investment in technology driven skills and knowledge increase welfare economy individuals, However, digital inequality and its impact negative on mental well-being due to dependence technology need overcome so that the benefits technology can felt in a way evenly.
- 5) Price factor No influential significant to welfare society, based on CFA results. Although price is factor important in welfare economy according to theory utility and supply-demand, research show that factors like distribution income and access to service public own more influence big. Studies show that change price need main No always impact directly to welfare, especially If There is mechanism compensation or help social from government.
 - 6) Distribution income also not influential significant to welfare society. Although distribution equal income considered important, research show that factors like policy social and redistribution government more play a role in increase welfare. The Kuznets Curve theory states that inequality income tend increase in stage beginning development economy, but will reduce along with progress economy and industrialization.
 - 7) Skills No influential significant to welfare society. Although human capital theory state that skills individual increase productivity and income, factors structural like policy government and access to source Power more dominant in determine welfare. Research show that improvement skills No always followed by an increase welfare Because incompatibility between skills possessed workers and the needs of the labor market that continue to grow changed.
 - 8) Potential area No influential significant to welfare society. Although development area important For increase welfare, research show that without effective and equitable policies development, potential This No translated become improvement significant welfare. Economic development areas that are not balanced with investment in human capital and infrastructure social can hinder improvement welfare public.

Multiple Linear Regression Results Analysis.

- 1) Influence Production To Community Welfare, based on hypothesis testing partial done, obtained mark t count $2.667 > t$ table 1.150 ($n-2=134-2=132$ a 5%) and significant $0.009 < 0.05$, then H_a is accepted and H_o is rejected, which states production influential significant to welfare community in Gunung Tua Baru Village. In addition, it also has beta coefficient of 0.052, which means If production happen increase, then welfare public will increase by 0.052 percent. With thus can concluded production influential positive and significant to welfare community in Padang Bolak District.
- 2) Influence of Labor To Public welfare, based on hypothesis testing partial done, obtained mark t count $3.672 > t$ table 1.150 ($n-2=134-2=132$ a 5%) and significant $0.007 < 0.05$, then H_a is accepted and H_o is rejected, which states power Work influential significant to welfare community in Gunung Tua Baru Village. In addition, it also has beta coefficient of 0.038, which means If power Work happen addition, then welfare public will increase by 0.038 percent. With thus can concluded power Work influential positive and significant to welfare community in Padang Bolak District.
- 3) The Influence of Capital on Community Welfare, based on hypothesis testing partial done, obtained mark t count $2.291 > t$ table 1.150 ($n-2=134-2=132$ a 5%) and significant $0.002 < 0.05$, then H_a is accepted and H_o is rejected, which states that capital has an effect significant to welfare community in Gunung Tua Baru Village. In addition, it also has beta coefficient of 0.041, which means if capital occurs increase, then welfare public will increase by 0.041 percent. With thus can concluded that capital has an effect positive and significant to welfare community in Padang Bolak District.
- 4) Influence Technology To Community Welfare, based on hypothesis testing partial done, obtained mark t count $2.285 > t$ table 1.150 ($n-2=134-2=132$ a 5%) and significant $0.006 < 0.05$, then H_a is accepted and H_o is rejected, which states technology influential significant to welfare community in Gunung Tua Baru Village. In addition, it also has beta coefficient of 0.028, which means If technology happen increase, then welfare public will increase by 0.028 percent. With thus can concluded technology influential positive and significant to welfare community in Padang Bolak District.

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 are in the table component matrix show that Of the eight factors, the four factors that have a significant influence on the welfare of the community in Gunung Tua Baru Village are 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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