

PADDY FARMING : POVERTY, REVENUE AND COST ANALYSIS

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ABSTRACT

To measure the level of feasibility of paddy farming in Lumbanjaean Village, Pahae North Tapanuli, North Sumatera, Indonesia in 2023 on 20 paddy farming selected by using snowballing sampling method, this study uses R/C analysis while to measure the poverty level of paddy farming, this study uses criteria for poverty levels equivalent to paddy consumption. Quantitatively, 3,53 will be the coefficient of R/C ratio means that, in Lumbanjaean Village, if a farmer spend the cost as much as IDR 1, then the farmer will receive income as much as IDR 3.53 thus the profit of this will be as much as IDR 2,53. Based on the criteria for poverty levels equivalent to paddy consumption, 316,9 kilograms of rice per person per year is classified as very poor to poor. Eventhough the R/C analysis stated that paddy farming in Lumbanjaean is feasible to be run, the poverty is still exist in this village. Increasing the level of education and skill is very suggested to be conducted by paddy farming in Lumbanjaean village, increasing price rice level by the governement, the importance of agricultare investment is needed to reduce porvety level in paddy farming in Lumbanjaean.

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INTRODUCTION

According to *the United Nations* (UN) or the United Nations (UN), Sustainable Development is development that provides an improvement in people's welfare by not having a bad impact on the environment, so that the quality of life today is not disturbed and natural resources to support the lives of future generations will be maintained. With the mission of achieving Sustainable Development, *the Sustainable Development Goals* (SDGs) are arranged in such a way, as a global commitment containing 17 goals (Allen, 2018).

Ending Poverty is one of the cross-sectoral issues included in Goal 1 of the Sustainable Development Goals (SDGs). The issue of poverty is linked to many other SDGs goals such as decent work, quality education and improved infrastructure and access to health services. United Nation (2024) states that the SDGS target is to alleviate extreme poverty for all people who currently earn less than US\$1.25 per day, reduce at least half the proportion of men, women and children of all ages, who live in poverty in all dimensions, in accordance with the national definition, implement nationally appropriate social protection systems and measures for all, including the poorest groups, and by 2030 achieve substantial coverage for the poor and vulnerable, ensuring that all men and women, in particular the poor and vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of ownership, heritage, natural resources, new technologies, and appropriate financial services, including microfinance.

Poverty needs to be measured because it can provide an estimate of how big the poverty problem is faced by a country and region (Carlsen, 2022). In addition, with poverty measurement, we can identif who is poor and where the pockets of poverty are located, and policy interventions can be carried out appropriately (Lister, 2021). This information is important when the poverty assistance program will be implemented. Policymakers or program managers can find out who needs help and can explain the root causes of poverty in a community or region.

Measurement also needs to be carried out continuously in order to monitor poverty conditions from time to time, as well as evaluate the effectiveness of policies, programs, and interventions that focus on poor people or groups. Relative Poverty occurs due to the failure of distributive justice while Absolute Poverty occurs due to the failure to meet the requirements of basic human needs (Atkinson, 1987; Thompson, 1978; Banerjee, 2006). GDP is influenced by the contribution of each sector to the economy in a region (Marbun, 2019). The following Table 1 contains information related to the contribution of the sector to the GDP of North Tapanuli.

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Table 1. Percentage Structure of North Tapanuli GDP for Several Business Fields (percent)

Sector	2021	2022	2023
Agriculture, Forestry, and Fisheries	43,91	44,91	45,16
Wholesale and Retail Trade; Car and Motorcycle Repair	15,84	15,79	15,91
Construction	14,19	14,24	14,14
Government, Defense and Compulsory Social Security Administration	8,88	8,12	7,83
Transportation and Warehousing	4,8	4,87	5,13

Source: BPS, 2024

The economic structure of North Tapanuli Regency in 2023 is still dominated by three main business fields, namely: agriculture, forestry, and fisheries business fields of 45.16 percent; large trade and retail business fields, car and motorcycle repair by 15.91 percent; and the construction business field by 14.14 percent. This data indicates that the agricultural sector is the most promising sector in growing the economy in North Tapanuli. In contrast to the magnitude of this contribution, the life of the agricultural community in North Tapanuli is considered less prosperous (BPS, 2023). The following table shows the number of poor people in North Tapanuli from 2019 to 2023.

Table 2. Number and Percentage of Poor People in North Tapanuli (Soul)

2019	2020	2021	2022	2023
28570	28410	29720	27470	26390
(9.48%)	(9.37%)	(9.72%)	(8.93%)	(8.54%)

Source: BPS, 2024

Table 2 above informs that the poor population in North Tapanuli is quite large when compared to several other districts. In 2023, North Tapanuli Regency is ranked 16th out of 33 districts in North Tapanuli as the district with the most poor population. The high contribution of the agricultural sector as the main contributor to North Tapanuli's GDP has not been able to significantly reduce the number of poor people in North Tapanuli Regency (Simamora, 2016).

North Tapanuli Regency is a regency at North Sumatera whose capital is in the sub-district Tarutung (BPS, 2024). Agriculture Food crops and horticulture in North Tapanuli Regency are quite promising in the future with the potential for dry land that can be used for development covering an area of 66,683 ha (until 2024) (BPS, 2024). Agriculture is the base sector in the North Tapanuli economy (Pakpahan, 2022). Lumban Jaeanis a village which is in Pahae Julu District, North Tapanuli Regency, North Sumatra, Indonesian. Agricultural development efforts in Indonesia from year to year can not be separated from various challenges. Hermawan (2012); Rahman (2021); Salqaura, 2020) concluded that the limited use of agricultural technology contributes to the low productivity of agricultural land. In addition, the lack of education in agricultural communities hinders their ability to adopt modern and efficient practices (Suwardi, 2011). Agricultural education and training programs are crucial to empower farmers with the knowledge and skills needed to increase productivity and break the cycle of poverty. No less important is the disaster factor as an impact of climate change, such as floods and droughts that often occur in Indonesia (Purnama, 2013).

To measure poverty, BPS uses the concept of the ability to meet basic needs (basic needs approach). With this approach, poverty is seen as an inability from an economic point of view to meet basic food needs and not food as measured in terms of spending. So the poor are residents who have an average monthly per capita expenditure below the poverty line (BPS, 2024). Sajogyo sets the poverty line based on household income of 360 kg of paddy per year in urban areas and 240 kg of paddy per year in rural areas (Pranadji, 2005 ; Hermawan, 2012). Paying attention to these conditions, the role of the agricultural sector is very important so that the productivity of this sector needs to be increased (Royat, 2007; Kholif, 2014; Soesanta, 2013; Ministry of Finance, 2024).

Based on data and information that the high contribution of agriculture but not able to reduce the poverty rate in North Tapanuli, agriculture is the base of the sector in North Tapanuli but is unable to reduce the poverty rate, as well as the SDGS targets that should be achieved but North Tapanuli has not shown signs of improvement through the reduction of the poverty rate, so this study was conducted. If in general, researchers with the topic of poverty previously used the poverty severity

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index, then in this study, the researcher used Sayogyo concept in determining poverty, in addition, to show the novelty in the research, then the researcher used R/C ratio analysis in determining the feasibility of agriculture.

RESEARCH METHOD

This research is a quantitative research with descriptive as an explanation of the research results. For reasons of effectiveness, primary data was obtained using the interview method for 2 months (May – June 2024) in turn via telephone to farmer resource persons in Lumbanjaean Village, Pahae Julu District, North Tapanuli Regency, North Sumatra with snowballing sampling as a sample collection method. The farmers intended in this study are 20 of paddy farmers who have their own land and have their main job as paddy farmers until June 2024 where the data on this research is from Januari 2023 until December 2023. If the paddy farmer has a type of crop other than paddy, then what is calculated in this analysis is paddy only.

Analysis of farm feasibility

$$I = TR - TC$$

I = Income/Profit

TR = Total Revenue

TC = Total Cost

TR = Y.Py

TR = Total Revenue

Y = Yields

Py = Paddy of Yields

TC = FC + VC
TC = Total Cost

FC = Fixed Cost

VC = Variable Cost

Profits will be continued with the Cost of Ratio (R/C) analysis to determine the feasibility index by comparing income with the total cost as follows:

$$R/C = TR/TC$$

R/C = Index of Farming Feasibility

TR = Total Revenue

TC = Total Cost

if:

R/C = 1, break even point

R/C < 1, lost

R/C > 1, profitable

Analysis of poverty level

Examine about the poverty, since the object of the research is farmer, poverty calculation can be measured by using per capita paddy consumption as a poverty rate indicator in urban and rural. *the amount of paddy farmers income equal to the amount of paddy obtained* by using local paddy paddy level, as formula:

1. Amount of Paddy (kg) = Income (IDR) / Ppaddy (IDR)
2. The amount of paddy obtained divided by the number of lives that are dependent by paddy farming families, as the formula: Kg of Paddy/Person/Year = Amount of Paddy (kg) / Number of Family Dependent (Person)
3. Compare the number of kg of paddy/person/year to the poverty line criteria to determine the poverty level as Sayogyo criteria:

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Table 3. Criteria for poverty levels equivalent to paddy consumption

Criteria	Rural (Kg / Person / Year)	Urban (Kg / Person / Year)
Destitute (poorest)	180	270
Very Poor	240	360
Poor	320	480

RESULTS AND DISCUSSION

Until 2023, the number of population in Lumbanjaean is 631. This number is dominated by young people (17-24 years old). This age range is productive age that can be able to operate the farming in Lumbanjaean Village. Population 15 Years and Over by Field of Employment (Percent) is presented on this table.

Table 4. Number of Population in Lumbanjaean Village, 2021 - 2023

2021	2022	2023
609	620	631

Source: BPS, 2024

Table 5. Population 15 Years and Over by Field of Employment (Percent)

	2021	2022	2023
Agricultures	83.36	86.09	84.74
Manufactures	2.76	5.12	3.96
Services	13.88	8.79	11.30
Total	100.00	100.00	100.00

Source: BPS, 2024

Table 6. Harvest Area of Paddy 2017-2020 (Ha)

2017	2018	2019	2020	2021	2022	2023
2505	1432,6	1432,6	1400	1200	1092,8	1092

Source: BPS, 2024

Harvest area of paddy as year by year was fluctuative in Lumbanjaean Village. In 2017, Sarulla Operation Ltd is a company engaged in mining and geothermal utilization, located in Lumbanjaean, Simataniari, and Sarulla Village, Pahae District, North Tapanuli Regency, North Sumatra. Since this company started to build their business, some of harvest area of paddy was decreased since they bought the land from paddy farmer, the paddy area was dramatically falling year by year since the company did an expansion of building and business process area.

REVENUES:

Production Amount	44.200	KG Paddy
Paddy	6.000	IDR
TOTAL REVENUES	265.200.000	IDR

COST:

Labor	34.800.000	IDR
Seed	5.200.000	IDR
Pesticide	6.000.000	IDR
Fertilizer	24.000.000	IDR
Depreciation	5.060.000	IDR

TOTAL COST	75.060.000	IDR
INCOME	190.140.000	IDR

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Total revenues gained in a year is IDR 265. 200.000 by spending IDR 75.060.000 and at the end achieve the income as much as IDR 190.140.000. This data means that, in a month, as mean, a farmer in Lumbanjaean Village will achieve IDR 792.250 by spending IDR 312.750 in a month.

By implying the R/C to the data, 3,53 will be the coefficient of R/C ratio means that, in Lumbanjaean Village, if a farmer spend the cost as much as IDR 1, then the farmer will receive income as much as IDR 3.53 thus the profit of this will be as much as IDR 2,53. This coefficient is not bigger than coefficient that was found by Setiawan (2023) 2,3 with the average of harvest area of food crops (paddy) is quite similiar with the land area size on this research which is 1092 Ha (in this study) and 1127 (in Setiawan's study) Ha with the same year of data which is January 2023 – December 2023. The coefficient of this study is quite far with the research conducted by Sirait (2022) which having the coefficient of R/C ratio was 6,39. This difference incicated the difference of paddy price where the selling price of paddy on it's study was IDR 10.500 per kilogram while on this research is IDR 6.000 thus, the coeeficient is quite far.

CONCLUSION

By implying the R/C to the data, 3,53 will be the coefficient of R/C ratio means that, in Lumbanjaean Village, if a farmer spend the cost as much as IDR 1, then the farmer will receive income as much as IDR 3.53 thus the profit of this will be as much as IDR 2,53. Based on the criteria for poverty levels equivalent to paddy consumption, 316,9 kilograms of rice per person per year is classified as very poor to poor. Eventhough the R/C analysis stated that paddy farming in Lumbanjaean is feasible to be run, the poverty is still exist in this village. The number of dependency is quite high but the amount of rice is limited to be consumed thus the poverty is created in Lumbanjaean, the education level of the farmer in Lumbanjaean is low level. Increasing the level of education and skill is very suggested to be conducted by paddy farming in Lumbanjaean village. Government can implement or continue to implement program of increasing price rice level to protect farmers and to reduce the poverty level in paddy farming and formulate policies to improve the welfare of farmers in rural areas by considering other related socio-economic aspects, so that it will have a major impact on reducing poverty levels in rural areas. The importance of agricultare investment is needed to reduce porvety level in rural area.

REFERENCES

- Allen, C., Metternicht, G., & Wiedmann, T. (2018). Initial progress in implementing the Sustainable Development Goals (SDGs): A review of evidence from countries. *Sustainability science*, 13, 1453-1467.
- Arouna, A., Lokossou, J. C., Wopereis, M. C. S., Bruce-Oliver, S., & Roy-Atkinson, A. B. (1987). On the measurement of poverty. *Econometrica: Journal of the Econometric Society*, 749-764.
- Banerjee, A. V., Benabou, R., & Mookherjee, D. (Eds.). (2006). *Understanding poverty*. Oxford University Press.
- Carlsen, L., & Bruggemann, R. (2022). The 17 United Nations' sustainable development goals: A status by 2020. *International Journal of Sustainable Development & World Ecology*, 29(3), 219-229.
- Fan, S., Zhang, L., & Zhang, X. (2004). Reforms, investment, and poverty in rural China. *Economic Development and Cultural Change*, 52(2), 395-421.
- Hasanuddin, T., & Endaryanto, T. (2009). Akar penyebab kemiskinan petani hortikultura di Kabupaten Tanggamus, Propinsi Lampung. *Agrikultura*, 20(3).
- Hermawan, I. (2012). Analisis eksistensi sektor pertanian terhadap pengurangan kemiskinan di pedesaan dan perkotaan. *Mimbar: Jurnal Sosial dan Pembangunan*, 28(2), 135-144.