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Implementation of the Agribusiness System and Feasibility of Rice Farming

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Abstract

Rice farming in TTU Regency is not only a source of livelihood but also has deep cultural values. The process of farming and harvesting rice plants is often a joint event that strengthens social ties. Rice farming is considered one of the basic and cultural foundations for the agricultural community of TTU Regency. This research aims to determine the implementation of the agribusiness system and the feasibility of lowland rice farming in the East Noemuti District. Primary data was obtained from interviews, documentation, questionnaires and surveys. Meanwhile, researchers obtained secondary data from various references such as journals, theses, books and the Central Statistics Agency. The population of this study was 400 people. The sampling technique used in this research is purposive sampling where the data source is taken with certain considerations. The number of samples in this study was 101 people. The data analysis used by researchers is descriptive analysis and farming feasibility analysis. Research results based on survey results found that farmers in East Noemuti District have implemented the agribusiness system well, although not yet optimally. The results of the feasibility analysis using a cost analysis approach show that lowland rice farming in East Noemuti District is feasible with an R/C Ratio value of 4.0.
Keywords: Feasibility, agribusiness, farming, rice, TTU

A. Introduction

The agricultural sector in Indonesia produces food crops, one of the favourite food crop commodities is rice (*Oryza Sativa)* which is dominantly cultivated by farmers. In 2020 the amount of rice production increased by 0.8% from 2019 (BPS, 2021). Rice has an important role in the lives of the people of East Nusa Tenggara (NTT) because the people of NTT depend on rice farming as their main source of livelihood and food needs. Farming and harvesting are a major part of the culture and daily life of the people of NTT (Joka et al., 2022).

Society Rice has an important role in the lives of the people of East Nusa Tenggara (NTT) because the people of NTT depend on rice farming as their main source of livelihood and food needs. Farming and harvesting are a major part of the culture and daily life of the people of NTT (Joka and Mambur, 2020). The people of North Central Timor Regency (TTU) consider rice to be a very important crop. Rice farming in Kab. TTU is not only a source of livelihood but also has deep cultural values (Falo & Kolne, 2024). The process of planting and harvesting rice plants is often a shared event that strengthens social ties in the TTU Community, rice is considered the basic foundation of their culture.

East Noemuti District is a district that has the potential for developing lowland rice farming. Residents in East Noemuti District use lowland rice as their main source of livelihood and as a means of fulfilling food in their daily lives. Residents in East Noemuti District do not yet take into account their income and expenses while farming. So it is necessary to conduct a study to calculate the profits and feasibility of rice farming to encourage increased production and productivity in the East Noemuti district.

B. Methodology

Data collection was carried out using primary data and secondary data. Primary data was obtained from interviews, documentation, questionnaires and surveys. Meanwhile, researchers obtained secondary data from various references such as journals, theses, theses, books, and the Central Statistics Agency. The population of this study was 400 rice farmers spread across 4 farmer groups. The sampling technique for this research uses *purposive sampling*, where data sources are taken with certain considerations. (Seran et al, 2023) . The total sample for this study was 101 people.

Analysis of the Implementation of the Agribusiness System uses a qualitative descriptive analysis method with a survey approach. Analysis of farming costs for rice farming has a structure of farming costs consisting of fixed costs and variable costs (Addison et al., 2022).

1. Fixed cost. Fees that are not used up in one production process. Costs consist above: land tax, work equipment costs, land rental and transport vehicles.
2. Variable Costs. The size of the costs depends on the scale of production. Production costs consist of: Seeds, Fertilizer, Pesticides, Labor wages, Harvest costs, and transportation costs. To determine the total cost using the formula
   TC = TFC + TVC

Information:
TC = Total Cost (Total Expenditures)
TFC = Total Fixed Cost (Total Fixed Cost)
TVC = Total Variable Cost (Total Variable Cost)
Revenue is the value of the production value of agricultural commodities as a whole before deducting production costs. Total revenue can be calculated using the formula:
$TR = P \times Q$
Description:
TR = Total Revenue (Total Revenue)
P = Price (Product Selling Price)
Q = Qiuantiy (Total Production)

Farming Feasibility Analysis

The aim of conducting a farming feasibility analysis is to determine the profits obtained and whether or not the farming is feasible. (Soekartawi , 2005; Bete et al,. 2021) To find out farmer income can be analyzed using income analysis whose mathematical equation is as follows:

$I = TR - (FC + VC)$
$I = TR - TC$

Information:
I = Income/Income
TR = Total Revenue / Total Revenue
TC = Total Cost / Total Cost
FC = Fixed Cost / Fixed Costs
VC = Variable Cost / Variable Cost

To determine the efficiency of lowland rice farming can be analyzed using systematic efficiency analysis (Soekartawi, 2005; Ambone et al., 2020) as follows:

R/C Ratio = TR / TC

Information:

TR = Total Revenue/Total Revenue

TC = Total Cost/Total Cost

C. Findings and Discussion

Application of Agribusiness to Rice Farming

Agribusiness is a system that connects various farming subsystems including the procurement and distribution of production facilities, production subsystems, product or processed product commerce subsystems, as well as supporting service subsystems such as government, banking and marketing institutions (Yuhono, 2007). Rice agribusiness in East Noemuti District, rice fields in this study are explained based on 5 subsystems as follows:

- **Production facilities subsystem**

The subsystem of production facilities in the development of lowland rice agribusiness in East Noemuti District is production land, hoes, sickles, machetes, crowbars, and hand sprayers which support the rice production process in East Noemuti. The level of availability of production facilities such as superior seeds and fertilizer that meet 4T at the location is still less than the amount needed by rice farmers different to (Laklo et al., 2022) and (Saekoko & Joka, 2022); research about the efficiency of inorganic fertilizer in Kupang regency, which is better in term of dose and period.

- **Production subsystem**

The production subsystem is related to the production activities of a company with a simple mechanism. The farmers started using tractors and transplanted machines to help them in case of production. (Pullaila et al., 2018). Generally, the production subsystem is divided into the following four activities: Seeding, cultivating rice fields, planting, maintaining and controlling plant pest organisms.

- **Marketing subsystem**

Marketing is a buying and selling activity in the field of economics. Marketing is not limited to buying and selling activities alone, but all money economic activities enable goods and services to move from producers to consumers. In principle, marketing is the flow of goods from producers to consumers. This flow of goods occurs because of the existence of marketing institutions. Marketing at the research location is carried out in several ways by farmers, namely farmers sell grain and also process it into rice. Agribusiness has an interdependent relationship with the marketing subsystem. This relationship, namely relationship marketing, is a marketing approach that is based on developing long-term relationships with suppliers and customers. (Maulidah et al., 2017) .

- **Processing subsystem**

The process of cultivating paddy fields aims to change the condition of agricultural land with certain tools to obtain the soil structure desired by plants, hoeing, ploughing and cultivating. The agribusiness development strategy in East Noemuti District is supported by the North Central Timor Regency Government, especially the Agriculture Service, which provides support for agricultural production facilities (*Saprotan*), support from extension workers, and provision of seeds and fertilizer (Biswas, et al., 2021).

- **Supporting Subsystem**

Subsystem is a development strategy decision that is expected to have an impact on sustainable industrial development. Financing assistance from the Regional Government through the Sari Tani (Independent Village of Love for Farmers) program, credit from Cooperatives and

financial assistance from MSME development by Bank NTT as the Regional Development Bank have been felt by farmers in East Noemuti District.

Analysis of Rice Farming Costs

Cost Analysis

1. Fixed Costs (*fixed costs*)

Fixed costs *are* costs that are always the same even though the amount of production changes. Fixed costs are costs that do not affect production and continue to be incurred even if the production obtained is large or small and even though no production is carried out, the amount of the costs does not depend on the size of the production costs obtained (Rico, 2013). Fixed costs incurred in collecting this data only include equipment depreciation value (EDV). Meanwhile, the tax value (PBB) is not yet available, because the respondent does not yet have a land certificate.

Table 1. Average value of equipment depreciation (EDV) per hectare of lowland rice farmers

No	Tool Type	Total cost
1	Hoe	40,720
2	Sickle	51,850
3	Hand sprayer	42,940
	Amount	140,230

Source: Primary Data, processed (2023)

Table 1 shows that the average cost of a home is IDR. 40,720 per hectare/year, average sickle costs Rp. 51,850 per hectare/year, and the average hamper cost is IDR. 42,940 per hectare/year in lowland rice farming in East Noemuti District, North Central Timor Regency, it can be carried out twice a year so that the depreciation costs are divided by two, where the depreciation value of the home is Rp. 20,360, sickle depreciation value Rp. 25.9.5, and the depreciation value of the hanspayer is Rp. 21,470 so the total equipment depreciation value (EDV) in one season is IDR. 70 .115

Table 2. Results of recapitulation of average fixed costs and those incurred by lowland rice farmers

No	Description	Total cost
1	Equipment depreciation value (EDV)	70.115
	Amount	

Source: Primary Data, processed (2023)

Table 2 shows that the total equipment depreciation value (EDV) is IDR. 26,098,500 per hectare/season, which consists of a hoe, sickle and hanspayer, while tractors are not included in fixed costs because the tractors used in land processing are tractors rented by farmers from farmer groups so farmers only need to pay for the tractor rental, rent Tractors are included in variable costs. Meanwhile, the total land and building tax (PBB) is IDR. 0 because in that area there is no certificate so farmers do not pay taxes, but farmers are encouraged to give alms after each harvest with an undetermined nominal amount (in essence) so the total cost remains Rp. 26,098,500.

2. Variable Costs

Variable costs are costs incurred by respondent farmers for purchasing fertilizer, seeds, and so on, the costs of which change. Variable costs in this research include fertilizer, pesticides, seeds and labour.

Table 3. Results of recapitulation of average variable costs per hectare of lowland rice farming

No	Description	Total Cost (Rp)
1	Fertilizer	15,633,700
2	Pesticide	52,197,000
3	Labour	44,666,000
4	Rent a Tractor	15,851,400
5	Seed	85,450,000
	Amount	213,798,100

Source: Primary Data, processed (2023)

Table 3 shows the average use of fertilizer per hectare with a total cost of IDR 15,633,700, where the fertilizer used is urea and NPK fertilizer, the use of pesticides with a total cost of IDR 52,197,000, the use of labour with a total cost of IDR 44,666,000, use of tractor rental with a total cost of IDR 15,851,400, and use of seeds with a total cost of IDR 85,450,000. So the total variable costs used in lowland rice farming per season average IDR 213,798,100 per hectare.

Table 1 Costs and income of lowland rice farming per hectare in East Noemuti District in the first planting season of 2023

Fee Type	Price/unit (Rp)			
		Vol	Value (Rp)	Percent (%)
A. Receipt (Output)	14514.851	1506.4	21865172.28	
B. Cost				
B1. Cash Fees			4093127.517	
Seeds (Kg)	12039.604	26.3	316641.5842	7.341345298
Organic fertilizer (Kg)	1000	264.5	264500	6.132440994
Chemical Fertilizer (Kg)			994890	23.0665566
Urea	2500	175.8	439500	
NPK	2700	205.7	555390	
Tractor Rental	10000	100	1000000	23.18503211
Workers outside the family (HOK)			1480000	34.31384753
Medicines (Lt)	39888.1	0.93	37095.933	0.860070398
B2. Non-Cash Fees			220000	
Labour in the family (HOK)	50000	4.4	220000	5.100707065
Total cost (B1 +B2)			4313127.517	100
Income on Cash Fees (A-B1)			17772044.76	
Revenue on Costs (A-B1-B2)			17552044.76	
R/C Cash Charges			4.341923061	
R/C Total Cost			4.069447214	

Based on the cost structure of lowland rice production (Table 4), labour is the largest cost component for farmers followed by land rent because on average they carry out lowland rice farming on non-own land with a profit-sharing system. Input costs such as fertilizer and seeds are not a very large percentage of the total costs. Rice farmers in TTU Regency have failed to harvest and even failed to plant because the water flow is very low. Judging from the R/C comparison, the farmer comparison is categorized as feasible because the value is more than 1 relative to cash and total costs. However economically, this ratio is still very low and cannot be considered optimal compared to Rice farming in Java island or Sulawesi.

Use of labour in the family among farmers 4.4 HKO. When cultivating land using a tractor, farmers pay processing fees in the range of Rp. 10,000/are, the price varies depending on location, this is due to the distance of land and distance to the nearest market which usually involves the availability of fuel for tractor operations. Meanwhile, for planting and harvesting, TTU Regency uses a piecework system. The contract work system is the use of labour in groups,

usually from outside the region, and payment is made by sharing the results, namely 80 buckets/ha in line with a previous study by Abani et al, (2023).

The process of eradicating pests or diseases is carried out with pesticides or chemical drugs as a step that is deemed appropriate, the types of drugs used vary depending on the plant pest organism that is attacking and recommendations from farmers who double as pest observers. Some farmers are sponsored (usually farmer group administrators) by a pharmaceutical company to promote their products to fellow farmer group members.

At the time the research was carried out during the transition period where farmers had finished harvesting for Planting Season (PS) I and had started planting for the next planting season. In PS I, there were many complaints from farmers due to failed harvests due to the *El Nino* climate anomaly phenomenon, water availability was very minimal so farmers in the sample sub-district generally only speculated on cultivating lowland rice but in the end, the harvest results were not by optimum production due to lack of water flow. This is detrimental to farmers and greatly reduces income because the harvest results do not match expectations at the start of planting.

Some farmers complained that their crop yields had decreased by up to 50 per cent compared to the previous season. Especially if farmers apply a profit-sharing system because they do not have their land. The profit-sharing system applied is generally 40-60% where the sharecropper gets 60 per cent of the results with the burden of input expenses by the sharecropper, while the land owner gets 40 per cent without any input costs. Some apply a 50-50 profit sharing, where cultivating farmers get 50 per cent of the results with 50 per cent sharing of the input load for fertilizer and 0 per cent for seeds. The landowner provides 100 per cent of the seed requirements and 50 per cent of the total fertilizer used. Meanwhile, the credit burden is given to the cultivator because it is entirely the cultivator's responsibility to cultivate the land to produce a product in the form of harvested dry grain which is immediately sold at harvest time so that he can pay off the credit taken at the start of the planting season.

The harvest results in the form of dry harvested grain are further processed by drying before farmers sell it in the form of yield rice which has an average price of IDR. 14,500,-/kg. The habit of farmers in the sample subdistricts is to sell rice, it is very rare to find farmers selling ground dry grain (GDG). The price of rice is much higher but requires more costs and you have to prepare a barn to store and dry the grain before milling.

From the results of the farming analysis, it was found that the R/C ratio value for the total costs of farmers was higher, namely 4.0, indicating that their farming was equally profitable because every rupiah of costs incurred would produce income greater than one rupiah, this was caused by use appropriate inputs and spend more efficiently. In addition, rice Farming in East Noemuti District could be categorised as feasible farming refers to Sri (2019).

D. Conclusion

To conclude, this research found that although the agribusiness system in East Noemuti District is not yet ideal, farmers there have done a good job of implementing it. With an R/C Ratio value of 4.0, the feasibility study conducted using a cost analysis approach demonstrates that lowland rice cultivation in East Noemuti District is possible.

E. References

Abani, M. A., Joka, U., Nubatonis, A., & Mambur, Y. P. TINGKAT PENERAPAN TEKNOLOGI PENGELOLAAN TANAMAN TERPADU (PTT) PADA USAHATANI PADI SAWAH DI KECAMATAN BIBOKI MOENLEU KABUPATEN TTU. *SEPA: Jurnal Sosial Ekonomi Pertanian dan Agribisnis*, *20*(1), 11-16.

Addison, M., Ohene-Yankyera, K., Acheampong, P. P., & Wongnaa, C. A. (2022). The impact of uptake of selected agricultural technologies on rice farmers' income distribution in Ghana. *Agriculture & Food Security*, *11*(1), 1-16.

Ambone, A., Fallo, Y. M., & Joka, U. (2020). ANALISIS PENDAPATAN USAHATANI PADI SAWAH DI KECAMATAN BIBOKI MOENLEU KABUPATEN TIMOR TENGAH UTARA PROVINSI NUSA TENGGARA. *Revenue: Jurnal Ekonomi Pembangunan dan Ekonomi Islam*, *3*(02), 41-47.

Bete, Y., Joka, U., & Nubatonis, A. (2021). Income Analysis of Tomato Farming in Paddy Fields in Leuntolu Village Raimanuk District Belu Regency. *Agribusiness Journal*

Biswas, B., Mallick, B., Roy, A., & Sultana, Z. (2021). Impact of agriculture extension services on technical efficiency of rural paddy farmers in southwest Bangladesh. *Environmental Challenges*, *5*, 100261.

BPS Kab. TTU 2021. *Timor Tengah Utara dalam angka 2021.* Kefamenanu (Dinas Pertanian Kab.TTU)

Falo, M., & Kolne, S. V. (2024). Menggali Model Ritual Usahatani Jagung Sebagai Simbol Identitas Petani di Kabupaten Timor Tengah Utara. *AGRIMOR*, *9*(1), 14-27.

Joka, U., & Mambur, Y. P. V. (2020). Daya Saing Komoditas Padi Sawah di Kecamatan Biboki Moenleu Kabupaten Timor Tengah Utara Provinsi Nusa Tenggara Timur. *AGRIMOR*, *5*(4), 66-68.

Joka, U., Dahu, B., & Taena, W. (2022). Peranan Penyuluh Pertanian Terhadap Produktivitas Usahatani Padi Sawah di Kecamatan Kobalima Kabupaten Malaka. *Jurnal Penelitian Pertanian Terapan*, *22*(1), 67-81.

Laklo, M. M., Joka, U., & Pramita, D. (2022). KEPUTUSAN PENGGUNAAN PUPUK BERSUBSIDI PETANI JAG DI KECAMATAN BIBOKI MOENLEU KABUPATEN TIMOR TENGAH UTARA: Studi Kasus Desa Kaubele. In *Prosiding Seminar Nasional Hasil-Hasil Penelitian* (Vol. 5, No. 1).

Pullaila, A., Amrullah, E. R., Astuti, Y., & Ishida, A. (2018). Factors affecting paddy farmers' perception of utilizing agricultural machines in Indonesia. *Journal of Agricultural Extension and Rural Development*, *10*(8), 150-157.

Saekoko, A., & Joka, U. (2022). EFISIENSI PENGGUNAAN PUPUK ANORGANIK TERHADAP PENINGKATAN PADI SAWAH DI KABUPATEN KUPANG (Studi Kasus Balai Benih Induk Padi Noelbaki). *Jurnal Hexagro*, *6*(2), 75-82.

Seran, Y. R., Kune, S. J., & Joka, U. (2023). PERSEPSI PETANI TERHADAP KOMPETENSI PENYULUH PERTANIAN DI DESA BIUDUKFOHO KECAMATAN RINHAT KABUPATEN MALAKA. *AGROTEKSOS*, *33*(1), 197-208.

Soekartawi 2004. Agribisnis: Teori dan Aplikasinya, Cetakan ke 9, PT RajaGrafindo Persada, Jakarta (ISBN: 979- 421-277-6)

Sri, J. (2019). The poverty level of farmers is based on the total income and the feasibility of rice farming. *World Journal of Advanced Research and Reviews*, *4*(2), 082-089.

Yuhono, J. T. (2007). Pepper agribusiness system and its development strategy.