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Feasibility Study of Rice Farming Investment Using Adol Oyodan Land Rental System

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Abstract

This study aims to find out the agricultural land lease system for farmers in Ketaon Village, Banyudono District, Boyolali Regency, and to determine the feasibility of rice farming in the land lease system in Ketaon Village, Banyudono District, Boyolali Regency. The location of the research was carried out in Ketaon Village, Banyudono District, Boyolali Regency. Sampling was carried out using purposive sampling. This research was carried out within 5 planting seasons because in 2 years it consisted of 6 planting seasons; 1 planting season could not be done because there was an improvement in irrigation. The analysis method used is quantitative descriptive. The data analysis used is descriptive analysis and investment analysis. The result of this study is that the agricultural land rental system carried out by the average farmer in Ketaon Village, Banyudono District, Boyolali Regency, is with the adol oyodan land rental system. This rental system is a land rental system where tenants give money in advance directly to the owner of agricultural land (rice fields). This land lease system is worth continuing to strive for this because based on the calculations that have been carried out, it shows from several calculations both through the calculation of NPV (Net Present Value) 20.814.535, IRR (Internal Rate of Return) 100%+, Net Benefit Cost Ratio 3,4779, Gross Benefit Cost Ratio (Gross B/C)2,2033 shows a positive value and meets the eligibility requirements for the farming business carried out. Given its proven profitability, it is recommended that the adol oyodan system be preserved and supported. Nevertheless, modernization strategies should be considered to strengthen its long-term sustainability

Keywords: *feasibility, investment , land lease.*

Introduction

Agriculture is the main livelihood of most people in rural areas, and it plays an important role in their lives. Farming is farming on agricultural land by planting various types of plants such as rice, tubers, vegetables, nuts, and so on, which can produce food ingredients. From year to year, there is no variation in the agricultural land, because the land is only suitable for planting the same plants (Nursiyamsih, 2015). Agricultural

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businesses require a large area of agricultural land for farming. Land is a natural resource that is greatly needed by farming communities. Farmers who have large areas of land will use them as a source of life. The large area of agricultural land ownership will produce an abundant harvest that can be used to meet their needs. Conversely, if the ownership of agricultural land is narrow, then the results are not that much, so that ownership of agricultural land is very important for life for the survival of rural farming communities (Wulandari et al., 2021). Boyolali District is one of the areas that is dominant in planting rice fields. Paddy farming has become the main livelihood for the people in this area, and has even become an activity that has been passed down from generation to generation. Although some paddy farming businesses are carried out only to meet family consumption needs, there are also market-oriented paddy farming businesses. Some of the produce is sold by farmers to obtain income to finance various needs in the farmer's family. The farming business carried out is still considered inadequate in meeting needs, so researchers are interested in researching the feasibility of farming businesses to know the agricultural land rental system for farmers in Ketaon Village, Banyudono District, Boyolali Regency. Knowing the feasibility of rice farming in the land rental system in Ketaon Village, Banyudono District, Boyolali Regency. Based on data from the Central Statistics Agency (BPS) of Boyolali Regency, paddy production in Boyolali Regency fields in 2018 was recorded at 277,238 tons. Compared to 2018, in 2019-2020, there was a decrease in production of 269,955 tons. Meanwhile, in 2020, Boyolali rice production was 236,823 tons. And in 2021-2022, rice production continued to increase, namely in 2021 rice production was 286,120 tons, and in 2022, Boyolali rice production was 287,884 tons.

According to data obtained from the Monitoring Center for Development (MCD) of Boyolali Regency until May 31, 2023, in the agricultural sector, Boyolali Regency has 80,250 landowner farmers. Then there are 18,522 tenant farmers, 7,253 sharecroppers, 16,343 farm laborers, and 12,045 millennial farmers. Also, there are 122,278 farmers recorded in the Agricultural Extension Information System or Simluhtan application. (Boyolali Regency Communication and Information Service Coverage Team)

Farmers have difficulty determining the return on capital from land rental businesses because farmers are unable to access the market to sell their own agricultural products to the market. The Indonesian Farmers Union (SPI) stated that the main problem experienced by farmers to date is related to the difficulty of marketing their harvests. Especially for farmers in the food crops and horticulture sub-sectors, one of which is farmers in Boyolali Regency, Banyudono District, Ketaon Village, who are unable to directly access to sell their agricultural products. In general, tenant farmers in Boyolali Regency, Banyudono District, Ketaon Village, sell their crops using a slashing system so that farmers only receive the results at harvest time.

Method

This research was conducted intentionally (purposive sampling) in Ketaon Village, Banyudono District, Boyolali Regency. The method used in this study was descriptive analysis. Descriptive analysis is an analysis method that systematically, accurately describes facts and characteristics regarding the population/activities carried out in a particular field, which makes the subject of research based on data from variables obtained from the group of subjects studied or facts that occur in the field (Bhakti et al., 2021). According to existing data, in Ketaon Village, Banyudono District, Boyolali Regency, the adol oyodan rental system is very commonly used as a land rental system.

The adol oyodan rental system is an agricultural land rental system, where the tenant gives money in advance directly to the owner of the agricultural land (rice fields). Those who rent no longer have power over their land for the agreed period of time.

Investment is an expenditure to procure capital goods at the present time with the aim of producing output of goods or services in order to obtain greater benefits in the future, for one year or more (F. Abdullah, 2015). To determine the feasibility of a business, researchers use calculations such as;

a) Payback period

The criteria for the feasibility of accepting investment using the payback period method are that an investment is declared feasible if the payback period is shorter than the maximum payback period (N. Abdullah et al., 2022). Conversely, if the payback period of an investment is longer than the maximum payback period, the investment is declared unfeasible.

$$Payback\ period = \frac{Initial\ Investment}{Average\ Annual\ Cash\ Flow} x\ years/month$$

b) NPV (Net Present Value)

NPV (Net Present Value) is the difference between the total present value of benefits and the total present value of costs, or the amount of present value of additional net benefits during the life of the business(Nisa et al., 2014). The value generated by the NPV calculation is in currency units (Rp). Mathematically, NPV can be formulated as follows:

$$NPV = \sum_{i=0/1}^{n} \frac{Bt - Ct}{(1-i)^n}$$

Description:

Bt: Benefits in year t

Ct: Costs in year t

t: Year of business activity

i: Discount Rate (%)

c) IRR (Internal Rate of Return)

IRR (Internal Rate of Return) Business feasibility is also assessed from how much business returns on the investment made by measuring the amount of IRR. IRR (Internal Rate of Return) is the discount rate (DR) that produces an NPV value equal to zero (Mukti & Elida, 2017). The amount resulting from this calculation is in percentage units (%). The following is the IRR formula:

$$IRR = i_n + \frac{NPV\ 1}{NPV\ 1 - NPV\ 2}\ X(i_2 - i_1)$$

Description:

NPV1: positive NPV (Rp)

NPV2: negative NPV (Rp)

i_1: Interest/ Discount rate positive NPV (%)

i_2: Interest/ Discount rate negative NPV (%)

d) Net Benefit/Cost

Net Benefit Cost Ratio (Hamdan, 2021) is a comparison between the number of positive NPVs and the number of negative NPVs, which shows how many times the benefits will be obtained from the costs incurred. A business is said to be feasible if the Net BC is more than one; if the Net BC is less than one, then the project is not feasible.

$$\frac{\sum_{t=0}^{t=n} \frac{B_t + C_t}{(1-i)^t}}{\sum_{t=0}^{t=n} \frac{B_t - C_t}{(1-i)^t}}$$

Description:
Bt: Benefit in year t (Rp)
Ct: Cost in year t (Rp)
i: applicable interest rate (%)
n: length of period (years)
t: project age

e) Gross B/C

Gross Benefit Cost Ratio (Gross BC) is the comparison between the amount of PV Benefit and PV Cost (Tiwa et al., 2016). This project is said to be feasible if the Gross BC value is above 1, but if the Gross BC value is below 1, it is categorized as not feasible (Hamdan, I. H., 2023).

$$= \frac{\sum_{t=0}^{t=n} \frac{B_t}{(1-i)^t}}{\sum_{t=0}^{t=n} \frac{C_t}{(1-i)^t}}$$

Description:
Bt: Benefit in year t (Rp)
Ct: Cost in year t (Rp)
t: applicable interest rate (%)
n: length of period (years)
t: project age

Result And Discussion

Adol Oyodan rental system

The Adol oyodan rental system is used by the tenant who pays money in advance directly to the owner of the agricultural land (rice fields), and the lessor does not have power over the land for a period of time that has been agreed upon by both parties. Based on information obtained through key informants or respondents in this study, it can be concluded that where the respondents carried out this adol oyodan rental system for approximately 2 years or equivalent to 6 planting seasons, the rent made by the respondents was in the amount of Rp. 8,400,000 with a land area of 2,000m^2. Tenant farmers have made transactions and discussions related to the land to be rented.

In carrying out this land rental activity, several conditions that have been agreed upon between the tenant and the landowner are enforced, one of the conditions in

carrying out land rental is that the tenant is not allowed to dig or take land, the tenant is not allowed to build buildings on the rented land, so that the rent made is only for carrying out farming activities or cultivating plants. In addition, the owner and tenant have the right to rent the agreed-upon land. One of the rights obtained by the owner is that if the owner terminates the lease or terminates the contract in the middle of the agreed land rental period, the tenant will receive compensation money back, but if the tenant terminates the agreement contract, there is no compensation money. So, what the tenant usually does when terminating the land rental contract is that it will be given to someone else, so that other people take turns renting or paying the first tenant.

From the information obtained through interviews with farmers who rent land, the adol oyodan system tenants will not be subject to tax fines, because, based on the agreement with the owner, the tenant is exempt from tax costs, so that the payment of tax costs is made by the land owner. The tenant should pay irrigation fees; besides that, the tenant will also be fined if they cultivate more than the agreed-upon rental period. A tenant with this adol oyodan system has the right to plant any type of plant, and the owner may not interfere with the plants planted, as long as it does not violate the mutual agreement. Contract extension can be done with confirmation from the owner.

Investment Analysis

Table 1. Net Present Value

years	planting season	Cash inflow	Discount Faktor	Present Value
0	0	(8.400.000)	1	(8.400.000)
1	1	4.598.000	0,952380952	4379047,619
1	2	4.620.000	0,952380952	4400000
1	3	4.772.500	0,952380952	4545238,095
2	4	8.963.000	0,907029478	8.129.705
2	5	8.556.000	0,907029478	7760544,218
Net Present Value			20.814.535	

Source: Primary data analysis, 2024

From the calculation above, the total present value is reduced by the rental fee of Rp 8,400,000, and the result is Rp. 20,814,535, which is a positive NPV, it can be concluded that the farming business carried out is feasible to be continued or implemented again in the future period. If the NPV value produces a negative value, then the farming business should not be carried out again, as this shows the profit and loss of each farming business carried out.

Internal Rate of Return

IRR shows how much business returns on investments invested during farming carried out by tenant farmers with the adol oyodan system in Ketaon Village. The results of the IRR value can be concluded that if the IRR value produced produces a percentage value greater than the opportunity cost of capital (DR). The use of IRR calculations aims to determine how feasible and how the return on invested capital can be returned, or in other words, the profits obtained. From the table above, it can be seen that the IRR value shows 100%+, which can be said that the farming business being carried out is feasible. Because if the IRR value is greater than the discount rate (DR), the farming business is said to be feasible. This happens because when the farming

project is carried out in the first year, the activity immediately provides profits that can cover the initial investment costs (Nugroho & Margana, 2024).

Table 2. Net benefit cost

years	planting season	Cash inflow	DF 5%	Present Value	Pv-	Pv+
0	0	0	1	-8400000	8.400.000	29.214.535
1	1	6.468.000	0,952380952	4.379.047,619		
1	2	6.520.000	0,952380952	4.400.000		
1	3	6.672.500	0,952380952	4.545.238,095		
2	4	10.653.000	0,907029478	8.129.705,215		
2	5	10.721.000	0,907029478	7.760.544,218		

Source: Primary data analysis, 2024

The calculation of Net b/c above can be calculated by adding the positive PV and dividing it by the negative PV, then getting the result 3.4779. Net Benefit Cost Ratio is used to compare the amount of positive NPV with the amount of negative NPV, which shows how much benefit will be obtained from the capital issued (Akiang et al., 2020). In this study, a Net Benefit Cost analysis has been conducted from the results of tenant farmers' farming efforts with the adol oyodan system in Ketaon Village, Boyolali. It can be seen through the table that has been made briefly and clearly, from the table above it shows that the NBC (Net Benefit Cost) value shows a value> 1.

years	planting season	Total Cost	Total revenue	DF 5%	B (Benefit)	C (Cost)
0	0	8.400.000	0	1	0	8.400.000
1	1	1.870.000	6.468.000	0,952380952	6.160.000	1.780.952,381
1	2	1.900.000	6.520.000	0,952380952	6.209.523,81	1.809.523,81
1	3	1.900.000	6.672.500	0,952380952	6.354.761,905	1.809.523,81
2	4	1.690.000	10.653.000	0,907029478	9.662.585,034	1.532.879,819
2	5	2.165.000	10.721.000	0,907029478	9.724.263,039	1.963.718,821
		JUMLAH			**38.111.133,79**	**17.296.598,64**

Table 3. Gross benefit cost

Source: Primary data analysis, 2024

Calculating gross b/c is by calculating and comparing pv benefit and pv cost. After getting the results, the PV benefit is divided by PV cost (Khofiyah et al., 2023). In this study, the result was 2.20. From the calculation results above, it can be concluded that the comparison between the amount of PV Benefit and PV Cost produces a value of 2.20, or >1. This can be concluded based on the theory above that farming can be said to be feasible because it has a Gross B/C value>1. So that tenant farmers with the adol

oyodan system in Ketaon Village can continue their business because, based on the Gross B/C value, tenant farmers will get a decent return on capital.

Payback period

$$Payback\ period = \frac{8.400.000}{23.109.500} x\ 1\ years$$

$$Payback\ period = 0{,}6004 \text{ years}$$

$$0{,}6004 \text{ x } 12 \text{ month } = 7{,}204\ month$$

The payback period calculation shows that the return on capital obtained by farmers in Ketaon Village, Banyudono, can be returned within a period of 0.6004, or in other words, the return on capital can be received within 7 months in one year. Judging from the basis or theoretical basis used, an investment is declared feasible if the payback period is shorter than the maximum payback period (Sulbahri, 2022). Conversely, if the payback period of an investment is longer than the maximum payback period, the investment is declared unfeasible. So it can be concluded that this farming business can be said to be feasible to run both in the current and future periods. The calculation is based on the initial capital of Rp. 8,400,000, and with a net cash inflow of Rp. 23,109,500.

Conclusion

The agricultural land rental system carried out by the average farmer in Ketaon Village, Banyudono District, Boyolali Regency, is the adol oyodan land rental system. This rental system is a land rental system where the tenant gives money in advance directly to the owner of the agricultural land (rice fields). Those who rent no longer have power over their land for a certain period (in the village, this method is often known as adol oyodan or adol usuman). The farming business system with the adol oyodan land rental system in Ketaon Village, Banyudono District, Boyolali Regency, it can be concluded that this land rental system is feasible to continue to be pursued because based on the calculations that have been carried out, it shows that from several calculations, both through the calculation of NPV (Net Present Value), IRR (Internal Rate of Return), Net Benefit Cost Ratio, Gross Benefit Cost Ratio (Gross B / C) shows a positive value and meets the eligibility requirements for the farming business being carried out. Given its proven profitability, it is recommended that the adol oyodan system be preserved and supported. Nevertheless, modernization strategies should be considered to strengthen its long-term sustainability. This includes formalizing rental agreements to prevent disputes, providing capacity-building programs for farmers on efficient resource management, and integrating adaptive measures to address fluctuations in commodity prices and climate variability. By combining traditional wisdom with modern management practices, adol oyodan can continue to serve as a viable and culturally relevant model for rural agricultural development in Boyolali Regency and beyond.

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capital and independent marketing strategies without going through the tebasan or middlemen system. This study is also expected to be a reference and initial guide for novice farmers who want to start a farming business with a land rental system. Hopefully, the results of this study can provide benefits for the development of sustainable agriculture and support the welfare of farmers.

Author Contributions Statement

M.F.A. designed the study, collected the data, and performed the initial analysis. M. contributed to the development of the methodology and interpretation of the data. A.P. was responsible for the supervision of the study, data validation, literature review, development of the theoretical framework, and editing of the final manuscript. A.Y.A. assisted in the revision of the substance of the manuscript. All authors have read and approved the final version of this article.

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