



# Economic feasibility analysis of service business of agricultural equipment and machinery in Kubu Raya Regency, Indonesia

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## Introduction

The use of agricultural equipment and machinery has become the main farmer's need as technically it can accelerate and improve the quality of soil cultivation, water supply, increase the cropping index, reduce lost yields and preserve the environmental functions. Economically, it can increase the added values through product processing, productivity, and resource efficiency. Institutional service business of agricultural equipment and machinery (UPJA) needs to develop to facilitate farmers' access to the use of affordable agricultural equipment and machinery in order to increase the sustainable food production. The sustainability of the service business is influenced by many aspects including economic aspects.

Kubu Raya Regency is one of rice production central in West Kalimantan. With 27,957 ha of harvest width, it is able to produce 92,452 tons of rice, 14.86% of the total rice production in West Kalimantan (Statistics Indonesia, 2019). One of subdistrict becoming the rice production central is Sungai Kakap subdistrict. It is an integrated agribusiness area applying relatively high agricultural technology, using 1,456 units of the agricultural equipment as machinery for the production processes, from soil cultivation to post-harvest.

In fact, however, the unit is difficult to develop. In the period of 2015-2017, the number of active units decreased by 42.75%, from 917 units in 2015 to 525 units in 2017. The challenges impeding sustainability of the institutional units, from farmers' side, include the low farmers' capital capacity to rent the equipment and machinery.

This study aimed to analyze financial feasibility of UPJA in Parit Keladi village, Sungai Kakap subdistrict, Kubu Raya Regency. Both R/C ratio and B/C ratio were the analysis applied

## Research Method

This study was conducted in December 2019 at UPJA Madiun Mandiri in Parit Keladi Village, Sungai Kakap Subdistrict, Kubu Raya Regency.

The financial feasibility of the service business unit of agricultural equipment and machinery was calculated with several measurement criteria of investment feasibility:

1. RCR
2. BCR

## Result and Discussion

**Table 1.** The Total Costs Spent for Each Equipment in One Planting Season Service Business Unit of Agricultural Equipment and Machinery (UPJA) Madiun Mandiri in Sungai Kakap Subdistrict of Kubu Raya Regency

No	Types of Agricultural Equipment and Machinery	Jumlah Alat	Fuel Cost	Lubricant Cost	Operator Cost	Maintenance Cost	Total Cost
1	Transplanter	3	448.000	52.000	2.100.000	300.000	2.900.000
2	Water Pump	1	0	0	0	200.000	200.000
3	Power thresher	1	504.000	52.000	2.250.000	600.000	3.406.000
4	Mini Combine	3	420.000	104.000	3.000.000	800.000	4.324.000
5	Hand Tractor	2	180.000	104.000	2.880.000	400.000	3.564.000
Total Biaya			1.552.000 (10,78%)	312.000 (2,17%)	10.230.000 (71,07%)	2.300.000 (15,98%)	14.394.000 (100%)

Source: Primary Data Analysis, 2019.

**Table 2.** Feasibility Analysis of Service Business Unit of Agricultural Equipment and Machinery Madiun Mandiri in Sungai Kakap Subdistrict of Kubu Raya Regency

Description	Types of Agricultural Equipment and Machinery					TOTAL
	Transplanter	Water Pump	Power Thresher	Mini Combine	Hand Tractor	
Number of Equipment and Machinery	3	1	1	3	2	10
Equipment and machinery work capacity	7 Ha/MT	10 hari	15 Tons/MT	12 Tons/MT	6 Ha/MT	-
Rental price (IDR)	750,000	50,000	400,000	600,000	1,200,000	-
Revenue (IDR/Unit)	5,250,000	500,000	6,000,000	7,000,000	7,200,000	-
Cost (IDR/Unit)	2,900,000	200,000	3,406,000	4,324,000	3,564,000	-
Benefit (IDR/Unit)	2,300,000	300,000	2,594,000	2,876,000	3,636,000	-
R/C per unit of agricultural equipment and machinery	1.81	2.5	1.31	1.67	2.0	-
B/C per unit of agricultural equipment and machinery	0.79	1.5	0.76	0.67	1.02	-
BEP	4 Ha	4 days	9 Tons	8 Tons	3 Ha	-
Total Revenue of the service business unit	15,750,000	500,000	6,000,000	21,600,000	14,400,000	58,250,000
Operational cost of agricultural equipment and machinery	8,700,000	200,000	3,406,000	12,972,000	7,128,000	32,406,000
Other costs	-	-	-	-	-	5,825,000
Total costs	-	-	-	-	-	38,231,000
Benefit	-	-	-	-	-	20,019,000
R/C of the service business unit	-	-	-	-	-	1,52
B/C of the service business unit	-	-	-	-	-	0,52

Source: Primary Data Analysis, 2019

## Conclusion

Based on the feasibility analysis, the management of the service business unit of agricultural equipment and machinery Madiun Mandiri is beneficial and feasible for operation with 1.52 RC ratio, 0.52 Net B/C ratio, and 20,019,000 rupiahs benefit rate. Considering the feasibility level, the highest R/C ratio is by water pump, followed by hand tractor (2.0), transplanter (1.81), mini combine (1.67), and rice thresher (1.31). To be feasible for operation, the minimum work capacity which must be achieved by each agricultural equipment and machinery is 4 ha for transplanter, 4 days for water pump, 9 tons for rice thresher, 8 tons for mini combine, and 3 ha for hand tractor.

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