

# Financial Feasibility Study for The Use of KUPS Credit Scheme on Balinese Cattle Farming (A Case Study in a Farming Group “Satwa Winangun” of Tangkas Village in Klungkung Regency)

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**Abstract.** This research aims to determine the financial feasibility on the farming business of breeding balinese cattle who uses KUPS Credit Scheme. Data was collected through observation and interview. Respondents were all members of the “Satwa Winangun” farmers in Tangkas village, Klungkung Regency. Financial feasibility is determined by evaluating the eligibility criteria such: NPV, Net B/C, IRR, and payback period. The assessment was based on 2 calculation systems, (1) calculation of cash costs in which forage and labor are not calculated as the cost (existing condition), and (2) total cost calculation, in which two components are calculated as cost. Based on the calculation of cash costs, cultivation of Bali cattle by utilizing KUPS credit in this village is financially feasible to be implemented. This was indicated by the NPV value of Rp. 274.103.000, IRR 20.16%, Net B/C 1.55, and investments has been able to return within 3.52 years. The result of sensitivity analysis shows that as far as KUPS interest rate is lower than 18.37% per year, this farming is still financially feasible. Breakeven point can be achieved when the number of cattle parents maintained is 37, or when the price of calves at the age of 6 months is an average of Rp. 1.764.022 per cattle. However, based on the calculation of total cost, this farming system is not financially feasible. This is shown by the negative NPV of Rp. -285.721.000, IRR 2.87%, and Net B/C 0,54. This farming system is not financially feasible despite the 0% / year KUPS rate. The break-even point can be reached when the price of calves at the age of 6 months averages Rp. 4.288.367 per cattle.

**Keywords:** *Farming, Balinese Cattle, Financial Feasibility, KUPS*

## I. INTRODUCTION

The role of breeding is very important as a "biological machine" of producing calves in order to achieve national meat self-sufficiency. To achieve these goals the government is targeting the addition of cow population of 1 million heads in the period of 5 years (until 2014). However, the growth of breeding or breeding business is still very slow so it needs to be stimulated to grow faster. One of the policies issued by the government to achieve this, is to provide subsidized loan interest to breeder of breeding cattles through the provision of Credit Scheme of Cow Breeding Business (KUPS).

The number of KUPS that have been utilized by farmers until July 2011 is very low, which was only 7.2% of the ceiling of Rp 3.822 trillion (Directorate General of Livestock, 2011). This condition also occurs in Bali, whereas the Balinese cattle breeding gets priority to be developed because of its various advantages. Until September 2012 the realization of KUPS in Bali was Rp. 20.322.566.200 (Animal Husbandry and Animal Health Service of Bali Province, 2012), distributed by BPD Bank of Bali. In Klungkung Regency there is only one group of livestock utilizing this credit scheme. There are farmers with concerns that they will lose if nursing cattle by using KUPS funds. Based on the above description, this research is very important to test whether the business of Balinese cattle breeding financed by KUPS scheme is feasible or not financially.

This study aims to: (1) find out financial feasibility of Balinese cattle cultivation farming system by utilizing the KUPS credit scheme; (2) knowing the financial feasibility sensitivity of cultivation farming to the change of KUPS credit interest rate; And (3) To know the scale of the cattle parent's maintenance in the Balinese cattle cultivation and to know the price of the calf on the breakeven point. The results of the research are beneficial to the farmers, government, and banks that are used as government partners in distributing the KUPS scheme, more of the benefits includes: (1) as information materials for farmers, that can give an idea about the financial feasibility of Balinese cattle cultivation farming if it is financed by credit scheme of KUPS; and (2) as an information material for the government, for evaluating the KUPS credit scheme spending policy.

## II. RESEARCH METHODS

### *Location, Time, Respondent, and Data*

This research was conducted on the animal husbandry group of "Satwa Winangun" which is located in the Tangkas Village, Klungkung Regency; conducted from June to October of 2012. Respondents are all members of the group which consisted of 30 people. The types of data used are quantitative and qualitative data, sourced from primary and secondary data. The data was collected through observation, and interviews.

### Investation Criteria Analysis

The financial feasibility of Balinese cattle cultivation farming through utilizing the KUPS credit scheme is determined by evaluating the feasibility criteria of investment such as: NPV, Net B/C, IRR, and Payback Period. The formula used to calculate the magnitude of these criteria is based on some researches [2], [3], [4], which are as follows:

Net Present Value (NPV)

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

$B_t$  = the benefit obtained by business activities in the year "t"

$C_t$  = cost Issued by business activities in the year "t"

t = Amount of Time (in Year Tahun)

n = Economic Life of the Business

i = Discount Rate

Evaluation Criteria of Business Feasibility:

NPV > 0, Meaning Feasible

NPV < 0, Meaning Not Feasible

NPV = 0, Meaning At Breakeven Point

Internal Rate of Return (IRR)

$$IRR = i_1 + \frac{NPV_1}{NPV_1 - NPV_2} (i_2 - i_1)$$

$i_1$  = The discount rate resulting in NPV is positive

$i_2$  = The discount rate resulting in NPV is Negative

$NPV_1$  = NPV at the discount rate of  $i_1$

$NPV_2$  = NPV at the discount rate of  $i_2$

Evaluation Criteria of Business Feasibility:

If IRR > i, Meaning Feasible

IRR < i, Meaning Not Feasible

IRR = i, Meaning At Breakeven Point

Net Benefit Cost Ratio (Net B/C)

$$\text{Net B/C} = \frac{\sum_{t=0}^n \frac{B_t - C_t}{(1+i)^t}}{-\sum_{t=0}^n \frac{B_t - C_t}{(1+i)^t}} \dots\dots\text{For } (B_t - C_t) > 0$$

$$\dots\dots\text{For } (B_t - C_t) < 0$$

Evaluation Criteria of Business Feasibility:

If Net B/C > 1, Meaning Feasible

Net B/C < 1, Meaning Not Feasible

Net B/C = 1, Meaning at Breakeven Point

Payback Period (PBP)

$$PBP = T_{tp-1} + \frac{\sum_{t=0}^n \bar{I}_t - \sum_{t=0}^n \bar{B}_{tp-1}}{\bar{B}_{tp}}$$

$T_{tp-1}$  = Years before there was PBP

$\bar{I}_t$  = The amount of Investment that have been discounted

$\bar{B}_{tp}$  = Benefit that have been discounted when PBP is held

$\bar{B}_{tp-1}$  = Benefit that have been discounted before PBP is held

The financial feasibility assessment was based on two calculation systems (Soekartawi, 2002), (1) based on the cash cost calculation (the cost calculation is only based on the real expenditure of farmers (existing conditions) where the cost of forage and labor is not considered as cost), and (2) based on the total cost calculation (in which the two components of the cost are taken into account as costs). Financial feasibility was calculated using a discount rate of 12%, with a 10 year time analysis (of project age). Prospective cattle parents begin to be kept at the age of 1 year old.

The calculation of physical inputs required in the cultivation of Balinese cattle such as feeding requirements, medicines, was done by referring to the system of livestock (ST), (Sukanata, 2009). One adult cow with the age above 2 years is calculated as 1 ST. A young cow with the age of 1-2 years of age equals 0.5 ST, and a calf under the age of 1 year of age equals 0.25 ST.

### Sensitivity Test and Breakeven Point

The level of sensitivity of financial feasibility of Balinese cattle breeding business in the research area towards the change of loan interest rate is determined by looking at the switching value from the credit interest rate, which was by determining the amount of KUPS interest rate that yields NPV equals to zero. The closer the current KUPS interest rate is to the value of its switching value, means that the feasibility will be very sensitive to the changes in KUPS interest rates, and vice versa. The amount of maintenance of the cattle parents and the price of the calf when it reaches the break-even point is also determined by finding the value of its switching value.

## III. RESULTS AND DISCUSSION

### The Inflow

Benefits derived from the breeding business of Balinese cattle are all received in the form of rupiah, received by farmers from the farm business. The results of this study indicates that the benefits gained from Balinese cattle farming in Tangkas Village was in the form of calves sales, calves parent's sales, fertilizers sales, and its residuals as can be seen in Appendix 3. Sales of the first new offspring can be enjoyed on the third year, which is exactly at the end of the third month of the year. The average age of the calf when sold is at 6 months of age.

Benefit in the first and second years only comes from fertilizer sales. The selling price of male and female calves at the age of 6 months old was different, where the male calve sold at Rp. 3.5 million rupiah / head while the female calve sold at 2.5 million rupiah / head. The selling price of solid organic fertilizer was Rp. 600 / kg, the price of Biourine fertilizer Rp. 8000 / 5 liters, while the calve parent price was Rp. 5.000.000/head. The residual value is derived from the value of the cage building and other buildings calculated at 5% of the initial value, as well as the residual value of the equipment (weighing scale) which is calculated at 10% of the initial value. The benefit in the form of biogas has not been fully utilized.

### *The Outflow Investation Cost*

Investment costs incurred in the form of purchases of female prospective mothers, cages and other buildings, land rent, equipment purchases, costs of electricity and water installations, and credit administration costs. The amount of investment cost required is Rp. 458.558.000, as can be seen in Appendix 1. Some investment items such as equipment are less of economic age than the time limit of analysis (project life) of 10 years therefore re-investment is required in a certain year according to their economic age. The capacity of the cage that has been built in the "Satwa Winangun" farmer group of Tangkas village are as many as 90 heads of mother cow. However, the number of current mother cow population is only 60 heads.

### *Operation Cost*

Operating costs in this case are differentiated into fixed costs and variable costs. The fixed cost component consists of electricity and water costs, loan interest, and marketing costs. Electricity and water costs are of Rp 150.000 and Rp 80.000 per month, respectively. In addition to using their own sources of funds, the livestock group also obtained funding from a credit scheme of cow breeding business (KUPS) of Rp.498.688.000, with a loan period of 6 years and interest of 5% / year. Interest payments are made monthly from the first month until the 72<sup>nd</sup> month. Marketing expenses spent are on average of Rp 1.2 million / year.

The variable costs of Balinese cattle cultivation in this group includes feeding costs (fresh forage and rice bran), minerals, labor, IB, vaccines, vitamins, medicines, and fertilizer mixtures. Labor costs and forage feeding costs are calculated costs because farmers actually do not buy forage and also do not pay for labor. In analysis based on total cost, labor cost is calculated as Rp 30.000/ HKSP, while forage feed cost is calculated as Rp. 50 / kg. The amount of fixed costs and variable costs required at Balinese cattle breeding farms in the farmer group of "Satwa Winangun" of Tangkas Village can be seen in Appendix 2.

### *Financial Feasibility Based on Cash Cost*

Based on the cash cost, Balinese cattle in farming group of "Satwa Winangun" of Tangkas village is financially feasible. This was shown by feasibility assessment presented in Appendix 3. The table shows that the NPV value is positive, that is Rp. 274.103.000, IRR 20.16%, and Net B / C 1.55. The value of NPV shows that in 10 years' time, Balinese cattle cultivation farming with a business scale of 60 heads of mother cows is able to give a net profit equal to Rp. 274.103.000 in present value form. The results of this study are in line with the opinion of Widiati (2012) which states that beef cattle breeding business utilizing loan capital with interest rate of 6%, if analyzed based on cash cost is financially feasible with positive NPV value, B / C ratio of greater than 1, and IRR bigger than discount factor. Ilham and Saliem (2011), stated that Balinese cattle breeding business with integrated system of palm oil plantation is feasible financially with a B / C ratio of 1.35-2.67 and long payback period of 4.91-6.4 years.

The IRR calculation above shows that based on cash cost, Balinese cattle breeder farming in this group is able to give profit until the discount rate of 20,16%. If the rate of discount is greater than that number, then this farm is not feasible anymore to be cultivated. While the value of Net B / C above shows that every rupiah of expenses incurred for the farm will provide a net benefit of Rp. 1.55, so it will give a net profit of Rp. 0.55.

Based on the calculation of cash cost, the payback period (PBP) shows that the cultivation of Bali cattle in the "Satwa Winangun" farmer group of Tangkas Village is able to return the investment cost in a relatively short time period of 3.52 years or in the 4th year. This indicates that the farming is feasible because the investment can be returned before the investment period ends (10 years).

Sensitivity analysis result shows that the switching value amount of mother cows is 37 heads. That is, when the number of mother cows maintained are as many as 37 heads, then this farm will reach the breakeven point. Thus, the farming would be feasible when the number of mothers kept above 36 heads, while other conditions remained. The switching value of calves prices also shows that the price of calves aged 6 months on average were Rp. 1.764.022 /head, while on other conditions it remains, then the breakeven point will be reached. A higher price than that would be financially profitable, and otherwise causing losses if was lower.

The value of switching value of KUPS credit interest rate is 18.37%. That is, if the KUPS credit rate is 18.37% / year, while other conditions remain, then the resulting NPV is zero or break even. Thus, based on these calculations, the farming system is financially feasible when the KUPS interest rate is lower than 18.54% / year, and will be disadvantageous if it exceeds that figure.

### *Financial Feasibility Based on Total Cost*

The results of the financial feasibility assessment of Balinese cattle breeding farms at the "Satwa Winangun" Farmer Group of Tangkas Village based on the total cost indicates a different feasibility of the valuation based on cash cost. The result of the assessment based on the total cost indicates that if the input of forage feed and labor is also calculated as the cost, the breeding farm in the farmer group is not feasible financially to be implemented. This is indicated by the negative NPV calculation, which is Rp - 285.721.000, IRR 2.87%, and Net B / C 0.54. This is caused by the results of cattle waste processing has not yet been sold optimally. According to Steflyando et al (2014), cattle breeding business with additional business income from livestock processing activities is able to provide a positive NPV value, with IRR 12.3%, and PBP 5 years 2 months.

The result of sensitivity analysis shows that switching value of calves price was Rp. 4.288.367/ head. That is, when the price of calves at the age of 6 months were an average of Rp. 4.288.367/head, this new farm will breakeven. Farming will experience a profit when the price of calves aged 6 months is above Rp. 4.288.367/head. The result of switching value calculation of KUPS interest rate shows that although the interest rate is lowered to 0% / year this farming system is not yet financially feasible.

## IV. CONCLUSION AND SUGGESTIONS

## ACKNOWLEDGEMENT

*Conclusions*

Based on the calculation of cash costs (without taking into account the cost of forage and labor), the cultivation of Balinese cattle in the "Satwa Winangun" Farmer Group of Tangkas Village in Klungkung Regency that utilizes the KUPS credit is financially feasible to be implemented. If forage feed and labor are also calculated as costs, this farm is not feasible to be implemented. Based on the calculation of cash cost, Balinese cattle breeding system at the "Satwa Winangun" Farmer Group of Tangkas Village in Klungkung Regency deserves to use KUPS credit only when the KUPS interest rate is lower than 18.37% / year. If forage and labor are also calculated as cost, this farming system is not financially feasible to use the KUPS credit, even though the KUPS interest rate is reduced to 0% / year. The cultivation of Balinese cattle in the "Satwa Winangun" Farmer Group of Tangkas Village in Klungkung Regency will reach a break-even point if the numbers of mother cows raised are of 37 heads, or when the price of calves at the age of 6 months was Rp. 1.764.022/head. Similarly, if forage feed and labor are also calculated as a cost, this new farming will break even only if the price of calves is on average Rp. 4.288.367/head.

*Suggestions*

The cultivation of Balinese cattle in the "Satwa Winangun" Farmer Group of Tangkas Village in Klungkung Regency can be continued as the farmers do not pay forage and labor wage. The number of mother cows can be increased according to the capacity of the mother cow's cage availability, which is up to 90 cows, keeping in mind that there are other inputs such as feeding and labor, so that no cages are empty. The addition of cages can be financed by KUPS, as it is financially feasible with keeping in mind that forage and labor must be of its own (without buying). Marketing of processed livestock waste needs to be improved, because the production is large enough and is not yet marketed maximally.

Through this opportunity we as a team of researchers would like to thank the greatest to: The Rector of Udayana University for the trust and funds that have been given to us to finance this research, Mr. Ketut Darmawan, S.Pt. As the head of the farmer group of "Satwa Winangun" of Tangkas Village Klungkung regency, and all members of the group for all their assistance, especially in collecting relevant data in this research.

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## APPENDIX 1.

## THE INVESTMENT COST OF BALINESE CATTLE BREEDING AT THE "SATWA WINANGUN" FARMER GROUP OF TANGKAS VILLAGE KLUNGKUNG REGENCY WITH THE SCALE OF 60 MOTHER COWS AS OF AUGUST 2012.

No	Investment Component	Unit	Physical amount	Price per Head (Rp x1000)	Investation cost (Rp x1000)	Residual value (Rp x 1000)	Economic age (Year)
1	Livestock Investment						
	Prospective mother cow of 1 Year	Cow	60	4.000	240.000	300.000	
	Amount				240.000	300.000	
2	Buildings						
	Cages ( 90 Heads capacity)	m <sup>2</sup>	346	130	44.928	2.246,4	15
	Forage Warehouse	m <sup>2</sup>	40	150	6.000	300	15
	Fertilizer Warehouse	m <sup>2</sup>	40	150	6.000	300	15
	Biourine installation (6,75 m <sup>3</sup> )	Unit	1	8.000	8.000	0	15
	Exercise Area	m <sup>2</sup>	400	10	4.000	0	15
	Biogas Installation (11 m <sup>3</sup> )	Unit	1	25.000	25.000	0	15
	Office/meeting ground	m <sup>2</sup>	35	300	10.500	525	15
	Amount				104.428	3.371,4	
3	Land Rent, cage area for 10 years	Acre	15	4.000	60.000	0	10
	Amount				60.000	-	
4	Equipment						
	Grass enumerator	Piece	1	25.000	25.000	1.250	15
	Hoes	Piece	5	50	250	0	1
	Spades	Piece	4	100	400	0	2
	Buckets	Piece	15	30	450	0	1
	Ropes	M	240	6	1.440	0	3
	Hoses	M	20	8	160	0	2
	Water Pump	Piece	1	450	450	0	5
	Sickle	Piece	26	30	780	0	1
	Sprayer	Piece	2	3.000	6.000	0	10
	Tap	Piece	4	25	100	0	2
	Injection device	Piece	2	75	150	0	2
	Diesel Machine	Unit	1	4.000	4.000	200	15
	Scales	Unit	1	850	850	85	20
	Tower	Unit	2	1.500	3.000	0	10
	Arko	Unit	2	400	800	0	3
	Amount				43.830	1.535	
5	Electricity Installation (900 watt)	Unit	1	2.500	2.500	0	
6	Water Installation	Unit	1	1.800	1.800	0	
7	Credit Administration	Package	1	6.000	6.000	0	10
	Amount				458.558	304.906,4	

APPENDIX 2.  
BALINESE CATTLE BREEDING OPERATION COSTS AT "SATWA WINANGUN" FARMER GROUP OF TANGKAS VILLAGE IN KLUNGKUNG REGENCY  
WITH A SCALE OF 60 MOTHER COWS, AMOUNTS ARE IN THOUSANDS OF RUPIAH, AS OF AUGUST 2012

Operational Costs Components	Number of Years									
	1	2	3	4	5	6	7	8	9	10
Variable Costs										
Fresh Forage *	-	-	-	-	-	-	-	-	-	-
Rice Barn	13.500,00	28.575,00	29.625,00	29.625,00	29.625,00	30.150,00	30.150,00	30.150,00	30.150,00	30.150,00
Labor *	-	-	-	-	-	-	-	-	-	-
Ib	-	3.358,21	3.358,21	3.358,21	3.358,21	3.358,21	3.358,21	3.358,21	3.358,21	-
Vaccine And Vitamins	8.880,00	9.216,00	8.880,00	9.216,00	9.216,00	9.216,00	9.216,00	9.216,00	9.216,00	9.216,00
Medication	2.490,00	3.330,00	4.736,00	4.736,00	1.406,00	4.736,00	4.736,00	4.736,00	4.736,00	4.470,00
Feed Additives	648,00	1.371,60	1.422,00	1.422,00	1.422,00	1.447,20	1.447,20	1.447,20	1.447,20	1.447,20
Fertilizer Ingridients	39.884,09	57.202,58	58.408,84	58.408,84	58.408,84	59.011,97	59.011,97	59.011,97	59.011,97	59.011,97
Amount Of Variabe Cost	65.402,09	103.053,38	106.430,05	106.766,05	103.436,05	107.919,38	107.919,38	107.919,38	107.919,38	104.295,17
Fixed Cost										
Depreciation	18.833,69	18.833,69	18.833,69	18.833,69	18.833,69	18.833,69	18.833,69	18.833,69	18.833,69	18.833,69
Electricity And Water	2.760,00	2.760,00	2.760,00	2.760,00	2.760,00	2.760,00	2.760,00	2.760,00	2.760,00	2.760,00
Interest Rate	24.934,40	24.934,40	24.934,40	24.934,40	24.934,40	24.934,40				
Marketing Cost	1.200,00	1.200,00	1.200,00	1.200,00	1.200,00	1.200,00	1.200,00	1.200,00	1.200,00	1.200,00
Total Fixed Costs	47.728,09	47.728,09	47.728,09	47.728,09	47.728,09	47.728,09	22.793,69	22.793,69	22.793,69	22.793,69
Total Operational Cost	113.130,18	150.781,47	154.158,14	154.494,14	151.164,14	155.647,47	130.713,07	130.713,07	130.713,07	127.088,86

\* are cost that are calculated

