



Feasibility Study of Financial Economic on Combination Goat Farming and Cacao Farm By Farmers

S. Rusdiana^{1*} and R. Hutasoit²

¹ *Livestock Research Institute Ciawi-Bogor, West Java.*

² *Indonesian Goat Research Station, Sungei Putih North Sumatra.*

Email for correspondence: s.rusdiana20@gmail.com

Abstract

The research was conducted in Sumber Harapan Village, Tinggi Raja District, Asahan Regency, North Sumatra Province, in 2016, using field survey methods, questionnaires and interviews. Secondary data was obtained from the local Livestock Service Office, primary data sourced from respondents by purposive random sampling, as many as 15 of goat farmer in scale of 3-5 heads / farmers and 10 cocoa farmers. Each farmer has a land area of around 1000 m² and has 100 cocoa trees, producing around 5.7 to 6.5 kg/tree/ week. Data were analyzed descriptively, quantitatively and economic feasibility analysis of B/C ratio. The purpose of this study was to analyze the economic feasibility of goat and cocoa farming businesses. The results showed that, almost all of the land belonged by farmers. The farmer business continue to run well, the worker of the goats business and cocoa is quite different. For the goats business as much as 160.56 days/year and for cocoa businesses 262.28 days/year. The profit of goat as much 5.392.060 IDR/year B/C 1.8. The capital of expenditure was 1.714.200 IDR/year. So that the profits obtained 3.677.860 IDR/year. The advantage of cocoa farmers is 67.507.200 IDR/ year B/C 2.7, The capital of expenditure of 7.2142.00 IDR/year. So that the cocoa profits obtained of 60.293.000 IDR/year. It is concluded that the goat and cacao business can be profitable for farmers. Then the business as financially economically feasible to develop further.

Keywords: Business feasibility, goat, cocoa, economics

Introduction

Indonesia is famous for its agrarian country which has quite extensive agricultural and plantation areas. Natural resources that still need to be explored and utilized for the fulfillment of animal feed and also human needs Ilham et al., (2008). Cocoa or *Theobroma cacao* L plants, which are one of the plantation commodities that are compatible with soil and climate culture in Indonesia, are included as tropical plants. high economic value. Cocoa is a raw chocolate production material that can bear fruit throughout the year, so many farmers are interested in cultivating it (Aziz, 2012). Cocoa plantations in Indonesia have experienced rapid development over the past 20 years. The area of cocoa plantations in Indonesia is 992.448 ha. Most cocoa plantations (89.45%) are managed by the people and the remaining 5.04% of the country's large plantations are around 5.51% of large private plantations (Maharany, 2012).

Cocoa plants and raising goats have their own meaning for farmers in Sumber Harapan Village, Tinggi Raja, Asahan Regency, North Sumatra Province. The income obtained will be directly proportional if the management of the business is carried out with good management. It is usually constrained by the classic problem of feed which can hardly be solved completely by the farmers themselves (Husen, 2005) and (Syahyuti, 2012). One of the technologies considered to be able to overcome this problem is by integrating the two types of commodity businesses. Businesses can be carried out in one particular area that can generate income together (Saptana, 2012). Farmers can increase their income through productivity of goats and cocoa production.

The diversification of goat farming and cocoa farming is a very promising business, and the benefits can be multiplied. Generally the types of goats that are raised are kacang goat or goat from the descendants of the etawah goat. Goats have

the ability to produce more than one child in one birth and their activities are not influenced by the season, so they can produce throughout the year. Muryanto et al., (2012) argue that, goats have a pregnant period of between 149-154 days, a range of 221-253 days of birth and have a fairly high adult male body weight between 23-40 kg and between 21-35. Fitra et al., (2009) and Ginting and Fera, (2008) suggest that bean goats generally have advantages especially in terms of fertility and adaptation to environmental conditions.

The cocoa plant in Sumber Harapan Village, Tinggi Raja District, Asahan Regency, North Sumatra Province, is one of the plantation commodities that is cultivated by many private and community plantations. Farmers in these locations have not utilized cocoa skin as goat feed, left alone or thrown away as farmer cocoa tree fertilizer. Cocoa waste is a great opportunity for small farmers and large farmers for animal feed so farmers have the opportunity to develop more goat farming businesses. Most of the farmers in the rural areas still raise around 3-5 goats / farmer livestock and have not gone towards commercial business. So far, most of the goat and cocoa farmers in running their businesses have become the main business of life, very much play a role as providers of employment for farmers.

However, the problems faced until now are the selling value of goats and cacao that have not reached the price according to the wishes of farmers. The price of goat and cacao cattle in farmers who are not yet full can improve their livelihoods better, still in the moderate category and below market prices. Based on consideration of the carrying capacity of the region, the availability of feed, the workforce of the farmer's family, facilities and infrastructure are very supportive for the development of the business of goats and cocoa. By using the approach in two directions, the effort to develop goat livestock in the area of people's cocoa plantations is very likely. The purpose of this study was to analyze the financial economic feasibility of goat and cacao farming in farmers.

Materials and Methods

The Location research

This research was conducted in Sumber Harapan Village, Tinggi Raja Subdistrict, Asahan Regency, North Sumatra Province, in 2016.

Methods

The study used field survey methods, questionnaires and direct interviews at the location on community cocoa plantation agroecosystems and goat farmers based on food crop wastes, forage and secondary crops. The data collected includes secondary data and primary data. Secondary data was obtained from the Asahan Regency Agriculture, Animal Husbandry and Plantation Office, while the primary data came from respondents of cocoa farmers and goat farmers.

This research also uses mixed methods (mixed method and economic), to get results that are in accordance with the research. The method of using descriptive, qualitative, quantitative and economic analysis refers to the techniques reported (Adawiyah and Rusdiana, 2016). Qualitative is the basics of philosophy used to examine an object. Quantitative uses a more objective approach to social, cultural and economic phenomena in goat and cacao farmers. These results can be translated through tables and numbers, so that they can be described according to the actual conditions.

Determination of respondents by purposive random sampling, as many as 15 respondents goat farmer with a scale of maintenance of about 3-5 heads / farmer and 10 respondents of cocoa farmers. Each cocoa farmer has his own land area of around 1000 m². The number of cacao trees planted is around 100 trees. Cocoa plants produce between 5.7-6.2 kg / tree. Then the data obtained was tabulated and analyzed descriptively, quantitatively and economic analysis.

Study of analysis feasibility of goat and cocoa businesses

The cost structure parameters of goat and cocoa farming businesses are calculated based on the B/C ratio (Rusdiana and Hutasoit, 2015). Financial economic feasibility analysis uses several factors that can describe how much the cost is spent, by

each cost factor, based on a one-year effort. The profit and loss business can be predicted how much, the probability of the costs to be incurred is not in accordance with the calculated costs. The benefits to be gained by farmers can be defined as the difference between revenue and total expenditure costs. The study of the feasibility analysis of livestock and cocoa business, carried out using farsial, the indicator of analysis used is B/C ratio (Benevit Cost Ratio) Amik et al., (2006).

If $a > 1$, it is said to be a feasible business

$a < 1$, it is said that the business is not feasible

$a = 1$, it is said that the breakeven business is not profitable and has no loss.

Results and Discussion

General Conditions of the Region

Asahan Regency has an area of around 371.945 ha which consists of 13 Subdistricts, 176 Villages per Km², and $\pm 292,16$ thousand of peoples. Distribution of population that is not evenly distributed in each District and accumulates in rural areas. The concentration of economic development in Asahan Regency in 2016 still leads to the development of agriculture, plantations, livestock and fisheries, infrastructure, education, health and the economy. Some functional shifts of agricultural land and climate, weather that is less supportive, so that the results achieved are not optimal. Nevertheless, the government continues to try to regulate the development of agriculture and non-agriculture for the advancement of the economy of its people (Plantation, Agriculture and Livestock Service Office Asahan Districts, (2016).

The results of this study can be seen from several things related to the analysis of the economic feasibility of goat farming and cocoa business to farmers in Sumber Harapan Village, Tinggi Raja, Asahan Regency, North Sumatera Province, including farmer land ownership for cocoa, agriculture for food crops, secondary crops, cocoa farmer and goat farmer labor, trade relations, outpouring of farmer's work time.

The ultimate goal is to find out how much profit the cocoa farmers and goat farmer earn in real terms, which can increase the lives of farmers.

Farmers characteristics

Based on the education almost 76% farmers were graduates from the primary school, junior high school is as higher of 16% and senior high school is 8%. However, can be supported by the experience of farming 22.11 ± 1.05 years, the average age of 45.32 ± 1.21 years. The age of farmers shows that still in the productive age range, so they can still receive a touch of new technology. Generally locations in this area are plantations like oil palm, rubber plantations, and some farmers grow cocoa. Most farmers cultivate their own farms and some of them cultivate other people's land. Goat livestock business is still in the side business, because the main business are agriculture, oil palm plantation, rubber plantation, cocoa plantation, plantation laborer, and trading.

Farmer labor costs

The worker's salary can be paid every day, but it depends on the manager. There are indications of the difficulty to finding workers, so farmers who have large land tend to tie up monthly labor wages. The farmer who need cash, the wages can be paid after after work. The Goat farmer such as cutting grass, bathing, pasturing and grounding are calculated based on a one-year effort. Workers for cocoa plantations, cocoa cultivation, land processing, planting, cacao cultivation, and post-harvest, calculate in one year.

The average time for work is shown in Table 1. The average number of goats kept 4.4 head/farmer, was calculated on the conversion time of day working person (DWP) 5 hours of work with the costs incurred amounting to 7.500 IDR/DWP. As for the cocoa business, the family workforce that is devoted to processing the land area for cocoa plants with an area of 1000 m² with 100 trees is calculated based on the conversion of 1 DWP 7 hours of work with the cost of 15.000 IDR/tree/year.

Table 1. Costs for goat and cacao business/year

Type of work	Goat business n=15				
	Hours/day	Average	Hours/year	DWP	IDR/year (7.500)
Grazing	25.0	1.67	601.2	120.24	901.180
Cutting forage	3.5	0.23	82.8	16.56	124.200
Care for goat	5.0	0.33	118.8	23.76	178.200
Number:	33.50	2.23	802.8	160.56	1.204.200

Type of work	Cacao business n=10				
	Hours/day	Average	Hours/year	DWP	IDR/year (15.000)
Planting	4	0.4	144/7	20.57	308.550
Fertilization	6	0.6	216/7	30.86	462.900
weeding	15	1.5	540/7	77.14	1.157.100
Harvesting	14	1.4	504/7	72	1.080.000
Drying	12	1.2	432/7	61.71	925.650
Number:	51	5.1	1.836/7	262.28	3.934.200

In the Table 1 shows that the labor used in goat and cacao farming is quite different. Each cost used for goat farming is 160.56 DWP and 262.28 DWP for cocoa business. Describing that the activity in cacao businesses is relatively higher than that of goat farming. The calculation of labor shows that the cost for goat farming is 1.204.200 IDR/year and cocoa is 3.934.200 IDR/tree/year.

Farmers stated that goat and cacao farming was profitable. However, in the reality farmer's income is very low, but it does not make a problem for them. Even though the results are small, farmers feel comfortable with the economic value obtained from the sale of both goat livestock and cocoa. The thing that makes farmers happy to do this business is farmers do not need high capital in doing goat farming, providing sufficient forage, and easily

grazed on the plantation area. Besides that, the way to sell goats is very easy and price according to the market. In the cocoa farm business, farmers also do not need sufficiently high business capital. Maintenance costs are quite cheap. Cocoa plants can live up to the age of 20-25 years.

The relationship between farmers and traders

The relationship between traders and farmers (Table 2) is strengthened by the cooperative business ties between the two that are mutually beneficial to each other. Business ties can be in the form of money loan contracts. The business bond is a requirement that farmers are required to sell their crops to traders who provide business capital loan assistance. But the selling price still applies as a market price, meaning that the farmer does not feel disadvantaged by the purchase price that applies at the trader.

Tabel. 2. The relationship between traders and farmers

Description	Goat business (-n-15)		Cacao business (n-10)	
	Average	(%)	Average	(%)
Business cooperation	5	33.33	6	60
Not business ties	10	66.67	4	40
Borrow business capital	2	13.33	1	10
Not borrow business capital	13	86.67	9	90
Borrowing of production facilities	-	-	-	-
Not borrowing production facilities	15	100	10	100
According to market prices	14	93.33	8	80
Not according to market prices	1	6.67	2	20

Business ties between farmers and traders in mastering business capital are sufficient. But some farmers feel the price is not in line with market prices. The price low of goat is caused by the goats being kept do not meet the standards or lack of body weight, while the price of cocoa is low because the cacao produced is not so dry and less clean. The selling price of goat and cocoa in traders is actually not much different from the market price. Changes in the price of production can be influenced by the quality of livestock and cocoa production. The price of goat and cocoa depends on the market price mechanism. If the products are sold to the market, the

farmers will pay for transport, and if they are sold to traders the farmers do not incur transportation costs.

The ownership of goat livestock

The ownership of goats in farmers (Table 3) in Sumber Harapan Village, Tinggi Raja Subdistrict, Asahan Regency in 2015-2016 ranged from 6.06-7.33 heads/farmer. The maintenance of the goat mother until $\pm$ 5 years and then sold despite low prices. Whereas for male cattle sold in the age range between 8-21 months. The number of goats kept by farmers from year to year is relatively constant because farmers often sell of them.

Table 3. The average of goat ownership in Sumber Harapan Village, Tinggi Raja sub District, Asahan Regency.

Description	Number of goats (n-15)			
	2015		2016	
	Average (head)	%	Average (head)	%
Adult female	2.75	38.46	2.92	34.11
Young female	1.15	16.08	2.01	23.48
Child female	1.09	15.24	1.2	14.02
Adult male	0.48	6.71	0.74	8.64
Young male	0.96	13.43	1.08	1.01
Child male	0.72	10.07	0.61	7.13
Number:	7.15	100	8.56	100

The table above shows that in 2015 the average number of goats 'livestock ownership was 7.15 and in 2016 there was an increase to 8.56. The number of adult goats in 2015 topped 2.75 or 38.46%. The average young female goat is 1.15 or as much as 16.08%. In 2016, the highest position in adult female goats was 2.92 or

34.11%, followed by 2.01 young females or 23.48% and 1.2 female child (14.02%). This shows that farmers can develop their livestock business. Farmers sell their livestock when farmers need money. However, the goats sold are the offspring of the children who have been selected to replace old mother.

Table 4. Prices for selling goats at various ages in 2015 and 2016

Description	Selling goats prices (n-15)					
	2015			2016		
	Head	Price	Sale value	Head	Price	Sale value
Adult female	2.72	885.500	2.408.560	2.93	887.500	2.600.375
Young female	1.13	655.000	750.150	0.9	675.000	787.500
Adult male	0.48	2.255.000	1.082.400	0.74	2.350.000	1.739.000
Young male	0.94	750.000	705.000	1.05	780.000	819.000
Number:			4.946.110			5.945.875

Table 4. Shows that the highest selling price of goats is in adult males. The average farmer can sell his goats in 2015 sale value

4.946.110 IDR and in 2016 (5.945.875 IDR). There was an increase in sales of 3.13% from 2015 to 2016. The biggest

contribution came from the sale of adult females and adult males. Based on data and information from farmers that the goats births were dominated by twin births. The feed factor is very influential on the productivity and development of goats, with the provision of quality feed can lead to multiple births in goats.

Feasibility analysis of goat livestock business

This economic feasibility analysis is a method used to determine the relationship between several variables of goat livestock business activities in farmers. can be calculated through production costs and net profits. Counts in real terms based on one year's business time.

Table 5. Feasibility analysis of goat livestock business

Description	Volume	Average Price (IDR)	Number
Variable cost			
A. Investment costs and shrinkage			
1. Goat cage (unit)	1	1.050.000	1.050.000
2. Shrinkage of goat cage / 5 years	-	-	210.000
3. Equipment of cage (package)	1	250.000	250.00
Number (1+2+3)	-	-	460.000
B. Variable cost			
1. Family workforce (DWP)	160.56	7.500	1.204.200
2. Feed concentrate	-	-	-
3. Medicine (package)	1	50.000	50.000
Number (1+2+3)	-	-	1.254.200
Total (A+B)	-	-	1.714.200
C. The value of selling goats at farmers			
Adult female (head)	2.93	887.500	2.600.375
Young female (head)	0.8	665.000	532.000
Adult male (head)	0.73	2.120.000	1.547.600
Young male (head)	1.07	665.500	712.085
Number			5.392.060
-Gross income			5.392.060
-Net income			3.677.860
B/C			1.8

From the results of financial analysis of goat livestock business shows that the raising of goats with a scale of 4.81 heads gets an advantage of 5.392.060 IDR/year. It is proven that each business capital expenditure of 1.714.200 IDR/year gets a net profit of 3.677.860 IDR/year with B/C ratio of 1.8. This result is higher than the results of a study reported by Rusdiana and Sutedi, (2016) in Costa goat business with corn plants making a profit of 1.810.960 IDR/year with B/C of 1.2. The results of research by Rusdiana and Hutasoit, (2014) that the goat bean business by grazing by farmers earned a profit of 1.058.602 IDR/year. Munir et al., (2009) reported that the profits of goat and cacao farms

amounted to 1.150.250 IDR/year. This means that the goat livestock business is feasible to develop because most of the costs incurred are concentrated in labor costs, especially the procurement of feed can be done by farmer.

Goat business opportunities will be more profitable if done with good management. Farmer profits are influenced by the number of goat born. while the remainder of the adult female and offspring that are not sold by farmers can still be maintained as an investment for subsequent maintenance. The high price of goat livestock is influenced by the condition of the livestock body, based on the calculation of the estimated economic income of

farmers will get real benefits if the goat livestock business for females is at least 10-20 heads / farmer.

Cacao production

The difference in production and income of cocoa farmers in each cocoa plant

owner is the area and number of trees. The average number of cacao trees are 100 trees / 1000 m². Even though with the same production costs, prices and revenues differ in each farmer.

Table.6. Cocoa production /1000m² and price/kg

Average production and dry cocoa prices (n-10)				
	Area / cacao tree	Kg (year)	Price/kg	Income (year)
1.	1000 m ² /100 tree	27.360	24.000	656.640.000
2.	1000 m ² /100 tree `	28.320	24.000	679.680.000
3.	1000 m ² /100 tree	27.840	24.000	668.160.000
4.	1000 m ² /100 tree	26.400	24.000	633.600.000
5.	1000 m ² /100 tree	28.800	24.000	691.200.000
6.	1000 m ² /100 tree	27.360	24.000	656.640.000
7.	1000 m ² /100 tree	29.760	24.000	714.240.000
8.	1000 m ² /100 tree	30.240	24.000	725.760.000
9.	1000 m ² /100 tree	27.840	24.000	668.160.000
10.	1000 m ² /100 tree	27.360	24.000	656.640.000
Number:		281.280	240.000	6.750.720.000
Average:		28.128	24.000	675.072.000

With a cocoa land area of around 1000 m² it can produce 281.280 kg of dry cocoa / year. With a sale value of 24.000 IDR / kg can get 675.072.000 IDR / year. The results of the Munir et al., (2009) study of the selling value of dry cocoa were Rp. 10.500 / kg. With introduction of 650,6 kg /05 ha or 1.306,2 kg/ha/ year. Other factors that cause differences in cocoa production in each farmer. influenced by the presence of infertile land. Cocoa plants are of sufficient age and the possibility of lack of fertilizer causes differences in cocoa production among farmers.

Feasibility analysis of cocoa Business

The survey results show that cocoa farmers pay for the purchase of Urea, TSP, and KCL fertilizers. While cocoa waste is used as fertilizer for plant fertility. Farmers have not used cocoa waste as animal feed. The goat herd is still given forage and agricultural waste with a maintenance system in shepherding grounded or both. Farmers who have cocoa plants with an area of 1.000m² with 100 trees of cacao still

producing until the age of 20 years. However, it is estimated that the age of 12 year old cocoa trees must be replanted. Cocoa plants start producing or fruiting between 2-3 years. and harvested around one time in one week. or as many as 48 harvests in one year, on average of 5.7-6 kg/tree.

The Financial analysis of the estimated profitability cocoa in farmers is shown in Table 7. The dried cocoa production is marketed through collecting agents with price around 24.000 IDR/kg. Production costs for maintaining one cocoa tree around 32.800 x 100 trees = 3.280.000 IDR/year, and the labor cost for one cocoa tree is estimated to be around 39.342 x 100 trees = 3.934.200 IDR/ year. Several factors of variable costs and production can be calculated based on the efforts made and usually for the family workforce. The farmers also need their own costs or capital for their own land, but farmers rarely to calculate the costs that have been incurred during the business.

Table 7. Financial analysis of cocoa business (n-10). 2016

Description	Volume	Price	Number (IDR)
A. Production cost			
- Production costs of cocoa / trees (urea fertilizer. SP. KCL. ZA and manure. Herbicide and pestisid / year)	100	32.800	3.280.000
- Farmer labor costs (land clearing, hole making, transportation of seedlings, fertilization, eradication of diseases / pests, cacao pruning, harvesting, drying and land tax/yearly) 1000m ² /100 trees, 1 DWP 7 hour (262.28 x 15.000 IDR)	100	39.342	3.934.200
Amount of production costs	-	67.600	7.214.200
C. Income			
Average cocoa production/kg/year	2.812.8	24.000	67.507.200
Profit / year			67.507.200
Net profit / year			60.293.000
B/C			2.7

From the results of cocoa business with a land area around of 1.000 m² with 100 cacao trees, the farmer gets a profit of 67.507.200 IDR/year with B/C ratio of 2.7. By issuing capital business of 7.214.200 IDR/year, farmer profits in real terms are 60.293.000 IDR/year. The results of the research by Munir et al. (2009) on cocoa business with an area of 0.5 ha, profit by conventional means amounted to 2.643.250 IDR/year and by introduction amounted to 4.120.750 IDR/year (having B/C ratio of 1.55), meaning that the cocoa business at the farm level is maked possible to the effort.

Conclusion

From the results of finanisal analysis of goat livestock business shows that raising goats with a scale of 4.81 heads gets a net benefit of 3.677.860 IDR/year in the B/C ratio of 1.8. From the results of the cocoa business with a land area of around 1.000 m² with 100 cacao trees, the farmer gets a profit of 67.507.200 IDR/year in the B/C ratio of 2.7. Thus the goat and cocoa business at the farm level is worth the effort.

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