

Profitability and correlation between Koica Milk Shop and dairy farm in Selupu Rejang, Bengkulu, Indonesia

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ABSTRACT: The objective of this research was to analyze profitability and correlation between KOICA milk shop and dairy farms in Selupu Rejang, Rejang Lebong, Bengkulu, Indonesia. Data driven were general condition, performance of Milk Shop, performance of dairy farms, and the correlation between KOICA milk shop and dairy farmer are evaluated. The methodology started by census that chosen only KOICA milk shop owner and dairy farmers who pooled the milk to KOICA milk shop. Data collected then tabulated and analyzed using Excel and Regression. The result showed that both KOICA milk shop and dairy all were gained properly benefit from dairy business. For the average, it was about IDR 6,557,057.75 per month equivalent to USD 493 as a profit in KOICA milk shop. The profit was depending on the milk production from dairy farmer only, if they couldn't milk from dairy cow, KOICA milk shop won't be able to earn money. The dairy farmers were also got IDR 3,620,311.09 (USD 272) per month as the average profit from milk, compost and calve. There was very high correlation between the milk produced by dairy farmers then processed by Koica Milk Shop and its profit was $r : 0.99$. The discovering of this research was very valuable information, and also important to whom it may concern in dairy business as well as dairy farmers and Government for applying or understanding to develop new strategies for reducing production costs and to increase the profit by using model of whom successful in dairy business.

Key words: dairy farms and business, Koica milk shop, Bengkulu

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INTRODUCTION

Milk business is increasing quite rapidly in Asia, OECD FAO predicted from 2015 that in 2024 milk production will be increasing 175 million ton comparing to 2012-2014 (Dairy Asia, 2017). The population of dairy cattle can be found, ranging from the simplest level to the modern level. For Indonesia, the Government distributed and imported dairy cattle to the village for achieving this business.

In 2014, there were 192,160 dairy farmers in Indonesia reported by Wright *et al.* (2014), while DGLS (2001) stated that 97 percent of them are located on the island of Java. Both fresh milk and dairy cattle grow more and more until 515 tons per day, and 125.401 heads in 2001 (GKSI East Java, 2002). In 2010, the total population in Java Island (East Java, Central Java and West Java) and Bengkulu were 480,861 heads of dairy cow and 909,847 tons of milk production.

Milk production in Indonesia in 2020 is projected as much as 1,039,068 tons (Pusdatin, 2016).

The milk production of Holstein cows could be improved by modifying the nutrition such as, supplementation of yeast for 20g/day (Sulistiyowati *et al.*, 2010). In other finding showed that supplementation of *Curcuma xanthorrhiza* Roxb for 15g/kg concentrate was optimal in improving milk yield and milk composition of Holstein cows as reported by Sulistiyowati *et al.* (2011). Concentrate containing 27.5% Durio (*Durio zibethinus*) flour was optimal for milk production, milk quality, and feed efficiency of dairy cow fed diet containing concentrate (Sulistiyowati *et al.*, 2019); while concentrate with 20% fermented Durio peel meal were considered optimal for improving milk production, milk quality, and nutrient digestion in dairy cows as reported by Sulistiyowati *et al.* (2020).

Milk consumption in Indonesia (2016) is the lowest one if compared to three other ASEAN countries like Philippine, Malaysia and Thailand (Wright *et al.*, 2016). However, it stills better than other countries where has no this business. The research of Widiati *et al.* (2012) showed that. The average revenue of dairy business was IDR 15,890,060 (USD 1,192) per milking cow while the total cost was IDR 14,050,185 (USD 1,056) and the profit was IDR 1,839,875 equivalent to USD 136. According to all researches above, dairy business is profitable for dairy farmer in some other region. To explore more about, how is the other region? Do they get the same thing as what the other did? That is the reason why "Dairy business of KOICA milk shop and farmer in Bengkulu, Indonesia" appeared for researching.

What is the economical performance of KOICA Milk Shop in Selupu Rejang, Bengkulu, Indonesia? What is economical performance of dairy farmers in Selupu Rejang, Bengkulu, Indonesia? How is the correlation between KOICA Milk Shop and dairy farmers in Selupu Rejang, Bengkulu, Indonesia? As hypothesis that Dairy business in Selupu Rejang, Bengkulu, Indonesia is profitable both for KOICA milk shop and dairy farmers. According to the rapidly growing of milk business in Asia, dairy business is really important for Indonesian farmer to reduce amount of poorer and uneducated by using this business. As of the limitation of time and budget, the research was conducted only for KOICA milk shop and all farmers who pooled milk to the shop. Research was conducted on the high land of Selupu Rejang sub-district, Rejang Lebong district, Bengkulu province, Indonesia.

The main objective of the research was to analyze the businesses of dairy farms and Koica milk shop in Selupu Rejang, Bengkulu, Indonesia. There are three specific objectives as following: to analyze the economical performance of KOICA Milk Shop in Selupu rejang, Bengkulu, Indonesia; to analyze the economical performance of dairy farmers in Selupu Rejang, Bengkulu, Indonesia; to analyze the correlation between KOICA Milk Shop and dairy farmers in Selupu Rejang, Bengkulu, Indonesia.

RESEARCH METHODS

The study was conducted in Selupu Rejang, sub-district of Rejang Lebong, Bengkulu province, Indonesia. This site is the central of dairy farming in Bengkulu, as it is lying on high land with temperature ranged 18-23 °C and

moisture ranged 88-99%, which is suitable for rearing dairy cows.

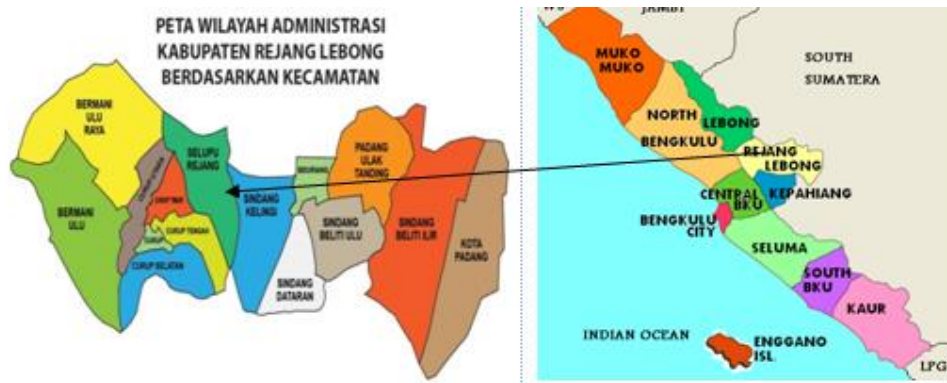


Figure 1. Map of Selupu Rejang, Rejang Lebong, Bengkulu, Indonesia
 Source : Google (2017) <https://www.google.com.kh/search?q=map+rejang+lebong>

The research was conducted in one month. The design of the research was conducted by census, based on the owner of KOICA milk shop, and all the dairy farmers who sent the milk production to KOICA milk shop. There were four dairy farmers who pooled the milk daily to the shop and the owner of KOICA milk shop were selected. There were two types of questionnaires separated, first for the KOICA milk shop and the second one was for dairy farmers. All of them were open-ended questionnaires. The questionnaires are attached in the attachments.

Data Collection Procedures and Analysis

First, the data were collected by interviewing the owner of KOICA milk shop and access the recoded of the milk pooled from dairy farmers. The records were written daily in each week, based on the milk sent by the farmer in every morning. The record has been kept since 2015 to January 2017. Second, the interview was also done with the dairy farmers. Data included general information of site, respondent and dairy farm characteristics, milk production, milk product, fix cost, variable cost, total cost, total revenue,

profit, gross margin, gross margin index, profit margin index, performance of KOICA milk shop, performance of dairy farm and regression, were all analyzed by using Microsoft Excel.

We also involved some model and formula for data analysis as following:

$$\text{Model : } Y = a + b X \text{ (Myers, 1986);}$$

r = correlation of the profit between average milk production in dairy farms and KOICA milk shop

$$\text{-Gross Margin} = \text{Total Revenue} - \text{Total variable cost}$$

$$\text{-Gross Margin Index} = \text{Gross margin} / \text{Total Revenue}$$

$$\text{-Profit Margin Index} = \text{Profit} / \text{Total Revenue} \text{ (Widiati et al., 2012)}$$

RESULTS AND DISCUSSION

Geographical of Selupu Rejang, District, Bengkulu, Indonesia

Selupu Rejang is one of the sub districts located in Bengkulu Province, Indonesia. The establishment of this district is based on the regulations in 2000, on the establishment of eleven new sub districts in Rejang Lebong district.

Selupu Rejang is one of the sub districts that have its representatives in the districts with the name Curup. Sub district of Selupu Rejang has 15,796 hectares (10,6%) out of Rejang Lebong Regency (BPS, 2016), which is divided into 13 villages with the capital district is located in the village of Air Duku. Selupu Rejang distances to the Rejang Lebong regency capital approximately 11 km. Boundaries of Selupu Rejang is as following. Nothern is Kerinci Seblat national park, Southern district is Kepahyang, Eastern district is Sindang Kelingi, Western district is Curup.

The geography of Selupu Rejang is located in the southern latitudes 27°28'29" and 36°47'34" east longitude. This district has a surface land and undulating slopes, at an altitude is 900-1400m above sea level. Dominant soil type is black or brown with a pH 4-6 and a small portion of land type is gray with pH of 4.5. Total rainfall in Rejang Lebong by the Air Bening and Bukit Kaba rain post in 2015 ranged between 3-298.000 mm every month. The lowest rainfall occurs in July- October by the number of rainy days is only 2-7 days for a month (BPS, 2016).

This sub district is also endowed with natural attractions such as volcanoes mountain hill, Bastari Lake, hot springs and irrigation dams Kejalo. Those objects have been able to bring in revenue for the region, and the government has sought to develop tourist places. The use of land in the district of Selupu Rejang mostly for farming and gardens, dominantly in this area is vegetables such as cabbage, collards ball, bitter mustard greens, tomatoes and red pepper.

History of Koica Milk Shop in Selupu Rejang

KOICA milk shop is a dairy shop that built on the site occupied by Mr.Wandono in 2004. People in that area began raising dairy cow business since 2002, but at the beginning the milk was not pasteurized as standard processing. They just sold directly to customers. Later in 2003, He was decided to install pasteurizing equipment of milk production in his house to prepare a standard property as well as started up the dairy shop by buying milk from the surrounding dairy farmer. By seeing the potential of raising dairy farmer in this location, KOICA was asking him for training four students from Republic of Korea to conduct research course in 2004. Firstly, the shop's size was only 4x7m, but after a group of students was coming to do the research, they built more by the current cover total size is 8x7 m. For the apparatus of milk shop and milk production, owner had bought on their own except from cup sealer that is the granted from KOICA. After completed training, all of those students went back to their country and the milk shop keep processing until the present by the owner.

Performance of KOICA milk shop

On table 1, the average of fresh milk that was pooled to the milk shop in 2015 and 2016 were exactly the same, about 1165 L/month, while in 2017 it was going down about 600 L since it was only recorded in January. It was happened also in the flavored milks that were produced in the shop. While the price was remain the same in the past three years. The revenue in 2015 and 2016 was about the same, then decreased in January 2017, however based on the average from 2015 to January 2017 it was

about between those years, was IDR 18,080,905.86.

Total cost from the average per month and 2015, 2016, and throughout from 2015-January 2017 were higher than that of in January 2017 only. This is due to the data in 2017 was recorded only in one month, while the others were eight months (in 2015) and 12 months (in

2016). This made differences in making the average per month in each year. The profit, in average, the highest was found in 2015 (IDR 7,097,262.53) then decreased in 2016 and January 2017 (IDR 5,678,635.04), that is IDR 1,418,627.49 equaled to 19,99%. This loss was very considerable and in the operation of milk shop.

Table 1. The average performance of KOICA milk shop in Selupu Rejang, Bengkulu, Indonesia

Items	2015	2016	Jan-2017
Average of fresh milk Production (L/month)	1,165.81	1,165.42	1,012.50
Average of flavored milk(cup/month)	4,663.25	4,661.67	4,050.00
Price of fresh milk(IDR/L)	6,000.00	6,000.00	6,000.00
Price of flavored milk(IDR/cup)	4,000.00	4,000.00	4,000.00
Revenue(IDR/month)	18,912,069.44	18,646,666.67	16,425,000.00
Total Cost (IDR/month)	11,814,806.91	11,788,358.83	10,746,364.96
Profit (IDR/month)	7,097,262.53	6,858,307.753	5,678,635.04
Gross margin	7,926,650.53	7,687,695.833	6,508,023.958
Gross margin index	0.42	0.41	0.41
Profit margin index	0.38	0.37	0.35

Then margin indexes in those years were about the same, 0.41-0.42, meaning that about 41-42% out of the revenues were as the margin. Profit margin indexes were smaller (0.35-0.38) than those in margin indexes. In term of the quantity of the profit index, it was considered higher compared to other profit index that was about 0.12 (Widiati *et al.*, 2012).

Characteristics of Respondent in Dairy Farm

Four families of dairy farmer were taken as samples in this research, displayed on Table 2. The average age of them was about 58.8. As long as the average of education is approximately 75% graduated from Elementary School,

and the rest graduated from high school. The result also revealed that there was 50% of those dairy farmers had additional business as vegetables farmer.

For the dairy farmers, it has been shown that there were about 4.5 family members of each dairy farmer. The average of dairy cows was about 7.75 came from 1.75 milking cows, 0.5 pregnant cow, 1.8 stop milking or dry period cow, 1 young and 2.75 calves. All of them were housed in the individual system of housing. For young cows, pregnant cows or stop milking cows, the farmer still getting benefit from their compost. If we go back to talking about the average of age, meaning that only the older (58.8 years) who is interested in

this business, and they are also the head of family. Since the dairy farm started up from 2002, meaning that the experiences of the farmers was about 10-15 years. According to the research of

Holoho *et al.* (2013), experience is the important point for improving skill and increasing profit. It was impossible to improve the business without any experiences.

Table 2. Characteristics of respondents in dairy farms in Selupu Rejang, Bengkulu, Indonesia

Name	Wandono	Kusnendi	Sofyan	Nasip	Total	Average
Age (yr)	60	58	51	66		58.8
Education	Elementary school	Elementary school	Senior High school	Elementary school		
Main job	Farmer	Farmer	Farmer	Farmer		
Additional job	Vegetable farmer	Vegetable farmer	No	No		
Family members	4	9	3	2	18	4.5
Amount of cow	13	4	7	7	31	7.75
Milking Cow	2	1	3	1	7	1.75
Pregnant	2				2	0.5
Stop milking	4		1	2	7	1.75
Young		2		2	4	1
Calve	5	1	3	2	11	2.75
Housing System	Individual	Individual	Individual	Individual		

The Average of Dairy Farm Cost

The dairy farm consisted of fix cost, variable cost and total cost are presented on Table 3 (monthly). The fix cost included the depreciations of housing, cow and tool as well as expenses of water and electricity. The average of total fix cost of the dairy farm was IDR 866,772.25 consisting of the highest one was for cow depreciation (82.41%) and the lowest one was for water (1.07%). The fix cost in other region was about IDR 6.731.631 per year equal to IDR 560,969.25 per month, reported by Widiati *et al.*, (2012). Meanwhile Haloho *et al.*, (2013) stated the fix cost is IDR 2,152,335 per year (IDR 179,361.25/month). The cost was different just because the depreciation of tool, cow and housing in each region weren't the same.

The result also showed that four kinds of the variable cost such as feed, labor, medicine and AI. The biggest expense was for labor (89.52%). This is in conjunction with the expense of feed, since most of the expense for the labor was for providing the grass. Widiati *et al.*, (2012) also released that variable cost in other area was IDR 9,562,431 per year (IDR 796,869.25/month). The expense of feed here was only for rice husk. The medicines consisting of Mastilak (for Mastitis disease), Antibiotic, Vitamin, anti-worm, and PG2 α for reproduction) were all provided by Government, so that it cost 0% of expense.

Artificial insemination was IDR 100,000 per cow even it was about 2 or 3 times to make cow pregnant, and for the average of AI is about IDR 22,916.67. The average of total variable cost was about

3,120,833.33 for the average of the dairy farmer. The research of Haloho *et al.*, (2013) showed about the other area that, it was about IDR 17,789,596 per year equivalent to IDR 1,482,466.33. The average of variable cost in Table 11 was higher than the other regions because

the labor cost was very expensive, even only rice husk was the feed of cow but other feed was include to the labor cost (labor was responsible for feed findable surrounding farm like grass or king grass).

Table 3. The average cost of dairy farm in Selupu Rejang, Bengkulu, Indonesia

Fix cost	IDR Per farm/month	Percentage (%)	Ratio of fix cost/total cost
Cow depreciation	714,285.71	82.41	
Housing depreciation	87,500.00	10.09	
Tool depreciation	25,736.53	2.97	
Electricity	30,000.00	3.46	
Water	9,250.00	1.07	
Total of fix cost	866,772.25	100%	21.74
Variable cost			Ratio of variable cost/total cost
Feed	304,166.67	9.75	
Medicine	0.00	0.00	
Labor	2,793,750.00	89.52	
AI	22,916.67	0.73	
Total of variable cost	3,120,833.33	100%	78.26
Total	3,987,605.58		

The Average Revenue of Dairy Farm

The average of revenue is derived from milk, calve and compost presented on the Table 4. The compost was the highest one, that was about 53.73% (IDR 4,087,500.00) and the lowest one of the revenues was from the calves (21.09%) or equaled to IDR 1,604,166.67. For the revenue from milk was 25.19% or IDR 1,916,250.00. The average of total revenue was about IDR7,607,916.67 in the unit 7.75 cows/farmer. According to Haloho *et al.* (2013) revealed that the revenue of the dairy farm in the other area was just about IDR 28,793,442/year equaled to 2,399,453.50/month from the average of cow 3.9/farmer. Even though, the average of cows were different but we still figured out that the result on the

Table 4. was higher than other research result. It made sense because of the labor costs and feed costs were lower.

Table 4. The average revenue of the dairy farm in Selepu Rejang, Bengkulu, Indonesia

Product	Revenue/month (IDR)	Percentage (%)
Milk	1,916,250.00	25.19
Calves	1,604,166.67	21.09
Compost	4,087,500.00	53.73
Total	7,607,916.67	100

The average profit of dairy farm

The profit of dairy farm calculated by taking the average of income

subtracted with the average of the revenue, presented in the Table 5.

Table 5. The average profit of the dairy farm in Selupu Rejang, Bengkulu, Indonesia

Product	Daily (IDR)	Monthly (IDR)	Yearly (IDR)	Percentage (%)
Milk	30,395.62	911,868.71	10,942,424.47	25.19
Calve	25,445.35	763,360.41	9,160,324.90	21.09
Compost	64,836.07	1,945,081.98	23,340,983.70	53.73
Total	120,677.04	3,620,311.09	43,443,733.07	100

We also divided the average of profit to daily, monthly and yearly. In this research, compost was the highest profit, about IDR 1,945,081.98/month (53.73%), while the calves were about IDR 763,360.41 (21.09%) represented as the lowest one. The research showed that the dairy farm gain IDR 120,677.04/day, IDR 3,620,311.09/month and IDR 43,443,733.07/year from the amount of 7.75 cows/farmer.

Performance of dairy farm

Table 6 showed that the average of fresh milk per month was 315 L equaled to 10.5 L/day belong to 1.75 milking cow/farm. For the compost, farmers can get as an average nearly 1363 kilograms in a month from the average of 7.75 cows. Research also revealed that 0.23 calve/head, which approximately IDR 1,604,166.67/month.

Table 6. The performance of dairy farms IDR/month in Selupu Rejang, Bengkulu, Indonesia

Items	Dairy farmers				Average
	Wandono	Kusnendi	Sofyan	Nasip	
Fresh milk (L/month)	450.00	180.00	450.00	180.00	315.00
Compost (kg/month)	2,200.00	750.00	1,250.00	1,250.00	1,362.50
Calves (head/month)	0.41	0.08	0.25	0.17	0.23
Price of fresh milk (IDR/L)	6,000.00	6,000.00	6,000.00	6,000.00	6,000.00
Price of compost (IDR/kg)	3,000.00	3,000.00	3,000.00	3,000.00	3,000.00
Price of calve (IDR/month)	2,916,666.67	583,333.33	1,750,000.00	1,166,666.67	1,604,166.67
Revenue (IDR/month)	12,254,166.67	3,928,333.33	8,237,500.00	6,011,666.67	7,607,916.67
Total Cost (IDR/month)	8,382,267.57	2,372,305.56	2,528,162.70	2,667,686.51	3,987,605.58
Profit (IDR/month)	3,871,899.10	1,556,027.78	5,709,337.30	3,343,980.16	3,620,311.08
Gross margin (IDR/month)	5,295,833.33	2,095,000.00	6,387,500.00	4,170,000.00	4,487,083.33
Gross margin index	0.43	0.53	0.78	0.69	0.61
Profit magin index	0.32	0.40	0.69	0.56	0.49

The price of milk was about IDR 6,000/L. All of them sold to KOICA milk shop. By the amount of milk 315 L/month, meaning that the farmer can earn IDR 1,890,000/month equaled to IDR 63,000/day. Compost price was IDR 3000/kg, equivalent to 4,089,000/month out of the average 7.75 cow/farmer, which is also considered as the largest one of the revenue. In Table 6 was telling more about the average of total revenue was IDR 7,607,916.67, while the average of total cost was IDR 3,987,605.58 and the average of the profit was about 3,620,311.08/month.

The research also revealed that the Gross Margin was IDR 4,487,083.33, came from the revenue minus by variable cost. Meanwhile, gross margin index was 0.61%, meaning that there was 61% out of revenue was the margin. Moreover, profit margin index was smaller than those margins since there are only 0.49% equaled to 49% was profit margin

The average cost production, revenue and profit per milking cow per farm

The Table 7 presented about the average of production cost, revenue and profit/farm/milking cow. The table focused just about the revenue, total cost and profit for a milking cow per farm. According to the researched result, the amount of fresh milk produced was 180 L/month/cow equaled to 6 L/day. Meanwhile the result of the research of Widiati *et al.* (2012) is about 9 L/cow/day. The milk production in three villages reported by Eddy *et al.* (2012) were 8.37 L/day/cow in Jetak, 8.70 L/day/cow in Batur and 9.4 L/day/cow in Tajuk. The result was less than those researches because the amount of milk production depend on the cow's health, experience and the forage feed. Haloho *et al.* (2013) also agreed that, other relationship between dairy business were the education, experience, observing and the training of farmer. The compost per farm was approximately 175.8 kg/month/cow. Going through the production of calve was absolutely 0.35 head/month compared with the average

Table 7. The average cost production, revenue and profit/milking cow/dairy farm in Selupu Rejang, Bengkulu, Indonesia

Item	Average of cow	Milking cow	Amount
Amount of cow	7.75	1.75	1
Milk production (L/month)	315	315	180
Compost (kg/month)	1362.5	307.66	175.8
Calve (head/month)	2.75	0.62	0.35
Price of milk (IDR/L)	6000	6000	6000
Price of compost (IDR/kg)	3000	3000	3000
Price calve (IDR/month)	1,604,166.67	362,231.18	206,989.25
Total fix cost (IDR/month)	866,772.25	195,722.77	111,841.58
Total variable cost (IDR/month)	3,120,833.33	704,704.30	402,688.17
Revenue (IDR/month)	7,607,916.67	1,717,916.67	981,666.67
Total cost (IDR/month)	3,987,605.58	900,427.07	514,529.75
Profit (IDR/month)	3,620,311.08	817,489.60	467,136.91
Gross margin (IDR/month)	4,487,083.33	1,013,212.37	578,978.49
Gross margin index	0.59	0.59	0.59
Profit margin index	0.48	0.48	0.48

of all cows in the farm that can produce calve.

For the price of dairy milk in the market is IDR 6000/L, and IDR 3000/kg for compost. As the result, we could identified that the compost prices lower than milk was different two times, but generally compost produced by cow is more than milk, meaning that compost is also the important part of profit. Briefly to calve, research has suggested that a month on average, farmers can earn IDR 206,989.25 by comparison to the average of calve in the farm. For both total fix cost and variable cost was about 514,529.75/cow/month. The revenue was IDR 981,666.67/month and after calculated with the total cost we can see that the profit released IDR 467,136.91/month/cow.

According to Widiati *et al.*, (2012) showed that the total profit of the milking cow in other region was about IDR 153,322.91/cow/month; while (Haloho *et al.*, 2013) also stated that there were only IDR 737,625/month from 2.4 milking cow, meaning that it was about IDR 307.34/cow/month. It was possible

that those researches were lower than this result even the amount of milk production per day in this research was lower than, exactly because of the lower cost both of labor and feed cost. Keep going for gross margin (Revenue minus Variable cost) equaled to IDR 578,978.49. The profit margin index was a result of Profit divided by Total Revenue, equivalent to 0.48% and the resulted lower than the gross margin. It meant that 48% of total revenue is the profit margin.

Correlation between the milk production in dairy farms and the profit of KOICA milk shop

Based on the Table 8, it is known that there is high correlation ($r = 0.99$) between the milk that produced by dairy farm then the milk processed by the milk shop and the profit that was made by the shop.

The model of the correlation between milk produced from flavored milk and profit of Koica is following this formula : $Y = -2912492.757 + 2121.95X$.

Table 8. Profit of milk production in dairy farms and KOICA milk shop in Selupu Rejang, Bengkulu, Indonesia

Year	Milk produced in the dairy farm (L/month)	Flavored milk (cup/month)	Profit (IDR/month)
2015	1165.81	4,663.25	7,097,262.53
2016	1165.42	4,661.67	6,858,307.83
2017	1012.50	4,050.00	5,678,635.04
2015-Jan 2017	1114.58	4,458.31	6,557,057.88

CONCLUSION

According to this study, KOICA milk shop and dairy farm all get properly benefit as average per month more than IDR 3 million. For milk shop

is getting higher profit than farmers due to the lower production cost. As we know the correlation between KOICA milk shop and dairy farm is about 0.99; it meant that economy of KOICA milk shop was completely dependent on

farmers, as much as 99%. If farmers had no milk production, milk shop had no profit either. The way to make sustainable profit for KOICA Milk Shop was to make a strengthen relationship with farmers and help finding any strategy for dairy farmer to increase milk production or do whatever for raising dairy cow in the area. For farmer should get more training about technology and science for increasing cow production.

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