The Impact Cost Factor Production on the Sheep Farmer's Household Economics

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ABSTRACT

Sheep is a promising business opportunity, aside from being a commodity of export sheep in several ASEAN countries, to date Indonesia has not been able to provide export opportunities for sheep or goats, including contributors to sheep and goats as well as gradually also as farmers. The existence of livestock is a daily capital or savings that can support the lives of farmers, requires the time needed to manage livestock that can be used in addition to farmers. This study aims to calculate all the components of costs, income, earnings obtained as well as factors that increase sheep farming in East Java. This study analyzes the use of business analysis R/c ratio, and multiple linear regression to understand the factors that influence production. The results of the analysis show a loss figure of Rp. 226,752,000. Seven factors that significantly affect the income of household sheep farmers education, experience, land occupied, status of livestock, feed costs, other costs, and VOVD costs have a positive contribution to the income of farmers.

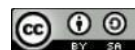**Keywords:** *Sheep Farming, Household Income , Factor Production*

1. INTRODUCTION

Sheep breeders in Indonesia are mostly sheep breeders who only have 2-5 sheep. As stated by Knipscheer, et.all. (2006). Animal husbandry is often the primary way by farmers to generate additional income, savings, provide additional benefits such as manure for their crops, and provide high quality food for farm households. Business orientation which is still traditional in nature makes it an obstacle in getting more income. Sheep raising business can create employment for farmers in rural areas, and be able to provide additional income for farmers. (Winarso, 2010).

Household sheep farmers in this case as home-scale producers, with the aim of maximizing profits from the results of the work of the sheep. This has become a problem in itself, because businesses that are still traditionally run and the orientation of raising sheep are used as capital deposits, and generate cash quickly due to need at any time. Making a lack of consideration of the contributions and costs incurred by farmers, so this can affect the level of profits of farmers.

The development of sheep and goat livestock business has good prospects in the country alone, it needs no less than 5.6 million head / year (Yusdja, 2004). Sheep is a small ruminant group which is one of the prima donna that is often raised by farmers. Every year around 2.5 million Muslims slaughter Qurban animals, then at least a minimum of about 1 million sheep or goats are needed for Qurban, thus the sheep commodity market opportunity is very bright, both in the domestic and export markets. Economically, this should make the motivation of sheep farmers to get high profits, the potential of farmers should be able to make sheep a variable increase in welfare of farmers.

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2. METHODS

This method uses a quantitative approach by estimating 11 factors that have the potential to influence the income of sheep farmers in East Java Province. This study uses provincial-level national survey data consisting of 736 household-scale sheep farmers. The data is part of the 2013 Agriculture census conducted by the Indonesian Statistics Bureau (BPS) and is representative of the conditions of farmers in East Java Province.

The sample of sheep farmer's household is determined by survey technique with 736 respondents of sheep farmer. Data collected and analyzed using descriptive analysis, analysis of farming and factors influencing the income of household sheep farmers in East Java Province.

Descriptive analysis is used to describe the characteristics of sheep breeders, as well as explain the demographics of breeders and families. And explain the condition of the sheep business. Analysis of farming is built with several analysis models, namely profits, and r/c ratio. What factors influence the income of sheep household farmers using multiple linear regression statistical analysis assisted with SPPS V.24 software.

2.1 Data Analysis

To find out the acceptance of household sheep farmers in East Java, an analysis of farming is used. Yusuf (2007) The net revenue was also calculated using the formula bellows.

$$Total\ Cost = Fixed\ cost + Variable\ cost$$

Analysis of revenue. Niederhoff & Kouvelis (2019) described revenue by the formula:

$$Revenue = P \times Q$$

R was revenue (IDR/ Farm/Period), P was the Price (IDR), and Q was the quantity of production (IDR).

The Return Cost Ratio (R / C) Return Cost Ratio is known as the ratio between revenue and costs.

$$R/C = \frac{TR}{TC}$$

Information:

R / C = The ratio between revenue and costs

TR = Total Revenue

TC = Total Cost

2.2 Statistical Analysis

The research data obtained were processed using the SPSS program and analyzed using the F test (ANOVA) from multiple linear regression analysis. F test (ANOVA) is used to determine simultaneously the influence of factors that affect income. Then, a t-test is carried out to determine partially the presence or absence of each factor effect on net income.

To see the factors that influence sheep business income using multiple linear regression, the mathematical factor equation can be written as follows

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + \ldots + b_nX_n$$

Table 1. Description of variables used in the quantitive

	Factors	Description	Units	Measure
Y	Reveneu	Receipt from the sale of shee		Nominal
X1	Age	The age of farmer	Year	
X2	Gender	The Gender of a farmer (1 = male, 2 = female)	-	Nominal
X3	Education	Farmer's formal education	-	Scale
X4	Farming experience	Farmer experience in sheep farming	Year	Nominal
X5	Land Size	The size of land use for sheep house	M²	Nominal
X6	Population	The population of sheep owned by each farmer	Tail	Nominal
X7	Labor cost	Costs incurred for labor	IDR	Nominal
X8	Feed cost	Costs incurred for purchase of sheep feed	IDR	Nominal
	Additional cost	Costs Incurred purchase for electricity, water, and fuel	IDR	Nominal
X10	VOVD Cost	Costs incurred purchase for Vaccine, drugs, vitamin, and desinfectan	IDR	Nominal
X11	Infrastructure cost	Costs incurred for land rent, taxes, interest on loans, depreciation of goods, transportation of transportation and other levies.	IDR	Nominal

Source : Data Analysis, 2024

3. RESULTS AND DISCUSSION

Household Analysis

Table 2. Description of Analysis of Sheep Farming Business

Description	IDR (000)	%
A. Cost		
1. Labor Costs	2.007.451	38,29
2. Feed costs	2.856.124	54,29
3. Other costs	162.658	3,10
4. VOVD fee	37.678	0,72
5. Infrastructure cost	178.632	3,41
Total Cost	5.242.543	100
B. Revenue		
Sale	5.015.791	100
C. Net Revenue	-226.752	
D. R/C Ratio	0,96	

Source : Data Analysis, 2024

Table 2 shows the highest production costs incurred, namely the cost of feed with a total of 2,856,124,000 or 54.29% of the total total cost. Next, labor costs Rp. 2,007,451,000 or 38.29% of the total costs production. The cost of purchasing vaccines, drugs, vitamins and disinfectants is the least with a total cost of Rp. 37,678,000 or 0.72% of the total production costs.

Sheep feed costs are the highest source of expenditure compared to other costs. Table 2 shows that the cost of sheep feed is Rp. 2,856,124,000 or 54.29% of the production cost. This is in accordance with the opinion of Parwati (2007) the purchase cost of HMT (Forage for Animal Feed) and concentrate reaches 94.4% of the total production costs incurred. The high cost of feed is a challenge for almost all types of livestock that are intensively raised. So it is necessary to do a more in-depth study of sheep feed innovations that are more efficient.

Afandi et al. (2020) explain feed plays an important role in determining the success of livestock business and also as a significant cost factor. Feed costs contribute 60% -80% of total production costs. The types of use of feed in livestock can have different effects on the cost, efficiency, and productivity of livestock businesses. These findings confirm that the influence of household-scale sheep's cost of feed is where the feed is from

The income from sheep production is Rp. 5,242,543,000, this figure is only obtained from the sale of live sheep tenak. The difference between total revenue and total production costs is used to determine the income of sheep farmers. The calculation results show the average sheep receipt rate of Rp. - 226,752, these results indicate a loss. The income results that experience a deficit affect the feasibility of sheep business. This can be seen from the R / C Ratio analysis which shows a result of 0.96. The results of this calculation mean that every 1 Rupiah issued generates 0.96 Rupiah, so the results indicate <1 means that the business is not feasible to be run or developed.

This finding is very different from some previous studies which showed the level of profit and feasibility of sheep business. Sheep business according to Dewi, et al. (2015) obtained profits from sheep fattening in a case study at PT Agro Jaya Mulya Subang, that the average income of horned rams was Rp. 415,953.00 per head kept for 93 days. The level of agricultural profitability in Spanish rangelands (dehesas) is the ratio between net surplus and fixed annual capital of an average value of 3.8% (Gaspar, et al. 2008). These findings confirm that household-scale sheep farming in East Java shows inadequate results, because the orientation of livestock raising in general is still only a side, self-consumption and relatively small amount of sheep ownership. This is consistent with the opinion (Gaspar et al, 2008) combined goat and sheep livestock raised for their own consumption needs.

Statistical Analysis

Table 3 shows the factors that simultaneously influence the income of sheep farmers. Shows that together the factors compiled have an effect on the income of sheep farmers by 0.64% with an error rate of 1%, this shows a strong influence of the 11 factors that influence the income of sheep farmers. while the remaining 36% is the result of the influence of other factors that have not been included and explained by the model used, but also contributes to the income of sheep farmers.

Table. 3. Test results F (ANOVA) simultaneously affect the income of household sheep farmers in East Java

Model	Number Of Squares	Free Degrees	Middle Squared	F - Count	sig.	Adj. R Square	Durbin Watson
Regression	6,303E+10	11	5730122225	106,450	0,000	0,643	1,866
Residual	3,407E+10	633	53829359,21				
Total	9,711E+10	644					

Source : Data Analysis, 2024

Table 4. Statistical description of the results of the factors that affect income

Variabel	Regression Coefficient	Standard Eror	T- Count	Sig.
Konstanta	-1117,696	2100,578	-0,532	0,595
Age	-11,988	26,133	-0,459	0,647
Gender	-824,083	862,968	-0,955	0,340
Education	605,266	306,558	1,974	0,049**
Experience	745,993	349,952	2,132	0,033**
Land controlled	0,157	0,069	2,267	0,024**
Livestock Status	572,064	41,952	13,636	0,000***
TK fee	0,021	0,074	0,287	0,774
Feed Costs	0,464	0,076	6,134	0,000***
Additional costs	-1,935	0,691	-2,800	0,005***
VOVD fee	2,888	1,057	2,733	0,006***
Infrastructure Cost	0,412	0,314	1,314	0,189

Source : Data analysis, 2024

Note : *** Significant at 99% confidence level, ** = significant at 95 % confidence level, *= significant at 90 % confidence level.

Table 3 shows the results of multiple linear regression analysis of 11 factor models that are designed as many as 7 significant factors at a 5% error rate on the income of sheep farmers. These factors include education, experience, land held, livestock status, feed costs, other costs, and VOVD costs. Several factors that affect income at 1% error include livestock status. Feed costs, other costs, and VOVD costs (vaccines, drugs, vitamins, and disinfectants).

The purpose of this study is to identify the factors that influence the income of sheep farmers. The analysis found that 7 out of 11 factors had a statistically significant effect on the income of sheep farmers. This section will discuss the findings obtained from each factor that is model.

Farmer's Characteristics

There are six factors in this category: age, sex, education, experience, land held and livestock status. The results of the regression analysis show that only education, experience, land held, and livestock status have a statistically significant effect. Meanwhile, age and gender are not significant to the effect of income of sheep farmers. Many previous studies such as age and sex are used as predictors that affect the income of sheep farmers, but cannot yet be used as a reference to a consensus of impact factors.

Several studies have shown significant effects on factors of education, experience, land held, and livestock status such as Wang et al., (2014), Rondhi et al., (2020), Gaspar et al., (2008), and Holly Wang et al. . (2017). Higher education can change the mindset of farmers to think towards business. Large scale businesses supported by large tracts of land will have seven times more likely to increase the feasibility of small scale agriculture for farmers (Odunze et al, 2015). Significant increased effects occur from farmers who have received higher education on the productivity of agricultural products, by facilitating the absorption of technological information (Alene, 2007).

Capital Cost Factor

Of the five factors the capital costs incurred by sheep farmers, including labor costs, feed costs, other costs, VOVD costs and infrastructure. The results of the regression analysis show that only the cost of feed, other costs, and the cost of VOVD have a significant effect at the

level of 1%. Labor costs and the cost of infrastructure do not have a significant effect on income, this is in accordance with the opinion of Gaspar, (2008) labor gives a negative correlation to raising sheep,

Several study results show the significant influence of several factors that affect income, including feed costs, other costs, and VOVD costs. Like Baki and Yucel, (2017), Afandi et al (2019), Milan et al (2003), Wiranata et al. (2017). The cost of sheep feed has a significant effect compared to some other costs statistically. Feed costs are included in a very crucial cost in raising sheep, the total cost is dominated by the cost of feed (Klepacki and Rokicki, 2006).

4. CONCLUSION

Household sheep production costs Rp. 5,242,543,000, the highest cost is 54.29% of feed costs. The total revenue from the sale of sheep is Rp. 5,015,791,000. total loss income of Rp - 226,752,000. The seven factors significantly influence the income of household sheep farmers, education, experience, land held, livestock status, feed costs, other costs, and VOVD costs have a positive influence on farmer income. Meanwhile age, gender, labor costs, and the cost of infrastructure have a negative effect.

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