

Analysis Factor Production of Fattening Breeds Etawa in Tanah Laut Regency

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Abstract. *The development of livestock business is currently directed at increasing the income of farmers, encouraging food diversification and improving the quality of community nutrition and export development. Livestock commodities which are generally cultivated by small farmers in an effort to support income in rural areas, one of them is goat farming, including PE goats, which are generally spread in highland areas. Tanah Laut Regency the centers of goat production in South Kalimantan has the potential for development in the future where the goat population continues to increase from year to year*

The business of fattening goats is one alternative business that many farmers choose. This is because in addition to the relatively easy maintenance system, the exploitation period is also relatively short. From this study, the conclusions of the variables that significantly affect production in the business fatteninggoat are forage and maintenance age. Given the forage and maintenance time have a positive and very significant effect, the farmer needs to increase the forage and maintenance period to achieve optimal production.

Keywords: *ProductionFunction, Factor Production*

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I. Preliminary

Background

Goat livestock are small ruminants that have high economic value, especially in providing sources of animal protein compared to other types of ruminants. This is because the goats breed quickly, the number of born is more than one, the distance between births is short, and the growth of the child is fast. In addition, goats have a high adaptation such as being able to survive in a new environment.

Tanah Laut Regency as one of the centers of goat production in South Kalimantan has the potential for development in the future. At present most farmers are trying to fatten etawa breeders. This is because breeders goats generally have better production performance. The main livelihoods of the community in the field of agriculture that support the provision of good food in the form of forages and agricultural waste can also be used as one of the potential development of goats.

II. Research Methods

Location and Time of Research

The study was doing in Takisung and Kintap Sub-Districts, Tanah Laut District, South Kalimantan Province. The choice of location is based on consideration because this Regency is one of the centers of goat production in South Kalimantan Province, Takisung and Kintap Subdistricts are the base areas for the development of goats. Kintap Subdistrict and Takisung Subdistrict are the districts with the largest population of goats, that is 3,087 and 2,287 goats in Tanah Laut Regency. This research was doing from January 2017 to April 2017.

Data and Source Types

The types of data used are primary data and secondary data. Primary data was collected from each respondent, that is breeders who sought fattening goats, with the help of questionnaires and direct observation in the field. Data collected from farmers includes the use of inputs, input and output prices and characteristics of farmers

Sampling Method

The population in this study were breeders who sought fattening of goats in Takisung and Kintap Subdistrict, where for each Subdistrict the highest goat population was chosen. Takisung Subdistrict, from the total population of breeders, 162 farmers were determined to be proportional to 30 samples. The same thing in

Kintap Subdistrict was determined by 30 samples from a total of 153 breeders, so that the total sample was 60 breeders taken by simple random sampling method from available data on breeders population.

Analyze Data

To analyze the variables that influence the production of goats, the Cobb-Douglas production function model is used. The choice of the form of function production is taken based on the following reasons: (1) homogeneous, (2) simpler, (3) rarely cause problems, and (4) reduce the occurrence of heteroscedasticity.

To answer the purpose of this study the data collected was tabulated and analyzed. To analyze the factors that influence the production of goat fattening business, the Cobb-Douglas production function analysis and the Cobb-Douglas production function can be mathematically written as follows:

$$Y = b_0 X_1^{b_1} X_2^{b_2} X_3^{b_3} X_4^{b_4} X_5^{b_5}$$

The Cobb Douglas function model if transformed into a linear form becomes an equation:

$$\ln Y = \ln \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 \ln X_5 + \epsilon_i \dots(1)$$

Information:

- y = body weight gain
- X1 = amount of forage
- X2 = number of livestock
- X3 = Maintenance age
- X4 = number of workers
- X5 = TER (Technical Efficiency Rating)
- β0 = intercept
- βi = estimator parameter coefficient, where i = 1,2,3, 5

Furthermore, analysis of the production function uses the LP technique as follows:

Minimize: $Z = b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5$

with constraints:

$$\left. \begin{aligned} b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 &> Y_1 \\ b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 &> Y_2 \\ b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 &> Y_3(2) \\ \dots\dots\dots \\ b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 &> Y_60 \end{aligned} \right\}$$

assuming $b_1, b_2, b_3, b_4, b_5, b_6 \geq 0$

$b_1, b_2, b_3, b_4, b_5, b_6 \geq 0$

then the technical efficiency value (TER = Technicle efficiency rating) will be obtained through the following mathematical calculations:

$$TER = \frac{Y_a}{Y_p} \dots\dots\dots(3)$$

Information :

- Ya = body weight gainactual
- Yp = body weight gainpotential

Operational Definition of Variables

The operational definitions of the variables in this study are as follows:

1. Goat weight gain (Y) is an increase in goat body weight during the maintenance period obtained from the reduction in final body weight maintenance and initial maintenance weight, which in the analysis was approached with body weight gain during the maintenance period in kilograms.
2. Forage (X1) is the amount of forage given during the maintenance period in kilograms.

3. Number of Livestock (X2) is the number of livestock owned by farmers during the fattening period.
4. Maintenance age (X3) is the time needed to maintain cut goats from the beginning of the maintenance of goats until the goats are sold. In the analysis of production, the maintenance period used is the average maintenance period of respondent farmers in months.
5. Labor (X4) is the amount of labor devoted to the production process of fattening goats during the maintenance period which is calculated in Working Day (HOK), where one HOK is 8 hours working a day. The value of one HOK is calculated by equal wages for men.
6. The factor production is the input used to produce output, in this study it is limited to forage feed
7. The output of goat fattening is the growth of body weight per goat per two weeks.
8. Body weight growth is the value of increasing body weight per goat per two weeks.

III. Results And Discussion

The discussion of variables affecting production is explained based on the results obtained from the analysis of production functions. In estimating the production function, all input variables that are thought to have an effect on the production of goat fattening business which are seen from the increase in goat body weight are included in the model. These variables consist of forage (X1), number of livestock (X2), maintenance age (X3), labor (X4).

Table 1. Results of production functions by adding management variables (TER) to goat farming in Tanah Laut Regency

Model	Koefisien Regresi	T	Sig
Constant	-3.06202	16.0155	0.0000
Forage	0.230458	0.556131	0.0000
Number of livestock	0.00476487	109.805	0.5804
Maintenance age	0.444076	1.02286	0.0000
Labor	0.00470996	105.242	0.3109
TER	3.63948	16.0155	0.0000
R-Square Fhitung	0,998 9393.47		

Based on the estimation of the production function by adding the management variable (TER) in Table 1, the model can be said to be its determination coefficient value (R square). This coefficient of determination can describe whether or not the model produced in forecasting future conditions. If the R-square value approaches one or 100%, it can be said that the model is more feasible because it can predict future conditions accurately. The R-square value of the production function model obtained is 0.998. This means that 99.8% of goat body weight gain can be explained by independent variables consisting of forage, number of livestock, maintenance age, labor, while the remaining 0.2% is explained by other variables not included in the model.

The production function in the Table can also show the relationship between factors of production and goat weight gain together. The relationship can be seen from the calculated F value, if the calculated F value is greater than the F value of the table, it can be said together that the factors of production used have a significant effect on body weight gain. F Test Value the calculated obtained is 9393.47 while the F-table value is 2.54 thus all production factors such as forage, number of livestock, age of maintenance, and labor together have a significant effect on body weight gain because the F-count value is greater than F-table (Fhit > Ftable).

While to see the effect of each production factor on the assumed dependent variable, it can be done using the t-test. Based on the results of the regression regression test for forage production factors, the number of livestock, the age of maintenance, labor was found to have a significant effect on goat body weight gain in the study area with a positive sign as expected.

The results of statistical tests show the effect of forage on body weight gain is very real, where an increase in land area of 1% will increase production by 0.23%. The statistical test results show the effect of maintenance age on body weight gain is very real. In this case the increase in maintenance period of 1% will increase body weight by 0.44%.

The results of statistical tests show the effect of the number of livestock on body weight gain is not real. In this case the increase in the number of livestock by 1% will increase body weight gain by 0.005%. The results of statistical tests show the effect of labor on body weight gain is not real, In this case the increase in labor by 1% will increase body weight by 0.005%.

Table 2. Distribution of Respondent Farmers' Technical Efficiency

Efisiensi Teknis	Indeks Efisiensi	
	Jumlah	(%)
0 < 0,8	2	3,33
0,8 < 1	56	93,34
= 1	2	3,3

The efficiency index value of the analysis results is categorized efficient if it is greater than 0.8. By tracing the distribution of technical efficiency values of individual respondent farmer, it was found that the number of farmers who had a value of technical efficiency greater than 0.8 in this model was 96.67%. In Table 2, it can be seen that the average value of technical efficiency is 0.89 with the lowest value being equal to 0.76 and the highest value is 1.

IV. Conclusions

1. Variables that significantly affect production in the goat fattening business are the amount of forage and age of maintenance.
2. The technical efficiency of the farmers in the etawa goat breeding business is quite efficient at 96.67%, and some even have achieved efficiency (1) of 3.3%.

V. Suggestion

1. Given the variable amount of forage, and maintenance age has a positive and very real effect, the farmer needs to increase the amount of forage and the age of maintenance, used to achieve optimal production. Further research is needed regarding the age of etawa goat breeds that are optimal for fattening.
2. Need to increase the efficiency of the business of fattening goats in the Land of the Sea and considering that the average technical efficiency achieved is at the level of less than 0.8 (<0.8), then efforts to increase productivity should be carried out with the optimal use of input socialization. For this reason, the government through the relevant offices needs to prepare experts or field assistants who can guide farmers

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