Economic Performance of local beef cattle development under rice field in the dryland area of Kupang Regency, Indonesia

Maximilian M J Kapa[1] *and Yusul L. Henuk[2]
[1] Agribusiness Department, Faculty of Agriculture, Universitas Nusa Cendana, Kupang, Indonesia
Jl. Adisucipto, Penfui, Indonesia Kupang NTT – Indonesia 85001
[2]Animal Science Department, Faculty of Agriculture, North Sumatera University, Medan, Indonesia

*Corresponding author Email: maximilian.kapa@staf.undana.ac.id

Abstract

Livestock raising activities cannot be separated from farming activities for people in paddy-growing areas in Kupang Regency of East Nusa Tenggara (NTT), Indonesia. Beef cattle enterprise is very important both as a source of protein and also plays an important role in the socio-economic and cultural life of farmers in dry land areas. The objective of this research was to know the economic performance and efficiency of local beef cattle enterprise which is extensively maintained in rice-based farming system in Kupang Regency, NTT. This research was conducted in Pukdale village of East Kupang Sub District, Kupang Regency. The research method used was survey method. Data on the economic performance of local beef cattle was obtained from interviewing 56 respondents who were chosen purposively. The results of the study showed that 100 percent of respondents had experience of raising cattle over five years despite relatively low formal education levels. The average number of cattle ownership is 8.76 livestock units (LU), 90 percent of respondents stated that the purpose of cattle raising is as a source of income, where in one rearing period the average income earned was Rp. 8,912,717. The result of R /C analysis revealed that local beef cattle enterprise is economically efficient and feasible to be operated with R/C > 1 (1.77). This explains, if farmers intend to invest Rp. 1 billion in this business then they will earn a profit of Rp. 770 million.

Keywords: local beef cattle, rice field, dryland, economic analysis, efficiency

Introduction

Livestock is one of the potential and very good businesses to be developed in dry land area because the livestock business gives advantage to the economic development of the region. One of the livestock business which is mostly run people in the dryland area is beef cattle in this case Bali cattle, which is a local beef cattle in Indonesia, especially in Kupang Regency, East Nusa Tenggara (NTT).

Local beef cattle are viewed as the leading commodities in supporting economic development in Kupang Regency. Previous research has shown that the role of cattle is very important in the socio-economic life of rural communities (Ilham, 2010 and Kapa, *et al.*, 2017). It should

be noted that the beef cattle business in this area is a traditional community livestock business by utilizing simple technology and more a side business. Yusdja and Ilham (2006) explain that the cattle farming system practiced by dryland farmers has direct impact on the lack of allocation of production factors mainly labor, and less directional purpose of care that ultimately affect the low productivity of cattle. Low productivity has a direct impact on the decline in population and quality of livestock. This was proposed by Jelantik *et al.,* (2007) where turnover of Bali cattle in NTT only ranged from 9.5% - 16.11% per year. In this case, if a farmer owns 100 heads of cattle then in one year farmers can sell 10-16 cows.

Indeed, the development of beef cattle in the dry land of Kupang Regency has a bright prospect if viewed from the potential of natural resources in the form of grazing area, and the genetic resources, technology and social culture of the people available in Kupang Regency (Kapa *et al*., 2018). However, according to Nuhung (2015), there is an interesting interest among consumers and producers of beef cattle, professional and business interests, as well as the interests of bureaucracy versus public interest causing the handling of beef cattle development is complicated and not optimal management of beef cattle business.

The study of social economic aspect of beef cattle business in dry land area so far has not received serious attention from the researchers despite the fact that the livestock commodity is an integral part of the life of the farmer's household and is an important element in the regional economy of Kabupaten Kupang (Kapa , 2007). Therefore, a comprehensive study on the economic performance of beef cattle business in order to make strategic measures of the development of beef cattle business in dry land area, especially in Kupang Regency, East Nusa Tenggara Indonesia. The objective of the study was to analyze the economic performance of beef cattle production system in the dryland area of Kupang Regency and to know profitability and efficiency of local beef cattle business in dry land area of Kupang Regency, NTT.

2. Research Methods

This research was conducted in Pukdale village, Kupang Timur sub-district, Kupang regency. The location determination was done by purposive where Pukdale village is the center of rice production of rice paddies as well as the village with the population of many local beef cattle in Kupang regency. The data used in this study was obtained by interviewing 56 respondents in the Pukdale Village, Kupang Timur Sub District, Kupang regency.

The data analysis method applied was input-output analysis, with aiming to calculate farm household income deriving from beef cattle enterprise in rice (lowland) based farming systems. The two main components required in this analysis are, (1) the components of revenue and expenditure. (2) the value of livestock cut for consumption or for social activities, (3) the value of livestock for customary purposes, and (4) the value of the draught power for the purposes of plowing. The components of the beef cattle business costs consist of, (1) the purchase of cattle, (2) fodder, (3) health care, (4) enclosures and equipment, and (5) wages of outside labor.

3. Result and discussion

3.1. Background information of the study area

The research area is located in the sub-district of East Kupang. In general, Kupang Timur sub district is a dry area with an average rainfall of 1.296 mm per year, with a relatively short number of rain days of only 66 days. Number of wet months is generally 4 months (BPS Kabupaten Kupang, 2017). This indicates that the research area is classified as dry area which has an impact on the difficulty of intensive food crop development. Such environmental conditions are very suitable for the development of livestock, especially local beef cattle enterprise in this case Bali cattle.

3.2. Beef Cattle Farming system Performance

3.2.1. Beef cattle farming systems

Livestock business in Pukdale Village, East Kupang Subdistrict consists of various types of livestock such as cattle, buffaloes, goats, pigs and poultry. Beef cattle enterprise is a dominant livestock business with a population of 29.914 heads followed by pigs 11,664 heads, and goats as much as 5,375 heads. The system of raising beef cattle practiced by farmers in Pukdale village is an extensive system (Kapa *et al.*, 2017; Kapa *et al.*, 2018).

The average number of cattle ownership in the research area is 9.5 head per household or 8,76 livestock units (LU). Generally, the motives or the purposes of raising beef cattle are as a source of agricultural labor, income, savings, and customary purposes. The results showed as much as 20 percent of sample farmers use cattle to support the activities of wetland farming, especially on land preparation activities. Labor is one of the main resources in beef cattle business. Human labor mainly comes from within the family. The use of outside labor is only for herding cattle with wages in the form of in-kind (calves). Payment normaly is given every two year but it depends on the agreement.

The average number of family labor used in cattle enterprise was 1.38 people with average working time of 3.42 hours per day. Meanwhile, the number of outside labor was 1 person, especially to herding cattle with a long working time ranges from 6-8 hours per day. Family labor is used for livestock farming for livestock and cattle that are bound for nurseries. The activities undertaken are looking for animal feed, feeding and drinking, repairing and cleansing the enclosure. Especially for cattle that are caged or tied, feed given field grass, and forage like leaf lamtoro, gala-gala and other forages, with an average of 25 kg / head / day three times a day. Apparently, the quantity and quality of feed given to livestock has received attention from its owner (Kapa *et al*., 2017).

As explained that cattle are used for various purposes, the farmers of the respondents explain the utilization of beef cattle in Pukdale village for sale, consumption, rent for draught power, and customary purposes (Table 1).

Table 1.Annual Utilization of Beef Cattle in Pukdale Village, Kupang Timur Sub-District, Kupang Regency

No	Types of Utilization	Number of respondent	Average Number (LU)	Average value (Rp)
1	Sell	47	1.7	8,220,246

2	Cut for consumption	6	1.5	7,253,158
3	Rent for draught power	15	-	1,353,330
4	Customary purposes	8	1.4	6,769,614

Source: Primary data, 2017

It should be noted that not all respondents sell their cattle annually; the data above shows only 83.92 percent of 56 respondents who sell cattle in 2017 and only 10.71 percent who cut cattle for family consumption. Only 15 out of 566 respondents rented cattle to other farmers.

3.2.2. Economic Performance of Local Beef Cattle

For the purposes of the performance analysis of beef cattle enterprise, income analysis was applied. The income is obtained from the difference between the value of livestock output and its input value. The input and output components in beef cattle raising business in Pukdale Village, East Kupang Sub district during one period of production can be seen in Table 2.

Table 2. Input-Output Analysis of Beef Cattle Business in Dry land Area under Rice Field of Kupang Regency

input-output components	Total	Price/LU (Rp)	Total (Rp)
Variable costs			
Store Bull (LU)	2,06	**4.300.181**	**8.858.372**
Medicines (package)	1,33	65.429	**87.021**
Rope (m)	6,63	4.700	**31.161**
Bucket (unit)	1	21.417	**21.417**
Feed:			-
Field grass, rice straw	5346,98	50	**267.349**
Leucaena leaves,		100	-
Hijauan pohon lokal (hutan)	990,75	50	**49.538**
Banana Stem	18,66	5.000	**93.300**
Labor	30,61	20.400	**624.444**
Total Variable Costs		4.417.327	10.032.601
Fixed Costs			-
Cage	1	159.440	**159.440**
Land	0,47	3.000.000	**1.410.000**
Total Fixed Costs	Rp	3.159.440	1.569.440
Total Costs			**11.602.041**
Revenue	2,06	9.958.621	**20.514.759**
Net Income			8.912.717
R/C			1,77

Source: Primary Data (processed)

The results of economic analysis of local cattle-based cattle enterprise showed the total cost incurred during one period to maintain 2, 06 ST was Rp. 11602.041. Revenues earned from the sale of 2.06 ST of beef cattle under rice field amounted to Rp 20,514,759 with income earned per household per year of Rp 8,912,717.

The results of the analysis also show that beef cattle farm under rice field systems is efficient and feasible to be developed further. This is proven by the R / C value of 1.77. The value of R/C Ratio is

greater than one, meaning that the business of local beef cattle in dry land area of Kupang Regency is efficient and feasible to be run. The value of R/C ratio of 1.77 explains that every 1 billion rupiah invested by the farmer for beef cattle business will give a profit of 770 million rupiah.

4. Conclusion

Cattle enterprise is an important farming branch in dry land area because of its very important contribution in the socio-economic life of farm households. With the maintenance system still extensively, the beef cattle business in the research area provides income of only Rp 742,726 only half of Kupang Regency minimum wage (Rp 1,650,000 per month). Nevertheless, beef cattle business is still feasible and profitable because of the R/C value > 1. The improvement of the maintenance system will certainly increase the production of beef cattle and ultimately increasing the income of the farmer households.

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