THE DETERMINATION OF BUSINESS SCALE OF COW FARMERS USING BREAK EVEN POINT ANALYSIS IN KEBAR DISTRICT OF WEST PAPUA PROVINCE

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Abstract

The duration of harvesting of beef cattle making farmers difficult for them who are still live under the poverty line to make this business as a sole livelihood. Therefore, the application of self-sufficiency program of meat on the people farm level must be a complete package that contains not only cattle, but also a package of farming multi business. The purpose of this study was to establish economic scale of agriculture and livestock farmers who are member of Sejahtera cooperative using analysis of the break even point in Kebar District of West Papua Province. Data were obtained from 20 household farmers who are member of Sejahtera cooperative in Kebar District. Variables measured consisted of fixed costs, variable costs, productivity of land, and the price of sale of agricultural and livestock products. Data were processed as descriptive using break event point calculation and tabulation. The results showed that to get the break even point of peanuts, corn, mustard, cucumbers, tomatoes, broccoli and native chicken business as much as 1.25, 3, 25, 30, 20, 15 tons and 28.62 head, it must be applied on each land area of 0.3307, 0.5888, 0.3188, 0.2126, 3184 and 0.003 ha. In order to household farmers can get benefit, then they have to produce over the break event point.

Keywords: Break even point, the scale of business, agriculture, livestock.

INTRODUCTION

Kebar is one area in Papua, Indonesia that declared as a Village Breeding Center of bali cattle. But based on results of the study on poverty and food security of Kebar people showed that 67% of people are still live under the poverty line (Supriyantono *et al*., 2012). The production cycle of beef cattle is very long, which is about 3 years (Bandini, 2003). This will be difficult for people who are still live under the poverty line to make beef cattle as its main livelihood. Therefore, there needs to be support from local government to first consider the economic strengthening of the beef cattle farmer community through the implementation of multi farming business. Through this program, farmers are not only retain ownership of cattle up to the age of the harvest, but also given assistance to implement the system quickly crop farming (under one year harvesting). The main problem faced by farmers in business is difficult area to reach the market. Kebar is located at 500 kilometers from the city center, and it has a topography that are difficult to reach public transportation so that the cost for marketing is very expensive.

The important thing that support the business is availability of land to develop livestock and agriculture. Therefore, by looking at the opportunities and weaknesses of the area development, it needs to be done right business scale calculations in order to obtain adequate profit from the farmer's business.

MATERIAL AND METHODS

Data were obtained from 20 household farmers who are member of Sejahtera cooperative in Kebar District. Parameters measured consisted of fixed costs (FC), variable costs (VC), land area, and the price of sale of agricultural and livestock products. Data were processed as descriptive using break event point calculation using formula as below:

a. The break-even point (BEP) in Unit Sales (X):

It can be directly computed in terms of Total Revenue (TR) and Total Costs (TC) as:

$$TR = TC$$
$$P \times X = TFC + (V \times X)$$
$$(P \times X) - (V \times X) = TFC$$
$$(P - V) \times X = TFC$$
$$X = \frac{TFC}{P - V}$$

where: TFC is Total Fixed Cost, P is Unit Sale Price, and V is Unit Variable Cost.

b. The break-even point (BEP) in currency unit

To calculate the break-even point in currency unit is multiplied the above calculation by Price (Garrison *et al* , 2006).

RESULTS AND DISCUSSION

In order to achieve Village Breeding Center of Bali Cattle, so that one of the absolute requirement is to achieve increased income household members of farmers being targeted. In the previous study, Supriyantono *et al*. (2012) revealed that most of farmer with conditions that still have problem of poverty is very difficult to be participated in development program of beef cattle.

Cattle production cycle that takes years make this commodity is difficult to be maintained until the age of sale. It is very necessary to look at the overall program, especially to study readiness economic of community to support the development of cattle by the government. The results of the study of food security in previous study showed that 73% of the group farmer is still in a vulnerable situation of food. It was found that farmers who have multiple income in the family has high food security. The purpose of applying multi farming business was to get a variety of livestock and agriculture business. Hopefully, through this business system, beef cattle farmers are able to maintain operation of cattle business up to the age specified (cow up to 5 times the birth, the bulls kept until the age of 2 years).

In the management of multi farming business needs to know the number of products and minimal sales in a business or Break Even Point (BEP). As we know that the profits of the business is highly depend on the level of production, the level of sales and the total cost. The relationship of these three factors is a reciprocal relationship of mutual influence. Break even point is the point when or where the production capacity or the volume of production is in the circumstances no profit or no loss (Garrison *et al*., 2006).

The calculation of the break even point for the multi farming business in Kebar District intended to determine the amount of production that gives value the break even to cost. Hopefully, through the calculation of the BEP will facilitate the management of production cooperatives in providing instruction to its members to produce above the break even value of farmers so that farmers can benefit. Based on Alnasser *et al.* (2014) study that using BEP analysis give significant advantages in planning, controlling, and decision making in business.

Some of these efforts will be done in Kebar are chicken and peanuts the business. The BEP calculation of those business are presented in Table 1.

Table1. The Calculation of BEP each commodity by Farmers in Kebar District

Commodity	**Fixed cost**	**Variable cost**	**Variable cost/ unit**	**Selling price/unit**	**BEP Unit**	**BEP IDR**
Peanuts	3,154,700	2,960,000	2,368	10,000	413.35 kg	4.133.516,77
Corn	3,154,700	2,600,000	866,67	4 ,000	1,006.82 kg	4,027,276.60
Mustard	3,154,700	7,174,700	80,80	3,000	1,080.67 kg	3,242,018
Cucumber	3,154,700	3,800,000	76,00	5,000	640 kg	3,203,391.55
Tomato	3,154,700	2,250,000	112,50	2,000	1,671.36 kg	3.342.728.48
Broccoli	3,154,700	2,240,000	149,33	7,000	460.50 kg	3,223,467.30
Native chicken	4,200,000	1,479,000	3,236	150,000	28.62 head	4,292,606

Increasing production value can be done through an increasing in number of livestock ownership, disease prevention in order to reduce mortality and use of local input production, especially feed.

By knowing the value of the break even production will facilitate the calculation of the amount of production of each commodity that should be pursued, which must be greater than the value of BEP. BEP value can also be used to calculate the area of land needed to plant crops. Based on the above calculation of BEP and productivity per commodity (Table 1), it can be calculated minimal land as presented in Table 2.

To achieve BEP of peanut business, then the amount of peanuts produced is 413.35 kg or sales value of IDR. 4,133,516.77. In order peanuts business can provide benefits, then farmers in Kebar District should be able to produce peanuts above 413.35 kg. The land productivity of West Papua to produce peanuts is 1.5 ton/ha. This value breakeven can be obtained on planting peanuts on the land area of 0.3307 ha. Therefore, to obtain advantage of business peanut, planting peanut should be done on the land above 0.3307 ha.

Table 2. Minimal Land Requirement to Achieve the BEP Production

Commodity	Number production per ha	BEP Unit	Minimal land requirements to achieve the BEP production per commodity (ha)
A	**B (*)**	**C**	**D=C/B**
Peanuts	1,25 ton	413,35 kg	0.3307
Corn	1,71 ton	1006,82 kg	0.5888
Mustard	3,39 ton	1080,67 kg	0.3188
Cucumber	3,01 ton	640 kg	0.2126
Tomato	5,25 ton	1671,36 kg	0.3184
Broccoli	2,82 ton	460,5 kg	0,1633
Native chicken	10,000 head	28,62 kg	0,0029

*Source : BPS Papua Barat (2013)

To achieve BEP of corn, cabbage, cucumbers, tomatoes, broccoli business, then each vegetable should be produced as much as 1006.82, 1.080.67, 640, 1.671.36 and 460.50 kg, respectively. Breakeven value can be obtained at each planting vegetables on an area of 0.5888, 0.3188, 0.2126, 0.3184, 01.633 ha.

The average of native chicken ownership of cooperative members is 5 head of hen and 1 cock. Base on study by Resnawati and Bintang (2005) showed that egg production of native chicken which is raised intensively varied from 105 to 112 per year. It can be estimated that the production of native chicken on a scale ownership of 5 females and 1 cock for a period of one year is 450 pullet and 60 eggs. The result of the calculation of Break Even Point production of chicken in Kebar District (Table 1) is 28.62 head, which is equivalent to IDR 4,292,606. In order to chicken business in Kebar District can provide benefits, then the farmer should produce chicken over 28.62 head.

It is needed a commitment of local government to provide access to production inputs such as seeds, medicines, agricultural equipment. The government through the cooperative may allocate local government budgets for the routine procurement of breeding stock, crops and medicines that are needed for agricultural and livestock developments or soft loans for members of the Kebar cooperative and the most important is to create a condition for farmers to have the certainty of marketing either the transportation or marketing area.

CONCLUTION

The break even point of peanuts, corn, mustard, cucumbers, tomatoes, broccoli and native chicken business as much as 1.25, 3, 25, 30, 20, 15 tons and 28.62 head, it must be applied on

each land area of 0.3307, 0.5888, 0.3188, 0.2126, 3184 and 0.003 ha. In order to household farmers can get benefit then they have to produce over the break event point.

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