

CALCULATION OF COST OF PRODUCTION USING ACTIVITY BASIC COSTING METHOD IN BUILDING WENANG BEVERAGE

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ABSTRACT

Gayam District is one of the areas in Sumenep Regency which has a high cattle population. This phenomenon can be a job opportunity for the people of the Sapudi Island Gayam District. The purpose of this study was to analyze and determine the Cost of Goods Sold (HPP) of Madura cattle in Sapudi Island, Gayam District, Sumenep Regency.

The analytical method used is quantitative with the Activity Basic Costing method (ABC). The stages carried out in the analysis method are distributing questionnaires, field observations and calculating costs.

The results of the research in raising cattle are that there are several costs that are needed, namely the cost of maintaining stables, equipment, feed, medical treatment, labor. Raw material costs, labor costs and costs over head are factory used in the calculation of determining COGS in the ABC method in this study. In raw material costs, feed costs, labor costs include wages for feeding and cleaning cages, and overhead factory costs for building and shrinking cages, electricity, water, vaccines and barrel ropes. From calculations using the ABC method, the HPP results for one cow in Gayam District were IDR 20,785,500.

Keywords: activity basic costing, cost of goods sold, Madura cattle

INTRODUCTION

Madura cattle are Indonesian local beef cattle that are scattered in the Madura region, especially in Sumenep Regency. The characteristics of Madurese cattle are brick red, slightly yellowish in color, short in stature and strong legs. Gayam District Sapudi Island, Sumenep Regency is an area with a high number of cattle. So that some people work as cattle breeders. This business is an increase in their economy.

A part from being a worker, Madura cattle can also meet economic needs that can support the improvement of the genetic quality of livestock. Sumenep Regency is one of the districts on Madura Island which is noted to have the potential for developing beef cattle. This can be seen from the suitability of the climate and the area of land for animal feed and the ability of the community to raise cattle. Madura cattle

center in Sumenep Regency is located on Sapudi Island which consists of two districts, namely Gayam District and Nonggunong District.

According to data from the Animal Husbandry Service of Sumenep Regency in 2019, the number of beef cattle population in Sumenep Regency has increased quite significantly from 2015 to 2019. In 2015 the cattle population was 217,888 heads and in 2019 the beef cattle population in Sumenep reached 367,362 cows. It is a district with the highest beef cattle population in East Java. This means that the level of development of beef cattle is a business opportunity in the field of animal husbandry for the community in each sub-district in Sumenep Regency [1]. Some of the Madura cattle are sold, namely beef cattle, and some are sold per head. In addition to selling beef or beef cattle, Madura cattle

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can also be sold as cattle that can be contested. Cows are used as sonok cows, and bulls as races of cows.

Most of the Madurese people, especially in Sumenep Regency, do not only fulfill their daily needs by doing one job, but also in several businesses. For example, agriculture, fishermen, nonfarming, traders.

Livestock are very beneficial for breeders and can help increase family income, there are several reasons why respondents are interested in raising beef cattle, including family savings which can be sold at any time to meet needs, livestock manure can be used as fertilizer on food crops or as fertilizer for plantations and can reduce expenses for the cost of purchasing fertilizers, can take advantage of agricultural waste products such as rice straw so that it is beneficial for livestock, beef cattle labor can be used to cultivate agricultural land and can reduce labor costs.

The development of the livestock sector is one form of development to achieve the welfare of the breeders and their ability to drive overall economic growth. The development of animal husbandry is directed at increasing the quality of production, income levels and expanding business opportunities for people in rural areas. The prospect of developing beef cattle in Indonesia is still wide open. This is because the need for beef has increased every year. However, this increase in beef was not followed by the beef cattle population.

Price fluctuations that occur also greatly affect their income. For example, on Eid al-Adha, the selling price of cows will be high. This is due to the increasing demand for cows. However, for normal days, the selling price of cows will be stable. This uncertainty is experienced by cattle breeders. The high fluctuation of beef prices is very influential and has a negative impact on economic growth. This condition should be an opportunity for cattle breeders, both small, medium and large scale breeders to be able to develop their business. Cattle

breeders can assist the government in increasing beef production, especially by providing quality beef according to the people's ability or purchasing power, so that beef prices are more controlled.

The need for beef in Indonesia is still not fulfilled, so it must import. This situation provides a great opportunity for beef cattle breeders to further develop their business. For this reason, it is hoped that beef cattle breeders can carry out breeding so that each year they can produce calves.

The development of livestock business is aimed at increasing people's buying by increasing their income. To be able to achieve this situation, it can be done by increasing community participation to invest part of the capital they have for raising livestock. This of course will encourage livestock business in rural areas in general which will later help empower the farmer-breeder community.

Table 1. Classification of Respondents' Education Level

No	Education	Number of Farmers (person)	Percentage (%)
1.	SD	37	74,00
2.	SMP	8	16,00
3.	SMA	5	10,00
Total		50	100,00

Source: data processed in 2020

Low education is more likely to raise cattle. So it's no surprise when they sell cows at the price they want. They determine the selling price of cows not based on precise calculations. So that the selling price of cows is below what it should be.

The cattle business in Gayam District can be a job opportunity for those in need. They will work as workers who will provide food, vaccines, clean cages and so on. This will result in labor costs in determining the cost of goods sold. The raw material cost is grass which is used as cattle feed. The farmer will feed their cows with grass that grows in the field. Apart from grass, cows are also given food in the form of tofu

dregs and waste from rice or corn. This feed also incurs costs on raw material costs. In addition, there are also costs that need to be taken into account, namely factory overhead costs in the form of the cost of building a cage and shrinkage of the cage.

Education, experience, age, and good knowledge of breeders will bring business in a good direction. Animal husbandry technology that has developed must be used to support the development of animal husbandry businesses.

Business experience shows that it has been a long time for breeders to run a beef cattle business. Experience is a breeder's knowledge obtained through routine daily activities or events experienced. If the farmer has a relatively long experience in managing his business, it will result in better quality cattle.

Generally, breeders who have better knowledge, attitudes and skills will be better at raising cattle than farmers who have less experience. Experience in trying to help breeders in making business decisions and support the success of their business. Farmers who are experienced in dealing with business problems will know how to solve them, while those who are less experienced will have difficulty in overcoming business problems. The success of the livestock business is largely determined by farming experience. The length of experience in breeding will greatly determine the success of the cattle business. This long-standing experience affects the ability of Madura cattle breeders to manage their livestock businesses, which are generally small scale, namely 2-5 head per farmer. The high experience of farming also affects the behavior of the Madurese people who always have a great desire to adopt new innovations to increase the productivity of their livestock.

LITERATURE REVIEW

Costs are expenses or value of sacrifices made to obtain goods or services that

are useful in future, or have benefits that are more than an annual accounting period [2].

Cost Classification

Classification is a process of grouping all components in a more concise and systematic manner in order to provide more accurate (useful and meaningful) information [3]. Meanwhile, Cost classification is useful for informing and presenting costs for management for decision-making purposes [2]. There are several types of costs based on behavior, namely:

- a) Variable costs are costs whose overall value changes directly with changes in the level of activity or volume, both production volume and sales volume
- b) Fixed costs are costs whose overall value is fixed or does not change with a change in the level of activity or volume within the relevant limit or within a certain time period.
- c) Semi-variable costs are costs that have both a fixed cost component and a variable cost component.

Madura Cattle

Madura Cattle is one of the local beef cattle that has high adaptability to the influence of tropical environments and is one of local germplasm that must be preserved and its genetic potential must be developed [4].

Cost of Goods Sold (HPP)

Cost of goods manufactured has a very important role in determining the selling price of product. A more precise determination of production costs will be able to produce a more accurate cost of production [5].

Activity Basic Costing (ABC)

Activity based costing is basically related to determining product costs which impose costs on products or services based on resource consumption by activities [6].

Three stages in the design of the Activity Based Costing (ABC) System, namely:

- a) Identify the cost of sources of funds and activities
- b) Charge resources to activities

c) Charging activity costs to cost objects

The government has planned Sapudi Island as a Madura cattle purification area [7]. This is done so that the population and purity of the Madura cows are maintained. Raising cattle is a part of community life that has been integrated socially and culturally as a tool for plowing the fields, investing, entertainment & as a source of income.

RESEARCH METHODS

This research is a quantitative study using the Activity Basic Costing method (ABC) as a tool of analysis. In this study, analyzing the cost of sales of Madura cattle in the District of Gayam, Sapudi Island, Regency of Sumenep. The object of this research is Madura cattle which is a community livestock business in Gayam District.

The data collection technique in this study was carried out by distributing questionnaires containing questions that will be answered by the respondents. The respondent's answer will be processed to determine the cost of goods sold for Madura cattle. Interviews in this study were also used, namely as a tool to support the answers of all respondents. This is done so that the results of the questionnaire are more complete and clear, so that the calculation method of the cost of Madura cattle is carried out. In addition, preliminary research observations were carried out to obtain in-depth information about the responses of Madurese cattle breeders.

The sample used in this study is the ownership of Madura cattle ranging from 5-10 heads, having sold cows, with at least 5 years of experience. The number of samples used in this study were 50 respondents.

The method of analysis used in this research is ABC. ABC is used to determine the cost of goods sold for Madura cattle in Gayam District. The stages of analysis carried out in this study are:

- a) Distributing questionnaires to respondents regarding feed costs, labor and

maintenance costs (making cages, equipment, electricity, water, vaccines, etc.).

- b) Conduct observations in the field (cattle breeders) and conduct interviews with respondents related to several things in raising cattle.
- c) Perform calculations on costs obtained from respondents. From the calculation of Raw Material Costs (BBB), Labor Costs (BTKL), and Factory Overhead Costs (BOP) which are then calculated using the Activity Basic Costing method (ABC) by identifying the activity and cost of the source of funds and grouping activities by level.
- d) Charge activity costs on objects by accumulating all costs and then perform analysis using the Activity Basic Costing method (ABC).
- e) Make conclusions from the results obtained to determine the selling price of Madura cattle using the Activity Basic Costing method (ABC) with a comparison of the selling price in the market.

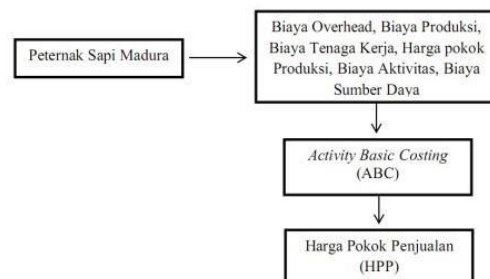


Figure 1. Research flow diagram

RESEARCH RESULTS

The Success of the cattle business to improve the economy in Gayam District is determined by several factors and several characteristics of the breeders (respondents). The respondents here not only work as breeders, but also most of them are farmers. Based on the data obtained, the age of the respondents was in the range of 32-72 years. The age grouping of respondents is described in table 2 as follows:

Table 2. Age grouping of respondents

No	Age Group (Years)	Number of Breeders (people)	Percentage (%)
1.	31-40	2	4,00
2.	41-50	15	30,00
3.	51-60	10	20,00
4.	61-70	17	34,00
5.	≥ 70	6	12,00
Total		50	100,00

Based on the data from the questionnaire, it shows that respondents with productive age (less than or equal to 60 years) are 27 people or 54.00% of the total 50 respondents. Meanwhile, respondents with non-productive age (more than 60 years) were 23 people or 46.00%. The higher the age of the farmer, to a certain extent, the ability to work will increase so that his productivity increases [8].

In addition, education also affects the decision making of a person or farmer breeder in developing their business. With the knowledge possessed by breeders, it will increase the yield of the better livestock. The following in Table 3 is a grouping of respondents seen from their education level.

Table 3. Classification of respondents' education level

No	Education	Number of Farmers (people)	Percentage (%)
1.	SD	37	74,00
2.	SMP	8	16,00
3.	SMA	5	10,00
Total		50	100,00

Based on Table 3, it is known that respondents with elementary school education were 74.00%, namely 37 people, junior high school was 16.00% with a total of 8 people, and high school was 10.00% with a total of 5 people. So it can be concluded that most of the Madura cattle breeders in Gayam District who served as respondents in this study had primary school education.

The experience of raising cattle is also a factor that triggers the success of incre-

asing cattle. Someone who has longer farming experience will of course better understand the needs of cattle to produce the highest quality cattle. In table 4, data on the experience of raising cattle is obtained.

Table 4. Experience raising

No	Raising Experience (years)	Number of Breeders (people)	Percentage (%)
1.	1-5	0	00,00
2.	6-10	23	46,00
3.	> 10	27	54,00
Total		50	100,00

Based on table 4, it can be seen that there are no respondents who only raise livestock under 5 years. Most of the respondents have experienced raising cattle for more than 5 years. This shows that the people of Gayam Subdistrict are very experienced in caring for cattle so that they can produce cattle of good quality and have high selling value.

In raising livestock, everyone has a different way of care. In addition, the ability of each person to raise cattle also varies. Some are able to care for large numbers of cows, and some are able to care for small numbers of cows. There are several factors that make a person decide to raise cattle. One of them is that it can be used as an investment in the future, because every time the price of cattle changes. Availability of capital is also a factor for someone to raise cattle.

Based on the results of observations with 50 respondents in Gayam District, the accumulated number of cattle was 300 heads. On average, each person owns 6 cows. Most of the people take care of cattle in simple ways, such as providing feed, the shape of the pen and its maintenance. Livestock also requires production costs to support the quality of livestock owned. The production costs include raw material costs, direct labor costs, and overhead costs.

Raising cattle requires several needs that must be met by Madura cattle breeders

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in Gayam District. Here are some things that are needed by Madura cattle breeders in Gayam District in raising cattle.

a) Cages Cages

The area of each farmer's cage has a different size of pen according to the number of cows he owns. Of the 50 respondents in Gayam District, there are two types of cages, namely permanent and semi-permanent. The permanent cage is made to resemble the shape of a house with walls and floors made of cement, wood, asbestos etc., while the semipermanent cage is made of wood, asbestos and a foundation of clay. A permanent cage costs more than a semi-permanent cage. But in terms of maintenance, permanent cages are more durable or durable when compared to semi-permanent cages.

b) Equipment

Equipment used in cattle is as follows: sickle or sickle that can be used to cut forage, buckets that can be used as water containers to mix feed from waste and for drinking cows, shovels that can be used to clean cow dung. The rope used to tie cows.

c) Feed

Type of feed given to cows is in the form of forage (field grass) and additional feed with different amounts. In each day, the farmer provides forage or grass feed twice a day, while additional feed (waste) is given once a day. Feed is useful for increasing livestock body weight, but it can also produce high cattle production. The animal feed given must be sufficient and of good quality.

d) Medication (Vaccines, Vitamins)

The provision of vitamins for cattle in Gayam District is done once a month, some even once every three months. Giving this vitamin aims to prevent cows from disease. Diseases suffered by livestock such as mastitis, foot and mouth disease. Vaccines are generally only given once a year to livestock.

e) Labor

As for the labor that is carried out, namely, cattle care includes care for cowshed and cow care. Cage maintenance is carried out by breeders by cleaning the cage every day, especially cleaning cow dung. The cow manure is not disposed of in a special place, but is still in the same pen with the cow. This will invite flies that can carry disease not only to livestock but also to the surrounding community. The cleanliness of the pen should be the main concern, because the livestock will grow quickly if the place is comfortable. Care for cows is done by bathing the cows every day or at least once every 5 days because it affects the health of the cows and the regulation of the cows and blood circulation in the body is not disturbed so that cow production remains stable.

1. Raw Material Costs

People in Gayam District use grass as cow feed. But besides that, there is additional feed such as factory waste (tofu dregs) and agricultural waste (rice, corn). At the time of comparison, cattle will be assessed for good quality and have a high bargaining value if the feed given is mostly grass. Cattle products fed by factory or agricultural waste have low bargaining value because the quality of the cattle is not good enough. Factory waste is only used as additional or mixed feed, but still the main feed is field grass. The following table shows the cost of feed for Madura cattle in Gayam District.

Table 5. Feed Costs

No	Feed	Total Cost (everyday)
1.	Field Grass	IDR 1.700
2.	Rice or Corn Waste	IDR 4.000
3.	Factory Waste (tofu dregs) / kg	IDR 2.000
Total cost		IDR 7.700

Feed costs include field grass and waste or can be referred to as concentrate. The price of field grass if the land used is not privately owned, then it must pay an annual fee of IDR 600,000/land. The average consumption of field grass for one cow per day is IDR 3,000. For concentrate, the price of 1kg is IDR 2,000, the need for concentrate for one cow per day varies, but on average, it is only one kilogram per head. Meanwhile, like agricultural waste (rice or corn), the price is determined by its capacity. The purchase of agricultural waste is calculated or measured using a pick-up container at a price of IDR 250,000 which can be consumed for about 2 months for one cow. So, every day agricultural waste (rice or corn) for one cow is IDR 4,000.

From the table above, it is known that every day for one cow the cost of feed that must be spent is IDR 7,700. Therefore, if in one year, the cost of feed for cattle is IDR 2,810,500.

2. Direct Labor Costs

In raising livestock, it certainly requires labor to care for cows even though the labor is family or owner labor. The calculation of labor costs is shown in the following table:

Table 6. Labor Costs

NO	Description	Total Cost (everyday)
1.	Feeding wages	IDR 10.000
2.	Wages of cleaning the cage	IDR 15.000
Total Cost		IDR 25.000

Most of the cattle in Gayam District are managed by themselves or their families. The cost of cleaning the pen and providing feed includes the internal costs of cattle farming. This cost is calculated based on HOK (Working Days of People) which is usually used in calculating the analysis of livestock farming labor units. The wage for feeding cattle is calculated from looking for grass to feeding livestock. The cost incurred for feeding is IDR 10,000 per day. Not just feeding, in raising cage care also needs

attention. Therefore, every day the farmer must clean the cage. The cost required to clean the cage is IDR 15,000. So the accumulated financing for this cattle workforce is IDR 25,000/day. If calculated annually, it can be seen that the cost for cattle labor is IDR 9,125,000.

3. Production Overhead Costs

Raising cattle costs costs that will later be incurred for site maintenance and livestock care. This cost can be said to be Cost Overhead Production(BOP). BOP is used to find out how much costs are incurred in the cattle business from the start until the sale is made. BOP can be used as a cost calculation that can be used when the farmer sells his cow. The details of the BOP are Fixed Costs and Variable Costs. Fixed costs here include building cages and repairing cages, while variable costs include electricity, water, administering vaccines or vitamins, and rope (tongar). If illustrated by the table as follows.

Table 7. Average fixed costs of Madura cattle

No	Description	Total Costs (years)
1.	Construction of a cage	IDR 7.850.000
2.	Cage Depreciation	IDR 688.000
3.	Equipment	IDR 107.000
Total Cost		IDR 8.645.000

The cowsheds owned by breeders in Gayam District are mostly tiled or permanent cages. While the others still have dirt floors. The average age of the pen has an economic level of 5 years, in 1 year the cattle farmer incurs costs for depreciation of the cowshed, such as repairing a damaged floor or roof with a cage shrinkage calculation of less than 10% of the initial construction averaging IDR 7,850.00. So the total average depreciation of the cage is IDR 688,000 per year. The tools used in livestock such as buckets, sickles, shovels, and others. The initial cost for the purchase of the tool, the farmer spends an average of

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IDR 107,000 for the economic life of the tool for approximately 4 years.

Table 8. Average variable costs of Madura cattle

No	Description	Total Cost
1.	Electricity and Water	IDR 27.000
2.	Vaccines/Vitamins	IDR 100.000
3.	Change of Rope (tongar)	IDR 78.000
Total Biaya		IDR 205.000

Based on table 8, it can be explained that electricity and water are additional requirements in raising livestock. Electricity is used for lighting livestock pens and for pumping water in storage tanks. While water is used for drinking livestock and also for cleaning livestock. In one month, on average, cattle breeders in Gayam Subdistrict pay IDR 27,000 for electricity and water.

Vaccines and vitamins for each person's livestock are different. There are those who give vaccines per year and some even once every three months. The cost of giving vaccines for one cow is IDR 100,000.

Tali or what is generally called tongar by the community in Gayam District is a need for cows. Without a rope, it will be difficult to control the cow while in the pen. Changing the rope is only done every year. The fee for changing the rope is IDR 78,000.

DISCUSSION

1. First stage: identification of the cost of funding sources and activities

Based on the data that has been obtained from the completion of the results, there are several activities that are included in activities overhead, namely as follows: feed costs, labor costs, cage building costs, cage depreciation costs, replacement costs rope, equipment costs, electricity and water costs vaccine costs in the ABC (Activity Based Costing) system the resulting product does not directly consume resources but absorb activity. Those activities that use resources directly.

2. Second stage: assigning resource costs to activities

Table 9. Classification of Activity

Activity	Activity Level	Total
Costs Feed	Unit	IDR 2.810.500
Costs Direct Labor	Batch	IDR 9.125.000
Cost of making cages	Facilities	IDR 7.850.000
Cost of Depreciation of cages	Facilities	IDR 688.000
Cost to change straps	Facilities	IDR 78.000
Equipment costs	Unit	IDR 107.000
Cost of electricity and water	Unit	IDR 27.000
Vaccine cost	Unit	IDR 100.000

Based on table 9 it can be explained that the classification of costs by activity:

- 1) Unit level activity is the type of activity used by the product/service based on the units produced by the activity. In this case the activities included in the unit level consist of feed costs, equipment costs, electricity and water costs, vaccine costs
- 2) Batch level activity is the activity used by the product/service based on the number of product batches produced. In the table above, the activities related to this level consist of indirect labor costs
- 3) Facility level activities are activities that are used by products/services based on the facilities enjoyed by the products being produced. In this case, what is included in this activity consists of the cost of making the cage, the cost of shrinking cage, and the cost of changing the rope.

3. Third stage: charging activity costs to cost objects

Costs for each activity obtained in the second stage are then charged to the product, according to the activities that the product goes through. The following is the calculation of the HPP for cattle.

Based on table 10, it can be explained that the cost of goods sold (HPP) of Madura cattle in Gayam District, Sapudi Island, Sumenep Regency is IDR 20,785,500. This price is a fair price that breeders must char-

ge to buyers. Because this price is the total cost used in raising the cattle until the cattle are ready to be sold.

Table 10. HPP Cattle

Type cost	Total cost/cattle
Raw Material Costs	IDR 2.810.500
Direct Labor Costs	IDR 9.125.000
Overhead Cost	IDR 8.850.000
Production	
HPP	IDR 20.785.500

This price is subject to change. This means that the determination of the increase or decrease in HPP for Madura cattle also depends on the operational costs. Raw material costs, labor costs and costs overhead go down, so the calculation of HPP for Madura cattle will decrease. Conversely, if the cost of raw materials, labor costs and costs overhead increase in price, the HPP calculation for Madurese cattle will also change in price. So the Madura cattle HPP cannot be fixed. This means that Madura cattle HPP will experience a price change.

CONCLUSION

The calculation of the cost of goods manufactured using the ABC system (activity based costing) by accumulating raw material costs, direct labor costs and costs, it is overhead known that the calculation value for one cow is IDR 20,785,500. However, this price is not a fixed COGS. Because Madura sap HPP will experience changes. This is influenced by the costs that burden the maintenance up to the time of sale of the Madura cattle. Changes in COGS are caused by the increase or decrease in raw material costs, labor costs and overhead costs. In addition, changes in the HPP will also be influenced by increased demand or even during big season like Eid al-Fitr or Eid al-Adha.

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