



# Business Analysis of Fattening Bali Cattle Post Pandemic Covid-19

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## Abstract

The state of the country is currently facing a shock caused by the Covid-19 pandemic which has caused the economy to be unstable nationally and even regionally to the countryside, the agricultural and livestock sector is one of those affected by the pandemic, especially the sector is the main source of livelihood for rural community. Bali cattle are superior livestock in Bali which have good meat quality and adaptability to the environment. This study aims to analyze the Bali cattle business after the COVID-19 pandemic. The research method used in this study is a qualitative descriptive method. The type of data used in this study is qualitative data, which is categorized into two types, namely primary data and secondary data. Sources of data obtained through library research techniques ( library study ) which refers to sources available both online and offline such as: scientific journals, books and news sourced from trusted sources. The results of the study concluded that the existence of the Covid-19 pandemic, there are two things that are considered by Balinese cattle farmers, namely facing the consequences of the pandemic on the livestock sub-sector and the availability of animal food and the provision of adaptive and adoptive livestock technology. Meanwhile, in terms of providing technology, such as conducting research through breeding technology, it is recommended that the formation of new lines through crosses from several livestock clumps or improvement of certain clumps by selection.

**Keywords:** Fattening, Bali Cattle. Business Analysis, Post Pandemic Covid-19.

## Introduction

The world is being attacked by a virus known as Covid-19, originating from the city of Wuhan, China and as of June 22, 2020, it has spread to 216 countries with a total of 8,650,917 infected victims, 460,360 deaths and 2.9 million recoveries. (Sumantri et al., 2022) . The virus, which is expected to enter Indonesia on March 2, 2020, quickly infected. In Indonesia, the virus has infected about 45,891 people in 34 provinces and 406 districts with the death of 2,465 people, while the recovery is 18,404 people (WHO, 2020) .

The spread of the virus ranks highest in the

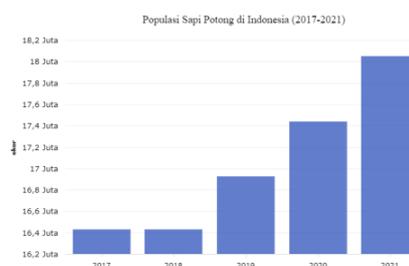
United States, followed by European Union countries, several countries in the Middle East, Southeast Asia, the Western Pacific and on the African continent. No vaccine or specific antidote to the virus has yet been found, so on March 11, 2020 Covid-19 was declared a global pandemic (WHO, 2020) . Indonesia has potential natural resources for the development of the agricultural and livestock sectors (Astiti, 2019b) (Paul, nd) . The agriculture and livestock sector is a strong and reliable sector in supporting the availability of food needed by the community (Astiti, 2019c) (Daryanto & Indrawan, 2020) . The agricultural and livestock sectors play a very important role

in overcoming the crisis caused by economic shocks or other factors (Woulfe, 2022) (Hastang & Mandasini, 2019) . It is as stated (Vicente et al., nd) (Sanjaya & Suparta, 2019) related to the role of the agricultural and livestock sectors. The state of our country is currently facing a shock caused by the Covid-19 Pandemic (Tigue, 2022) . The impacts include a decrease in purchasing power due to a decrease in income for the productive sector (Naryono & Sukabumi, 2020) . On the other hand, government policies related to the Covid-19 pandemic have an impact on the number of workers who have been laid off (Astuti, 2019d) . This situation greatly shook the economy nationally and even regionally to the countryside. The agricultural and livestock sectors are encouraged as the main source of livelihood for the community (Silalahi et al., 2020) .

Bali cattle are superior livestock in Bali which have good meat quality and adaptability to the environment, making them easy to develop (Astuti, nd) . The main problem in the cultivation and development of cattle in Bali is the lack of supply of feed both in quantity and quality. (Sumantri et al., 2022) stated that in addition to genetic factors, feed is an important factor in a livestock business because the cost of providing feed is around 60 -70% of the total production cost. Therefore, the need for quality feed is very much needed in the cattle business for optimal production (Astuti, 2019e) .

Livestock as an integral part of the agricultural sector has various roles including as a source of income for the community and the region (Sanjaya & Suparti, 2019) . Livestock can be used as a driving force because in addition to increasing the income of the farmer-breeding community, it also has the

opportunity to create job opportunities for the productive workforce (Rahman et al., 2021) . One of the leading livestock commodities in the region is cattle. According to (Astuti, 2019b) (Pramana & Hastjarjo, 2021) that the beef cattle business has the potential to be developed. The development of cattle farming is a serious concern of the government and various parties (Patunru et al., 2021) . This is because cattle are a contributor to the national demand for beef. The demand for beef from time to time has increased, but often cannot be met due to the slow increase in supply. This is supported by (Paul, nd) that every year there is a shortage of beef.



**Image 1**  
**Beef Cattle Population in Indonesia**  
**(2017-2021)**

The Central Statistics Agency (BPS) report shows that the beef cattle population in Indonesia has continued to increase over the last 5 years. In 2017, the beef cattle population was 16.42 million heads. Then, the national beef cattle population increased slightly by 0.06% year-on-year (yoy) to 16.43 million heads in 2018 (Bamualim & Wirdahayati, 2003) . Then, the Indonesian beef cattle population grew by 3.04% yoy to 16.93 million heads in 2019. Next, the Indonesian beef cattle population increased again to 17.44 million pieces in 2020. Meanwhile, the beef cattle population in Indonesia was recorded at 18 0.05 million

heads in 2021. This means that the beef cattle population in the country will increase by 3.49% yoy.

The price of beef cattle falling during the pandemic can result in huge losses if the cattle are forced to be sold because most cattle breeders in Indonesia aim for investment (Pathak et al., 2020). Slaughter of cattle for the production of the food industry is greatly reduced because the community greatly reduces the consumption of processed food (Astuti, 2019a).

The purpose of this study is to analyze the Bali cattle business after the COVID-19 pandemic, the benefits of this research are to provide input for the government and all parties involved in the cattle business so that their business can run optimally.

### Materials and Methods

The research method used in this study is a qualitative descriptive method. The type of data used in this study is qualitative data, which is categorized into two types, namely primary data and secondary data. Sources of data obtained through library research techniques (library study) which refers to sources available both online and offline such as: scientific journals, books and news sourced from trusted sources. These sources are collected based on discussion and linked from one information to another. Data collection techniques used in this study were observation, interviews and research. This data is analyzed and then conclusions are drawn.

### Results and Discussion

Bali cattle are native Indonesian beef cattle domesticated from banteng (*Bibos banteng*). Bali cattle are also known as Balinese cows, which are sometimes also

known as *Bibos javanicus*, although Bali cattle are not in the same subgenus as *Bos taurus* or *Bos indicus* cattle. Based on the genealogical relationship of the Bovidae family, the position of Bali cattle is classified into the subgenus *Bibovine* but still belongs to the genus *Bos* (Paduloh et al., 2022).

Bali cattle have uniform physical characteristics, and only undergo minor changes compared to their wild ancestors (Banteng) (Ariff et al., 2015). The color of cows and calves or young is usually light brown with a thin black line along the middle of the back. The color of the bulls is brown when young but then this color changes slightly darker at 12-18 months of age to near black at maturity, except that castrated bulls will remain brown. In both sexes there is a white color on the back of the thigh (buttocks), the bottom (abdomen), the four lower legs (white stockings) to the top of the nails, the inside of the ears, and on the edge of the upper lip (Nababan & Regina, 2021).



Characteristics Bali cattle have the ability to maintain their condition and body weight even though they are kept in low quality pastures. In addition, its ability to digest fiber and utilize feed protein is better than other cows. At the age of 1.5 years Bali cattle weight reached 217.9 kg. In terms of carcass production, Bali cattle have a higher

carcass percentage than other superior cattle. Bali cattle carcass percentage ranged from 56-57% (Astuti, 2019d) .

Conditions in the field show that most of the farmers keep their livestock as a side business, with the provision of improvised feed so that productivity is low. In addition to low productivity and long maintenance time, raising cattle is considered less profitable. Budiari et al. (2014) reported that rearing cows fed only poor quality feed such as field grass resulted in a weight gain of 0.32 kg/day (Mayberry et al., 2021) . Furthermore (Cardoso et al., 2020) stated that rearing cows given forage feed (dry grass and bushes) resulted in weight gain of only 0.15 kg/day. This is because the consumption of field grass feed in cattle causes a deficiency of feed nutrients, such as protein, minerals, and vitamins so that forage cannot be absorbed completely (Bruno et al., 2022) . Field grass and waste mostly contain high crude fiber, so its digestibility is low.

Due to the Covid-19 pandemic, there are two things that Bali cattle farmers pay attention to, namely facing the consequences of the pandemic on the livestock sub-sector and the availability of animal food and the provision of adaptive and adoptive livestock technology to respond to the consequences of climate change.

There is a segment of society with middle income who really wants healthy food, thus opening up opportunities for farmers to take advantage of this opportunity. Niche market, which is a marketing technique with a more specific target market and consumers. This can be pursued by marketing livestock products of a certain quality (Hilmiati et al., 2021) . This specific market can be one of the promising

opportunities for farmers to provide sources of animal protein. The era of technology 4.0 has penetrated all lines of life, including the use of information technology for the dissemination of research results, so that various applications are created. The existence of a pandemic stimulates technological innovation in the livestock sector. There are several technologies in the field of animal husbandry that have been developed to support Balinese cattle breeders, including;

1. Takeshi is an android-based application about Cow Health Information,
2. Smartfeedpro, is an application for regulating the amount of feed that can be consumed in a day according to production needs with the aim of using feed more efficiently, livestock not fighting over feed and no wasted feed.
3. Orams, is a tool for calculating feed formulations for beef cattle and dairy cattle.
4. Green Feed, an application intended to measure feed efficiency, measures greenhouse gas emissions from livestock on a digital basis.
5. Sidik is a livestock identification and recording system and can help farmers to evaluate livestock production in their population.

The problem of cattle breeding faced by Balinese cattle breeders in Indonesia is the limited variety and clump with optimal seed quality. The recommended breeding technology is the formation of new lines through crosses from several livestock clumps or improvement of certain clumps by selection. So that the recommended breeding technology is to form new clumps or lines that are adaptive to humid and hot weather like Indonesia. The nature of production with high economic value is

regulated by many genes or main genes, it will be very lucky if it can be known that certain production properties are regulated by the main gene (major gene or single gene) (Dlusskaya, 2021) .

It is necessary to observe the genetic stability of the production trait or to update it, usually requiring a research period of about 4-5 generations (de Brauw et al., 2021) . The length of the research period, the number of livestock observed must follow the rules of breeding science and research infrastructure and support from researchers in the field. For this reason, it is recommended that a consortium of several research implementing agencies be carried out that will improve genetic quality and utilize molecular technology. Breeding research is supported by components of feed, reproduction and animal health, because in releasing new strains or clumps, these data are needed.

### 1. Feed Technology

Concentrate is a mixture of several ingredients based on a formulation made to

meet the needs of beef cattle as a source of energy with high crude protein (CP) and low crude fiber (SK). Some materials from agricultural waste available on site are widely used for the manufacture of concentrates. The use of ingredients for concentrates must consider the price and availability as local feed ingredients. Concentrate formulations are balanced in order to increase beef cattle productivity.

The principle of making concentrate is to mix several feed ingredients with certain characteristics in order to meet nutrient needs, especially CP and energy, do not contain toxins or anti-nutrients, and are easy to obtain. The selection of materials for concentrates must be carried out with wise considerations, for example avoiding materials with high nutritional value with high prices, even imports. Substitution or substitution with other raw materials can be done as long as it meets the requirements. The materials used to make the concentrate are as shown in the table below:

Ingredient Compiler	Proportion (%)	Content Nutrients Availability Nutrients			
		CP	TDN	CP	TDN
		(%)	(%)	(%)	(%)
Peanut soya bean	17	40	78	6.80	13.26
Bran paddy fine	30	6.32	60	1.90	18.00
Skin coffee	16	5.81	57	0.93	9.12
Corn	20	10.76	59	2.15	11.80
Skin peanut soil	16	6	31.7	0.96	5.07
Leaf turi	5	23	65	1.15	3.25
Leaf gamal	5	19.1	69	0.96	3.45
Mixture Mineral	0.5	0	96	0	0.48
Salt	0.5	0	0	0	0

Information:

CP : crude protein

TDN : total digestible nutrients (total digested nutrients)

Some of the commonly used concentrate materials are rice bran, corn, soybeans, and agricultural or plantation waste which are almost always available in some locations. Leaves and small twigs from tree legumes, such as turi and gamal, can be used as concentrates. Compared to granulated material, the use of turi leaves and gamal leaves requires drying and grinding first. Based on the results of the analysis in the laboratory, turi leaves and gamal leaves showed CP content ranging from 22–26%. Both leaves are very potential to be used in the manufacture of concentrates. Concentrated products using turi leaf flour and gamal leaves are preferred by beef cattle.

## 2. Animal health technology

Climate change can cause outbreaks of animal diseases that can appear at any time, decrease in animal body conditions due to rising temperatures which allow for an increase in mortality, as well as the emergence of diseases due to the increase in pathogenic microbes, the spread of *vector-borne diseases*, *foodborne diseases* and the occurrence of resistance. For this reason, it is necessary to anticipate in the face of possible diseases that arise.

In a study conducted by Maria Fatima Bere, a study was conducted to prove an increase in income through cattle fattening technology, the results showed that the average income of farmers in the Bali cattle fattening business on a 2-tail fattening scale gave the best average income with an income of Rp. 8,800,337,- (Rp. 4,400,169,-) per year or a month's income equivalent to Rp. 733,361 (Rp. 366,681). The business is feasible to run as seen from the B/C ratio

value is 1.23 which means  $> 1$  so it is financially feasible on a 2-tailed business scale.

In order to analyze the level of profit from the Bali cattle fattening business, it was previously known all the components of expenditure during the production process as well as the revenue obtained from sales. All components of expenses and receipts are calculated within a period of one year of maintenance (365 days). The explanation of Table 5 is described as follows:

### a. Reception

The income from the Bali cattle fattening business in the Karang Ayu livestock group is the total income obtained by each farmer for 1 year. In general, the source of income for farmers in the Karang Ayu livestock group only comes from the value of the cattle sold, while other sources of income (feces and urine) have not been managed at all.

The average income of farmers from Bali cattle fattening from sales of Bali cattle from 2011 to 2013 is around Rp. 8,149,976, - up to Rp. 15,970,496,-. If referring to the amount of revenue that only comes from the value of livestock sales, then this business needs to be immediately pushed towards a commercial business both in terms of business management and livestock prices as well as in terms of the livestock market. Increasing revenue by increasing the value of livestock sales by improving the quality of livestock. Increase the selling price of livestock in order to obtain a decent income, improve marketing such as market information and manage livestock waste properly to produce products that are worth selling.

**Table 5. Average income, costs and income of Balinese cattle fattening farmers**

Description	Score (Rp/year)		
	1st year	2nd year	3rd year
Score sale cattle	8,149,976	8,356,176	15,970,496
Total reception	8,149,976	8,356,176	15,970,496
<b>B Cost</b>			
2 Investation	550,000	-	-
Cage	523,000	-	-
Equipment cage	27,000	-	-
3 Fixed cost	-	9,213	9.350
Depreciation Cost cage	-	8,783	8850
Depreciation Cost equipment cage	-	430	500
4 Variable Cost	4,122,285	4,187,669	7,160,809
- Procurement Cattle	3,214,848	3.263.232	6,121,472
- Feed addition	531,250	531,250	621,250
- Cost Power work	359,000	376,000	400,000
- Drugs	17.187	17.187	18.087
Total Cost	4,672,285	4,196.882	7.170.159
<b>C Income</b>			
5 Income clean	3,477,691	4,159,294	8800,337
6 Average income/farmer/month	289,808	346,608	733,361
<b>D B/C</b>	0.74	0.99	1.23

Source: Processed from primary data (2021)

Information :

$$B/C \text{ ratio}_{1st \text{ year}} = 4,672,285 : 3,477,691 = 0.74$$

B/C ratio = total revenue (B) : total cost of production (TC)

$$B/C \text{ ratio}_{2nd \text{ year}} = 4.159.294 : 4.196.882 = 0.99$$

$$B/C \text{ ratio}_{3rd \text{ year}} = 8,800,337 : 8,800,337 = 1.23$$

## b. Cost

The cost components used in the Bali cattle fattening business can be grouped into three parts, namely investment costs, fixed costs and variable costs. The production costs that exist in the Bali cattle fattening business in the Karang Ayu cattle group include:

### 1. Investment cost

Investment costs are costs incurred by farmers/breeders which are fixed in nature

and have a selling value and have a certain economic age. The investment cost components categorized in this study are the investment value for the manufacture of cages and the procurement of cage equipment with a total value of Rp. 550.000,- (Rp. 523,000,- cage and Rp. 27,000,- cage equipment)

### 2. Fixed cost

Fixed costs are costs incurred by farmers

whose nature remains independent of the size of production or in other words the amount of these costs is not affected by an increase or decrease in the number of livestock produced. Fixed costs (fixed costs) are defined as costs that remain constant even though the output changes to a certain extent. The component of fixed costs incurred in fattening Bali cattle in the Karang Ayu livestock group is the depreciation value of the total investment in cages and equipment, which in this case is assumed to have an economic life of 5 (five) years and in the fifth year a residual value of Rp. 0,- Thus the value of fixed costs in the 2nd and 3rd years is Rp.9,213,- and Rp. 9.350,-

### **3. Variable cost**

The variable costs incurred by respondents in the Bali cattle fattening business in the Karang Ayu livestock group include the cost of livestock procurement, feed costs, labor costs, and drug costs. Variable costs are costs associated with the production run. The amount of variable cost components incurred can be detailed as follows:

#### **a. Livestock procurement costs**

Based on Table 5, it can be seen that in the Bali cattle fattening business the average value of livestock procurement each year experiences constant price changes, which is between the range of Rp. 3,214,848, - up to Rp. 6.121.472,-. This shows that the value of livestock procurement depends on the number of livestock ownership, age and the number of requests for livestock, where the price will increase along with the increasing number of livestock you want to buy.

#### **b. Animal feed**

Forage feed that is generally used by breeders in the business of fattening Bali

cattle is in the form of natural grass, kingras, turi and lamtoro. The feed prepared is usually sufficient in the maintenance process, but in certain months the farmers experience a shortage of feed so they have to buy it at a price of Rp. 100/kg. The average expenditure to buy feed is Rp. 531,250, - to Rp. 621.250,-. Feed affects the increase in PBBH per day so that every Bali cattle farmer must always provide feed in large quantities.

#### **c. Labor costs**

The labor costs incurred by breeders in the effort of fattening Bali cattle in the Karang Ayu Farmers Group average around Rp. 359,000, - up to Rp. 400,000,-. With the workforce used entirely using family labor. Most of the family labor used is the head of the family and family members, both men and women who have grown up. The types of activities carried out by the workforce are generally in the form of physical activities such as feeding, cleaning places to eat, drinking places, cutting grass, collecting grass which is carried out every day. The calculation of available manpower for beef cattle business activities uses the concept of labor equivalent to an adult male in 1 year (HKSP), i.e. 1 adult male is equivalent to 1 working day for an adult male, and a small child is equivalent to 0.5 working days for an adult male.

#### **d. Drugs**

For maximum production results, farmers must pay attention to the health of livestock against disease. Changes in environmental or weather conditions such as temperature, humidity and rainfall can cause cows to get sick and even cause death. This can be anticipated early on by taking preventive measures by administering drugs issued by

breeders. The average cost for the medicines issued is between Rp. 17,187 to Rp. 18,087,-.

#### **e. Total variable cost**

Variable costs are the largest component of costs incurred by farmers in their business. Production costs tend to increase along with the increase in the scale of business owned by farmers. The total production costs incurred in the Bali cattle fattening business in the Karang Ayu Farmers Group averaged around Rp. 4,196.882 up to Rp. 7.170.159,-

#### **f. Income**

Revenue is the difference between total revenue and total costs incurred in conducting a business. The income from the Bali cattle fattening business in the Karang Ayu livestock group is obtained from the proceeds from the sale of livestock minus the total costs incurred for one year. The total net income of Balinese cattle fattening farmers obtained by respondents per head per year on average ranges from Rp. 3,477,691 to Rp. 8,800,337, - and if it is broken down per month, the average income/head/month is around Rp. 289,808, - up to Rp. 733,361,-. From the average income obtained by farmers, breeders / head / month when associated with the number of livestock ownership, breeders who have fattening 2 tails have higher income compared to farmers who have fattening only 1 head.

#### **Conclusions**

With the Covid-19 pandemic, there are two things that Bali cattle farmers pay attention to, namely facing the consequences of the pandemic on the livestock sub-sector and the availability of animal food and the provision of adaptive and adoptive livestock technology. several technologies in the livestock sector that have been developed to

support Bali cattle breeders include the Takeshi application, Smartfeedpro, Smart Feed Agrinak Version 1.0.0, Oramsi, Green Feed, and the Sidik system. Meanwhile, in terms of providing technology, such as conducting research through breeding technology, it is recommended that the formation of new lines through crosses from several livestock clumps or improvement of certain clumps by selection. Breeding research is supported by components of feed, reproduction and animal health.

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