

# Empowering Communities on the Feasibility of Local Chicken Livestock Business in South Sulawesi Province, Indonesia

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## Abstract

This study aims to determine the level of business feasibility and the number of local chicken production resulting in a breakeven point in the organic chicken business in the Gowa Regency and Maros Regency of South Sulawesi Province. The total population of local chicken businesses that spread in the regencies of Gowa and Maros was as many as 584 people. Using the Slovin formulation and determining the number of samples in each Sub-district in two regencies using a proportional sampling technique. Data collection techniques were conducted using documentation, observation, and questionnaire techniques. The analysis tools used are revenue cost ratio (R/C ratio), benefit-cost ratio (B/C ratio), and break-even point based on cost approach, price, revenue, and business revenue. The conclusions of the research are: generally, local chicken businesses in Gowa and Maros districts have a feasibility level according to the recommended cost ratio (R/C ratio) and benefit-cost ratio (B/C ratio) which is above number one. The number of production at the time of break-even is as much as 40 chickens per month.

**Keywords:** Revenue cost ratio; Benefit-cost ratio; Break-even point; Livestock business, Poultry farming.

## 1. Introduction

The local chicken or Gallus domestics is a fowl that does not originate from a strain or purebred so it is called by local chicken. Local chickens have grown widely in various parts

of Indonesia and can adapt to the environment causing their existence accepted by all circles of society in the remote archipelago (Lainawa et al, 2022). Has identified the local chicken clumps that live in Indonesia both original and import which have been through a production cycle of at least three generations. Furthermore, it is said that local chickens have multi-function that is as a hobby because of their melodious voice, much used in traditional ceremonies, as an ornamental animal because of the colour of the feathers, made as an animal complaint and as a special property of broilers and eggs (Umboh et al, 2014). Local chicken has its market share and quite potential because most people consider the quality of local chicken meat different from other types of chicken, as well as the price, which can be reached by all levels of society (Maddatuang et al, 2021).

Suggested that other advantages of local chickens are very easy to cultivate and have better endurance than other types of chickens. The type of chicken feed is corn or bran mixed with various traditional ingredients that can be made by you (Rahayu et al, 2021). When the era of the Gowa kingdom, chicken is one type of tribute from the community causing chicken has become an integral part of community life and remains awake and sustainable. Until now by most people prefer to consume chicken than the type of broiler or laying chicken. This is due to the texture and quality of chicken meat being different from other types of chicken (Ahmad et al, 2020). Therefore, the growth of the local broiler business is not an obstacle to the growth of the local chicken business. In addition, chicken has its market segment so the demand for chicken has a potential market opportunity. On the other hand, the development of the number of chicken production in South Sulawesi province experienced fluctuations that tend to decrease in the last 5 years as shown in table 1 below:

Table 1: Development of Local Chicken Production in 2017-2021

Year	Development of Production	
	National (Total of tails)	South Sulawesi Province (Total of tails)
2017	260,250,642	14,487,129
2018	270,812,323	13,047,576
2019	281,803,147	13,551,043
2020	291,433,901	14,765,458
2021	303,973,838	17,833,769

Source: Livestock Service Office of South Sulawesi Province, 2021.

The table above shows the amount of production has increased increasingly decreased or in economics known as the law of diminishing returns which each year has increased and tends to decrease (Rauf, 2021). The decline in production contributes to the decline in the availability of local chicken in the market, so most of the consumer society diverts from the purchase of broilers. Another phenomenon that is commonly found in poultry farms still use business management is very simple and memorable as it is, both in terms of feed, cage care, breeding patterns, and surveillance system (Jufri et al, 2018). The pattern of maintenance found is generally still using small land and partly using natural ways without using special handling and supervision.

Likewise, business management based on financial management systems in general still uses simple business management, especially in determining operational costs. Determination of profitability targets, so that not a few poultry farmers pay less attention to the development of the business being run. One of the meanings of work that allows the creation of a conducive environment, innovative quality, and good management? Creating a conducive environment in the sense that the business that is run can provide benefits to the surrounding environment. Business continuity allows the growth of new business units that can contribute to regional economic growth (Djamaluddin et al, 2020).

This study examines the level of business feasibility based on the amount of income and profitability value of local chicken in South Sulawesi Province. This is very important to determine business continuity (Susilo & Suhardi, 2022). Business feasibility analysis aims to determine the level of acceptance and profitability of the business is carried out by considering the aspects of cost, revenue, and profit. Not a few business actors still use business management is still simple, especially related to the knowledge about the use of business capital, especially if the business capital used comes from loan capital, and the determination of the amount of revenue and profit to be achieved. So it is not uncommon to experience losses that ultimately do business closure. Thus, it is important to know to be a benchmark in assessing the level of profitability of the business undertaken. In line with this, it can be raised research problems; a) How the feasibility of local chicken businesses run by the community of local chicken in South Sulawesi Province?, b) How big the number of local chicken production can show the break-even point by the community of local chicken cultivators in South Sulawesi Province?

## **2. Literature Review**

Geprek chicken has become a favourite and hobby of most people, especially the type of free-range chicken. Local chicken farming is very popular because it has a unique meat texture and feather colour and sound that are often the main attraction. In addition, the maintenance system is also not too difficult compared to other types of chickens and has a longer life span (Azis & Abduh, 2019). Livestock is not limited to mere maintenance but is oriented to the achievement of livestock business goals. The purpose of the livestock business is to maximize profits by applying management principles to the optimally combined factors of production.

An agricultural business is a breeding or cultivation business in the form of a company or individual which is held regularly and continuously for a certain period, for business purposes or as a side business, to produce livestock seeds, or beef, egg, milk and germinate. These types of livestock include collecting, distributing, and marketing them (Rusdiana & Soeharsono, 2017). The village chicken business is an activity that does not only rely on livestock skills but also has knowledge and skills in managing livestock business. To maintain business continuity, it is necessary to harmonize knowledge and skills of livestock cultivation with managerial skills (Sengngeng et al, 2022).

The success of chicken farming is influenced by three factors, namely feed, environment, and maintenance management (Sianipar & Widaretna, 2012). The combination of feed

management, environment, and rearing factors is reflected in the important indicators of mortality, feed conversion, and chicken weight achieved. There are three important things in chicken farming, namely (1) feed and water; (2) medicines, vitamins, sanitation, and vaccines; and (3) cage. Handling these three aspects can affect the performance of livestock business as indicated by low feed conversion (high efficiency), stunted growth, and high mortality (Tikollah et al, 2022). In the chicken farming business, the production factors used are chicken seeds, feed, labour, medicines, vaccines, vitamins, and supporting materials such as husks, electricity, and fuel.

In addition to the above capital goods, which are no less important is managerial skills that need to be considered in chicken cultivation, namely: 1) maintenance management; 2) product price fluctuations; 3) certainty of the time of sale depending on market conditions; 4) relatively low operating margins; 5) availability of production factors such as local chickens, including vaccines, medicines, feed supplements, ration raw materials for imported products. In broiler agribusiness are (1) good at dealing with market situations in the pattern of production arrangements; (2) establish communication between farmers; (3) shorten marketing channels; (4) master production and cutting management.

Cost-benefit analysis is important for business people to find out the balance between the total costs incurred and the benefits to be received. Cost-benefit analysis is an analytical technique for comparing various costs associated with an investment with the expected benefits (Sahabuddin & Thaha, 2018). Business feasibility is important in determining investment success for business actors. Therefore, information related to investment planning is very necessary (Karim et al, 2021). The need to evaluate the magnitude of the costs and compare them with the magnitude of the benefits. This analysis assesses two components that require the availability of information, namely the cost component and the benefit component (Sirajuddin et al, 2018).

The results of the analysis are not good because it is estimated that the costs are too large compared to the benefits which are too low (Matlou et al, 2021). Cost is the value of the input used to produce several outputs, which includes both fixed costs and production costs which are also called operating costs in one year. The cost of a livestock business is a cash outlay to finance the business. Farming expenses include depreciation costs and inventory values from the use of tools for one accounting year (Karim et al, 2022). The depreciation of an item can be assessed using a proportional system with one-year figures. Classification of costs to assess the level of feasibility of a chicken farming business, namely; fixed costs, and variable costs.

Components of costs incurred in chicken farming production activities in general, namely; fixed costs and variable costs. Production costs in chicken farms are divided into two, namely variable costs and fixed costs. Determination of depreciation costs using the formula  $(N_b - N_s)/N$  where  $N_b$  is the purchase value of the product,  $N_s$  is the estimated salvage value, and  $N$  is the service life. Furthermore, to calculate the cost of free-range chicken using the form  $TC = TCC + TVC$  or  $TC = TVC + P_x \cdot X$  where  $TC$  is Total Cost,  $TFC$  is Total Fixed Cost,  $TVC$  is Total Variable Cost,  $P_x$  is Output Price, and  $X$  is the amount used.

### 3. Methods

The research was conducted in Maros Regency and Gowa Regency. The data used in this study were sourced from chicken business entrepreneurs in Maros Regency and Gowa Regency, South Sulawesi Province. The total population of chicken breeders spread across Maros and Gowa Regencies, South Sulawesi Province is 584 people. Determination of the number of samples using the Slovin approach with the formulation as follows:

$$n = N / (1 + N \cdot e^2)$$

Where:

n: number of samples

N: number of population

e: the magnitude of possible errors in determining the sample is determined at 10 percent

Thus the number of research samples known as 86 farmers. The next sampling technique is to use cluster or sampling technique based on sub-district with the following formulation.

$$n_i = N_i / N \times n$$

$n_i$  = Total of samples each regency

$N_i$  = Number of populations in each Sub-district

The determination of respondents in each sub-district uses a probability sampling technique, which is a technique that gives each sample the same probability of becoming a respondent. The types of data in this study include primary data obtained through questionnaires and direct interviews with respondents, secondary data is documentation obtained from the Department of Industry and Trade and the Livestock Service Office of South Sulawesi Province. The data needed in this study include the number of free-range chicken farmers, financial statements, and income statements.

This study aims to analyse the feasibility level of native chicken farming using the R/C ratio analysis or revenue cost ratio which is one measure of the efficiency of using costs in investment activities with the formula:  $R/C = [(P \times T) / (FC + VC)]$ . Next, revenue (R) is obtained through the formulation,  $R = P \times Q$  or  $TR = P \times Q$  where TR is Total Revenue, P is Price, Q is Total Sales, FC is Fixed Cost, VC is Variable Cost, and C is Cost. Then the total cost (C) is obtained through the formula:  $C = FC + VC$ . The decision from the results of the analysis can be seen that if the R/C value  $> 1$  means revenue is greater than each unit cost if the R/C value  $< 1$  means income is smaller than each unit cost if the R/C value = 1 then the business is in a good condition break-even condition.

### 4. Results and Discussion

Business is a process of investment activity based on systematic planning by utilizing various existing resources to produce a product or service that can meet the needs of consumers, and

create benefits in the future. Fixed costs are the number of expenses incurred by the local chicken business that has not changed in 14 months. The details of the average fixed cost for the number of cattle with 3000 tails can be seen in the following table.

Table 2: Calculation of Fixed Costs and Contributions for Local Chicken Cultivation in Gowa and Maros Regencies in 2021

No.	Description	Cash charge (IDR)	Cost calculated (IDR)	One year (IDR)	One period (IDR)	%
1	Land tax	1,250,000	-	1,250,000.00	1,458,333.33	3.0
2	Depreciation	-	23,021,766.67	23,021,766.67	26,858,727.78	46.0
3	Investation	30,000,000	-	30,000,000.00	30,000,000.00	51.0
<b>Total</b>				<b>54,271,766.67</b>	<b>58,317,061.11</b>	<b>100.0</b>

Source: Author's findings, 2021.

Variable costs are costs that are calculated based on the volume of production in one year. Variable costs in poultry farming include all costs of production equipment or production facilities used in poultry farming, such as daily labour costs, electricity costs, transportation costs, feed costs, and vaccine costs. On average, a chicken farm employs 5 workers for every 3000 chickens. The salary of financial officers is IDR 2 million, cultivation staff is IDR 1.5 million, feed and vaccine feed is IDR 1.5 million, sorting power is IDR 1 million, and marketing staff is IDR 1 million. The average total monthly labour cost for 3,000 chickens is IDR 7 million.

The use of electricity is intended for lighting and the use of water-pumping equipment. The average use of electricity for lighting and water use in 14 months with a capacity of 3,000 chickens is IDR 2.1 million consisting of IDR 600 thousand and the cost of electricity for water use is IDR 1.5 million. Transportation costs that will be taken into account in chicken farming activities include costs incurred in connection with the expenditure of funds in transportation activities consisting of costs for purchasing feed ingredients, vaccines, and selling chickens. In the calculation of transportation costs based on the average number of cows as many as 3,000 heads are analysed by comparing the highest and lowest costs.

Table 3: Transportation Cost of Local Chicken Livestock Business

Expenditure Type	Cost (IDR)	Frequency/month	Operating cost/month (IDR)	Operating cost/period (IDR)
Feed	250.000	5 times	1,250,000	17,500,000
Vaccine	100.000	twice	200,000	2,800,000
Husk	150.000	4 times	600,000	8,400,000
Selling	200.000	9 times	1,800,000	25,200,000
<b>Total</b>				<b>53,900,00</b>

Source: Author's findings, 2021.

Each chicken aged 2 months to 4 months consumes an average of 0.02 kg of chicken feed per day. Meanwhile, chickens aged 5 months to 9 months consume as much as 0.025 kg of feed

per day. The feed provided is processed by farmers to reduce feed costs to be cheaper than the existing market price. The price of feed per Kg is IDR 1500, much cheaper than the price of feed in the market. The amount of feed given to 3000 chickens in a day is an average of 200 kg with livestock aged 0 months to 8 months as shown in the following table.

Table 4: Feed Costs for Local Chicken Farming

Age of cattle	Requirements/ chicken (Kg)	Feeds for 3000 chickens (Kg)	Feed cost/day (IDR)	Feed cost/period (14 months) (IDR)
0 month – 1 month	0.01	30	25,000	10,500,000
2 months – 4 months	0.02	60	50,000	21,000,000
5 months – 8 months	0.025	75	70,000	29,400,000
<b>Total</b>				<b>60,900,000</b>

Source: Author's findings, 2021.

Giving vaccines and vitamins aims to prevent stress, and increase endurance, and egg production. For more details on the use of vaccines, see the following table:

Table 5: Vaccine Cost of Local Chickens Livestock Business

Brand of vaccine	Requirements/3000 chickens/unit	Unit price (IDR)	Total (IDR)
Strain lento genic	12	250,000	3,300,000
Rodalon	4	150,000	600,000
Vitality	1,000	7,500	7,500,000
Vita stress	900	9,000	8,100,000
<b>Total</b>			<b>19,500,000</b>

Source: Author's findings, 2021.

Table 6: Total Variable Cost

Cost	Requirements/3000 chickens	Total (IDR)
Electricity cost	14 months	2,100,000
Transportation	20 times	53,900,000
Feed	165 Kg	60,900,000
Vaccine	4 brands	19,500,000
<b>Total</b>		<b>136,400,000</b>

Source: Author's findings, 2021.

The largest variable cost is the cost of feed which is followed by the cost of transportation. The two cost items indicate that they two items support the implementation of free-range chicken farming activities. The total cost in this case is the number of fixed costs and variable costs used in the operational activities of domestic chicken farms with an average number of 3000 chickens in each livestock business as shown in the following table:

Table 7: Total Cost of Local Chicken Livestock Business in 2021

Type of cost	Cash charge (IDR)	Cost calculated (IDR)	Total (IDR)
Fixed cost:			
1. Land Tax	1,250,000	208,333.33	1,458,333.33
2. Depreciation	23,021,766.67	3,836,961.11	26,858,727.78
3. Investation	30,000,000	-	30,000,000.00
Variable cost:			
1. Electricity cost	2,100,000	-	2,100,000.00
2. Transportation	53,900,000	-	53,900,000.00
3. Feed	60,900,000	-	60,900,000.00
4. Vaccine	19,500,000	-	19,500,000.00
<b>Total cost</b>	<b>190,671,766.67</b>	<b>4,045,294.44</b>	<b>194,717,061.11</b>

Source: Author's findings, 2021.

Revenue from domestic chicken farming includes income from livestock sales, sales of chicken eggs that cannot be hatched, and sales of chicken manure. An overview of the acceptance of free-range chickens in one maintenance period (14 months) can be seen in the following table:

Table 8: Analysis of Acceptance of Local Chicken Livestock in 2021

Description	Chicken production	Price/unit	Acceptance		Production value (million)
			Cache	To be calculated	
Sale of Chickens	129,000 heads	150.000	110.550 heads	18.450 heads	19,350
Sale of Eggs	309,600 eggs	1.500	265.371 eggs	44.229 eggs	464.4
Sale of chicken manure	38,700 sacks	5.000	33.171 sacks	5.529 sacks	193.5
<b>Total</b>					<b>20,007.9</b>

Source: Author's findings, 2021.

Analysis of revenue on costs aims to determine the amount of the contribution of costs to generate some income. Analysis of income over costs or R/C ratio is a comparison between the amount of income and costs incurred in the company's operational activities. Thus, if the benefit-cost ratio is equal to one, it can be said that the company's operational activities do not experience profits and also do not experience losses or break even. To find out the level of acceptance of the free-range chicken business in Gowa Regency and Maros Regency can be seen in the following table 9.

Table 9: The ratio of Revenue on Costs (R/C Ratio) of Local Chicken Livestock for 3,000 Heads per Period in 2021

Description	Value
Operating revenue	IDR 465,300,000
Total costs	IDR 194,717,061.11
R/C ratio	2.4%

Source: Author's findings, 2021.

The value of profit over cost or (B/C) ratio is a comparison between the level of income and production costs which is indicated by a comparison of 1.00. This value can mean that every IDR 100 thousand production cost incurred can bring a profit or income of IDR 100 thousand. The results of the profit on cost or (B/C) ratio in one production can be seen in table 10.

Table 10: Profit Ratio on Cost or (B/C Ratio) of Local Chicken Livestock for 3,000 Heads in 2021

Description	Value
Operating revenue	IDR 270,582,938.89
Total costs	IDR 194,717,061.11
R/C ratio	1.4%

Source: Author's findings, 2021.

The table shows that the B/C ratio is 1.4 which explains that the chicken farms run by the community in Gowa and Maros regencies are feasible. As a measure of the feasibility of evaluating a project using the Benefit Cost Ratio method of more than one or  $BCR > 1$  then the project is said to be feasible and vice versa if the BCR value is  $< 1$  then the project is not economically feasible to implement.

A business feasibility study is a structured series of activities involving parties who can plan and systematically assess job and business opportunities to arrive at the company's goals. Creating a business plan is not as easy as doing business (Azis et al, 2022). Several things need special attention in planning and assessing the feasibility of a native chicken business, such as conducting a cost and benefit study. One of the causes of the lagging of local chicken farms compared to other poultry farms is that risk management is not optimal due to a lack of attention to business feasibility analysis. Generally, local chicken farmers are optimistic about achieving the target market but have not considered the risk aspects that may arise from other competitors (Silondae et al, 2021). Farming broilers or laying pullets is cheaper and has faster business cycles. Therefore, chicken farmers are required to create creative values. In general, it can be said that the broiler business that has been run so far has not shown new values, as well as efforts to create superior varieties with faster livestock and more competitive prices.

This is exploited by competitors to create superior varieties with a faster and cheaper harvest period so that they can reduce high costs. The low level of productivity of native chickens is caused by several factors such as a relatively slow growth rate when compared to native chickens, lack of knowledge about business management, and good chicken farming skills. It is different if the cultivation of native chickens is carried out intensively and managed with good and regular business management, then the growth of chickens is much faster than the routine maintenance pattern.

## 5. Conclusion

The feasibility level of the free-range chicken business that is run by the community in Gowa and Maros regencies shows the feasibility level recommended by the business feasibility analysis using the highest cost-to-income ratio (R/C ratio) and cost-benefit ratio (B/C ratio). Furthermore, based on the analysis of the starting point shows that the turning point is in the number of chicken production as much as 558 chickens per period or as many as 40 chickens per month with a price level of IDR 150 thousand per head.

The implications of the results of community empowerment research on the feasibility of a native chicken farm in South Sulawesi are as follows. The results of the analysis show that the cultivation of native chickens in South Sulawesi is feasible, so it can be recommended to local governments through community empowerment programs to increase local revenue. One of the main problems faced by the community is the limited employment opportunities so local chicken farms can be a solution for local governments in overcoming unemployment.

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