Original Research Article

Comparison of Marketing Efficiency in the Sheep-Fattening Business Supply Chain Scheme in Langkat District

ABSTRACT

Aims: Analyze the economic efficiency of production and describe the supply chain scheme for the fattening sheep business in Sei Bingai District, Langkat Regency.
Study design: This type of research is quantitative descriptive research.
Place and Duration of Study: The research was conducted from November 2022-January 2023 in Sei Bingai District, Langkat Regency..
Methodology: Data collection techniques include several techniques, namely using questionnaires through Focus Group Discussions (FGD), in-depth interviews with respondents, document analysis, informal discussions, and direct observation. The data analysis method used is Economic Efficiency Analysis and System Supply Chain.
Results: The results showed that 1) The marketing of fattening sheep in Sei Bingai District, Langkat Regency, has been efficient. This is proven by the results of efficiency calculations which show the efficiency of the three supply chain schemes is below 50%. Compared to the other two channels, scheme two is said to be the most efficient because the efficiency value is only 13.2%. In comparison, the highest efficiency value is in scheme three, followed by the first channel scheme. 2) The supply chain scheme for fattening sheep in Sei Bingai District, Langkat Regency, consists of producer breeders, agents, regional market intermediaries, and consumers.
Conclusion: Improvements in performance indicators provide good performance results for the sheep-fattening supply chain. Efforts to improve the indicators of order fulfillment and compliance with standards are carried out by having good cooperation with suppliers. Companies must be more involved in handling the quality and quantity of fattening sheep.

Keywords: Marketing efficiency, Langkat Regency, Sheep Fattening, and Supply Chain.

1. INTRODUCTION

Sheep fattening business is one of the strategic commodities in Indonesia because changes in the price of fattening sheep business can affect inflation [1]. The cause of high inflation can be an increase in the price of the livestock business [2]. In addition, the business of fattening sheep is also a high-value commodity, so many farmers are working on it. The total production for fattening sheep businesses in North Sumatra in 2021 will reach 29,222 tons, while the need for 43,000 tons [3]. The high demand for fattening sheep in 2021 will increase prices due to a decrease in production.

This condition is caused by the uneven marketing distribution of the fattening sheep business, resulting in price fluctuations in each region. During the harvest season, the central areas experienced a decline, resulting in losses for producer farmers, while in other areas, consumers had to buy at high prices [4]. An effort must be made to organize the supply chain system so that there is an even distribution from the central area to other regions to create a balance between stock and price [5].

So far, the cooperative system between breeders and companies has yet to be a written contract [6]. This collaboration only relies on trust between the two, in which breeders sell their sheep fattening to the company, and the company only buys fattening sheep according to the company's grade. The selling price for fattening sheep offered by the company to farmers for fattening sheep is above the price for fattening sheep in traditional markets. However, the selling price for fattening sheep is not fixed but is adjusted to market conditions because there is no contract, so the selling price has yet to be agreed upon.

This study aimed to analyze the economic efficiency of the production of sheep-fattening businesses and describe the supply chain scheme for sheep-fattening businesses in Sei Bingai District, Langkat Regency. This research is essential to carry out, namely 1) because the results of the research can be used as information for sheep fattening business farmers in improving their performance through the application of agribusiness development strategy models for fattening sheep business in Sei Bingai District, Langkat Regency by examining the production aspect, namely measuring the level of efficiency economy by measuring the efficiency of the use of production inputs and the efficiency of production unit prices. 2) Information for stakeholders or companies can be used to hold good cooperation with partners to manage their supply chain so that they can meet consumer needs, from breeders to retailers. 3) For government, the results of this study are expected to be helpful for the local and regional government to be used as a reference in efforts to increase production and profit for breeders in the fattening sheep business.

2. METHODOLOGY

The research was carried out in Langkat Regency by specifying several areas that develop farming for fattening sheep. The object of research is farming actors, both producing breeders, marketing institutions, and production input business actors. Other respondents are the Department of Agriculture Agricultural Extension Agency. Data was collected using a questionnaire through Focus Group Discussion (FGD) and in-depth interviews with respondents. The research was carried out with three stages of research, as follows; Stage (1) analyzes economic efficiency; Stage (2) describes the supply chain model for fattening sheep in Sei Bingai District, Langkat Regency, to produce a more effective and efficient scheme for carrying out farming business for fattening sheep using Supply Chain Management Analysis.

This research will be carried out from November 2022 to January 2023 in Sei Bingai District, Langkat Regency, because this area is one of the areas with great potential in developing a sheep farming business. Respondents' requirements were breeders cultivating sheep-fattening businesses in the study area. The research method used is a survey method with a unit of analysis of breeders who carry out the business of cultivating sheep fattening.

3.1. Population and Sample

The population in this study were all cattle breeders in the business of fattening sheep in Sei Bingai District, Langkat Regency. In this study, sampling was carried out by census or as a whole..

3.2. Data Collection Technique

Data collection activities include several techniques: questionnaires through Focus Group Discussions (FGD), in-depth interviews with respondents, document analysis, informal discussions, and direct observation. Interviews involved decision makers and experts who are responsible for the cultivation of fattening sheep business in Sei Bingai District, Langkat Regency. This data collection technique is appropriate for analyzing marketing efficiency comparisons in supply chain schemes for sheep fattening and implementing contract farming models in Sei Bingai District, Langkat Regency.

3.3. Data analysis

3.3.1. Economic Efficiency Analysis

Namely measuring the efficiency level in the use of factors of production and determining the right price for the implementation of fattening sheep business in coastal lands. The research was conducted in the first year using the Cobb-Douglas equation:

Y= X1 + X2 + X3 +...Xn..... [2].

Information:
Y = Production results
X_1 = Production Input 1
X_2 = Production Input 2
X_3 = Production Input 3
X_n = nth Production Input n

The analysis used to measure allocative efficiency compares revenues with expenses so that the production unit price is known. The analysis used is marketing efficiency analysis with the marketing channel criteria that the EP value is smaller than the EP value of other marketing channels.

EP = (TB / TNP) x 100% ..... [3].

Information:
EP = Marketing Efficiency (%)
TB = Total Marketing Cost (Rp/kg)
TNP = Total Production Value (Rp/kg)

3.3.2.System Supply Chain

Describe the supply chain model for fattening sheep in Sei Bingai District, Langkat Regency, to produce a more effective and efficient scheme for farming operations for fattening sheep in Sei Bingai District, Langkat Regency using Supply Chain Management Analysis.

3. RESULTS AND DISCUSSION

3.1. Production Cost Analysis of Sheep Fattening Business

The costs incurred by breeders in managing the sheep-fattening business consist of fixed and variable costs. Fixed costs are costs that cannot change (constant) for each level of the number of results produced or that are not used up in one production period and are still incurred even though they are not producing, including depreciation costs. The fixed costs incurred in this sheep-fattening business are the stable and equipment depreciation costs. One way to calculate depreciation costs is the difference between the item's initial value and the item's final value divided by the length of use. This is by research [7] that the depreciation cost is obtained by dividing the investment price by the estimated number of years the length of the investment is used.

Variable costs can change at any time depending on the size of the production volume or costs used up during production. The variable costs of this sheep-fattening business include the cost of beef cattle at the beginning of the year, additional feed, medicines, vitamins, and labor wages. For more details, the average costs incurred in this business can be seen in Table 1.

Table 1. Average costs incurred in fattening Sheep

No	Description	Effort value (Rp)
1	***Fix Cost***	**513.000**
	1.1. Cost of depreciation	513.000
	1.2. Tax	-
2	***Variable Cost***	**226.836.410**
	2.1. Cost of Production Facilities	221.604.743
	2.2. Labor costs	5.231.667
3	**Total Cost (1+2)**	**227.349.410**

Source: Primary Data (processed), 2023.

Table 1 shows that the fixed costs incurred in fattening sheep at the study site amounted to Rp. 513,000, - consisting of depreciation costs for cages and livestock equipment depreciation costs of Rp. 513,000, with a percentage rate of 0.23 percent of the total cost. Variable costs consist of costs of production facilities and labor costs. The production facilities used in the fattening sheep business are Rp. 221,604,743, with a percentage of 97.4 percent consisting of additional feed costs, costs for vitamins and medicines, and livestock costs at the beginning of the year. The cost of labor used is Rp. 5,231,667, with a percentage of 2.30 percent of the total cost of fattening sheep in the Sei Bingai District.

Based on the research results, variable costs are more significant than fixed costs, namely 99.54 percent. This is in line with research [8], which states that spending on fixed costs does not affect the number of products produced but affects the profit earned by beef sheep breeders. Meanwhile, variable costs affect the amount of product produced.

Analysis of Income from Sheep Fattening Business

The size of the income from the fattening sheep business is primarily determined by the size of the production and the price at harvest. The price for beef cattle for Males is Rp 7,500,000; for Adult Males, it is Rp 11,500,000 per head. The average beef cattle production per year for Males is six heads, and for Adult Males is 12. The average revenue and income from the sheep-fattening business can be seen in Table 2.

Table 2. Revenue and Income from Sheep Fattening Business Per Year

No	Description	Effort value (Rp)
1	*Fix Cost*	513.000
2	*Variable Cost*	226.836.410
3	**Total Cost (1+2)**	**227.349.410**
4	**Total Revenue (P*Q)**	**314.053.350**
5	**Income (4 - 3)**	**86.703.940**

Source: Primary Data (processed), 2023.

Table 2 shows the value of production (revenue) generated from businesses in this research area of Rp 314,053,350 per year. Beef cattle are sold alive and fresh. The total cost, which results from the sum of fixed costs (fixed costs) and variable costs (variable costs), is Rp. 227,349,410. The data processing results from Table 2 show that the net income from fattening sheep farmers is obtained from the total income minus the total cost of Rp. 86,703,940 per year.

By looking at the assessment criteria that a business is profitable if a price level multiplied by the amount of beef cattle production exceeds all costs, it can be ascertained that the sheep-fattening business is feasible to develop. At the level of efforts to maximize profits, it is usually realized through increased technical efficiency. When viewed from the net income of sheep breeders per month can be seen in Table 3.

Table 3. Distribution of Income Levels in the Sheep Fattening Business in the Study Area

Descriptive Statistics Net Income				
Description	**Sample**	**Lowest**	**Highest**	**Average**
Net Income	30	Rp. 1.931.517	Rp. 42.218.167	Rp. 7.225.328

Source: Primary Data (processed), 2023.

Table 3 shows that the lowest net income for fattening sheep in the study area is Rp 1.931.517 per month, and the highest net income is Rp. 42,218,167. So that the average net income received by fattening sheep breeders in the study area is Rp. 7,225,328 per month. This is because there are differences in the amount of business production and the use of superior seeds owned by breeders, so the resulting production also varies. The difference in the number of products produced will affect the costs incurred and the income received by the farmer. Based on field surveys, the difference in production also lies in the scale of the business. The larger the scale of the business, the greater the production and income. Vice versa, the smaller the scale of the fattening sheep business, the smaller the products produced. In addition, farmers' experience in the research area also influences business production. The greater the business experience, the greater the opportunity to increase production and income. This was proven when the sample had the highest experience, namely 16 years of running the sheep fattening business, and the business scale was large; the production was also high, so the income he earned was also large, namely Rp. 42,218,167 per month.

3.2. Economic Analysis and Feasibility of Livestock Fattening Business

After completing the production costs and income analysis, the feasibility of the fattening sheep business in Sei Bingai District can be seen in Table 4.

Table 4. Feasibility Analysis of Sheep Fattening Business in Dusun I Klambir Lima Village

No	Description	Unit	Effort value
1	Total Cost	Rupiah	227.349.410
2	Total Revenue	Rupiah	314.053.350
3	***Net Income*** (2 - 1)	Rupiah	86.703.940
4	Revenue Cost Ratio (2/1)	-	1,38

Source: Primary Data (processed), 2023.

Table 4 shows that the R/C ratio is 1.38. The value of the R/C ratio is obtained from a comparison of the total receipts of IDR 314,053,350 with a total cost of IDR. 227,349,410,-. Economically, the fattening sheep business in Sei Bingai District is feasible to be cultivated (developed) as indicated by the value of R/C Ratio > 1, an average value of 1.38. This means that with a sacrifice (production costs) of Rp. 1.00, the beef sheep breeder will receive revenue (production value) of Rp. 1.38. Concerning this situation, the fattening sheep business in the research area is feasible and profitable and can even be developed or run.

3.3. Supply Chain Scheme of Sheep Fattening Business

Several areas are production centers for fattening sheep in Sei Bingai District, Langkat Regency. This area annually produces sheep fattening with characteristics similar to sheep fattening. The visible difference is that the size is relatively smaller when compared to fattening sheep from other areas. Marketing for fattening sheep is carried out by marketing in general, both with general trade patterns and informal contract patterns with several large dealers with more capital. Marketing is carried out in the regions and distributed outside the city to meet national needs. On average, breeders do not sell their crops directly to the market; most are sold to dealers and intermediaries through direct sales or slashing systems.

The supply chain scheme describes the flow or distribution route for fattening sheep to local and regional markets in Sei Bingai District, Langkat Regency. Based on research data, the supply chain scheme for fattening sheep in Sei Bingai District, Langkat Regency, is explained in Figure1.

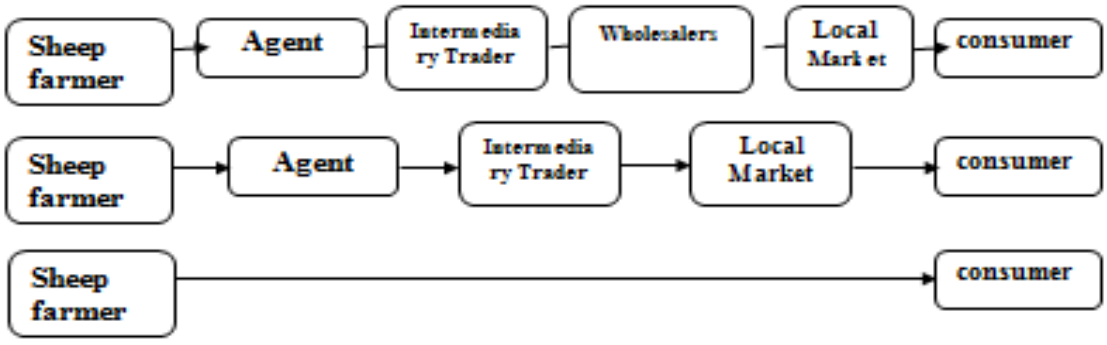

Figure 1. Supply Chain Scheme of Sheep-Fattening Business

3.4. Efficiency of Marketing Channels for Sheep-Fattening Business

Table 5. Comparison of Margins, Prices, and Marketing Efficiency of Sheep Fattening

No	Description	Marketing channel		
		I	II	III
1.	Marketing Margin (Rp/Kg)	32.880	25.200	22.000
2.	Price (Rp/Kg)	68.500	60.000	55.000
3.	Marketing Efficiency (%)	14,6	13,2	17,3

Source: Primary Data (processed), 2023.

Based on Table 5, the marketing of fattening sheep in Sei Bingai District, Langkat Regency, has been efficient. This is proven by the results of efficiency calculations, which show that the efficiency of the three supply chain schemes is below 50%. Compared to the other two channels, scheme two is the most efficient because the efficiency value is only 13.2%. While the highest efficiency value is in scheme three, followed by the first channel scheme.

3.5. Supply Chain Performance Analysis of Sheep-Fattening Business

The performance measured is the performance for the past year with the reason of comparing how the performance of the supply chain for fattening sheep in the previous and following semesters. Measurement of a company's performance can be measured between three to six months or even annually [9].

3.6. Partner Farmer Supply Chain Performance

The internal performance of partner breeders is measured from several indicators, including (Table 6): on the lead time value indicator, the smaller the value produced, the better the supply chain performance. The average value of lead times and order fulfillment cycles for all commodities decreased from semester one to semester two, meaning that the supply chain performance was getting better [10]. The second indicator is about Total Supply Chain Management Cost (TSCMC). The lower the TSCMC value, the better the supply chain performance. The results of the TSCMC calculations in the two semesters say it has experienced a significant decrease in value, although it is not that significant. This is in line with research [11]. This means that the performance of the supply chain for fattening sheep on partner breeders is relatively good.

Measuring the external performance of partner farmers consists of several aspects: Perfect Order Fulfillment is the percentage of timely delivery of orders according to the date of the consumer's order and the date desired by the consumer, expressed in percent [12]. Getting closer to 100 percent means that the performance of a supply chain will be better, and if it reaches 100 percent, it means that the performance of the supply chain can be said to be good [11]. Based on Table 6, the value of Perfect Order Fulfillment at the partner farmer level shows good performance. There was an increase in the performance of sending farmers from semester one to semester two, with an average score of almost 100 percent for each farmer.

Table 6. Supply Chain Performance for Sheep Fattening

No.	Indikator Kinerja RP	Benchmark	Nilai Kinerja RP
1.	POF (%)	100	97,2
2.	Kesesuaian dengan standar (%)	100	92,8
3.	Pemenuhan pesanan	100	98,1
4.	Siklus pemenuhan pesanan	menurun	2,05
5.	Lead time	menurun	2,31
6.	TSCMC	menurun	3.875,7

Source: Primary Data (processed), 2023.

If the order fulfillment indicator gets closer to 100 percent, it means that the performance of a supply chain will be better, and if it reaches 100 percent, it means that the performance of the supply chain can be said to be good [11]. Table 6 shows that the performance of partner breeders by standards is good, and the standard compliance performance of sheep farmers has increased over the past year.

In the standard conformity indicator, if it gets closer to 100 percent, it means that the performance of a supply chain will be better, and if it reaches 100 percent, it means that the performance of the supply chain can be said to be good [11]. Table 6 shows that the performance of partner breeders by standards is good, and compliance with standards performance has increased over the past year. Partner farmers continue to evaluate and improve their performance results. Farmers are categorized as quite good at meeting company standards; this can be seen from the many holidays and aqiqah events that occur throughout the year so that farmers pay more attention to the quality the company wants to reduce the risk of losing customers

4. CONCLUSION

This study concludes that marketing fattening sheep in Sei Bingai District, Langkat Regency, has been efficient. This is proven by the results of efficiency calculations, which show that the efficiency of the three supply chain schemes is below 50%. Compared to the other two channels, scheme two is the most efficient because the efficiency value is only 13.2%. At the same time, the highest efficiency value is in scheme three, followed by the first channel scheme. The supply chain scheme for fattening sheep in Sei Bingai District, Langkat Regency, consists of producer breeders, agents, regional market intermediaries, and consumers.

REFERENCES

1. Marisa, J., Sitepu, S. A., & Kurniawan, R. (2022, August). ANALYSIS OF SHEEP FARMER SUPPLY CHAIN INTEGRATION LENGKAT REGENCY. In Proceeding International Conference on Childhood Prof. H. Kadirun Yahya (Vol. 1, No. 1, pp. 104-112).
2. Sitepu, S. A., & Marisa, J. (2019). Increasing Business Income of Dairy Goat Crossbreed Etawah Farming in Payageli Village Deli Serdang District. Journal of Saintech Transfers, 2(1), 102-106.
3. Central Bureau of Statistics (BPS). 2021. Livestock Meat Production Statistics by Regency/City and Livestock Type (kg), 2021 and 2022 North Sumatra. Central Bureau of Statistics. Medan.
4. Nasir, M., 2011. Research Methods. Indonesian Ghalia. Jakarta.
5. Abd. Rahim and Riah Retno Dwi Hastuti. 2007. Agricultural Economics, Introduction to Theory and Cases: Independent Spreaders
6. Marisa, J., & Sitepu, S. A. (2018). Increased Revenues in Beef Cattle Business in Hamlet I Kelambir V Village in Hamparan Perak Sub-District Deli Serdang Regency. Journal of Saintech Transfers, 1(1), 54-57
7. Nunes J. 2015. Modern Market Oriented Sheep Farming Business Development Strategy (Case Study of the Liudiak Farmer Group, Liurai Village, Aileu District, Timor Leste). Journal of Agricultural and Animal Husbandry Sciences. 3(1).
8. Sutama, 2012. Livestock-Based Agribusiness. Young Entrepreneur Library, Bogor.
9. Hadiguna, R. A. 2015. "Agro-industry Supply Chain Management." Andalas University Press. Padang
10. Chandra, Charu., and, Sameer Kumar, 2000, Supply chain management in theory and practice : a passing fad or a fundamental change?, Industrial Management & Data Systems, Vol. 100/3, pp. 100-113
11. Wuwung SC. 2013. Clove Product Supply Chain Management in Wawona Village, South Minahasa. EMBA Journal. 1(3):230-238
12. Sitepu, S. A., & Julia Marisa, S. P. (2020). Etawa Peranakan Goat Dairy Business Management. Media Scholar Partners.