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Analysis of Supply Chain Beef Cattle in Riau Province

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ABSTRACT

The livestock sector plays a strategic role in the economy of Riau Province through the contribution of food supply, supply of industrial raw materials, feed, bio-energy, employment, and achievement of GRDP (Gross Regional Domestic Product). One of the commodities in the livestock sector that has the potential to be developed is beef. This study aims to analyze the supply chain flow and determine the beef supply chain strategy in Riau Province. The research method used is descriptive qualitative analysis. Qualitative descriptive analysis using SWOT analysis on the beef supply chain. There are 4 streams of the beef supply chain in Riau Province. First, producers/breeders and consumers; second, breeders, traders, and consumers; third, breeders, traders, slaughterhouses, and consumers; fourth, namely breeders, traders, butchers, wholesalers, and small traders then bought by consumers. The internal factor evaluation matrix has a total score of 2.6807, while the external factor evaluation matrix has a total score of 2.7432. The strength factor of the beef supply chain is the quality of beef cattle is good, the weakness factor is the continuity of beef cattle supply is still lacking, the opportunity factor is the wide open market share, and the threat factor is he instability of beef supply.

Keywords: beef, supply chain, SWOT analysis

INTRODUCTION

The Indonesian government, in this case, the Directorate General of Livestock and Animal Health, Ministry of Agriculture of the Republic of Indonesia, has established various strategies for the fulfillment of food originating from livestock. This is stated in the 2020-2024 Strategic Plan, namely increasing the availability of food from livestock as measured by the achievement of beef, buffalo, goat, sheep, pork, chicken, and duck production. The livestock sector plays a strategic role in the economy which is depicted through a tangible contribution through the provision of food, the provision of industrial raw materials, feed, bio-energy, employment, the achievement of GRDP (Gross Regional Domestic Product), a source of foreign exchange, a source of income for some large communities in rural areas, and environmental conservation. This role will increase in the future with the development of technology and the reduction of non-renewable resources, especially in terms of providing food and alternative energy sources. The livestock sub-sector in Riau Province is still not able to optimally support all the strategic roles set by the central government, because the fulfillment of beef cattle consumption most or 98 percent is done by small farmers. Small farmers have limitations in producing because they have low economies of scale, minimal livestock infrastructure, and a limited number of livestock (Sunyigono, 2019).

The development of production and productivity of several livestock commodities in Riau Province during the last few years is still slow. In order to meet food needs, food supply chain management plays an important role. To become effective, supply chain networks need to have a cost-effective design that helps make strategic decisions (Mohebalizadehgashti et al., 2020). Meanwhile, population growth from year to year makes the need for food also increase (Mulyatini *et al*., 2019). The main focus of the beef industry is to meet customer demands, namely quality improvement (taste, color, and softness), reduce prices, traceability and animal welfare (Singh et al., 2018). Meat production, especially beef production, is still very low when compared to the increasing demand for beef from year to year. Currently, the fulfillment of beef needs is still dominantly imported from outside the province. Riau Province experiences a shortage of beef cattle supply every year, which is caused by an imbalance between supply and demand/demand. The availability of beef in Riau province is influenced by the total beef produced and the level of consumption of beef itself. The total consumption of beef is influenced by the level of consumption per capita of society which is proportional to the total population (Anaking & Suryani, 2021). So far, Riau still relies on additional supplies from West Sumatra, North Sumatra, and Lampung to ensure sufficient beef in the market (Amin & Suwondo, 2021).

The beef supply chain consists of production, processing, distribution and retail segments (Shanoyan et al., 2019). One of the reasons for the low local beef production in Riau Province is the small number of livestock populations. The low population is due to various factors such as the availability of local livestock seeds which are still lacking, marriage management is not optimal, the application of appropriate technology in the field is still minimal, good farming practices are not implemented properly, and the institutional arrangement of livestock is not optimal. In livestock commodities where livestock-rearing actors (producers) are mostly dominated by small farmers with low livestock skills, the maintenance system is dominated by extensive or semi-intensive and only a small part is intensive, causing sub-optimal productivity. The beef supply chain consists of several components. These include ranch, stocker, feedlot, packer, distributor and retailer (Ferdousi et al., 2020). The problem that occurs in the management of the beef cattle supply chain lies in the distribution of the added value of each beef cattle supply chain actors (Hastang et al., 2015).

A good supply chain requires principles fair distribution of benefits and risks between supply chain members (Fatahilah, 2009). The income of farmers as the leading actors is still very low because most of their businesses are small-scale, with limited capital, the technology used is still simple, and limited access to finance. For this reason, livestock development is still important to be continued on an ongoing basis in the context of overall economic development. Another thing that becomes a problem in the development of livestock and animal health is the effort to suppress livestock diseases in Riau Province, until now it is still a problem that is still being faced by the Department of Animal Husbandry and Animal Health of Riau Province. Prevention efforts by vaccination, eradication (elimination), traffic control, socialization, and coordination are carried out to suppress the spread of livestock disease, but cases of livestock disease still occur.

Animal husbandry products that are the needs of the community must increase every year, in line with food needs and the increasing population. Livestock as a provider of logistics needs is increasing followed by increasing public awareness of nutritional needs in order to improve the quality of life. The high price of beef commodities is a separate obstacle for the community to meet the protein needs of these foodstuffs. There are various factors that influence the price of beef. Among them are the imbalance between supply and demand, the cost of shipping local beef cattle is more expensive than imports, and animal feed is expensive. One of the interesting conversations is about the analysis of the supply chain (supply chain) of beef.

In this case, the main topic discussed is beef. High demand and short supply raise questions about which beef chain aims to meet demand efficiently and sustainably (Susanty et al., 2021). Coordination and linkages between parts in the entire meat product supply chain need serious attention in order to improve the integration of the production process and the integration between business actors in order to increase the efficiency and competitiveness of local beef products. Based on these considerations, information related to the performance of the livestock and beef supply chain is needed (Saptana & Ilham, 2017). The supply chain for beef is related to the supply side. There are various factors that affect the supply, including the availability of cattle, labor, transportation and cross-border from the supplier area to the target area for selling beef cattle. Beef distribution is the key in supply chain for the future (Malafaia et al., 2021). The distribution chain affects the level of production costs. A good supply chain makes production costs lower. On the other hand, if the supply chain is inefficient, it will lead to relatively high price increases for both producers and consumers (Endoh et al., 2021).

MATERIAL AND METHOD

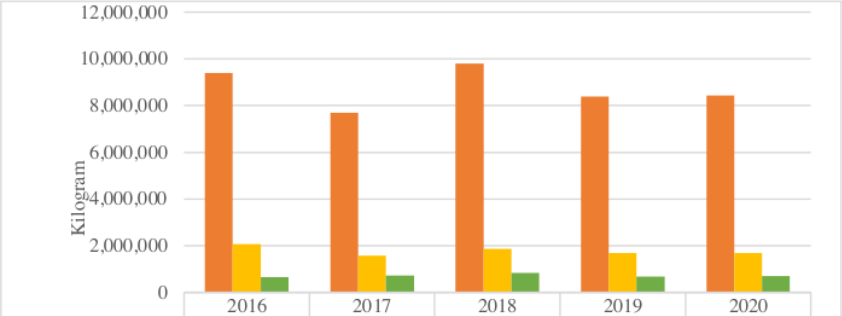
The research method used is descriptive qualitative. Qualitative descriptive analysis was carried out using the SWOT (Strengths, Weaknesses, Opportunities, Threats) method to describe the beef supply chain. This study uses primary data and secondary data. Primary data in the form of data obtained from the Department of Animal Husbandry and Animal Health of Riau Province, interviews with stakeholders who are directly or indirectly involved in the beef cattle supply chain in Riau Province, abattoirs, traders and consumers. Secondary data in the form of journals and other documents related to this research. The research was conducted by observing and analyzing the entire beef cattle supply chain from farms to consumers.

RESULT AND DISCUSSION

In the picture above (Figure 1), it can be seen that the growth in the number of beef beef in Riau Province from 2016 - 2020 has fluctuated. In 2020 beef production is 8,441,524 Kg or 8,441,524 Tons. The total population of Riau Province in 2020 is 6,394,087 people. When viewed from the protein adequacy rate (AKP) of 57 grams/day, the amount of beef available in Riau Province only meets 15.76% of the total protein requirement, because of this many people turn to other protein sources such as fish, chicken., eggs, vegetable protein and so on. The availability of beef is closely related to the supply chain.

The following is a picture (Figure 2) of the beef supply chain in Riau Province. Alternative supply chains are currently being developed, which include contractual arrangements for production and increasing the importance of collaboration in the supply chain and greater demand for specialized products (Hooks et al., 2017). *Supply chain* is a network of agencies that work together to create and deliver a product into the hands of end users (Risyaldi et al., 2021). The supply chain also applies to the livestock business in order to maintain the continuity of local beef (Mizan Us et al., 2021). There are various flow of beef supply chains in Riau Province from producers/breeders to consumers. Based on Figure 2 below, there are 4 (four) supply chain lines. First, producers/breeders sell directly to consumers, secondly breeders sell to collectors and then to consumers, thirdly breeders sell to collectors, then take them to slaughterhouses and then buy them by consumers. Fourth, it is a long supply chain, i.e. farmers sell to blantik, butchers, wholesalers, small traders and then buy them by consumers. The application of the concept of supply chain management is needed to meet consumer demand for livestock products, both as raw materials for agro-industry and demand for fresh products that are directly consumed, so that supply chain actors can benefit from upstream (breeders) to downstream (end consumers) (Pramana et al., 2021).

The community's need for beef still has to be met with imported beef, because local beef has not been able to meet the needs. This must be improved in the beef supply chain in order to minimize the consumption of imported meat. There are various problems that result in low local cattle production. These problems are listed in the Table 1.



	2016	2017	2018	2019	2020
Beef	9,396,286	7,700,427	9,792,531	8,379,100	8,441,524
Buffalo meat	2,074,966	1,579,985	1,868,530	1,689,403	1,686,257
Lamb	652,278	729,620	826,614	685,156	699,991

Figure 1. Ruminant meat production in Riau Province

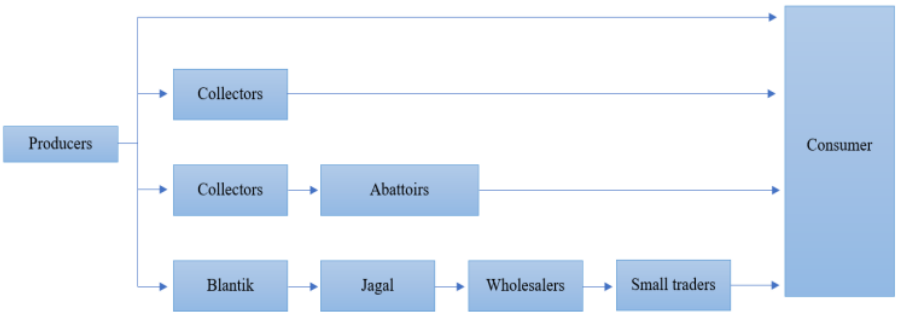


Figure 2. Supply chain beef in Riau Province

Table 1. Main problems of livestock and animal health development in Riau Province

No	Main problem	Problem	Root of the problem
1	Low Local Beef Production	The number of cattle population is small	Low artificial insemination birth rate Low natural mating intensification birth rate The number of livestock seeds is limited The quality of livestock seeds is not superior Lack of quality feed
		Small farm scale	Limited working capital Access to livestock business capital which is still difficult for farmers Breeders are not yet business oriented
		Competence of limited livestock human resources	Reproductive service officers have not been trained Limited Technical Field Officer knowledge and skills Lack of knowledge of farmers about livestock farming techniques Limited ability of farmers in managing farmer institutions

Source: Department of Animal Husbandry and Animal Health of Riau Province, 2021

Analysis of Internal and External Factors of Beef Supply Chain

Internal Factor Evaluation (IFE)

The calculation of the IFE matrix begins by entering the main internal factors in the form of strengths and weaknesses, then weighting and ranking is carried out on each of these internal factors, then the weights and ratings are multiplied to obtain the results as shown in the Table 2, where the total value is obtained. IFE matrix calculation is 2.6807. According to David (2011), the supply chain will be considered strong if the total internal factors are greater than 2.5.

Based on the calculation of the Internal Factor Evaluation (IFE) matrix, it can be seen that the strength factor that ranks first with a score of 0.4706 is good quality beef. This factor is one of the most important strengths of the internal beef supply chain in Riau Province. The existence of good quality beef can be used as loyalty for consumers to buy the meat. On the weakness factor, namely continuity of beef cattle supply is still lacking with a score of 0.1821. This makes the company not optimally use the power it has.

External Factor Evaluation (EFE)

The calculation of the EFE matrix begins by entering the main external factors in the form of opportunities and threats, then weighting and ranking of each of these external factors is carried out, then the weights and ratings are multiplied to obtain the results as in Table 2, namely the total value of the calculation EFE matrix of 2.7432. Because a weight score above 2.5 indicates a good response to opportunities and threats. according to David (2011), the supply chain will be considered strong if the total external factors are greater than 2.5.

Table 2. Calculation of IFE

No	Internal Factors	Weight	Rating	Score
	Strength			
1	Labor available	0.1176	4	0.4314
2	Wide open market share	0.1176	4	0.4314
3	Supporting facilities and infrastructure	0.1092	4	0.4006
4	Good quality beef	0.1176	4	**0.4706**
5	Many enthusiasts become cattle breeders	0.1176	3	0.3529
	Weakness			
1	Lack of supervision from related agencies	0.1092	1	0.1092
2	Lack of capital for beef cattle business	0.1008	1	0.1345
3	Continuity of beef cattle supply is still lacking	0.1092	2	**0.1821**
4	Lack of seeds, seed quality, and livestock productivity	0.1008	2	0.1681
	Total	1.0000		2.6807

Table 3. Calculation of EFE

No	External Factors	Weight	Rating	Score
	Opportunity			
1	Increase farmer's income	0.1622	4	0.5946
2	Wide open market share	0.1892	4	**0.6937**
3	Meat price increase	0.1486	4	0.5946
4	Meat self-sufficiency government policy	0.1351	3	0.4054
	Threat			
1	Beef import policy is allowed	0.1081	1	0.1081
2	Instability of beef supply	0.1351	2	**0.2252**
3	Changes in government regulations	0.1216	1	0.1216
	Total	1.0000		2.7432

Based on the results of the EFE matrix calculation, it can be seen that the opportunity factor that ranks first with the highest weighted value of 0.6937 is wide open market share. This factor is one of the most important opportunities in the current era of competition, if the market share is wider, the opportunity to increase income by selling beef is higher. The existence of a beef cattle farming business will have a direct or indirect effect on activities and socio-economic conditions and the surrounding environment(Sarah *et al*., 2021). On the threat factor, instability of beef supply got the highest score 0.2252. Therefore, supply chain actors must be able to anticipate these threats by taking advantage of all existing opportunities. According to research (Dwicahya & Probowati, 2014), all members of the supply chain cooperate in managing the tasks of each supply chain. Supply chain management based on cooperation and trust as well as good relationships between supply chain members will make it easier to realize an agreement on common goals.

SWOT Analysis

The next step is the integration/analysis (matching stage) between strengths, weaknesses, opportunities and threats using the SWOT matrix. according to Setyorini *et al*.(2016), SWOT analysis is a strategic planning method used to evaluate the factors that are strengths, weaknesses, opportunities and threats that may occur in achieving an activity goal. The results of the formulation are grouped into 4 (four) groups of strategy formulation consisting of a strength-opportunity strategy (SO), a weakness-opportunity strategy (WO), a strength-threat strategy (ST), and a weakness-threat strategy (WT), as presented in the Table 4.

Table 4. SWOT matrix

Internal Factors / External Factors	*Strength* (S) 1. Labor available 2. Wide open market share 3. Supporting facilities and infrastructure 4. Good quality beef 5. Many enthusiasts become cattle breeders	*Weakness* (W) 1. Lack of supervision from related agencies 2. Lack of capital for beef cattle business 3. Continuity of beef cattle supply is still lacking 4. Lack of seeds, seed quality, and livestock productivity
Opportunity (O) 1. Increase farmer's income 2. Wide open market share 3. Meat price increase 4. Meat self-sufficiency government policy	SO • Increase beef productivity • Increase partnership network	WO • Improving the quality of human resources for cattle farmers
Threat (T) 1. Beef import policy is allowed 2. Instability of beef supply 3. Changes in government regulations	ST • Increase cooperation with several related agencies so that consumers buy local beef	WT • Conduct training for farmers in order to maintain the quality of beef cattle • Increase partner network with several beef beef suppliers

CONCLUSION

There are 4 streams of beef supply chain in Riau Province: 1) producers/breeders and consumers; 2) breeders, traders and consumers; 3) breeders, traders, slaughterhouses and consumers; 4) namely breeders, blantik, butchers, wholesalers, small traders then bought by consumers. The beef supply chain evaluation matrix in Riau Province, internal factors of 2.6807, the external factor evaluation matrix of 2.7432. The details of the score are based on the calculation of the IFE matrix, the strength factor of the internal beef supply chain is the quality of beef cattle is good, while the weakness factor is the continuity of beef cattle supply is still lacking. As for the results of the calculation of the EFE matrix, it can be seen that the opportunity factor is the wide open market share and the threat factor.

CONFLICT OF INTEREST

The authors declare no conflicts of interest with the data contained in the manuscript.

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