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Analysis of the Supply Chain of Local Beef Cattle Commodity and Beef in North Sulawesi

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ABSTRACT

The high price of local beef at the retail and end consumer levels is due to many members in the supply chain. As a result, the selling price is low at the producer level. The research aims to identify the state of production factors, analyze the product, financial information flows of the supply chain and the margin value of various distribution channels, and formulate a development strategy. The survey research with the case study model was conducted on 256 respondents with a qualitative descriptive analysis, network, supply chain distribution margins, and the formulation of strategies. The analysis results show that in North Sulawesi there are five distribution channels with varying margin values between 32.71-39.20 percent. This confirms that the supply routes for local beef and beef cattle commodities in North Sulawesi depress farmers' income and burden consumers. The development strategy is with an industrial approach from upstream to downstream.

Keywords: Local Beef Cattle, Margin, Strategy Formulation, Supply Chain

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INTRODUCTION

The growth of local beef consumption in North Sulawesi (Ongole crossbreed, Bacam Cattle), has an average annual rate of 3.38%, while production growth is -13.33% per year (Lainawa, 2020). This causes local beef prices to be high and to compete with imported beef. Nationally, 7000 tons of beef are needed currently, however local beef production only reaches 4000 tons.

According to the Ministry of Trade's report, the price of local beef in September 2020 was IDR 119,818/kg on average, with a price disparity between regions of 9.49%. Meanwhile, the price of imported beef in September 2020 was USD 6.12/kg (Rp.86,268.74).

The high price of local beef at the retail and final consumer levels is caused by the large number of supply chain members involved in the demand, which is influenced by varied consumption preferences. As a result, the producer level experiences pressure, which causes the selling price of products to be low, and low growth in the livestock population. This results in farmers raising livestock with traditional business patterns, where the main objective is simply to make livestock as agricultural labor rather than for commercial purposes.

A supply chain is a concept in which a regulatory system is related to the product, information, and financial flows. This arrangement is essential to connect with the many links involved in the supply chain for local beef and beef cattle commodities in North Sulawesi. The supply chain activities deliver products from live beef cattle to ready-to-be-marketed beef from beef cattle breeders to final consumers.

Choosing improper distribution channels can affect the selling price, which burdens consumers and puts pressure on producers. Due to the lengthy supply chain, high costs may exacerbate the yawning gap between farmers' income as producers and consumer costs.

LITERATURE REVIEW

Based on Jolyanis (2020) data, the growth of beef production from 2012 to 2017 has decreased, although it has slowly increased at the national level. The growth rate of beef production is an average of -13.33 percent per year and 0.72 percent per year nationally. For consumption needs, the growth has increased with an average growth of 3.38 for North Sulawesi, and 7.63 percent for national growth. This difference in the growth of production and consumption needs is emphasized by Lainawa (2020) that in North Sulawesi and even nationally, there has been a gap between consumer needs and product availability.

Suherman, Mirwandhono, and Daulay (2015) stated that there are two types of marketing channels involved in the marketing process of beef from producers to consumers. Kurniawan (2020) highlighted five types of distribution channels for beef marketing of feedlots, local breeders, cattle collecting agents, wholesalers I, wholesalers II, and retailers to consumers. The marketing channel that gets the largest margin is Wholesaler I. The farther the marketing channel from producers to consumers, the greater the marketing margin.

RESEARCH METHOD

The research was carried out in North Sulawesi Province, from April to October 2021. It is a survey with a case study model. It aims to describe, summarize various conditions, situations, or problems in the distribution reality of local livestock and beef commodities in North Sulawesi and product development strategy. The selected events or cases are real-life and ongoing events in this study. Bogdan and Biklen (1982) stated that a case study is a study that seeks to describe a specific setting, object, or event. A case study is a strategy chosen to answer the question of how to implement or implement something.

The primary data were collected and obtained directly from parties considered to understand the problems of local beef cattle farming and the distribution of supply lines in North Sulawesi, which consisted of 3 academic researchers of livestock agribusiness from the Faculty of Animal Husbandry, Sam Ratulangi University, three civil servants responsible for animal husbandry at the North Sulawesi Provincial Office of Agriculture and Animal Husbandry, 200 farmers, and 50 beef traders. The secondary data were collected and obtained from articles or relevant literature, the internet, mass media, and the Central Bureau of Statistics.

The sample was chosen purposely selected in Bolmong Regency, Minahasa Regency, South Minahasa Regency, Southeast Minahasa Regency, Kotamobagu City, and Manado City as research locations. Furthermore, in each of four districts, 50 farmers were selected who were raising local cattle above three heads with a length of maintenance over two years. In Kotamobagu City and Manado City, 25 fresh beef and processed ready-to-eat beef traders were chosen respectively, with resource variables of production factors, external environmental factors, internal environmental factors, and marketing margins.

The analysis comprises four qualitative stages: data collection, data reduction, data display, and conclusion drawing. According to Miles and Huberman in Sugiyono (2010, 2017), activities in qualitative data analysis are data reduction, data display, and conclusion drawing. According to Dey in Moleong (2011, 2017), the essence of qualitative data analysis lies in three related processes, namely (1) describing phenomena, (2) classifying them, (3) determining how the emerging concepts are related to one another.

The supply chain distribution network analysis applied Value Stream Mapping (VSM) (Rother et al. in Rachman, Cahyadi, & Hardjomidjojo, 2017). VSM is a method for describing information flow, product flow, and financial flow in a supply chain. The channel analysis and marketing agency for local livestock and beef commodities is carried out by tracing the chain of marketing channels that are traversed at the farm level up to the final consumer. Bailey and Lusk (2007) stated that to determine the share of the price received by farmers (Sp) of the price paid by consumers; it can be calculated using the following model:

$$Sp = Pv/Pr \times 100\% \quad (1)$$

Sp: the share of the price received by the farmer
Pv: the price at the farm level
Pr: the price at the consumer level

The three-stage strategy formulation analysis was carried out for the needs of the 4-stage qualitative analysis process. According to David and David (2015), in formulating a complete strategy, strategy formulation has three stages (framework: Stage I is input, Stage II is matching, and Stage III is a decision.

RESULTS

The State of Production and Consumption

In North Sulawesi Province, based on 2018 livestock statistical data in Jolyanis (2020), beef production growth from 2012 to 2017 has decreased, although, at the same time at the national level, it has slowly increased. The growth rate of beef production is an average of -13.33 percent per year, and 0.72 percent per year nationally. For consumption needs, the growth has increased with an average growth of 3.38 for North Sulawesi, and 7.63 percent for national growth. This difference in the growth of beef production and consumption needs is emphasized by Lainawa (2020) that in North Sulawesi and even nationally there has been a gap between consumer needs and product availability.

The business of raising local cattle (Ongole Cross and their descendants) in North Sulawesi has been going on for a long time. There is no factual data on when the people of North Sulawesi raise cows. However, it is known that in Indonesia, there have been found three major breeds of beef cattle, namely the Ongole, Balinese, and Madurese cattle, and the breeds of several other cattle, including the offspring of PO cattle and Balinese cattle in Sulawesi North, known as the cow "Bacam". Ongole Cross Cattle (PO) or Bengal is one of the local Indonesian beef cattle with high adaptability to the Indonesian environment, climate, natural food and water availability, and resistance to bacteria and parasites.

Generally, cattle raising in North Sulawesi is still a side business from their main food crop agriculture, horticulture, and plantations. They carry out three models of cattle raising. They are 1) intensive maintenance, where the cattle are housed together with a regular feeding system of 10-20 percent; 2) "semi-intensive" rearing, where the livestock are grazed during the day on the plantation or agricultural area and kept/imitated in the afternoon and at night, the number is around 20-50 percent; 3) "extensive" maintenance, which is a system of maintenance using livestock are released/grazed throughout the day foraging for their food in turns from one farm and plantation to another (known as moving cows), then tied up in the evening and at night on trees in grazing land or around houses, the amount is above 50 percent. The cows are generally local PO, Bali, and their breeds (Bacam). Furthermore, there are also imported cattle, namely Limousin and Simmental cattle.

PO and Bacam are distributed in almost all areas in North Sulawesi Province, while Bali cattle are primarily in the Bolmong Regency area, especially in the Dumoga transmigration area. Meanwhile, other areas in the surrounding regencies also have very limited Bali cattle because their presence is only used as seeds to be mated with PO cows.

The State of Production Factors Supporting Beef Cattle Business

Based on the survey results, the production factors used in the local beef cattle business consist of original and derivative production factors. Original production factors include natural production factors and labor production factors. The derivative production factor includes the capital and skill production factors.

Natural production factors are provided by nature, including land, forest wealth, water, and climate. Based on their characteristics, labor production factors are labor production factors, which consist of physical labor, namely work activities that use more physical strength, craftsmen, and laborers. Spiritual labor is work activities that use more brainpower/mind, namely experienced extension workers and other breeders.

Based on ability, labor production factors are divided into skilled labor (workers sith special and regular education), trained labor (workers who have attended training and experience), unskilled and untrained labor (workers who have never received education or training).

Capital as production factors insisted on all livestock production facilities such as fuel, raw materials, feed, and livestock-related. Based on nature, it is divided into fixed capital, which is more used than once in processing, such as buildings and vehicles, and current capital, which is an end-used, such as fuel, feeding, vitamins and medicines, and labor wages

Skills as essential production factors meant that human capacity to organize or regulate and combinate natural production factors, labor, and capital by managerial tricks, which is expertise in production factors managing by technological skills, and organization skills, handling various activities both internal and external traits.

Description of Supply Chain Management for Animal and Beef Commodities in North Sulawesi

There are three supply chain management flows for local livestock and beef cattle commodities in North Sulawesi. The first is the goods flow from upstream to downstream. The second is money flow and the like that flows from downstream to upstream. The third is the flow of information from upstream to downstream and vice versa. Furthermore, there are five identified components of supply chain management in each supply chain actor for livestock and local beef cattle commodities in North Sulawesi. They are planning, sourcing goods, processing, shipping, and receiving goods.

Based on the research results, it is known that there are 5 channel patterns of product flow: 1) breeders-intermediary traders (animal market/blue market)-consumers/breeders; 2) breeders-middlemen-butchers-retailers-consumers; 3) Breeder-butcher-retailer-consumer; 4) Breeder/butcher-retailer-consumer; 5) Breeder-butcher-consumer. As for financial flows, there are 5 channel patterns, namely: 1) consumer breeders-intermediary traders in the animal market and batik-breeders; 2) consumers-retailers-butchers-middlemen-breeders; 3) consumers-retailers-butchers-breeders; 4) consumers-retailers-breeders/butchers; 5) consumers-butchers-breeders. The information flow occurs in all channels running both ways from downstream to upstream and upstream to downstream.

The distribution pattern of local beef cattle and beef commodity trade distribution in North Sulawesi illustrates the distribution chain of a commodity from producers to end consumers that involves trading activities. According to Indonesia's Central Statistics Agency (BPS), every trader in trading activities gets a margin of transportation and trade (MPP) in their trading activities so that the more players involved in trading activities, the more potential for a lengthy distribution chain, which is suspected to result in price increases at the consumer level.

Based on the results of the BPS survey, information was obtained that the MPP of beef in North Sulawesi Province was 23.12 percent. This indicates that the increase in the price of beef from producers to end consumers in North Sulawesi Province is 23.12 percent.

Trade distribution acts as a contact bridge between production and consumption, channeling the commodities from producers to consumers. The distribution of trade is also closely related to the role of the mediators involved in it because an efficient distribution chain affects low-cost levels. On the other hand, an inefficient distribution chain will result in a relatively high increase in prices at both the producer and consumer levels.

The problem in the distribution chain is important to conduct studies, where the need for food for this commodity will continue to increase for it is the most common source of animal protein consumed by the community. According to BPS, this commodity is included in the 20 main staples contributing to inflation, which is always closely monitored by the government.

Data from the BPS in 2014, this commodity contributed around 1.46 percent to the inflation rate in the foodstuff group. One year later, this share rose to 5.10 percent of the inflation rate for the foodstuff category. The increase was allegedly due to the increasing demand for beef every year.

According to BPS, judging from its availability, domestic beef production has tended to increase in the last five years except in 2017. However, the average production growth is relatively stagnant. Furthermore, based on an identification study of Food Security and Consumer Preference for Meat Consumption, the total household demand for beef in Indonesia is estimated to be 679 thousand tons. Meanwhile, beef production in 2018 is estimated at 496 thousand tons. The unbalance of meat production and meat consumption results in an additional supply of beef by import.

DISCUSSION

Supply chain channels are very diverse and quite long, involving several business actors, in which playing the most role are butchers who also act as intermediaries and retailers. The difference in activities at each marketing agency leads to the difference in selling prices between one institution and another. The more marketing agencies involved in distribution resulting in higher marketing costs, the more significant the difference between the price at the consumer level and the producer level.

Table 1. Marketing Margin, Margin and Share Distribution of Beef for Various Distribution Channels in North Sulawesi

Distribution Channels	Marketing Margin			Margin and Share Distribution (%)			
	P-SP	P-PT	P-PP	P-PP	P-J	P-PP-SM	P-PP-PT
1	-	-	20.000	40,00	-	-	-
2	56.250	60.500	-	25,45	8,70	32,58	35,06
3	65.000	69.000	-	-	35,71	36,36	38,60
4	56.000	65.500	-	-		55,45	59,27
5	60.000	66.500	-	-	47,06	19,04	23,77
Rata-Rata	**47.450**	**52.300**	**20.000**	**32,71**	**30,49**	**35,86**	**39,20**

Note: Producer Breeder; SM = Supermarket; PT = Traditional Market; JL = Butcher (Slaughterhouse); PR = Intermediary Trader; PP = Retailer

The size of the marketing margin is not only caused by marketing costs but also by the profits taken by the traders. The trader sets the sales price, which can provide a certain amount of profit or the selling price. The amount of the merchant's expenditure in terms of marketing costs is a component that determines the size of the marketing margin.

Suherman, Mirwandhono, and Daulay (2015) stated that there are two types of marketing channels involved in the marketing process of beef from producers to consumers. The first channel is producers-wholesalers-retailers-consumers and the second channel is producers-agents-wholesalers-consumers. The marketing margin for wholesalers is IDR 3,311,000/cow and IDR 1,992,000/cow for small traders. This concludes that shorter marketing channels have a more considerable marketing margin for wholesalers.

Emhar, Aji, and Agustina (2014) researching Jember Regency suggested three flows of the beef supply chain: product flow, financial flow, and information flow. The product stream flows from the farmer to the final consumer of beef. Financial flows flow from the final consumer of beef to the rancher, and the flow of information flows both ways from the farmer to the final beef consumer.

Media research results by Kurniawan (2020) highlighted five types of distribution channels for beef marketing, which come from feedlots, local breeders, cattle collecting agents, Wholesalers I, Wholesalers II, and retailers to consumers. The marketing channel institution that gets the largest margin is Wholesaler I. The farther the marketing channel is from producers to consumers, the greater the marketing margin that occurs. The average percent ratio of profits received by traders is 8.95%.

In marketing the local beef cattle commodity, breeders have a high dependence on the services of intermediary traders in the Atlantic market. *Blantik* and the middlemen have the potential to reduce the income of breeders. *Blantik* is an intermediary service that is still traditional. In the transaction, they involve the seller using the services of an anesthetist by providing details on the price of the seller's animal, then offering the seller's animal to the buyer/partner at the price and profit that has been agreed between a *blantik* and buyer. In other words, the owner of the animal or the seller does not need to find the buyer himself, but the trader agent is in charge of finding the buyer.

In marketing the local beef cattle commodity, breeders have a high dependence on the services of intermediary traders in marketing their livestock. This is caused by several factors, including 1) the business scale is relatively small so that the cost of transportation to the market is inefficient; 2) Lack of knowledge on market access by breeders; 3) Transactions are based on buyers, livestock body weight and other indicators are neglected so that the bargaining position of breeders is weak and there is a joint cooperation with brokers on the market and has the potential to reduce breeders' income.

Supply Chain Management for the commodity of beef cattle and local beef in North Sulawesi is a complete cycle chain management from traditional breeders, middlemen, butchers to retail and end consumer levels. The problem that arises is that distribution costs are lengthy and expensive because the distribution system is still carried out traditionally. As a result, there is an emphasis on the profit of producers, in this case, traditional breeders, as well as the burden of purchasing costs on consumers. This condition creates competition between local and imported beef as a result of different selling prices, where imported beef is cheaper than local beef. Therefore, farmers have not changed the business pattern of raising cattle from the traditional way for a long time.

Jolyanis (2020) stated that the position of the beef cattle agribusiness strategy in North Sulawesi was growing and developing. This explains that the beef cattle farm agribusiness in North Sulawesi has high industrial attractiveness. Thus, the strategy for developing the supply line for local cattle and beef commodities in North Sulawesi is to approach the local cattle agribusiness industry model with cooperative farming and digitization. This could encourage production growth at the local cattle breeder level and increase the amount of local beef demand at the consumer level.

CONCLUSION

Based on discussion and results, three major points are related to the local beef cattle commodity and beef supply chain in North Sulawesi. First, there were five supply lines for beef cattle and beef with different marketing margins. Second, profits obtained at each marketing agency fall into the very high category, which causes the selling price at the retail level to increase and suppress the income of producers, in this case, traditional breeders. Third, the development strategy changes the traditional supply line model to a modern one by approaching the marketing industry concept.

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