



Value Chain Analysis Indonesian Animal Husbandry Industry

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ABSTRACT

At least until 2017, a very low production capacity coupled with livestock methods that are still traditional causes almost all major livestock commodities in Indonesia to close their deficits through imports. Meat, milk, eggs, and even the skin, all of them still cannot be fulfilled entirely from the country. As much as 83% of raw material for the dairy industry is imported. Leather processing industry, importing raw materials for cow leather by 3 million pieces and 13.5 million pieces (sheep and goat skin). Specifically for beef, it was noted that 2016 was the highest volume of beef imports reaching 132.74 thousand tons. As for eggs in general, the pattern of development of export volume is lower than the rate of imports per year. Data on chicken meat imports and their values during the 2012-2016 period showed quite high values compared to export volumes. Knowledge of industry value chains is needed to explore the gap in the dependence of imported raw materials. The value chain analysis carried out in the livestock base industry chain shows a map of the relationship between a number of livestock industry bases in Indonesia so as to facilitate the breakdown of dependence on raw materials. Analysis carried out on the main chain (livestock base) and joint chain (supporting base). Five farm-based industry value chains have been assembled, namely: 1) beef-cattle base industry; 2) industrial livestock-poultry meat base; 3) dairy-based livestock industry; 4) leather-based industry base; and 5) egg-based livestock industry. Core industries or prime movers namely: a) RPH on beef chains, b) industrial pasteurization in the milk chain; c) tanning industry on leather chains; d) food freezing industry on chicken meat chains; and e) egg packing house on the egg chain. The existence of the core industry greatly determines the position of the raw materials of the downstream industry.

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INTRODUCTION

At least until 2017, the need for many Indonesian livestock products, still unable to be fulfilled from within the country, most of them are still overcome through imports. It is undeniable that at this time, the livestock business in Indonesia is still dominated by smallholder farms with a very low production capacity. The very low production capacity is also supplemented by still traditional farming methods.

At least some things that have been identified as obstacles to the growth of the Indonesian livestock sub-sector include:

1. The industrial structure of livestock is largely a people's business, characterized by low farmer education levels, low salaries, conventional management and technology applications, widespread livestock, relatively small business size, procurement of important inputs such as seasonal forage, availability of labor family, as well as limited land tenure for food sources.
2. Availability of quality seeds is still limited. Research related to nurseries has not been done

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a little but has not been socialized on a large scale. Communication is still lacking between various research and development bodies (R & D) and universities. Farmers also have no incentive to adopt new technology.

3. Livestock agroindustry problems that have not been able to move the livestock sector. For example the milk processing industry, most of them use imported raw materials. The hotel industry mostly still needs meat from imports.
4. Heavy illegal imports of livestock products
5. Disasters (still found cases of bird flu, anthrax, etc.)
6. High dependence on feed ingredients.

Taking into account the structure of the livestock products industry in Indonesia, growth is focused on the food industry, leather processing industry, and support for the feed industry. The growing food industry is meat processing and milk processing. The downstream food industry that uses milk and egg products is growing very rapidly in Indonesia, one of which is the biscuit industry. The leather industry has been endeavored by the people, derivative products such as times and leather goods are also well developed. Meanwhile, the domestic feed industry which is largely driven by multinational companies continues to grow in Indonesia. The purpose of this research is to analyze several livestock industry bases in Indonesia in an effort to map their performance and formulate a number of recommendations for their development strategies. The purpose of the activity is so that the results of the study can be utilized by livestock-based industry players, livestock businesses, and industry and livestock policy makers. Some of the objectives in this study are:

1. The compilation of a generic value chain model in a number of major livestock-based industries in Indonesia
2. The supply chain balance model is applied in several major livestock-based industries in Indonesia.
3. Compilation of recommendations for development strategies.

EXPERIMENTAL METHOD

The design of this research is quantitative research, analysis of the value chain of the Indonesian livestock industry base. Stages of research include industry tree analysis, value

chain analysis, and determining the balance of supply of livestock products in the Indonesian livestock industry. Value chain analysis is carried out by the Value Chain Model as developed by Porter, by constructing a chain of chains in the livestock industry base and related industries that are adjacent to the core industry. The chain relationship is done by supply-chain analysis. Kaplinsky and Morris (2000) describe the vertical value chain as fields which are input or output of the industry. The vertical value chain is forward and backward. From the point of view of major industries, all vertically related industries are called "supporting industries". The concept was developed for the generic livestock base industry as shown in Figure 1.

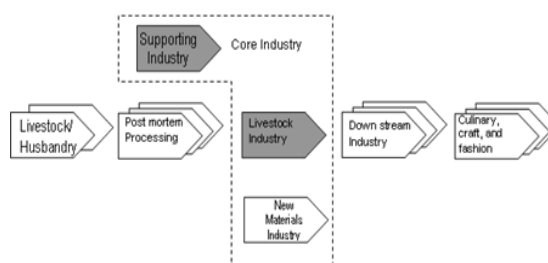


Fig. 1. Generic Value Chain of Livestock-Based Industry

RESULTS AND DISCUSSION

Analysis of Livestock Industry Raw Material Sources

The livestock processing industry is very wide covering various kinds of livestock, but what has a major role in human life is Ruminants and Poultry. Large ruminasia, especially cattle, is more widely traded in the world than small ruminants (goats, pigs, and sheep). While poultry, the most dominant is chicken. The main products of livestock products as industrial raw materials are meat, eggs, milk and skin. While other materials are only follow-up results which generally do not become the main raw material for the industry. Not all livestock processing industries in Indonesia can be supported by Indonesian livestock production raw materials. Domestic livestock production, especially meat and milk, must still be fulfilled by import. During the period of 1984 to 2016, beef production in Indonesia increased by an average of 2.76% per year. In 1984, beef production in Indonesia was

recorded at 248.48 thousand tons, increasing to 524.11 thousand tons in 2016. Data on chicken meat production is more difficult to monitor because its production is not only in official Chicken Slaughterhouses. Predicted data on race chicken meat production from poultry production has more than doubled in the last 4 years compared to three decades ago. In the last five years (2011 - 2015), the development of the population of native chicken in Indonesia has stagnated but tends to increase with an average growth of 2.06% per year or an average population per year of 275.16 million head.

Egg production according to the Ministry of Agriculture (2018) has increased from year to year since 2013, even in 2017 shows an increase of 2.79% compared to 2016 which reached 1.53 million tons. About 90% of national egg consumption is consumed directly by the public, the rest are just entering the industry. The price of eggs is equivalent to a quarter of the price of meat, so eggs are the cheapest animal protein. Indonesian people really like eggs. The milk processing industry uses raw materials from fresh milk or processed milk to be more durable like milk powder. Ministry of Agriculture's prediction, in 2020, the projected demand for cow's milk for consumption reaches 1.08 million tons and 2021 for 1.13 million tons. Domestic cow's milk production growth is around 2 percent per year, while the growth of cow's milk consumption is more than 5 percent per year. Indonesia's domestic milk production is only sufficient for 21% of the Indonesian consumption needs, mainly only due to the limited role of dairy cows from Holstein Friesian (FH) cattle bred on Java. The decrease in productivity also causes the production costs of farmers to increase, while the prices received are less or even unable to cover production costs, especially the costs of high protein feed. One of the best cowhide in the world which is often called "Java Box" comes from Indonesia. The development of the leather raw material industry and the leather goods industry requires a supply of raw materials from the skin which are increasingly difficult to obtain from year to year. Based on national statistical data, domestic leather production can only supply 35% of domestic leather needs, while 65% is filled with imported leather. At present national needs are 5 million pieces (cow leather) and 20 million pieces (sheep and goat skin) while

domestic supply is 2 million pieces (cow leather) and 6.5 million (sheep and goat skin). The shortage of domestic leather raw materials is 3 million pieces (cow leather) and 13.5 million pieces (sheep and goat skin) through imports.

Analysis of Downstream Industries and Livestock Industry Value Chains

Tree Analysis of Animal Husbandry Processing Industry Broadly speaking, the main livestock products in the world are produced from two groups of livestock namely Ruminants and Poultry. Industrial trees built from these two groups of animals have been able to represent the livestock industry in general, where derivative products include food, beverage, clothing, handicrafts, functional food, and other products. Figure 2 shows the livestock industry tree of large ruminants namely cattle. Upstream livestock industry is an animal slaughterhouse, while the upstream industrial dairy products are pasteurized. But in practice, the upstream industry integrates a lot with its processing industry. The main commercial industrial products from large ruminants Cows in the trade are meat, milk and skin.

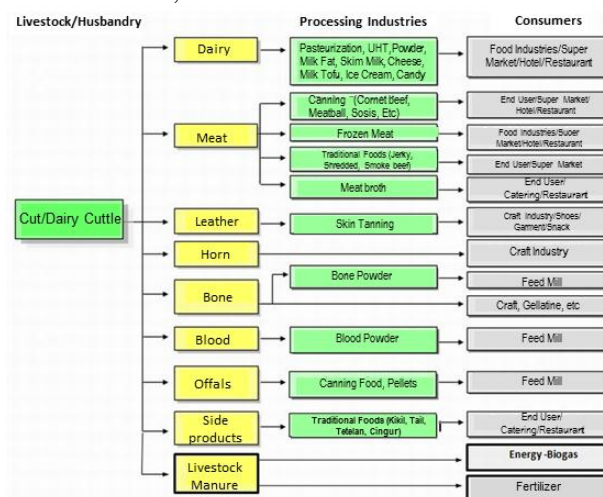


Fig. 2. Tree of Cattle Large Ruminant Industry

In poultry, often included in the discussion are chickens and ducks, especially chicken as a source of protein. The most commercial products as industrial raw materials are meat and eggs. Figure 3 shows the poultry industry tree.

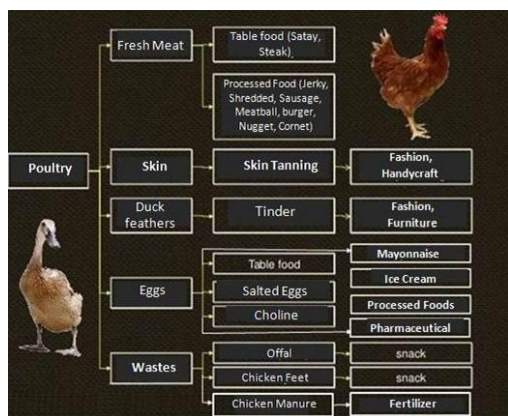


Fig. 3. Poultry industry trees (ducks and chickens)

Value Chain Construction

Value chain analysis is carried out by taking into account the sequence of product utilization in industrial trees. The industry is divided into upstream, intermediate, downstream and down-stream. The construction of the value chain uses the Porter approach and the industry process chain, separated from the industry base of poultry farms and the base of large ruminant livestock, cattle. The chain in the meat-processing industry is in fact not too long because almost all of its products are geared towards processing meat for food. The chain of milk processing is a little longer because of the many milk derivative products that use other raw materials. The value chain system in the egg-breeding base industry seems even shorter because it can be said that there are no intermediate industries. The skin processing chain is not too long because after tanning, the skin is directly used to produce the finished product. Separately the construction of the value chain of several livestock-based industry groups is presented in Figure 4.

Value Chain Analysis

To find out the linkages of industry in the livestock base industry value chain, the perception of two chains has been identified, namely the main industrial chain (Main Chain) and the mixed chain. The perceptions assessed are formulated in Table 1. The perception assessment was carried out on a number of industries in the value chain divided into five, namely: 1) the beef-cattle base industry value chain; 2) the value chain of the livestock-chicken

meat industry base; 3) industrial value chain-Milk farm base; 4) industrial-egg husbandry base value chain; and 5) Leather-based base value chain. Mapping is done in a combination of main chain and mixed chain.

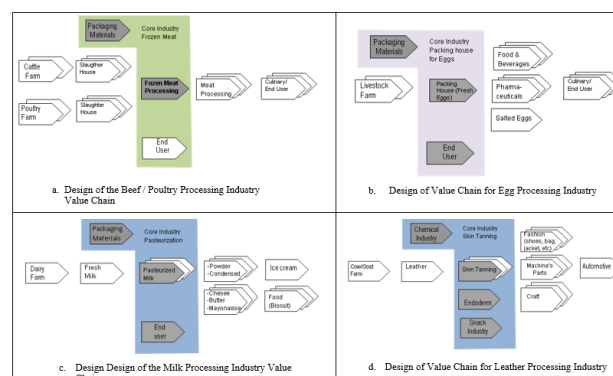


Fig. 4. Construction of value chain systems in several livestock-based industries

Table 1. Formulation of linkages in the industrial base chain of animal husbandry

Main Industry Chain (Main Chain)	
Upstream Industry Support	Development of the Downstream Industry
Contribute to GRDP	Dependence on Raw Materials
Supported by Workforce Skills	Mastery and Technology Capabilities
Productivity	Limited Market Access
Market Availability	Infrastructure Not Supported
Infrastructure Support	Institutional Support
Downstream Political Support	HR Constraints
Raw Material Supply Ability	Political Policy
Combined Industrial Chain (Mixed Chain)	
Various Industrial Development	Basic Industry Support
Potential for Added Value	Increased Competition
Employment	Changes in Regional / National Policies
Provides a Multiplier Effect	Decreasing Support Material Supply
Having export prospects	Sustainability aspects
Open Business Scale Expansion Opportunities	

In the analysis of the livestock base industry value chain - beef, analyzed from slaughterhouses, filleting industries, meat processing industries (fumigation, canning), meat processing industries (sausages, nuggets and meatballs). Mapping perceptions of the main value chain and the combined value chain is shown in Figure 5. The figure shows that almost all trends are approaching the basic and upstream industries. The meaning is that there is an industrial value chain that is farmed-beef is not the long chain downstream.



Fig. 5. Map of the livestock-based industry value chain – beef

The farm-milk base industry value chain map is slightly longer because there are many derivative products. The industries that have been successfully mapped in Indonesia are pasteurized milk, powdered milk, sweetened condensed milk, cheese, mayonnaise, butter, ice cream, and other dairy products. The mapping results are shown in Figure 6.

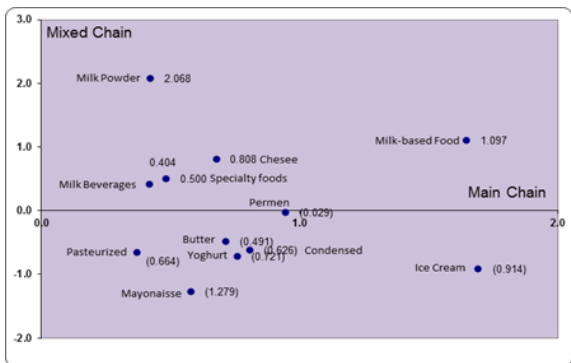


Fig. 6. Map of the livestock-based industry value chain - milk.

The livestock base industry - leather shows that the core industry as a key is leather tanning. From these leather tanning products, there are actually two kinds of products, namely outer skin as the raw material for the industry, skin and inner skin (endodermis) are made into skin crackers by small industries. Figure 7 shows the livestock base industry value chain - leather.

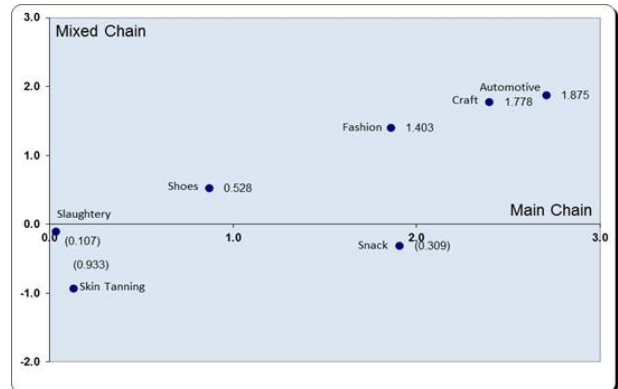


Fig. 7. Map of livestock-based industrial value chains - leather

Industrial livestock base - chicken meat, even though most of its products are similar to beef, but have different value chains. If the beef processing industry in Indonesia relies heavily on frozen meat or fresh meat from slaughterhouses. While chicken meat processing industries in Indonesia, some of which have their own RPA and are connected with their livestock business. Figure 8 shows the industry value chain of livestock bases - poultry meat.

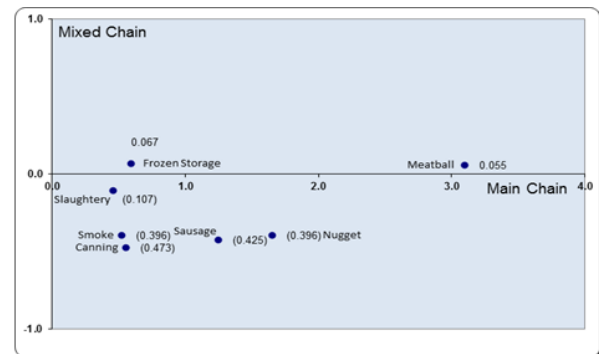


Fig. 8. Map of the livestock-based industrial value chain - chicken meat

The livestock-egg base industry value chain is the shortest, where industry is rarely found. All industries directly take raw materials from their livestock sources, namely fresh eggs. Figure 9 shows the industry value chain of the egg farm base.

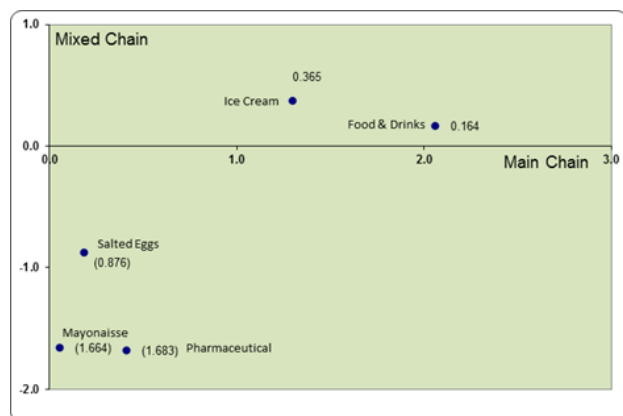


Fig. 9. Map of livestock-based industrial value chains – eggs

Almost all livestock based industrial products have developed in Indonesia, because most of them are processing industries for food. The market for food products in Indonesia continues to grow through several periods of economic crisis, in line with the growth of Indonesia's population. Even though the statistics for the past few years have shown a deficit in raw materials for livestock-based industries, they are always covered with imported raw materials to maintain the stability of the food supply.

CONCLUSION

It is undeniable that at this time, the livestock business in Indonesia is still dominated by smallholder farms with a very low production capacity. The very low production capacity is also supplemented by still traditional farming methods. Almost all major livestock commodities in Indonesia are closed by imports. The milk industry raw materials according to the National Dairy Council data as much as 83% are fulfilled from imports reaching 53,000 metric tons in 2016. For leather processing industries, currently there is a shortage of domestic leather raw materials of 3 million pieces (cow leather) and 13.5 million pieces (sheep and goat skin) through imports. Specifically for beef, it was noted that 2016 was the highest volume of beef imports reaching 132.74 thousand tons resulting in a fairly large and highest beef trade balance deficit. As for eggs, in general, the pattern of growth in the volume of egg exports was lower than the rate of growth in the volume of imports, namely export growth of 251.68% per year, while import growth was 403.71% per

year. Data on chicken meat exports and imports along with their values during the 2012-2016 period shows that the volume of imports is quite high compared to export volume, so that the trade balance of chicken meat can be explained, especially during the 2012-2016 period, showing the balance sheet deficit. The value chain analysis carried out in the livestock base industry chain shows a map of the relationship between a number of livestock industry bases in Indonesia so as to facilitate the breakdown of dependence on raw materials. Analysis carried out on the main chain (livestock base) and joint chain (supporting base). At least five farm-based industry value chains have been assembled, namely: 1) beef-cattle base industry; 2) industrial livestock-poultry meat base; 3) dairy-based livestock industry; 4) leather-based industry base; and 5) egg-based livestock industry. Core industries or prime movers namely: a) RPH on beef chains, b) industrial pasteurization in the milk chain; c) tanning industry on leather chains; d) food freezing industry on chicken meat chains; and e) egg packing house on the egg chain.

ACKNOWLEDGMENT

Research on livestock base industry value chains still needs to be continued using important quantitative indicators, one of which is the main value added. Research to find stronger indicators of linkages between industries in the chain of each commodity Besides aspects of supply chain and traceability, environmental factors also need to be evaluated through several indicators.

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