



# Beef Supply Chain of Imported Cattle from Traditional Markets to Modern Retail Markets

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**Abstract.** The Indonesian government adopted a policy of importing buffalo meat to meet national needs. The policy of importing buffalo meat is suspected to have resulted in new market segmentation and changes in the supply chain of the beef market. This study aims to analyze the supply chain of livestock and beef from imports into traditional markets and modern retail. The research design used in this study through a mix of methods is descriptive quantitative and qualitative. This study was determined by snowball sampling to analyze the supply chain. Based on the results of research observations, the supply chain system of imported beef cattle follows the following pattern: exporters > feedlot (importers) > feedlot depots > wholesalers (butchers/beef cutters) > Abattoir ESCAS (Exporter Supply Chain Assurance System). Furthermore, there are three supply chains in the beef business chain based on cuts, namely (1) the first pattern, the prime cut part, hamstrings, and bones in meat tend to be concentrated in the modern market segment, (2) the types of offal and bone cut parts are generally concentrated in the traditional market segment, and (3) the quadriceps are the slow-moving product. This study concluded that the supply chain of local beef from imported cattle gradually changes to modern markets for their consumption.

**Keywords:** Supply chain · Imported cattle · ESCAS · Feedlot

## 1 Introduction

The increase in beef consumption from year to year is a result of the number of Indonesians increasing every year. The average national beef consumption in 2020 is 2.36 kg/capita/year and in 2021 it is projected to increase to 2.46, kg/capita/year (BPS, Prognosis of Beef Supply Demand) On the other hand, the beef cattle population in Indonesia in 2020 is 17.4 thousand heads [1]. The total national beef production in 2019 was 490.4 thousand tons, an increase of 12% compared to 2010 which was 436.5 tons [2]. There is a gap between the supply and demand for beef in Indonesia.

The need for beef in Indonesia has been met from three sources, namely local beef, imported beef and imported meat [3]. [4] stated that domestic meat production can only

meet around 45% of national beef needs. Meanwhile, the remaining 55% is fulfilled through imports of both frozen meat and beef. The fulfillment of local beef is not only supplied from community farms but has also penetrated feedlot companies. In addition to importing cattle, to meet national meat needs, in 2016 the government took a new policy, namely importing buffalo meat from India.

This policy of importing buffalo meat from India resulted in new market segmentation and changes in market structure. Buffalo meat is often connoted as lower quality of beef (bovine meat). Lower quality causes the price of meat to become cheaper and acts as an alternative for consumption by the lower income middle class [5]. The trend as an alternative meat has resulted in the segmentation of consumers in the middle class into consumers of low-quality bovine meat (buffalo meat) and higher quality (beef). So, the demand for beef will tend to fall because the middle class with lower incomes will shift to consume buffalo meat [6]. The market structure, which was originally dominated by local beef traders and imported beef, shifted as meat sellers began to switch to selling buffalo meat. Demand and profit factors became the reason meat sellers started selling imported buffalo meat. The demand and sales of beef that tend to decline have an impact on the decline in the number of cattle slaughtered in 2018 and 2019 [2]. In addition, er feedlot companies also experienced a decline in production.

The confluence of local beef and imported buffalo meat in traditional markets will only make consumers judge goods on a meat commodity entity leading to equalization or price comparison. In fact, the two goods are a product entity that has differences in value such as coming from different livestock entities, cows, and buffaloes, as well as fresh and frozen. Separating market segmentation areas is important to avoid comparing the value of meat in a commodity entity. Local beef must switch to market segmentation that is able to judge meat as no longer a commodity but a product value. A market with such a character allows it to take place in modern retail. There needs to be value chain innovation that can increase the added value of local beef from imported cattle to get out of price competition in the conventional market through increasing the added value of processes that can protect and become the advantage of local meat over imported meat. This study aims to analyze the supply chain of livestock and beef from imports into traditional markets and modern retail.

## **2 Material and Methods**

### **2.1 Material**

This study's data came from both secondary and primary sources. Manager of beef cattle feedlot companies were interviewed for the major information. In the study, semi-structured questionnaires were employed. Pre-intensive conversation is used to organize the questions, which are subsequently turned into questionnaire using the collected keywords. The results of the interview are expected to see the process of changing the value chain carried out by the company.

### **2.2 Methods**

The research design used in this study is through qualitative descriptive methods. The supply chain analysis carried out in this study used qualitative descriptive methods.

Descriptive method, which is a research procedure in the form of written or oral sentences from directly observed supply chain actors supported by the opinions of speakers, field observations and literature studies. The analysis method used to answer the first purpose of the study was regarding the mechanism of flow of local beef products from feedlots.

### 3 Results and Discussion

#### 3.1 Beef Cattle Supply Chain Imported into Traditional Markets and Modern Retail

The following is a pattern of the cattle supply chain to produce local beef from ex-imported cattle starting from *on-farm* activities, namely the fattening production process to rph and *off farm*, namely post-slaughter starting from meat distribution activities between business chain actors to consumers.

#### 3.2 Live Beef Cattle Supply Chain Pattern

Based on the results of the study, it was found that the supply chain pattern of local meat production from imported cattle is regulated separately through compliance with *supply chain standards* regulated by Australia, both ESCAS (*Exporter Supply Chain Assurance System*) which refers to the principle of *Animal Welfare*. The provisions for the implementation of animal welfare, which are part of the WTO-defined live livestock

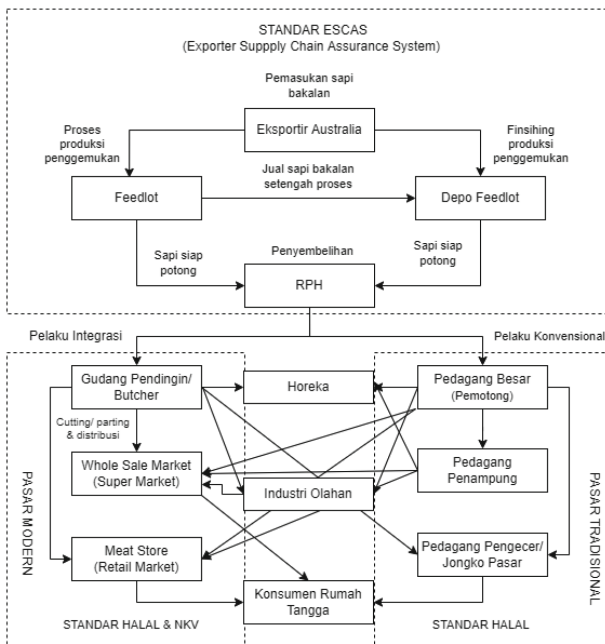


Fig. 1. Local Beef Supply Chain Pattern of Origin of Cattle Ex Import

trade transactions, have become the obligation of Australian livestock exporters who send their livestock to various countries and business chain actors involved while the livestock is in a living condition up to the slaughter process, as stipulated by the Australian *Department of Agriculture, Fishery & Forestry* (DAFF).

In Indonesia itself, the fulfillment of the application of animal welfare rules or Animal Welfare is an important part of *indonesian feedlotter* importing live livestock from Australia. Prospective cattle that are fattened by *feedlots* and slaughtered in the prescribed RPH, the implementation of which must be verified by an independent auditor who has the authority in terms of checking the compliance of ESCAS standards on each cow entered from Australia. The appointed auditor carries out an audit of the entire chain of processes related to imported cattle in various locations ranging from ports, supporting infrastructure such as pens, transportation, livestock handling, maintenance management, and livestock handling in the RPH that have met ESCAS standards. The supply chain system that occurs on farm with ESCAS standard control not only maintains the quality of goods (cows) but also minimizes the opportunities for business chain actors who do not contribute to increasing the added value of the cow products produced. The consequence of the discrepancy in the ESCAS standard supply chain is the dismissal of actors involved in the Australian cattle supply chain.

In general, the supply chain system of imported beef cattle follows the following pattern: exporters > *feedlotter* (importers) > *feedlot* depots > wholesalers (butchers/cattle cutters) > RPH ESCAS. The pattern of selling half-process cattle in the production process that occurs in *the feedlot* (importer) to the *feedlot* depot reflects the inefficiency problem that occurs both financial consideration factors and in the benefits of the *feedlot* production system (importer) in the early phase of the maintenance process. *Feedlots* (importers) do not get margin optimization in the fattening production process until the final phase. At the same time, the role of *feedlot* depots in the final production process system can compete in the same consumer market with various considerations of production and sales risks.

Some *feedlot* depots in strengthening their role as middle actors in the upstream supply chain pattern also have access to direct procurement of cattle imports. However, the consideration is the pattern of the scale of a certain amount that must be brought in to meet the suitability of the schedule and the available transportation capacity of the ship. Not all depot *feedlot actors* could access directly and act as importers because the selling capacity and infrastructure owned do not support the economical scale to enter the running logistics chain. The option of accessing cattle from *feedlots* (importers) on a scale that matches their production capacity is more likely to be done than accessing them directly.

### 3.3 Local Beef Chain Pattern Supplies Post-cut

The supply chain pattern of local meat production of imported cattle in the post-slaughter process chain has two applications of compliance standards that are part of the standards regulated by the government, namely halal and NKV (veterinary control number) for hygienic products. With such a complex supply chain pattern as depicted in Fig. 1 it will be very difficult to apply these standards consistently. Business chain actors in modern retail who generally have halal product certification and NKV have the consequence

**Table 1.** Supply chain patterns of business chain actors based on deductions from each segment of traditional markets and modern markets

No.	Meat Breeds	Pattern Shape	% Weight Live	Traditional Markets			Modern Market			
				Merchant Large/Cutter	Container Merchant	Retailers/Jongko	Super Market	Horeca	Meat Store	Processed Industry
i	Prime Cut	1	3,30%	✓	✓	-	✓	✓	✓	-
ii	Hamstrings	1	12,16%	✓	✓	✓	✓	✓	✓	✓
iii	Quadriceps	3	15,89%	✓	-	✓	✓	✓	✓	✓
iv	Bone in	1	5,91%	✓	-	✓	✓	✓	✓	-
v	Offal	2	10,01%	✓	✓	✓	✓	✓	-	-
vi	Variety Meat	2	22,23%	✓	✓	✓	-	✓	✓	-
vii	Bone	2	5,14%	✓	✓	✓	-	✓	✓	-

that the products supplied come from actors who also have the same compliance system certification. On the other hand, business chain players in the traditional market segment do not fully have similarities in the system of procedures owned by the modern market looking at the complexity and dynamics of the business chain actors involved. In the end, the implementation of halal supply chain standards and certified NKVs is partial, not forming a supply chain pattern for industrialized business chain actors. As well as the application of ESCAS standards in the upstream production system whose application not only forms business chain actors to maintain the quality of goods but also minimizes the opportunities for business chain actors who do not contribute to increasing the added value of the cow products produced. The application of supply chain standards has an impact on the efficiency of the supply chain and the added value of the production process so that the existence of the business chain actors involved is maintained and developed.

The post-cutting or *off-farm* supply chain pattern is determined by the needs of the user of each piece of meat that exists. There are at least 24 pieces of section items that can be grouped into 7 groups of pieces from one slaughtered cow. The supply chain pattern between actors is depicted in Fig. 1 and the pattern of goods sold from each player in the traditional market segment and modern retail market is depicted in Table 1 and Table 2 of the matrix of the role of local beef business chain actors.

Based on such data, the total volume of the share of one cow that can be worth money is 74.64% of the live weight of slaughtered cows. In general, the pattern of separation of supply chains from traditional markets and modern markets can be seen based on the selection of the type of product sold.

The combination matrix, based on Table 2, is seen to form 3 pattern segmentations: (1) the first pattern, the prime cut, hamstrings, and bones in meat tend to be concentrated in the modern market segment although in the supply chain process it also involves business chain players in traditional markets. The end consumer segment of the cut section is relatively preferred for household and horeka consumers. (2) the second pattern, in the 3 types of cut parts, namely offal, variety meat, and bones, is generally concentrated in the traditional market segment and is not found in the modern market either the business chain actors or the end consumers of the product. (3) the third pattern, the quadriceps

**Table 2.** Matrix of the Role of Local Beef Chain Actors

No.	Supplier Actors	Role	Product Type	Sales Objectives
Upstream Business Actors				
1	Australian exporters	Providing cows for fattening	Cattle Feeder	Feedloter/importer
2	Feedlot	Carrying out the production process of cows will become ready-to-slaughter cows and cows will be half-processed	Ready-to slaughter Half-processed cattle	Wholesalers Depot feedlot
3	Depo Feedlot (Finishing Fattening Production)	Finishing the production process into ready-to-cut cows	Ready-to-slaughter	Wholesalers
Intermediary Business Actors				
4	Wholesalers	Making the purchase of ready-to-slaughter cows, slaughter and sacking of beef carcasses	Prime Cut: Has Inside, Has Outside Hind Quarter: Knuckle, Short loin, flank, Shank, Quadriceps/Fore Quarter: Quads, Chuck Ribs Meat Bone in: Regular Oxtail, Rib eye, Rib Bone Offal: Offal Fat, Tripe – Bowel, Flash, Liver, Heart Variety Meat: Swallowed Fat, Head (meat), Skin, Legs Bone (Bone): Bone, Hip Bone, Bone	Horeka, Super Market, Meat Store, Processed Industry, Container Merchant, Retailer Trader/Jongko Market

*(continued)*

**Table 2.** (continued)

No.	Supplier Actors	Role	Product Type	Sales Objectives
5	Butcher/Refrigeration Warehouse (Modern Market Players)	Carry out the process of removing carcasses into meat parting items and treating the cooling and packing process (The role of the trader is the same as that of the wholesaler in the traditional market business, but the additional role is in the cold chain process)	Prime Cut: Has Inside, Has Outside Hind Quarter: Knuckle, short loin, Flank, Shank Quadriceps/Fore Quarter: Quads, Chuck Ribs Meat Bone in: Regular Oxtail, Rib meat, Rib Bone Offal: Offal Fat, Tripe – Bowel, Flash, Liver, Heart Variety Meat: Swallowed Fat, Head (meat), Skin, Legs 6 Bones (Bone): Bone, Hip Bone, Bone	Horeka, Super Market, Meat Store, Processed Industry, Container Merchant, Retailer Trader/Traditional Market
6	Container Merchant	Carrying out the holding of certain items of meat parts that are specific products with a request on one or another type of part.	Prime Cut: Has Inside, Has Outside Bone in: Regular Oxtail, Rib Meat, Rib Bone Offal: Offal Fat, Tripe – Bowel, Flash, liver, Heart Variety Meat: Skin, Legs Bone (Bone): Bone, Hip Bone, Bone	Horeka, Super Market, Meat Store

(continued)

**Table 2.** (continued)

No.	Supplier Actors	Role	Product Type	Sales Objectives
Final Business Actors				
7	Super Market	Selling meat to end-consumer households	Prime cut: Has Inside, Has Outside Hamstrings (HQ): Knuckle, short loin, Flank, Shank Quadriceps (FQ): Quads, Chuck, Meat Ribs Bone in: Regular Oxtail, Rib eye, Rib Bone Offal (offal): Tripe-intestines, Liver, Heart Variety meat: feet (boiled feet!)	Household Consumers
8	Meat Store (Retail Market)	Selling meat to end-consumer households	Prime Cut: Tenderloin, Sirloin Hind Quarter: Knuckle, short loin, Flank, Shank Quadriceps/Fore Quarter: Quads, chuck, Ribs Meat Bone in: Bone in, Rib bone Variety Meat: Swallowed Fat, Head (meat), Skin, Feet (by PO) Bone (Bone): Big Bone, Hip Bone, Bone (by PO)	Household Consumers
9	Processed Industry	Carry out the process of producing meat into processed products (sausages, baso, patties etc.)	Hind Quarter: Knuckle, short loin Quadriceps/Fore Quarter: Quads, Chuck, Ribs Meat	Supermarket

(continued)



**Table 2.** (continued)

No.	Supplier Actors	Role	Product Type	Sales Objectives
10	Horeka	Providing meat-based food menu services for household consumers	Prime Cut: Tenderloin, Sirloin Paha Belakang/Hind Quarter: Knuckle, Flank, Shank, Quadriceps/Fore Quarter: Quads, Chuck, Ribs Meat Bone in: Regular Oxtail, Rib Meat, Rib Bone Offal: Tripe – Bowel, Liver, Heart Variety Meat: Swallowed Fat, Head (meat), Skin, Legs Bone (Bone): Bone, Hip Bone, Bone	Household Consumers
11	Merchant Retailers/Jongko Markets	Conducting meat weighing from wholesalers for sale to household consumers	Hind Quarter: Knuckle, short loin, Flank, Shank Quadriceps/Fore Quarter: Quads, Lamusir, Ribs Meat Bone in: Bone In, Rib Bone Offal: Offal Fat, Tripe – Bowel, Flash liver, Heart Variety Meat: Swallowed Fat, Head (meat), Skin, Legs Bone (Bone): Bone, Hip Bone, Bone	Household Consumers

are knots that are the slow-moving parts of *the product* with higher selling risks and low prices. The main final absorbent in the section's products is the processed industry where local beef products will be juxtaposed with the price of imported beef. The pattern of its selling system does not distinguish the value of the part from the type of cut. Usually in some parts of the hamstring products that are not sold will go into the processed industry.

The speed of selling such products is the key to getting better added value. The longer the product is restrained, the more it will reduce the price of the goods and the quality of the product.

## 4 Conclusion

Based on the results of research observations, the supply chain system of imported beef cattle follows the following pattern: exporters > feedloters (importers) > feedlot depots > wholesalers (butchers/cattle cutters) > RPH ESCAS (Exporter Supply Chain Assurance System). Furthermore, there are three supply chain patterns in the beef business chain based on cuts, namely (1) the first pattern, the prime cut, hamstrings, and bones in meat tend to be concentrated in the modern market segment, (2) the types of offal and bone cut parts are generally concentrated in the traditional market segment, and (3) the quadriceps are the slow-moving product part.

## References

1. Directorate General of Livestock and Animal Health 2019 *Statistik Peternakan dan Kesehatan Hewan 2019. Statistik Peternakan dan Kesehatan Hewan* (Ministry of Agriculture: Jakarta)
2. Central Bureau of Statistics 2020 *Statistik Indonesia 2020* (Badan Pusat Statistik: Jakarta)
3. R. Agustiar, A. Triatmojo, and B. Guntoro 2021 The study of local beef market structure in Jakarta, Indonesia *IOP* **888** 012082
4. A. Agus and T. S. M. Widi 2018 Current situation and prospect of beef cattle production in Indonesia – A review. *Asian-Australasian Journal of animal Science* **31** 1–8
5. S. Tey, M. Nasir, Alias, M. Zainalabidin and M.A. Amin 2008 Demand for beef in Malaysia: Performance quantity quality and lean *Food Research International Journal* **15** 347–354
6. A. R. S. Putra dan A. Triatmojo 2018 Analisis dampak kebijakan impor daging kerbau di indonesia melalui pendekatan manajemen rantai nilai ternak *Jurnal Kebijakan Pembangunan Peternakan* **1** 1–7.

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