(RESEARCH ARTICLE)

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A market analysis of beef cattle: Study in North Sulawesi Province - Indonesia

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Abstract

The aim of the study was to analyze marketing channel, marketing margin, and marketing efficiency of in North Sulawesi, Indonesia. The research was conducted in two cities, such as City of Manado and Tomohon, and one regency, such as Regency of Minahasa, as the trade center of cattle in North Sulawesi province. There were 120 respondents, consisting of 100 farmers, 10 livestock brokers or intermediaries, 5 collecting traders (business scale of 20-30 cattle), and 5 end user or end consumer of live beef cattle, business consumer, and owner or user of abattoirs as well as beef distributors in North Sulawesi. The determining of respondents was snowball sampling starting with information of farmers as owner or user of abattoirs or slaughterhouse as well as both business and end users or end consumers of beef cattle. Analysis of marketing channel was performed by descriptively qualitative analysis via interview to marketing agencies and farmers of beef cattle, likewise with the analysis of marketing margin and marketing efficiency. The result of study showed marketing channel of beef cattle from farmers in North Sulawesi consists of two channels, such as via livestock brokers or intermediaries and through collecting wholesalers. the marketing margin of live beef cattle in North Sulawesi was large enough as of IDR 8,400,000, where the biggest marketing margin was on end users or business consumers. The market of beef cattle in North Sulawesi tends efficient due to the equal profit share and share of marketing cost in each marketing agency.

Keywords: Beef cattle; Marketing channel; Marketing margin; Market efficiency

1. Introduction

As one of husbandry business in Indonesia, the commercial management of beef cattle has not largely been intervened by government. Various marketing agencies, establishing a chain supply of marketing from farmer, livestock broker, collecting trader, and owner or user of abattoirs up to exporter, still dominate the marketing of beef cattle [1,2]. Specifically, each marketing agency, in every marketing chain, has respectively different role and function. Each marketing channel functions to transfer product, either directly or indirectly, from producer to consumer [3,4].

In addition, North Sulawesi is a province having potential source for development of beef cattle, where in the total of population was 135 thousand cattle in 2020.Based on data derived from Central Bureau of Statistics [5], there was 42.0% household of farmers in North Sulawesi raising cattle as one of family incomes and North Sulawesi had contributed as of 10.7 % for the procurement of national beef supply in Indonesia.

The existence of sellers, also known as livestock broker, gives a favor to farmers and breeders in selling their cattle. Thus, farmers/ranchers easily get cash as they require it a lot. Typically, pricing in the marketing of cattle is always related to the urgent of cash from farmers/ranchers, so they will go to market if they require cash for fulfilling family needs and adding family income [6-9]. Farmers, practically, only act as price taker due to their low bargaining power and livestock broker sometimes gives loss to them. This is because most farmers only have an option to sell their cattle

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to livestock broker, or intermediaries. Therefore, the role of livestock broker highly dominates the commercial management of beef cattle in North Sulawesi. Farmers' capability in marketing their cattle significantly determines their business profitability. One of accelerating factors in establishing agriculture is efficient marketing, while marketing system still becomes the weakening factor in marketing beef cattle [10].

The marketing system of agriculture products, including a small-scale business of beef cattle, or its subsistent has not still been efficient since it tends monopolistic. It is due to insufficient infrastructures and marketing facilities, so that an efficient marketing is no longer conducive [11]. Thus, marketing channel is required by involving marketing agencies to solve various impediments in marketing process [12,13]. A marketing channel is channel to transfer harvest of agriculture and non-agriculture from producer to the end user, or consumer, where the length of marketing channel results inefficient market so that farmers and consumer equally suffer from loss [14]. Consumer must bear a higher purchasing cost, and, on the other hand, farmers or producers obtain a relatively cheaper selling price. In doing so, a shorter marketing channel must be chosen by farmers to achieve efficient marketing channel. However, a lack of knowledge of farmers related to marketing information causes difficulty for farmers in utilizing available economic opportunities. The marketing channel of beef cattle will provide information about cost and profit from each marketing agency involved and its marketing margin, such as price margin received by farmers with price paid by the end consumer [15]. The availability of information on marketing margin of beef cattle in North Sulawesi can be used to know whether income achieved of each marketing agency has been in accordance with the expense they have spent. In short, the comparison of output and input in marketing process has efficiently been in progress. Therefore, this research aims to analyze marketing channel, marketing margin, and marketing efficiency of in North Sulawesi, Indonesia

2. Material and methods

2.1. Site, sample and type of data

The research was conducted in two cities, such as City of Manado and Tomohon, and one regency, such as Regency of Minahasa, as the trade center of cattle in North Sulawesi province Methodologically, it employed case study approach to purposively inform significant variables and observation process during the research [16]. There were 120 respondents, consisting of 100 farmers, 10 livestock brokers or intermediaries, 5 collecting traders (business scale of 20-30 cattles), and 5 end users or end consumers of live beef cattle, business consumers, and owner or user of abattoirs as well as beef distributors in North Sulawesi. The determining of respondents was snowball sampling [17,18], starting with information of farmers as owner or user of abattoirs or slaughterhouse as well as both business and end users or end consumers of beef cattle through Agriculture and Husbandry Service, Province of North Sulawesi, Agriculture, Husbandry, and Plantation Service, Regency of Minahasa, and Agriculture, Husbandry and Fishery service, City of Tomohon. Through the input of end/business consumers of live beef cattle, it became the base in tracing any information regarding the existence of collecting traders and livestock brokers in marketing beef cattle as input source for.

Further, this research was conducted by survey and interview method, such as gathering information from respondents using a list of questions. Collecting of primary data was done by survey with guided questionnaire and direct interview to ranchers, livestock brokers, end/business users of live beef cattle as well as owner and user of abattoirs. While, the secondary data was obtained from various institutions related to this research and other secondary sources, such as scientific journal and the internet. Then, data was systematically presented in the form of table and diagram.

2.2. Data analysis

Analysis of marketing channel was performed by descriptively qualitative analysis via interview to marketing agencies and farmers of beef cattle. Based on the analysis result, it was known the percentage total of cattle products via marketing agencies. Next, marketing margin was analyzed to know the marketing performance, so the suitability ofcost proportion from each marketing agency with income was identified. The formulation of marketing margin is as follows [18]:

$$MP = Pret - Pfarm$$

$$= C_i + \pi_i$$

Where:

MP is marketing margin of beef cattle

Pret is price of retailer/end user or end consumer of live beef cattle (IDR/Kg)

Pfarm is price of farmer (IDR/kg)

Ci is marketing cost of i-th of marketing agency (IDR/kg)

Пi is profit of i-th of marketing agency (IDR/kg)

Then, the marketing efficiency of beef cattle was analyzed by the profit and cost share, by the following formulation:

$$Bci= Ci \ / \ MP \ x \ 100\%$$

$$B\pi i= \Pi i \ / MP \ x \ 100\%$$

Where:

Bci= Share of marketing cost by i-th marketing agency

Bπi= Profit share by i-th marketing agency

If the percentage comparison of profit share and marketing cost is evenly distributed, the marketing of beef cattle is efficient, whereas if its comparison is uneven distributed so the market is not efficient[19,20].

3. Results and discussion

3.1. Marketing channel

The marketing channel was through some marketing agencies, such as farmers/ranchers (producer), livestock brokers or intermediaries, collecting wholesaler, and end users or business consumers of live beef cattle as well as owner and users of abattoirs and beef distributors.In addition, the trading system used estimating method based on physical appearance and not by weight of cattle. The finding of this research show that selling price of cattle in North Sulawesi was heavily depended on its physical appearance, such as white color, pure white, bright, hefty, and special mark upon the backbone. If any cattle satisfied those standards, the selling price would be higher. In detail, the marketing channel of beef cattle is presented in the following Figure 1.
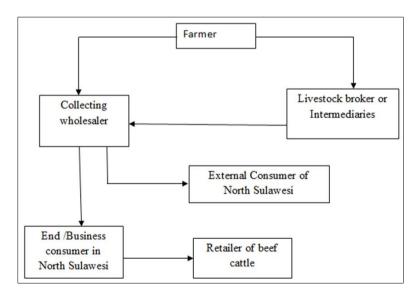

Figure 1 Marketing channel of beef cattle in North Sulawesi

Based on Figure 1, it describes that 87.3 % of farmers sold their beef cattle via livestock brokers or intermediaries, and 12.7% was by collecting wholesalers. The livestock brokers or intermediaries sold all cattles to collecting wholesalers, and this sellers sold 89.6% of live beef cattle to end consumers or business consumers of live beef cattle, acting as owner

or user of abattoirs in North Sulawesi Utara, while 10.4% was sold to external consumer out of North Sulawesi. This circumstance exhibits that there were three marketing channels of beef cattle in North Sulawesi, such as the first channel consisting of farmers/ranchers, livestock brokers or intermediaries and collecting wholesalers, and end user or business consumers of live beef cattle as owner or user of abattoirs in North Sulawesi; the second channel started from farmers/ranchers to collector and ended to business consumer of beef cattle in North Sulawesi; and, the third channel was from farmers/ranchers, collecting wholesalers, and external consumers outside of North Sulawesi.

Most farmers/ranchers, the producer of beef cattle, selected marketing channel via livestock brokers or intermediaries. This was because the role of livestock brokers or intermediaries was informant regarding the existence of buyers, sellers, and governing price of beef cattle in market, where farmers/ranchers did not have information of such issues [21].

The marketing channel of farmers to collecting wholesalers was divided into two marketing channels. It started from collecting wholesalers to end users or business consumers of beef cattle in North Sulawesi as of 89.6%, and the rest of 10.4% was sold to external consumer outside North Sulawesi, such as Borneo, Province of North Moluccas, and West Papua. This finding, then, was in line with previous research, reporting that the marketing channel of Ongole breed involves some marketing agencies, such as livestock broker or intermediaries, collecting wholesaler, owner of slaughterhouse, before it ends up to end user or consumers. [1,3,10 22].

Additionally, collecting wholesalers purchased cattle from livestock brokers or intermediaries in livestock market existing in District of Kawangkoan, Regency of Minahasa. This market is the biggest livestock market in North Sulawesi, where it always opens every thursday. When the market opened, collecting wholesalers from Manado, Tomohon, North Minahasa, South Minahasa, and South East Minahasa gathered to conduct cattle transaction.Then, end consumers or business consumer in North Sulawesi purchased beef cattle from collecting wholesaler. They acted as butcher since they had abattoirs and were users of slaughterhouse. Subsequently, they distributed beef to retailers in City of Manado, Tomohon, and other regions in North Sulawesi.

3.2. Marketing margin

The marketing margin of beef cattle is displayed in Table 1 Based on Table 1, the marketing margin of live beef cattle in North Sulawesi was large enough as of IDR 8,400,000, where the biggest marketing margin was on end user or business consumers, being also owner of abattoirs and users of slaughterhouse. In addition, the price of beef cattle from retailer was IDR 4,117,750, marketing cost was IDR. 1,865,230, and profit was IDR. 2,552,520 per cattle, or 30.54% of working capital. The total of marketing margin was due end users or business consumers required a larger cost in cattle gathering, market retribution, transportation and escorting of beef distribution in North Sulawesi, where they were also beef distributor. A higher marketing margin in the level of business consumers of beef cattle, being wholesalers and owner of abattoirs, indicates that seller's bargaining power was stronger than farmers as producers of beef cattle. It was because sellers were more able to grasp market information than farmers having a relatively low education level, so their access to market information was also short. It was relevant with previous study [23].

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The previous research reported that there is a tendency of market domination from wholesalers, so it can control price of beef cattle in its marketing chain. While, the participation of traditional farmers is heavily influenced by access to market information, low education background, and agriculture credit [7,24,25]. The marketing margin in the level of livestock brokers or intermediaries was relatively small since they only bore a lower marketing cost, such as market retribution cost and temporary gathering cost of beef cattle. This was because cattle had already purchased by collecting wholesaler. Further, livestock brokers or intermediaries sometimes sold beef cattle and received fees of their service from farmers.

Table 1 Marketing cost, profit and marketing margin of beef cattle in North Sulawesi

Number	Details	Value (IDR/cattle)
1	**Farmers**	
	Production cost	2,327,600
	Selling	4,375,000
	Profit	2,048,000
2	**Livestock Brokers/Intermediaries**	
	Purchasing	4,375,000
`	Selling	5,886,140
	Marketing Cost	427,400
	Marketing Margin	1,511,140
	Profit	1,083,740
3	**Collecting wholesalers**	
	Purchasing	5,886,140
	Marketing Cost	1,075,600
	Selling	8,357,600
	Marketing Margin	2,471,460
	Profit	1,396,460
4	**End users/business consumers/owner of abattoirs/distributors of beef cattle**	
	Purchasing	8,357,600
	Marketing Cost	1,865,230
	Selling	12,775,350
	Marketing Margin	4,417,750
	Profit	2,552, 520
5	**Total of Marketing Margin**	8,400,350

3.3. Marketing efficiency

The analysis of marketing efficiency related to beef cattle in North Sulawesi is presented in the following Table 2.

From Table 2 the result displays that the cost and profit share in each marketing agency almost evenly distributed, excluding livestock broker or intermediaries having the least distributed of cost and profit share and causing inefficient marketing of beef cattle. However, the marketing of beef cattle in collecting wholesalers and end users/business consumers was already efficient due the cost and profit share was relatively equal, or evenly distributed.

Table 2 Cost and profit share

No.	Details	Value
1	**Farmers/ranchers**	
	Cost share	-
	Profit share	-
2	**Livestock brokers/intermediaries**	
	Cost share	0.28
	Profit share	0.71
3	**Collecting wholesalers**	

	Cost share	0.43
	Profit share	0.56
4	**End consumers of beef cattle/business consumers/owner of abattoirs and distributors of beef cattle**	
	Cost share	0.42
	Profit share	0.57

4. Conclusion

Marketing channel of beef cattle from farmers in North Sulawesi consists of two channels, such as via livestock brokers or intermediaries and through collecting wholesalers who were selling beef cattle to end users or consumers of beef cattle as business consumers, owner of abattoirs and to distributors of beef cattle in both regional or national market. The marketing margin of each marketing agency heavily depends on marketing cost and risk born by marketing agency. Additionally, the marketing of beef cattle in North Sulawesi tends efficient due to the equal profit share and share of marketing cost in each marketing agency.

Compliance with ethical standards

Disclosure of conflict of interest

All of the authors have no conflict of interest.

Statement of informed consent

Informed consent was obtain from all individual participants included in the study.

References

[1] Munadi L,Rahim A, Munadi ML, Razak A, Pagala MA, Syamsuddin. Marketing analysis of beef cattle in Landono and Mowila Subdistrict of South Konawe Regency. International Journal of Science, Technology & Management, 2021; 2(3):747-754.

[2] Zekarias B,Teshale W, Market structure conduct and performance of live cattle in Borana pastoral area: the case of Moyalle district Oromiya regional state. Current Investigations in Agriculture and Current Research, 2018; 4(3): 542-548.

[3] Dinku A, Abebe B, Lemma A, Sako M. Beefcattle value chain analysis: Evidence from West Hararghe Zone of Ethiopia. International Journal of AgriculturalScienceand Food Technology. 2019; 5(1):077-087.

[4] Mmbando FE, Wale E, Baiyegunhi LJS, Darroch MAG. The choice ofmarketing channel by maizeand pigeonpea smallholder farmers: evidence from Northern and Eastern zonesof Tanzania. Agrecon. 2016; 55(3):254-277.

[5] Central Bureau of Statistic.North Sulawesi in Figure. Manado, Sulawesi Utara. 2020.

[6] Nkombeni P,Beekman S. Beef value chainsin A2 resettled farms in Zimbabwe: A review. Livestock Research for Rural Development. 2015;27.

[7] Lubungu M.Factors influencing livestock marketing dynamics in Zambia. Livestock Research for Rural Development. 2016; 8.

[8] Pratama RCS, Supranianondo K. Analysis of marketing efficiency of beef cattle on Tirto Sari livestock at sub district Samboja, District of Kutai Kartanegara, East Kalimantan. International Journal of Environmental and Agriculture Research. 2017; 3(12): 53-56.

[9]   Shepherd AW. Market Information Service, Theory and practice.FAO Agriculture Service Bulletin. 1997; 125.

[10]   Lasaharu N, Laya NN, Boekoesoe K. Analisis pemasaran sapi potong. Jambura Journal of Animal Science. 2020; 2(2): 62-75.

[11]   GebreselassieN. Review on cattle production and marketing system in Ethiopia. Journal of Fisheries & Livestock Production. 2018; 6(3):277.

[12]   AninditaR, Baladina N,Setiawan, B.Effect ofmarketing efficiency Improvement on Indonesia. Russian Journal of Agriculture and Socio-Economic Science. 2019; 7(19): 13-21.

[13]   Djailani L, I Supriyo,MukhtarM.The efficiency of beef cattle marketing channelin Gorontalo district during the covid-19 pandemic. JPs: Jurnal Riset dan Pengembangan Ilmu Pengetahuan. 2021; 06(1): 42-49.

[14]   Shiimi T, TaljaardPR,JordaanH.Transaction cost and cattle farmers" choice of marketing channel in NorthCentral Namibia. Agrecon: Agricultural Economic Research, Policy and Practice in Southern Africa. 2012; 51(1):42-58.

[15]   Lalus MF, Krova M, Ratu MRD,Nono OH.Analisis distribusi margin di antara lembaga lembaga pemasaran ternak sapi potong di Kabupaten Kupang Nusatenggara Timur. Jurnal Nukleus Peternakan. 2019; 6(2): 63-70.

[16]   Winartha. Metode penelitian sosial ekonomi. Andi Offset, Yogyakarta. 2006.

[17]   Naderifar M, Goli H, Ghaljaie F. Snowball sampling: A purposeful method of sampling in qualitative research. Strides in Development of Medical Education. 2017; 14(3): e67670.

[18]   Ojogho O,Erhabor PO, Emokaro CO,Ahmodu J. Marketing margin and price transmission analysis for beef in Benin metropolis. International Journal of Agricultural Economics and Rural Development. 2015; 5(1):63 – 73.

[19]   Girei AA,DireB, BelloBH.Economic of cattle marketing on the socioeconomic characteristics of cattle marketers in central zone of Adamawa state. Nigeria International Journal of Advance Agriculture Research. 2014; 2: 1-7.

[20]   PrasetyoD,SariAL,Emawati S, Rahayu ET, Purnomo SH. Analisis pemasaran ternak sapi potong di Kecamatan SawanganKabupaten Magelang. Sains Peternakan. 2015; 13(2):65-72.

[21]   Oliveira GMd, Cunha ChFd, CalemenSMDQ, Maia RLG. Information asymetry: the case of cattle supply transaction in Brazil. British Food Journal. 2019; 121 (8): 1825-1837.

[22]   Kartika W, Aliyah A, Teguh PD, Nur AL, Kurniawan A, Analisis saluran pemasaran sapi peranakan ongole (PO) di perusahan penggemukan sapi PT X. Jurnal Inovasi Penelitian. 2017; 1(1): 19-22.

[23]   Ningsih UW, Hartono B, Nugroho E.Analisis pemasaran sapi potong melalui analisis margin,transmisi harga, struktur pemasaran, perilaku pemasaran dan kinerja pemasaran. Jurnal Ilmu Ilmun Peternakan. 2017; 27(1): 1-11.

[24]   Ayele S, Zemedu L, Gebremdhin B. Analysis of market structure, conduct and performance of beefcattle: the case of Dugda district East Shoa Zone, Oromia Regional State, Ethiopia. Journal of Biology, Agriculture and Healthcare. 2017; 7(5): 5-11.

[25]   Kibona CA,Yuejie Z .Factors that influence market participation amongtraditionalbeef cattle farmers in the Meatu district of Simiyu region, Tanzania. PloS One. 2021; 16(4): e0248576.