RJOAS: Russian Journal of Agricultural and Socio-Economic Sciences
ISSN 2226-1184 (Online) | Issue 4(136), April 2023

UDC 332; DOI 10.18551/rjoas.2023-04.17

ANALYSIS OF PIGS' MARKET PERFORMANCE IN THE MAINLAND OF EAST FLORES REGENCY, INDONESIA

Hayon Albertus Dominikus, **Lole Ulrikus R.***, **Ratu Maria R. Deno**, **Lalus Matheos F.**
Faculty of Animal Husbandry, Marine Affair and Fisheries,
University of Nusa Cendana, Kupang, Indonesia
*E-mail: ulrikusromsenlole@gmail.com

ABSTRACT
Several patterns of pig marketing channels were found on the Mainland of East Flores Regency (MEFR) which had an impact on transaction costs, farmers' share, marketing margins, and marketing efficiency. Objective: To analyze the pattern of marketing channels and market performance of pigs. Method: The study used a survey method where data was collected through observation, interviews and document search. Purposive determination of three sub-districts and nine sample villages; while sample traders using the snowball sampling method, and 135 sample farmers randomly proportional. The data is analyzed using market display analysis. Results and discussion: There are three patterns of pig marketing channels, namely: Marketing Channel I: farmers sell directly to consumers (51%); Channel II: farmers sell to local traders (35%); and Channel III: farmers sell to inter-district traders (14%). The marketing margin for local traders is IDR 1,125,000, and traders between districts are IDR 1,700,000. The average marketing cost for local traders is IDR 100,000, while traders between districts are IDR 322,000. Farmer's share in Channel I is 100%, Channel II is 81.64%, and Channel III is 77.33%. The marketing efficiency of Channel I is 0%, Channel II is 11.25%, and Channel III is 17.1%. Conclusion: Three marketing channels for pigs were found in the MEFR related to marketing costs, marketing margins, farmer's share, and marketing efficiency. The highest marketing costs and the highest marketing margins occur at the trader level between districts (Channel III). The largest farmer's share is received by farmers (Channel I). The marketing system for pigs is efficient in all channels (Channels I, II and III). The choice of channel depends on the actual conditions of the farmers and traders involved in marketing.

KEY WORDS
Pig farming, East Flores, market performance, marketing efficiency, farmer's share.

Pigs have a very important role socially, culturally and economically for breeders and livestock development on the main island of East Flores Regency, East Nusa Tenggara Province (NTT), Indonesia, because they are commonly used for traditional ceremonies (dowry), marriages and deaths; as well as a source of meat for parties (welcoming, wedding, and thanksgiving); as savings or for sale. Sukanata (2017) and Ballo and Lalus (2021) state that pig farming plays a very important role both economically and socio-culturally. Viewed from the socio-economic aspect, the pig farming business is able to provide additional income for farmer households (Sani *et al*., 2020; Kimbi *et al*., 2016). This is supported by Tarigan *et al*. (2021), Ngosomwile *et al*. (2021); and Wedastra (2011) that an increase in demand for pork is in line with an increase in population, income, socio-cultural needs, religion, tastes, and urbanization. Marketing development focuses on marketing efficiency, namely reducing marketing costs and optimizing the role of marketing agencies.

Creating a livestock marketing and handling system is closely related to improving the welfare of market participants in it, where the shorter the marketing channels affect the profits of market participants in trading institutions. Facts show that pig livestock plays an important role as a source of income for breeders and the local community if it is marketed properly (Lalus *et al*., 2018; Chan *et al*., 2017). This is necessary because pig farmers usually raise livestock individually limiting their access to markets, bargaining power,

marketing costs, market possibilities, expertise and government services (Suroto *et al*., 2022; Kristensen *et al*., 2012; Monczka *et al*., 2011).

The socio-economic role of pigs can be seen from the development of the variable population size, slaughter, and pork production. According to the NTT BPS (2021) the pig population in NTT for the 2017–2020 period, namely: 2,073,446 (2017), 2,025,412 (2018), 2,266,222 (2019), and 2,694,830 (2020), meaning there was an increase in population of 9.50% (BPS NTT 2021). On the other hand, according to BPS East Flores Regency (2021) the pig population for the 2017–2020 period, namely: 99,936 heads (2017), 87,054 heads (2018), 104,465 heads (2019), and 125,358 heads (2020), meaning that in the 2017- 2020 saw a population increase of 4.60% (BPS Flores Timur Regency, 2021) Furthermore, the number of pigs slaughtered in the 2017–2020 period, namely: 14,583 heads (2017), 15,837 heads (2018), 14,894 heads (2019), and 13,952 heads (2020); with pork production of 2,746,219 kg (2017), 2,835,937.50 kg (2018), 3,088,387.50 kg (2019), and 2,186,085.00 kg (2020) (BPS Flores Timur Regency 2021).

The data shows that pig farming has an important role for the social and economic life of the community. East Flores Regency includes three parts, namely Adonara Island, Solor Island and the MEFR area. The people in MEFR run a pig farming business because they play an important role in generating income. The existence of this potential and important role encourages pig marketing activities to become more massive. However, the facts show that pig marketing activities face problems, including high demand for pig and pork, but there is no specific physical market for livestock marketing. This causes the role of marketing institutions to be very important in meeting the demand for pig and pork.

In marketing activities, conflicts of interest always arise between producers, intermediaries and consumers. To maintain balance, these three components must be brought together through an efficient marketing system. Narrowly, an efficient marketing system can include marketing channel patterns, marketing margins, marketing costs, farmer's share, and marketing efficiency. The aim of this research is to analyze the pattern of marketing channels and market appearance of pigs in MEFR.

METHODS OF RESEARCH

The research was carried out on the main island of East Flores Regency (DFT) covering eight sub-districts. Furthermore, three sample sub-districts were selected purposively with the consideration of having the highest population of pigs, namely Wulanggitang District (7,430 heads), Larantuka (6,757 heads), and Titehena (6,114 heads) (BPS Kabupaten Flores Timur, 2021). From each sample sub-district, three sample villages/kelurahan were selected purposively (with the consideration of having the largest population of pigs), so that nine villages/kelurahan were selected, namely Wulanggitang Subdistrict (Boru, Pululera and Hokeng Jaya Villages), Larantuka Subdistrict (Waibalun and Pohon Sirih Subdistricts and Mokantarak Village), and Titehena District (Duli Jaya, Watowara, and Tenawahang Villages). Furthermore, from each sample village/kelurahan, 15 sample breeders were selected, so that 135 breeders were selected as respondents.

Determination of local traders and traders between districts was carried out by the snowball sampling method, in which 5 local traders of pigs were selected and 3 traders between districts. These traders already have a network of trade cooperation that has long been formed.

The type of data needed is primary and secondary (both qualitative and quantitative). The collection of primary data using observation techniques of business activities and interviews with respondents was guided by a questionnaire to find out the marketing activities of pigs from the level of breeders, livestock traders, to consumers. Secondary data collection from government or private agencies or agencies, as well as reports and articles related to this research. Quantitative data concerns: the number of livestock owned, the number of family dependents, marketing costs at each institution, purchase prices at the institutional level, prices at the consumer level, etc. Qualitative data concerns: forms of marketing channels, method of pricing, gender, age, education, employment, business experience, etc.).

The data is tabulated and analyzed using market display analysis methods including analysis of marketing channel patterns, marketing margins, marketing costs, farmer's share and marketing efficiency. Marketing margin analysis done using the formula:

$$Mp = Pr – PF$$

Where: Mp = marketing margin (Rp/kg), Pr = price at the consumer level (Rp/kg), and Pf = price at the farmer level (Rp/kg).

Furthermore, the calculation of the farmer' share received by the pig marketing agency is mathematical:

$$\text{Spf} = \frac{Pf}{Pr}\ x\ 100\%$$

Where: Spf = price share at the farmer level, Pf = price at the farmer level (Rp), and Pr = price received by consumers (Rp).

Then to measure marketing efficiency, certain indexes are used to find out the most efficient marketing channels (Soekartawi, 2014; Wang *et al*., 2014), with the formula:

$$MEI = \frac{\text{FP}}{\text{MC} + \text{MM}}$$

Where: MEI = marketing efficiency index, FP = farmer's price, MC = marketing costs, and MM = marketing margin.

RESULTS AND DISCUSSION

Pigs are a widely marketed commodity in MEFR. In marketing activities, pigs are channeled from producers to consumers through marketing agencies at a certain price level. Product distribution requires marketing institutions that work effectively (Rahmat et al., 2022). The results showed that there were four parties involved in the marketing of pigs at MEFR namely breeders, local traders, traders between districts, and final consumers. The marketing channel for pigs in MEFR can be seen in Figure 1.

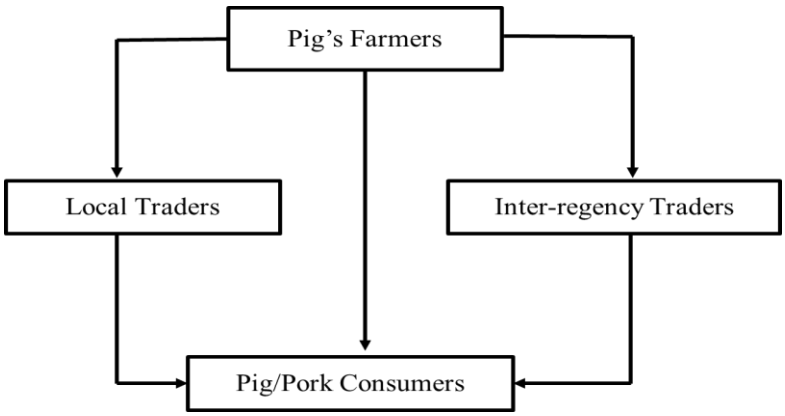

Figure 1 – Pig's marketing channel

An overview of the marketing channels for pigs in MEFR from breeders to consumers is as follows:

1) Marketing Channel I (Farmers – Pig Livestock Consumers):

Marketing Channel I is the marketing of pigs without intermediaries, that is from farmers directly to consumers, so it is the shortest channel. The average selling price of pigs is IDR 10,000,000.-/head. The selling price of pigs is relatively high compared to the selling price of other small livestock such as goats. This is supported by Ghuta et al. (2021) that the

price of pigs is higher than goats because of their role in meeting the social, cultural and economic needs of the community. Pig livestock consumers buy livestock directly from breeders for personal needs, namely traditional parties, weddings, thanksgiving, and others. Direct marketing in Marketing Channel I covers 51% of the farmer respondents;

2) Marketing Channel II (Farmers – Local Traders – Pig Livestock Consumers):

Marketing Channel II is marketing through local traders with an average price of IDR 5,000,000.-/head. Furthermore, local traders sell to consumers at an average price of IDR 6,125,000.-/head. Marketing through Marketing Channel II covers 14% of farmer respondents;

3) Marketing Channel III (Farmers - Inter-Regency Traders - Pig Livestock Consumers):

Marketing Channel III is direct marketing through traders between districts with an average price of IDR 6,000,000.-/head. Furthermore, traders between districts sell to consumers at an average price of Rp. 7,700,000.-/head. The Marketing Channel III includes 51% of the farmer respondents.

It can be concluded that there are differences in selling prices in the three marketing channel patterns. This is supported by Maro et al. (2021) that the selling price of pigs fluctuates due to differences in marketing patterns, namely farmers visiting buyers or buyers visiting sellers. If the buyer visits the seller, the selling price of pigs is relatively expensive. This condition can occur when consumers need pigs for traditional events or parties. Conversely, if a farmer needs money and visits a buyer, the selling price of pigs tends to be lower.

Ballo and Lalus (2021), Mulabbi (2015), and Kwamina *et al*. (2014) argue that marketing margin is the difference between the price paid at the consumer or intermediary trader level and the price received at the farmer-breeder level. The marketing margin at each marketing agency in the marketing channel for pigs in MEFR can be seen in Table 1.

Table 1 – Marketing margin at each marketing agency in the marketing channel for pigs in MEFR

Marketing Channel	Status	Average Buying Price (IDR/head)	Average Selling Price (IDR/head)	Margin (IDR/head)
I	Farmers	-	10.000.000	-
	Pig/pork consumers	10.000.000	-	-
	Total	-	-	-
II	Farmers	-	5.000.000	-
	Local traders	5.000.000	6.125.000	1.125.000
	Pig/pork consumers	6.125.000	-	-
III	Farmers	-	6.000.000	
	Inter-regency traders	6.000.000	7.700.000	1.700.000
	Pig/pork consumers	7.700.000	-	-
	Total			1.700.000

Source: Primary data 2022 (processed).

Table 1 shows that the biggest marketing margin is in Marketing Channel III, namely traders between districts with a value of IDR 1,700,000.-/head. In this marketing channel, the purchase price of pigs by traders between districts to breeders is the most expensive, namely Rp. 6,000,000.-/head. This is because there has been a drastic decline in the livestock population as a result of ASF (African swine fever) attacks since November 2019 (Djawapatty *et al*., 2022; Safitri, 2022). Traders between regencies will sell pigs to consumers at a price of IDR 7,700,000/head. This causes the buying and selling price margin (marketing margin) in Marketing Channel III to be the highest, amounting to IDR 1,700,000.-/head.

Marketing costs are the amount of money spent during the marketing process and borne by the marketing agency which includes transportation, labor and shelter costs. This is in accordance with the opinion of Assauri (2002) and Montsho & Moreki (2012) that marketing costs include the cost of holding, retribution, transportation and labor.

Table 3 shows that in Marketing Channel I, the marketing agencies involved were only farmers. Marketing Channel II, the costs incurred by local traders are storage costs in the form of feed costs during storage and transportation at the time of purchase. Total marketing

costs in Marketing Channel II Rp. 100,000.-/head. In Marketing Channel III, the costs incurred by traders between districts are IDR 322,000.-/head. It can be seen that Marketing Channel III generates the most financing, because at the inter-district trader level, the product has undergone several marketing functions.

Table 2 – Marketing costs for pigs in MEFR

Marketing Channels	Marketing Institutions	Marketing Cost (Rp/head)	Informations
I	Farmers:		
	1. Accommodation fees	-	Farmers sell pigs directly to consumers of pig/pork
	2. Retribution fee	-	
	3. Transportation costs	-	
	4. Labor costs total	-	
	Total	-	
II	Farmers:		
	1. Accommodation fees	-	Farmers sell pigs directly to pig local traders consumers
	2. Retribution fee	-	
	3. Transportation costs	-	
	4. Labor costs total	-	
	Local Traders:		
	1. Accommodation fees	30.000	Local traders sell pigs to consumers of pig/pork
	2. Retribution fee	-	
	3. Transportation costs	50.000	
	4. Labor costs total	20.000	
	Total	100.000	
III	Farmers:		
	1. Accommodation fees	-	Farmers sell pigs directly to traders between districts
	2. Retribution fee	-	
	3. Transportation costs	-	
	4. Labor costs total	-	
	Inter-regency traders:		Inter-regency traders sell pigs to consumers of pig/prok
	1. Accommodation fees	50.000	
	2. Retribution fee	-	
	3. Transportation costs	250.000	
	4. Labor costs total	22.000	
	Total	322.000	

Source: Primary data 2022 (processed).

Farmer's share is the portion received by the producer from the price at the producer level to the price at the consumer level (Asmarantaka, 2014). If the farmer's share is >50% then marketing is efficient, otherwise if the farmer's share is <50% then marketing is not efficient. Furthermore, Fahrurrozi (2015) states that farmer's share has a negative correlation with marketing margins, meaning that the higher the marketing margin, the lower the share of the price received by farmers as producers. Farmer's share in each marketing channel for pigs in MEFR can be seen in Table 3.

Farmer's share in Marketing Channel I, where farmers sell directly to consumers so they have the highest percentage, because in the marketing process there are no costs incurred and the sales proceeds are fully received by the farmer (100%). This is supported by Sukanata *et al*. (2019) that the farmer's share of pig farmers in Marketing Channel I reach 100% because consumers who need pigs usually come directly to the farmer's location. Pigs will be directly slaughtered to meet the needs of a religious ceremony, namely the Yadnya ceremony.

Marketing Channel II is still efficient with a farmer's share of 81.64%, while Marketing Channel III has the lowest efficiency because the farmers' share is 77.93%. Even though Marketing Channel III has the lowest efficiency value, marketing is still efficient because the farmer's share value is > 50%. The lowest marketing efficiency score is in Marketing Channel III due to more marketing agencies being involved.

Lalus *et al.* (2018) and Chopra (2006) emphasized that marketing efficiency is a measure of the productivity of the marketing process by comparing the resources used to the output produced during the marketing process. This study discusses the comparison of the net price received by farmers to the total marketing costs plus the total margin.

Table 3 – Farmer's share of Marketing Channels I. II and III in MEFR

No	Descriptions	Farmers	Local Traders	Inter-regency Traders	Pig Consumers
	Marketing Channel I:				
1	Purchase price (Rp/head)	-	-	-	1.000.000
2	Selling price (Rp/head)	1.000.000	-	-	-
3	Marketing margins	-	-	-	-
4	Marketing costs (Rp/head)	-	-	-	-
5	Farmer's share	100	-	-	-
	Marketing Channel II:				
1	Purchase price (Rp/head)	-	5.000.000	-	6.125.000
2	Selling price (Rp/head)	5.000.000	6.125.000	-	-
3	Marketing margins	-	1.125.000	-	-
4	Marketing costs (Rp/head)	-	100.000	-	-
5	Farmer's share	81.64	-	-	-
	Marketing Channel III:				
1	Purchase price (Rp/head)	-	-	6.000.000	7.700.000
2	Selling price (Rp/head)	6.000.000	-	7.700.000	-
3	Marketing margins	-	-	1.700.000	-
4	Marketing costs (Rp/head)	-	-	322.000	-
5	Farmer's share	77.93	-	-	-

Source: Primary data 2022 (processed).

Table 4 – Efficiency of marketing for pigs in each marketing channel in MEFR

Marketing Channel	Marketing Institutions	Total Value (Rp/head)	Total Marketing Cost (Rp/head)	Marketing Institution Efficiency (%)
I	Farmers	10.000.0000	-	-
	Pig/pork consumers	-	-	-
II	Farmers	5.000.000	-	-
	Local traders	6.125.000	100.000	11,25
	Pig/pork consumers	-	-	-
III	Farmers	6.000.000	-	-
	Inter-regency traders	7.700.000	322.000	17,01
	Pig/pork consumers	-	-	-

Source: Primary data 2022 (processed).

Table 4 shows that Marketing Channel I is the most efficient because there is no marketing agency involved. This is different from Ballo and Lalus (2021) in Kupang Regency, NTT Province, where no pig farmers sell directly to consumers, including selling directly to Slaughterhouses (SH) and non-SH. Marketing channels involving other marketing agencies to consumers are Marketing Channels II and III. Between the two marketing channels, Marketing Channel II is the most efficient because there are not too many institutions involved. Marketing efficiency in Marketing Channel II is 11.25%; while in Marketing Channel III it was 17.01%.

Based on the value of marketing efficiency above, it can be stated that the marketing of pigs in DFT has been efficient. This condition is different from the results of research by Rahmat *et al.* (2022) regarding the pork supply chain in traditional markets in Bali where it is known that the marketing is not efficient due to the long market chain and low farmer's share causing the marketing system for pork and pork in the area to be inefficient.

Based on the value of marketing efficiency above, it can be stated that the marketing of pigs in MEFR has been efficient. This condition is different from the results of research by Rahmat *et al*. (2022), Ogunsipe *et al*. (2017), and Ouma *et al*., 2015) regarding the pork supply chain in traditional markets in Bali where it is known that the marketing is not efficient due to the long market chain and low farmer's share causing the marketing system for pork and pork in the area to be inefficient.

CONCLUSION

The conclusions regarding the performance of the pig market in MEFR are: 1) There are three patterns of marketing channels for pigs in MEFR, namely Marketing Channel I (51%), Channel II (35%), and Channel III (14%); and 2) The biggest marketing margin in

Channel III. Marketing costs are only found in Channels II and Channels III where Channel III is three times larger than Channel II. The level of farmer's share in Channel I has the highest percentage (100%) with an efficiency index (0%) followed by Channel II (81.64%) with an efficiency index (11.25%) and Channel III (77.93%)) with an efficiency index (17.01%) the three patterns are already efficient.

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