

Marketing of Moa buffalo at farm level in Maluku Province, Indonesia

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ABSTRACT

Buffalo Moa is Indonesia's local livestock which is potentially maintained by the community on Moa Island as a source of family income and nutrition. This study aims to examine the marketing system, selling prices and factors that influence the price of buffalo at the farmer level. The results of the study found that the maintenance system was still traditionally carried out with two systems, namely semi-intensive during the rainy season and extensive during the dry season. The main motivation for raising livestock as a source of income, others as a means of payment for customary sanctions, family and religious events, marriage dowries. Buffalo cattle are marketed in the form of live animals and use intermediary traders. Weak market information so traders are more dominant in selling prices. Determination of the value of buffalo as a medium of exchange based on horn length and sex, the value of buffalo to be traded based on its performance, not defective, male sex at a higher price and the age range of 5–10 years, normal skin (not albino) is preferred. Factors that influence the selling price at the breeder level are buffalo age, gender, skin color and climate.

Keywords: Moa buffalo, marketing, price

INTRODUCTION

Caring for livestock has become part of the rural farming system in Indonesia as a source of family income and nutrition for the majority of the rural population, especially poor households (Singh et al, 2007). One potential local livestock resource that is kept by small farmers and as a producer of meat and milk is buffalo cattle. Local buffalo has the advantage of being able to adapt because it has been selected naturally so that it has specific characteristics in accordance with the environment in which the buffalo live. Local livestock have experienced natural selection and have adapted well to their environment (Muhakka et al, 2013).

Local livestock that has been developed for a long time by the residents of the island of Moa, Maluku Province, is a Moa buffalo. This buffalo is one of Indonesia's endemic germplasm. This species is only found on Moa Island, a type of mud buffalo with the main product being meat and a small portion utilizing milk as a family protein source. Almost all residents of the island of Moa maintain Moa buffalo with the aim of being the main source of income, a "living bank" for the urgent needs and source of organic fertilizer for food crops. Buffalo Moa is closely related to the social structure of the local population as a means of payment for customary

sanctions, the main menu in a variety of traditional and religious ways and marriage dowry. For rural communities, livestock are considered a symbol of wealth, social status, prestige, and protection against crop failures, especially during the dry season or flooding (Togarepi et al, 2016 ; Smith, 2022).

The large value of buffalo use in Moa is also accompanied by the main constraints of development that affect production. In addition to the low quality and quantity of feed, especially during the dry season, poor maintenance management and marketing systems that have not been well organized such as very large assistance to intermediary traders, no formal market, lack of market information and the absence of marketing institutions to channel livestock received by farmers is far from the value sacrificed in raising the livestock. On the other side Marketing is an important aspect of any livestock system (Steinfeld et al. 2013). Livestock raising buffalo Moa is the core economic activity in Moa Island. Improved livestock marketing is seen as one of the ways to improve performance of this core economic activity and reduce poverty rates. This study aims to examine the marketing system, selling prices and factors that influence the selling price of Moa buffalo at the farmer level.

MATERIALS AND METHODS

This research was carried out on Moa Island in Southwest Maluku Regency, Maluku Province, Indonesia. Six sample villages were

taken from 7 villages in Moa Island, namely: Moain, Klis, Tounwawan, Werwaru, Patti, and Kaiwatu (Figure 1).

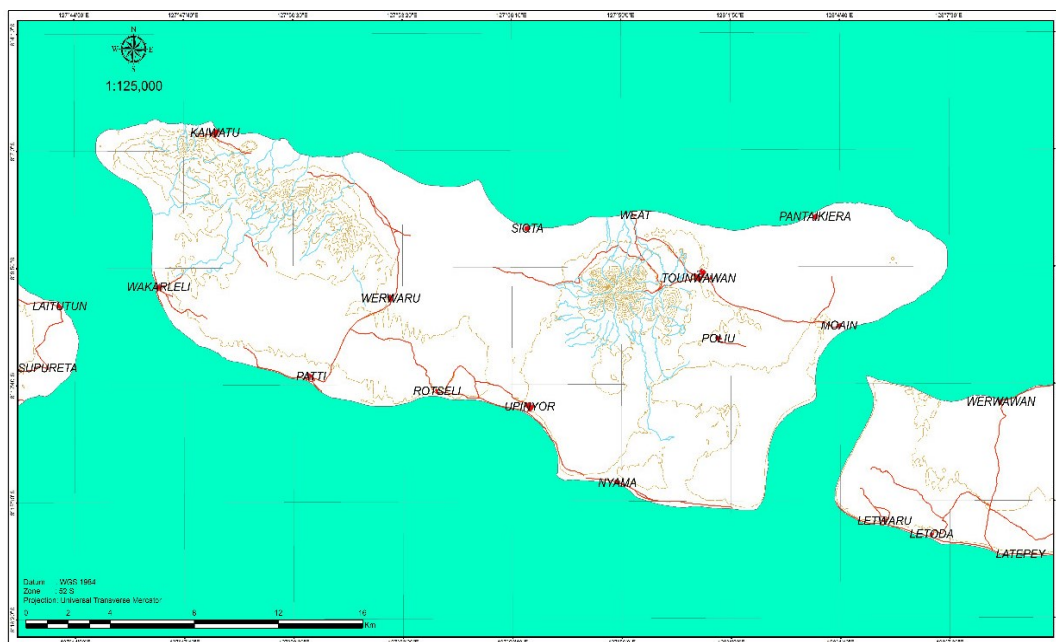


Figure 1. The map of research location.

Based on its geographical position, Moa Island has boundaries: north with Banda Sea, south with Timor Sea, west with Letti Island and east with Pulau Lakor with an area of 959.68 km². Located around 583 km or 315 nautical miles from Ambon, the capital of Maluku Province and can be reached by sea and air.

Samples of rancher households were taken by purposive random sampling with a population of 261 cattle buffalo farmers on Moa Island with a minimum length of business of 3 years and marketing. All data used are primary

data collected by the survey method. Data collected includes ownership and motivation, marketing system, selling price and factors that are thought to influence the selling price at the farmer level by using a structured questionnaire and Focus Group Discussion (FGD). Data were analyzed descriptively and displayed in table form. Multiple regression analysis (Gujarati 1978), is used to determine the factors that influence the selling price at the farmer level as follows:

$$Y = b_0 + b_1X_1 + b_2D_1 + b_3D_2 + b_4D_3 + b_5D_4 + e$$

Description:

- Y : Selling Price (Rp/head)
- b₀ : Intercept
- b_{0=1,2,3,4} : regression coefficients
- X₁ : Age of Livestock when marketed (year)
- D₁ : *Dummy* sex buffalo (male = 1; female = 0)
- D₂ : *Dummy* Moment (religious holiday = 1; ordinary day = 0)
- D₃ : *Dummy* buffalo skin color (albino = 1 ; not albino = 0)
- D₄ : *Dummy* climate when marketed (rainy season = 1; dry season = 0)

RESULTS AND DISCUSSIONS

Ownership of Buffalo Moa

Moa buffalo have been on Moa Island since mid-1513 (Pipiana et al, 2010), currently the Moa buffalo population on the island of Moa 10,531 heads (BPS 2021). Maintenance of Moa

buffalo is still traditionally side by side with food crop farming. There are two systems of maintenance, namely, semi-intensive in the rainy season (January – June) and extensive during the dry season (July – December). The average ownership of buffalo is 17.95 ± 11.59 per farmer.



Figure 2. Moa Buffalo on Moa Island

The highest number of ownerships is in the East Moa area to Center Moa because it has a wider grazing area than West Moa. At present Moa Barat is a district capital development area so that land conversion has taken place with the construction of various infrastructure and settlements. The limitation of grazing areas has caused farmers in West Moa to tend to reduce the number of livestock owned.

Marketing System

Marketing of buffalo cattle on the island of Moa still uses the services of an intermediary trader. Determination of selling value of livestock based on estimated weight. In determining the farmers' bargaining position is still weak, due to low knowledge and market access, weak market information, poor marketing facilities and lack of extension services exacerbate the condition of the buffalo trade at the farmer level. Salau et al. (2013) reported that the main obstacles to using various sources of information were poor marketing facilities, lack of credit, poor infrastructure, and poor extension services. Poor infrastructure, access and marketing networks keep farmers out of poverty (Olabimisi et al. 2019).

All marketing of livestock on the island of Moa uses intermediary traders, of which 63.22% market their livestock to traders from outside the island from Sulawesi and 36.78% market their livestock to village traders who are native to the island of Moa who function as

collectors. In addition to poor marketing infrastructure, this bad condition with the length of the market chain has an impact on high marketing costs. Structural problems of poor infrastructure (Kydd and Dorward, 2004; Dorward et al. 2005) and lack of market institutions (World Bank, 2002) continue to characterize the subsector with high transaction costs (Smith, 2022).

More than half of the farmers stated that sometimes they had difficulty marketing buffalo. This is caused by the process of buying and selling only carried out 4 times in one year, so that when the insistence on the need for cash, farmers feel difficulty in marketing their buffalo cattle. To meet needs that urge farmers to sell it to village traders. Sari et al. (2015) found that in Aceh farmers sell buffalo cattle if they need money (90%) and only a small number of farmers sell on religious holidays (10%).

Based on information from farmers, the selling price at the village merchant level is lower than the price at the level of traders from outside the island. Dominant intermediary traders in determining selling prices because they have more control of price information. Small-scale farmers have a low bargaining position. Intermediaries, on the other hand, are often in a very strong position to determine local prices because they have a strong liaison position between farmers and markets (Guntoro et al. 2015).

Table 1. Information on the marketing of Moa buffalo

Information	Value
Number of respondents (n)	261
Average number of livestock marketed (AU / yr)	01.09
The sex of the buffalo which is marketed per year (head ; %)	
Male	227 ; 79.65
Female	58 ; 20.35
Reasons for selling buffalo cattle (%)	
Insistence on family needs	77.39.00
Price	0,519444444
Livestock age (calling, advanced, old)	0,467361111
Demand rate (%)	
Religious holidays	85.05.00
Normal day	0,938194444
Livestock marketed to: (%)	
Village traders	36.78
Outside island traders	63.22.00
Market access (%)	
Difficult	0,519444444
Sometimes it's difficult	71.65
Easy	16.47
Price difference between village traders and outside islands (%)	
Yes, lower than outside the island	72.95
Same	12.26
Do not know	0,596527778
Comparison of market access (easy: difficult , %)	
Buffalo: Cow	60.87 : 39.13
Buffalo: Horse	97.06 : 2.94
Buffalo: Goat	7.77 : 92.23
Buffalo: Pig	20.89 : 79.11
Goat: Pig	69.77 : 30.33

Source: Field data (2021).

Based on farmer information compared to cattle and horses, buffalo are more easily marketed because of more demand, but are very dependent on the level of demand from outside the district. This situation illustrates that farmers dependence is relatively large on inter-island traders, thus weakening the bargaining position of farmers. On the other hand, the marketing of goats and pigs is easier because the level of demand is not only from outside but also from within the district. So that to meet the urgent and relatively not-so-large needs, farmers who own goats and pigs can sell their livestock. This condition needs attention to reduce the dependence of buffalo farmers on traders and maintain the stability of the selling price of buffaloes, buffalo farmers must produce other types of livestock such as goats and pigs.

Selling Prices at The Farmer Level

Determination of buffalo value for transactions using buffalo as a medium of

exchange such as payment of customary sanctions, sale and purchase of land and marriage dowry are different from trading procedures. Buffalo value for barter transactions uses horn length and gender. The value of the buffalo is higher when it has long, male, and female horns. The value of buffalo will automatically drop if there is a defect in the horn or its shape is disproportionate, the size and shape of the female buffalo horn is not too calculated.

With local government regulations, farmers generally market their livestock above the age of 5 years. Male buffaloes are more marketable than females. Productive female buffaloes are maintained to increase the buffalo population that is maintained. Adult females can be marketed if they are considered unproductive (advanced) or urgent family economic needs with information from the village government. Found marketing of female buffalo 2-4 years old as seed cattle in Moa Island.

Table 2. The selling price of buffalo Moa at the farmer level is based on age group and sex

Age group (year)	Male			Female		
	number (heads)	%	Average selling price (IDR/heads)	number (heads)	%	Average selling price (IDR/heads)
2 – 4	2	0.89	4,125,000.00± 1,237,436.87	18	31.03	3,847,222.22± 781,866.59
5 – 7	139	18.94	7,418,604.55± 1,106,959.76	9	15.52	5,888,888.89± 1,054,092.55
8 – 10	43	61.23	8,708,633.09± 1,604,905.61	25	43.10	6,860,000.00± 757,187.78
11 – 13	37	16.30	10,716,216.20± 1,970,407.95	6	10.35	9,166,666.67± 752,772.65
≥ 14	6	2.64	13,666,666.70± 1,505,545.31	-	0.00	-
Total	227	100.00		58	100.00	

Source: Field data (2021).

The marketing characteristic of buffalo cattle on the island of Moa is the determination of selling prices generally based on sex (males are more expensive than females), performance and skin color (normally more expensive than albino), sold in the form of live cattle. In a report by Chinchilla et al. (2018) in many cases, traders often underestimate the weight of livestock to reduce livestock prices, consequently, farmers receive low prices for their animals rather than reasonable prices. The selling price of livestock is relatively the same for all villages even though the distance of the village affects the cost of transporting livestock to the shelter location, there are only a few traders (buyers). Traders are more dominant in determining selling prices and acting as price setters and farms as price takers. This characteristic shows that the Moa buffalo

market is an oligopsonic market. Bijman et al. (2007) state that smallholders have very low bargaining power when they operate in the supply chain where the economies of scale in the product transformation phase lead to the creation of oligopsonies.

Factors Affecting Selling Prices

Table 3, shows the R^2 value of 0.71, this means that this model 71% percent can be explained by independent variables while the remaining 29.30% is explained by other variables not included in this model. The F-count value is 134.74 ($P < 0.01$) indicating the independent variables jointly have a significant effect on the price of buffalo at the farmer level on the island of Moa. (Table 3).

Table 3. Factors that influence the selling price of Moa buffalo at the farmer level

Independent variable	B	t-value	sig
Age of livestock (X1)	727039.13	20.18	0.000**
Sex (D1)	1168357.67	0,2527778	0.000**
Moment (D2)	-112651.47	-0.29	0.776 ^{ns}
Buffalo skin color (D3)	-1941062.29	-7.14	0.000**
Climate when cattle are marketed (D4)	666587.18	0,0881944	0.047*
R^2	0,0493056		
F- Value	134.74		

Source: Data Processing Results Using SPSS 21 (2022)

Description: * $P < 0.05$, ** $P < 0.01$, ns = not significant

The results of the analysis show that age, gender, and skin color have a significant effect on level 1% and climate factors have a significant effect on the level of 5% on the selling price of buffalo. These results show that the price of adult male buffalo is higher, the albino-skinned buffalo (whole white) has a lower price compared to normal-skinned buffalo.

During the rainy season buffalo prices are higher than the dry season. This is caused by during the rainy season buffalo performance is better because enough forage is available. Kebede (2016) states that poor livestock conditions during the dry season result in farmers receiving low prices Livestock production is affected by

the adverse effects of extreme climatic conditions.

The analysis found that buffaloes marketed during religious holidays were not statistically significant with selling prices. This is due to limited internet access and electricity, making it difficult for farmers to obtain information on selling prices, especially religious holidays (Eid al-Adha, Eid al-Fitr, Christmas, and New Year) so that the selling price is the same as for normal. Luqman et al. (2019) stated that electricity shortages and the availability of slow internet connections, especially in rural areas, were the main obstacles for farmers to access information.

CONCLUSION

The marketing system for Moa buffalo is sold in the form of live cattle using intermediary traders, weak market information, dominant male marketed, sold because of pressure from family needs, compared to buffalo goats and pigs are more difficult to market. Determination of the selling value of buffalo as a medium of exchange based on horn length and gender. Buffalo values for trading based on performance, age and gender. Factors that influence the selling price at the farmer level are, buffalo age, gender, skin color and climate. The government needs to improve market infrastructure, facilitate access to information and provide extension services.

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