

Correlation of Body Weight and Age on The Selling Price of Bali Cattle Ranomeeto District, Konawe Selatan Regency

Musram Abadi, La Ode Nafiu, Achmad Slamet Aku, Rusli Badaruddin

Department of Animal Husbandry Faculty of Animal Husbandry, Halu Oleo University, Kendari

Koresponden Author, email : musram.abadi79@uho.ac.id

ABSTRACT

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The study aims to determine the relationship between age and the relationship between body weight and the selling price of cattle. This research was conducted in the District of Ranomeeto Konawe Selatan District, Southeast Sulawesi Province. The material used was 72 male Bali cattle. The parameters observed were selling price, age, and body weight using the Winter formula which uses chest circumference, body length, and shoulder height as estimators and using a digital scale. The research method used in the study is a survey method with the Pearson correlation analysis model. Based on the discussion and the results of the analysis show that there is a very strong and positive relationship between age and body weight with the selling price of male Bali cattle in Ranomeeto District, Konawe Selatan Regency, namely between body weight and selling price has the highest coefficient value. Consequently, the coefficient value between age and selling price is 0.886 while between body weight and selling price the coefficient value is 0.952.

Keywords : Bali Cow, Age, Body Weight, and Selling Price

I. INTRODUCTION

Bali cattle is one of the meat-producing cattle that has good prospects for development. Beef consumption continues to increase along with the tendency of increasing population and public awareness about meeting the nutritional needs of animal protein. The maintenance management and technology of Balinese cattle farming needs to be continuously improved to meet market demand and support the agribusiness of Bali cattle in Southeast Sulawesi, which is generally still traditionally maintained by farmers.

Based on data obtained from the Animal Husbandry and Animal Health Service (PKH) of Konawe Selatan

District in 2017, it shows that overall the cattle population in the Konawe Selatan District is 67,746 head scattered in each District. This population is the highest number of 17 cities/regencies in Southeast Sulawesi Province. This makes South Konawe Regency one of the producers of beef cattle and is a fairly high supplier of meat.

Ranomeeto District is one of the districts in the South Konawe Regency which also contributes to the beef cattle population. The population level of 2,189 consisting of 256 adult males and 1,171 adult females and 364 male males and 398 female females, which is the tenth of twenty-five districts in South Konawe Regency and became one of the areas supplying the

needs of live beef cattle and in the form of fresh meat in the city of Kendari (PKH Service, South Konawe Regency, 2018)

Bali cattle have several advantages, one of which is their high adaptability to the local environment and can utilize existing feed. In Ranomeeto District, breeders usually use a semi-intensive pattern of maintenance, where during the rainy season cattle are intensified (impounded) and during the dry season the cows are extended (herded). The feed provided is usually by utilizing the by-products of food plants and natural grass that are spread around.

The Bali cattle marketing system in Ranomeeto is generally the direct buyers coming to the breeders. Knowledge and skills of breeders in measuring body weight or the achievement of livestock body weight gain are one aspect of management that is quite important in livestock raising efforts so that farmers are not fooled into selling cattle too cheaply. So that farmers are required to have knowledge and skills in assessing the weight of the cow they have.

Determination of the selling price of cattle by estimating body weight through the body size of cattle has often been done and has a high accuracy. Measurement of some livestock body parameters that are responsive to body weight can be used as an alternative to determining livestock body weight. In addition to body weight, age is also one aspect that is often used by farmers in selling cattle. So it is felt that research is needed to compare the influence of body weight and age on the selling price of cattle in the District of Ranomeeto.

II. METHODS AND MATERIALS

This research was conducted in the District Ranomeeto Konawe Selatan District. The determination of the research location was determined by purposive sampling with the consideration that the research location was a sub-

district with a considerable population of 2,198 Bali cattle consisting of 256 adult males and 1,171 adult females and 364 female males and 394 female males.

The population is taken only in Balinese cattle with adult male sex with an age of 1.5-3 years in Ranomeeto Subdistrict of South Konawe Regency as many as 256 head so that the determination of the sample is taken by Representative that can represent the population of adult male Bali cattle. Mathematical formula of determining sample size with a precision (error rate) of 10% Slovin (Sevilla et al., 1993).

$$\begin{aligned} n &= \frac{N}{N(d)^2+1} \\ &= 256 / 256. (0, 1)^2 +1 \\ &= 72 \end{aligned}$$

Information:

n : Number of research samples
N : Total population
d : Precision is set (10%) which is the degree of deviation from sample characteristics of the population

Data collection is carried out in this research is the observation that is data obtained directly in the field by holding observations on the object under study directly. Interview, namely question and answer with farmers about livestock information following the data to be observed. Measurements are obtained from the results of weighing and measuring Bali cattle based on the specified age.

The variables in this study consisted of the dependent variable and the independent variable. The dependent variable in the study is the selling price, while the independent variable in this study is the age and body weight of the cow. Measurement of cow body weight is done by using a digital scale and estimation using the Winter formula. The Winter formula is estimated to be the most accurate formula for the actual body

weight of livestock. These formulas can be used for cattle, goats, sheep, pigs, and buffalo (Badriyah, 2014).

The Winter Formula estimates body weight based on chest circumference, Body Length, and Shoulder Height. Chest circumference is measured using a measuring tape, curling just behind the shoulder through the gumba on the third to fourth ribs or humping cows just behind the hump. Body length was measured with a measuring stick from the ischia tuber to the humeral tuberosity. Shoulder height is measured using a measuring stick, by measuring the distance perpendicular to the ground to the top of the rear shoulder hump.

Analysis of the relationship between body measurements and the body weight of Bali cattle using the simple correlation method according to (Sugiyono, 1999). Simple correlation calculation as follows:

$$r = \frac{\sum X_1 Y - \frac{(\sum X_1)(\sum Y)}{n}}{\sqrt{\left\{\sum X_1^2 - \frac{(\sum X_1)^2}{n}\right\} \left\{\sum Y^2 - \frac{(\sum Y)^2}{n}\right\}}}$$

Information:

- r : Correlation
- X : Vital statistics
- Y : Body weight
- n : Number of samples

Guidelines for providing interpretation and analysis for correlation coefficients are 0.00 - 0.199 = very low, 0.20 - 0.3999 = low, 0.40 - 0.5999 = moderate, 0.60 - 0.799 = strong, and 0.80 - 1,000 = very strong (Sugiyono, 1999).

To measure the strength of the relationship between the two variables and also to be able to know the form of the relationship between the two with

quantitative results. The strength of the relationship between the two variables in question is whether the relationship is close, weak, or not close. The coefficient of determination is used to indicate extinction and strength between two variables. The magnitude of the influence of body size on Bali cattle body weight can be known from the coefficient of determination with the following formula:

Determination coefficient:

$$R^2 = (r)^2 \times 100\%$$

Information:

- R = Determination
- r = Correlation

To measure the relationship of body weight and age of cows to the selling price is Pearson correlation analysis using SPSS.

III. RESULTS AND DISCUSSION

Body Weight of Bali Cattle

The weight of a livestock body is related to the growth and carcass produced, while the body weight itself is influenced by the nature of the flesh, fat, muscle, carcass, stomach contents, and the magnitude of the head, legs, and skin repetition. Age and sex also influence the body weight and size of the livestock. Body weight generally has a positive relationship with all linear measurements of the body. The body weights of male Bali cattle in the Ranomeeto sub-district, Konawe Selatan district are presented in Table 1.

Table 1. Body weight of male cattle from Bali in the Ranomeeto sub-district, Konawe Selatan Regency

No	Body Weight (Kg)	Frequency (tail)	Percentage(%)
1	110 - 130	3	4.17
2	131 - 160	33	45.83
3	161 - 190	20	27.78
4	191 - 220	8	11.11
5	220 - 250	7	9.72
6	251 - 280	1	1.39
Total		72	100

Based on Table 1, cow body weight at intervals of 131-160 kg is the most dominant body weight with a frequency of 33 animals and a percentage of 45.83%. While the smallest body weight is in the interval 251-280 kg with a frequency of 1 tail and a percentage of 1.39%. If the average body weight of the cow is 168.85 kg. The diversity of cow body weight is influenced by many factors, such as age, body condition, feed, and maintenance management. The body weight of a cow needs to be known so that the farmer can determine the sale value of the cow, such as meat production, selling price, selection of seeds. Also, body weight plays an important role in a good maintenance pattern, because knowing the body weight of a cow will make it easier to determine the amount of feeding and the number of drug doses.

In general, cattle that are fed in sufficient quantities will grow quickly and can achieve optimal weight measurements according to their genetic capabilities. Conversely, if cattle lack food, their growth will also

be slow (Murtidjo, 1990). Animal body weight is always directly proportional to the level of feed consumption. The higher the body weight, the higher the level of consumption of feed (Kartadisastra, 1997). Besides the potential for growth of livestock is also determined by genetics expressed in hormonal relationships in the body, this results in differences in growth rates and adult weight achieved (Bamualim et al., 2002).

Age of Bali Cattle

The determination of age can also be determined through birth records and incisors of livestock. These data are used as consideration for decision making in conducting beef cattle farming. For example, the age of a cow, usually used as a consideration in selecting prospective breeds. The age of male Bali cattle in Ranomeeto Subdistrict, South Konawe Regency is presented in Table 2.

Table 2. Age of Male Bali Cattle in Ranomeeto District, Konawe Selatan District

No	Age (year)	Frequency (tail)	Percentage(%)
1	1.5 – 2.0	48	66.67
2	2.1 – 3.0	24	33.33
Total		72	100

The age of dominant male Bali cattle is at 1-2 year intervals with a frequency of 48 cows and a

percentage of 66.67%. The age of livestock in rearing has an important role because through the age of

breeders can know when cattle can be mated or fattened. The most appropriate way to find out the age of livestock is to look at production records or from livestock recording cards, and also the age of livestock can also be seen through incisor growth.

Age affects the growth of livestock, rapid growth occurs in the initial period of birth to the age of weaning and puberty, but after puberty passes until adulthood grows slowly. Bambang (2005) states that the weaning age until the age of puberty growth rate persists rapidly, but from the age, after puberty to adulthood the growth rate gradually decreases and will continue to decline. According to Lawrence and Fowler (2002), the growth curve of ruminants consists of three parts, namely the acceleration phase,

followed by a linear phase or very fast growth with a very short time (adult sex) and ends in the deceleration phase which gradually decreases until the animal reaches adult body illustrated by a sigmoid shaped curve.

Selling price Of Bali Cattle

Prices are often related to the large amount of money that must be paid as a replacement purchase value for livestock. Price is one of the success factors of business because the price determines how much profit the farmer will get. The selling price of Bali bulls in Ranomeeto Subdistrict, Konawe Selatan Regency is presented in Table 3.

Table 3. Selling prices of male Bali cattle in Ranomeeto sub-district, Konawe Selatan district

No	Prices (Juta)	Frequency (tail)	Percentage(%)
1	5.0 – 7.0	32	43.05
2	7.1 – 9.0	20	27.78
3	9.1 – 11.0	12	16.67
4	11.1 – 13.0	5	8.33
5	13.1 – 15.0	3	4.17
Total		72	100

The dominant selling price is at an interval of Rp. 5-7 million, with a frequency of 31 animals and a percentage of 43.05%. While the frequency of the smallest selling price is 13-15 million intervals, with a frequency of 3 animals and a percentage of 4.17%. Determination of the selling price of cattle in the Ranomeeto District, South Konawe Regency is still traditional. Cattle marketing systems, namely buyers (collectors) come directly to farmers to buy cows, where collectors are the determinants of the price of cows, so farmers in marketing their livestock have a high dependency on the services of collecting traders in marketing their livestock. Besides the formation or determination of prices is always associated with the urgency of the need for money from farmers, if farmers need cash, then farmers only act as price recipients, because the position in bargaining is weak,

even marketing practices that are not detrimental to farmers by farmers collectors.

This is caused by several factors, including 1) relatively small scale of business so that transportation costs to the market are inefficient, 2) lack of market access knowledge by farmers, 3) transactions are based on buyers, livestock body weight, and other indicators are neglected so that the bargaining position of breeders is weak and 4) the existence of the Dadung inauguration as a broker in the market that has the potential to reduce the income of farmers (Rahmanto, 2004).

Relationship between Age, Body Weight, and Selling Price of Cows

Correlation shows the value of the closeness of the relationship between the age variable and the selling

price of Bali cattle. The correlation value between age and the selling price of Bali cattle in Ranomeeto Subdistrict, Konawe Selatan District, is presented in Table 4.

Table 4. Pearson Test Results Correlation between Age and Body Weight with the Selling Price of Bali Cattle in Ranomeeto District, Konawe Selatan District

Parameter	Korelasi	Information
Age	0.886**	Verry strong
Body Weight	0.952**	Verry strong

Keterangan : * Significant ($P < 0.05$)

^{ns} Not Significant ($P > 0.05$)

Based on table 4. that the correlation value is 0.886 or has a relationship of 88%. This shows that there is a positive and very strong correlation between the age of cows to the selling price of cows, where the higher the age of cows, the price of cows will increase. It is assumed that the older the age of cows eats the more weight the body weight of cows, thus affecting the selling price of cattle. Wello (1999) states that age as one of the factors affecting carcass weight including the ratio of meat and bone, fat content, and distribution as well as the quality of meat, is closely related to growth.

Age is one of the factors that influence weight. Age affects the growth of the cow's body which will also affect the body weight of the cow. As we get older, the cow's body growth continues to run, until it reaches the peak of growth. The weight gain of young cattle will continue to increase with a high rate of increase until puberty is reached and finally there is no significant increase in body weight after reaching maturity in cattle.

The main component of carcass consists of muscle tissue (meat) and bone where the growth rate of bone and beef will occur at the age of 1-3 years and stop at the age of 3 years. This growth speed will affect the body weight of cows. There is an interaction that occurs in age and body weight, the more age the cow

is, the higher the weight of the carcass, and the carcass weight will affect the selling price of the cow (Usmiati and Setiyanto, 2008).

Based on table 4 also found that the correlation value is 0.952 or has a relationship of 95%. This shows that there is a positive and very strong correlation between body weight and the selling price of cattle, where the higher the body weight of cattle, the price of cattle will increase. Body weight is one of the important things in determining prices because the main product of beef cattle is meat. Body weight needs to be considered because basically body weight is an important indicator in increasing selling prices to increase income. By obtaining an estimated live weight, the percentage of carcasses and meat can be known immediately. Cow carcasses range from 47-57 percent of their body weight and 75 percent of meat from carcasses.

IV.CONCLUSION

Based on the discussion and the results of the analysis show that there is a very strong and positive relationship between age and body weight with the selling price of male Bali cattle in Ranomeeto District, Konawe Selatan Regency, namely between body weight and selling price has the highest coefficient value. Consequently, the coefficient value between

age and selling price is 0.886 while between body weight and selling price the coefficient value is 0.952

V. REFERENCES

- [1]. Badriyah, Nuril. 2014. Conformity of the Winter Formula Against Body Weight of Ongole Breeds (P.O). *Journal of Exact.* 02: 99-103.
- [2]. Bambang S. Y. 2005. *Beef Cattle. Self-help Spreaders.* Jakarta.
- [3]. Bamualim A, Wirdahayati RB. 2002. Nutrition and management strategies to improve Bali cattle productivity in Nusa Tenggara. *Proceedings of the ACIAR Workshop on Strategies to improve Bali cattle in Indonesia, Bali, Indonesia, 4-7 February 2002.* p.17–22.
- [4]. South Konawe Regency PKH Service, 2019. *Konawe Selatan in Figures 2019.* Konawe Selatan Regency
- [5]. Heryadi, A. Y. 2011. Pattern of beef cattle marketing on the island of Madura. *Journal of Social Economics of Animal Husbandry* 5: 38-46.
- [6]. Kartadisastra, H. R., 1997. *Provision and Management of Ruminant Animal Feed.* Canisius Publisher. Yogyakarta.
- [7]. Lawrence, W.G. and V.R, Fowler. 2002. *Growth of Farm Animals.* 2 Ed. CABI Publishing. London.
- [8]. Murtidjo, B. A., 1993. *Caring for Sheep.* Kanisius. Yogyakarta.
- [9]. Rahmanto, B. 2004. *Analysis of Livestock Beef Cattle Enterprise.* ICASERD Working Paper. Center for Agricultural Socio-Economic Research and Development. Agricultural Research and Development Agency, Ministry of Agriculture, Bogor.
- [10]. Sevilla. C.G.O, T.G. Punsalan, B.P. Regala, and G.P. Uriarte. 1993. *Introduction to Alumuddin Translation Translation Method Tuwu.* UI-Press. Jakarta.
- [11]. Sugiyono 1999. *Statistics for Research.* C.V. Alfabeta, Bandung.
- [12]. Usmiati, S. and H. Setyanto.2008. *Appearance of carcasses and carcass components of small ruminant livestock.*
- [13]. Wello, B. 1999. *Katability edible meat behind the carcass of Brahman Cross cattle with different fattening time.* Faculty of Animal Science, Hasanuddin University, Makassar.

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