

Model of carrying on trade of beef cattle at slaughterhouse in Yogyakarta, Indonesia

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ABSTRACT

The objective of the research was to know the accuracy of the model of carrying on trade. The materials of this research were 93 heads of cattle consisted Ongole Grade (OG) and its crossing (OG cross). The results showed that the margin (the difference between selling price and buying price) for OG and OG cross were 415,419.00IDR/head and 551,032.00IDR/head, respectively. The result of multiple regression analysis showed that the margin could be explained jointly and very significant ($P < 0.01$) by slaughtered weight of cattle, weight of carcass, BCS, age estimation, sex, and breed of cattle ($R^2 = 0.8060$). Partially, the slaughtered weight of cattle, weight of carcass, BCS, and breed of cattle were positive and very significant influence on the margin got by cattle supplier, while the age estimation and sex positive and significant ($P < 0.05$) influence on the margin got by the cattle supplier.

Key words: Butcher, Estimation of weight the carcass, Margin, Price transaction, Trader.

According to Roessali, (2011) economy development and population of people and also the development of free market are going to increase the demand of cattle meat consumption of about 30 % in the future decade. Cattle meat is the second greatest contributor (19.09%) in the meat production after broiler chicken meat (52.53%) in Indonesia (Statistik- Peternakan, 2013). The high need of meats will open up an opportunity in the business providing cattle meats such as a cattle supplier for slaughterhouse and a butcher as channel meat marketing. As what Roessali *et al.*, (2011) said that the increasing demand for livestock products, especially beef, serves basically as the magnet factor for agribusiness growth in beef cattle. Currently the rate of demand for beef increases exceeding the rate of its supply and in the long run it is estimated that beef demand would continue to rise. Increased imports of beef which is going higher are some efforts to face the meat self-sufficiency target by 2014. Australia is the largest exporter country of beef to Indonesia. The export reached 28 % of the total beef demand in Indonesia.

In general the farmers do not sell their cattle directly to the butchers, yet there are cattle traders as cattle suppliers for the butchers. In Indonesia, especially in Yogyakarta area, there are two models of transaction between cattle suppliers (cattle traders) and the butchers: In the first model a butcher buys live cattle from the cattle trader based on live weight of cattle and in the second model a butcher buys cattle in the form of carcass and also the transaction usually conducted in the slaughterhouse. A special skill is needed for the cattle

trader to estimate the carcass weight produced by live cattle. Miss-estimation of carcass weight produced by live cattle will lead to a loss; since the transaction is based on the carcass weight produced after the cattle has already been slaughtered. The cattle traders buys cattle from the farmers not based on live weight but on assumption of approximate carcass weight. On the butchers' side, they will get profit, at least from the non carcass value of the cattle slaughtered. On the contrary, the cattle traders have to wait for the carcass weight result produced by the cattle that had been slaughtered, and miss-estimation will suffer a loss. The cattle traders estimate the weight of cattle or the weight of carcass based on exterior, sex, age estimation and breed of cattle. This study is going to prove the accuracy of estimation of cattle weight conducted by cattle traders with margin parameter gained by cattle traders in the transaction with the butchers.

The study was conducted at Giwangan Slaughterhouse in Yogyakarta, Indonesia. The materials of this research were 93 heads of cattle consisted of 31 heads of Ongole-Grade (OG) and OG cross (SimOG and LimOG) of 62 heads coming from 7 cattle traders, who sell live cattle to the butcher. Samples of cattle traders taken by using convenience sampling.

The cattle were weighed before slaughtering to get slaughtered weight of cattle. Carcass weight was taken after slaughter excluding the weight of the head of cattle, skin and visceral organs except kidneys, lungs, heart and liver. Data of this research consisted of slaughtered weight of cattle,

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body condition score (BCS) sex, age estimation by teeth structure, carcass weight, carcass price and cattle price.

To prove the accuracy of the model of carrying on trade of beef cattle at slaughterhouse it was used margin parameter got by cattle trader. According to Amir and Knipscheer(1989), a marketing margin is the difference between prices at different levels of the marketing system. So with this research margin was calculated from the difference of carcass selling price minus buying price of cattle by the cattle trader. As mentioned before, estimation by the cattle trader on carcass produced by slaughtered cattle was based on exterior, sex, age estimation by teeth structure, and cattle breed. Exterior factors were estimated by BCS. To prove that the factors affect the margin, multiple regression analysis was done. Factors used by the cattle trader to estimate carcass weight on this research were set to be independent variables. Dependent variable was approached by margin got by cattle trader; since this value reflected directly the carcass produced by slaughtered cattle and also at once proved the accuracy of this transaction model. The formula used to know the factors influencing the margin got by cattle trader is:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + D_1 + D_2 + D_3$$

Y = Margin got by cattle trader (IDR/head);

X₁ = slaughtered weight (kilogram/head);

X₂ = carcass weight (kilogram/head)

X₃ =BCS (score/head)

D₁ = dummy variable (age estimation by teeth structure, D₁= 0 if no eruption meaning that the cattle is not ready to be slaughtered and D₁=1 if there is an eruption meaning that the cattle is ready to be slaughtered)

D₂=dummy variable (sex, D₂=0 if it is female and D₂=1 if it is male);

D₃= dummy variable (breed of cattle, D₃=0 if OG and D₃=1 if it is OG cross)

a= constant

b₁....b_i= regression coefficient.

From Table 1 it can be seen that the value of R² was 0.806 %. It was indicated that 80.60 % of the variance

Table 1: The result of multiple regressions analyze based on the trader side

Variable	Coefficient regression	Significance
Constanta	0.441*	0.012
Slaughtered weight	0.774**	0.000
Carcass weight	0.670**	0'009
Body condition score	0.599**	0'008
Age estimation	0.551*	0.011
Sex	0.612*	0.020
Breed	0.542**	0.001

R²: 0.806

F: 37.957**

P<0.05

**P<0.01

of the margin got by the cattle trader was influenced by the independent variables observed, while 19.40 % was influenced by variables outside the model. The result of multiple regression analysis showed that the margin got by the cattle trader (the difference between selling price and buying price of cattle of the cattle supplier) can be explained jointly and very significant (P< 0.01) by slaughtered weight of cattle, weight of carcass, BCS, age estimation, sex, and breed of cattle.

Partially, the slaughtered cattle weight, weight of carcass, BCS, and breed of cattle had a positive and highly significant (P< 0.01) influence on the margin got by cattle trader, while the age and sex had a positive and significant (P<0.05) influence on the margin got by the cattle trader (Table 1). As mentioned before that the margin in this research was directly correlated with the carcass weight, implying that the factors used by the cattle trader to estimate cattle weight or carcass weight produced by cattle were correct.

Actually the factors are identical to those of De Caarvalho *et al.*,(2010) who observed that the OG cross (SimOG) had higher carcass weight and carcass percentage than OG cattle; Soeparno, (2005) observed that the genetic and environmental factors influenced the rate of development and body composition such as weight distribution; Moreover, Soeparno (2005) reported that the increasing of age will cause the increase of development of organ especially fat depot, and also the increase of the other component, such as muscle and bone; Furthermore Padang.(2006), cited by Padang and Irmawaty, 2007) stated that the male had a performance production such as weight, the efficiency of feed usage and physiology status higher than the female.

On the side of butcher, there were some factors influencing margin value. According to Chotimah (2013), the butcher should be more considering (P<0.01) on the factors including purchase value of carcass, slaughtered weight, weight of non-carcass, and cattle breed (Table 2) The conclusion of the research was the model of carrying on trade of beef cattle at slaughterhouse in Yogyakarta, Indonesia had a higher accuracy.

Table 2: The Factors influencing margin value based on butcher side (Chotimah, 2013)

Variable	Coefficient regression	Significance
Constanta	1.860	0.338
Purchase value of carcass	0.529**	0.004
Slaughtered weight	0.547**	0'002
Non carcass weight	0.620**	0'000
Breed	0.625**	0.000

R²: 0.908

F: 158.40**

**P<0.01.

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