

Carcass Production of Cattle Slaughtered at Salatiga City Slaughter House, Salatiga, Central Java, Indonesia

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Abstract

The objective of this study was to evaluate the breed, age, sex, slaughter weight, carcass weight, and carcass percentage of cattle which was slaughtered at Slaughter House in Salatiga, Central Java. The materials used in the study were 156 head of cattle. The sampling used was incidental sampling to identify the breed, age, sex, slaughter weight and carcass weight. The data gathered were analyzed descriptively. The result showed that the sex of all the cattle slaughtered were male. The breeds of the cattle were Frisian Holstein Grade (70.51%), Simmental (15.38+3.21), Simmental-Ongole Grade (5.13%), and Limousine-Ongole Grade (5.77%). The average age of the cattle were 2.34 year old, with an average of slaughter weight of 529.34 kg, while the averages of carcass weight were 277.61 kg. The average of carcass percentage was as high as 52.56%. The conclusion of the study was the highest number of breeds of the cattle slaughtered at Slaughter House in Salatiga were young Frisian Holstein, the body weights were included in large frame score, and the carcass percentage were moderate.

1. Introduction

The Indonesian government has many programs to increase the livestock production, especially meat, in reaching the dream in which Indonesia becoming a country with self-sufficiency of meat. The meat production indicator of cattle can be measured from the weight and carcass percentage, because the meat is a part of carcass components [1]. According to Soeparno (2005) [2], the definition of carcass is the slaughter production of cattle which the blood, skin, head, viscera, low parts of the legs, and tails are removed. Cattle can be classified as good cattle are if it the carcass yield is 59% of the slaughter weight, and from there, the amount edible meat is 46.5 % [3]. The carcass percentage is ratio of carcass weight to slaughter weight, multiplied 100 % [4].

Some factors that affect carcass percentage are feed, breed, age, sex, hormone, slaughter weight, and body conformation [5]. The kind of feeds, feed consumption, and feed composition has a great influence to the growth of cattle, where the higher protein and energy intake will accelerate the growth rate of the cattle [2]. The slaughter weight will increase as the cattle's age increase [3], so the carcass weight will increase too [2]. The carcass percentage will increase with the increase of the slaughter weight [6]. According to Saka *et al.* (2011) [7], Bali bull has higher carcass percentage those female Bali cattle. A big cattle breed will also produce big carcass [2]. The slaughter weight, carcass weight, and carcass percentage of Simmental-Bali Grade breed is higher than Bali-Bali Grade, Ongole-Bali, and Brahman-Bali breed [8]. The study objective is to determine breed, age, slaughter weight, and carcass percentage of cattle slaughtered at Slaughter House Salatiga, Salatiga, Central Java.



2. Material and Method

2.1. Time and Location

The study was done in Slaughter House Salatiga (SHS) Salatiga City, Central Java on January 20 to February 18, 2016.

2.2. Materials

The materials used in the study were 156 heads of cattle that were slaughtered at SHS Salatiga City. The equipments that were used to slaughter are knife, axe, digital scale, hanging hooks, scale, barrow, hydraulic clamp, hose, and working suit.

2.3. Methods

The study was done via observation and by following the whole activity of cattle slaughtering process in Slaughter House Salatiga. The sampling method that is used is incidental sampling, where the samples of the cattle are taken incidentally while conducting the study. The slaughtering process in Slaughter House Salatiga started from ante mortem inspection, cattle slaughtering and carcass forming process, until post mortem inspection. The data that are gathered were breed, age, sex, slaughter weight, carcass weight, and carcass percentage.

The age was determined using the observation to the teeth eruption included incisors, pre molar, molar, and permanent teeth [9]. Slaughtered and carcass weight were measured using digital scale. The definition of carcass is the slaughtered cattle which the skin, head, tail, low part of leg and viscera is removed. The dressing percentage is a proportion of carcass to body weight multiplied by 100% [10]. The data gathered was analyzed descriptively.

3. Result and Discussion

3.1. The Slaughter House Salatiga

The Slaughter House Salatiga (SHS) is located at Jl. Imam Bonjol No. 111 A. Salatiga. The SHS has been built in 1984-1985 on the area of 13,000 m², including the SHS building of 785 m². SHS was inaugurated officially by the Governor of Central Java in 1987. In 1993, the SHS was renovated to be type B Slaughter House by Director General of Livestock. According to Badan Standarisasi Nasional (1999) [11], the type B slaughter house must have special room to wash internal organs, a laboratory to detect antibiotic residue, physically and biologically waste processing process, chilling room, the inside wall of slaughter building should made of porcelain, hot water resources, vehicle with cooling box, and has a veterinarian.

The SHS has no laboratory to detect antibiotic residue, because the lab only has simple equipments. Hot water, chilling room, cooling room, and the cooling vehicle are not well utilized. The waste management in SHS was done by a third party. In addition, SHS was not distributing beef meat as per distribution guideline of type B Slaughter House, which is interprovincial.

The location of SHS is beside a traditional market and quite closed to housing area, so disruptions are likely to happen. Lestari (1994) [12] stated that a good slaughter house location is in city border where the human population is not high, near the river stream, or in the lowest part of city so that it will not produce any disruption or contaminate the environment. According to Setiajatnika (2011) [13] the technical requirement of slaughter house location is 2-3 km from housing area. The goal of SHS is to serve people in getting a safe, healthy, complete, and *halal* meat. The average number of cattle which slaughtered in SHS was 8 heads/day. The number of cattle that was slaughtered in SHS was low. Based on the number of cattle slaughtered in SHS, the SHS could be grouped as category 1 slaughter house [14].

3.2. *The Characteristics of Cattle and its Carcass at Slaughter House Salatiga*

The result of the study (Table 1) showed that the average age of the cattle slaughtered at Slaughter House in Salatiga was 2.34 year old, male, and the average of body weight, carcass weight, carcass percentage were 529.94 kg, 277.61 kg, 52.56% respectively. Purbowati *et al.* (2015) [15] reported that the age of cattle that was slaughtered at Slaughter House Penggaron, Semarang is ranging from 2-3 year old (has 2 pairs of permanent incisors). The average body weight, carcass weight, and carcass percentage were 497.95 kg, 247.17 kg, and 49.59%, lower than those of this study.

Most of the cattle breeds slaughtered at SHS was Friesian Holstein Grade (FHG), as many as 70.51% followed by Simmental (15.38%), Limousine-Ongole (LimOG) Grade (5.77%), Simmental-Ongole (SimOG) Grade (5.13%), and Limousine (3.21%). The reason why most of cattle breed slaughtered at SHS was Friesian Holstein Grade because the Salatiga city was very closed with the Friesian Holstein Grade dairy cattle location, so that the bulls would be fattened as a beef cattle. The study of [15] showed that the cattle breeds slaughtered at Penggaron Slaughter House (PSH) were Simmental = 36%, Limousine = 22%, Limousine Grade = 18%, Simmental Grade = 16%, and other breeds (Ongole Grade and Brahman Angus Grade = 8%).

Table 1. The Characteristic of Cattle Slaughtered at Slaughter House Salatiga.

Cattle Breeds	n	Age	Slaughter Weight	Carcass Weight	Carcass Percentage
		(year)	----- (kg) -----		(%)
FHG	110	2.40	477.91	254.23	53.99
Simmental	24	2.33	548.92	285.00	51.95
Limousin	5	2.50	622.20	328.80	52.90
Sim-OG	8	2.44	542.25	282.13	51.95
Lim-OG	9	2.06	458.44	237.89	52.00
Average		2.34	529.94	277.61	52.56

n = total sample

The age range of the cattle slaughtered at SHS was 1- 4.5 year old. It was showed that the cattle which were slaughtered were young. The young cattle have a good quality of meat, so that the consumer would like it. Arifin and Purbowati (2011) [14] noted that the prime

carcass quality is received from the slaughtered cattle with an age of 9 months to 3.5 year old, and has a slightly abundant of marbling. Cattle can produce prime quality of beef by fattening it using high concentrate or grain. The cattle's age slaughtered at SHS is similar with the age of cattle slaughtered at PSH, which was 2-3 year old. Ali *et al.* [16] reported that the age of slaughter cattle slaughtered at Slaughter House in Makassar (South Sulawesi) was 4.76 year old in average, older than the age of the cattle from the study. The age percentage of cattle slaughtered at SHS for each cattle breed is presented at Illustration 1.

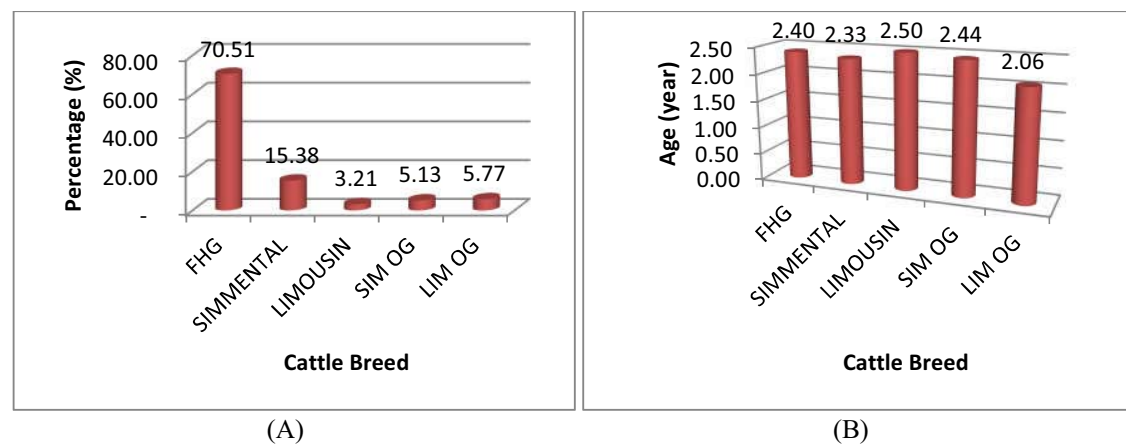


Illustration 1. Breed Percentage (A) and Age (B) of Cattle Slaughtered at SH Salatiga

The average slaughter weight of cattle slaughtered at SHS was as high as 529.94 kg. The highest slaughter weight was the Limousine (622.20 kg), and the lowest was Limousine-Ongole Grade (458.94 kg). According to Arifin and Purbowati [14], the slaughter weight of cattle slaughtered at SHS was included into medium score frame (405-495 kg) to large score frame (495-585 kg). Frame score of the suitable cattle for slaughter is used to describe how heavy (in kg) the cattle were when reaching maturity, when the back fat on 12th rib is 0.2 inch thick and the gastric was properly full. The study of Purbowati *et al.* [15] resulted that at the SHP Semarang, the average of the cattle slaughter weight was $497,95 \pm 44,97$ kg (CV = 9,03%). The slaughtered weight was affected by feed, breeds, and age of cattle. The slaughter weight of each cattle breed at SHS could be seen at Illustration 2.

The highest and the lowest carcass weight were Limousine breed (328.80 kg), and Limousine-Ongole Grade (237.89), with an average carcass of 277.61 kg. The carcass weight is in line with the slaughter weight, as high slaughter weight will also be produce high carcass weight. This was shown by Purbowati *et al.* [15] that the highest carcass weight at SHP was Brahman-Angus Grade (295 kg), followed by Simmental (249.33 kg), Limousine (245.65 kg), Ongole Grade (236,25 kg), Limousine Grade (235,56 kg), and Simmental Grade (221,35 kg), in line with their slaughter weight.

The carcass weight of the study at SHS was higher compared to carcass weight in Slaughter House Penggaron (SHP). The average of dressing percentage (DP) of the study was as high as 52.66%. Frisian Holstein breed has the highest DP (53.99%), while Simmental and Simmental-Ongole Grade have DP of 51.95%. The average of DP in the study (52.56%) is included as medium DP. According to Zajulie *et al.* [3], cattle are considered as good if it has

a DP of 59%. The DP of the study was better compared to DP from SHP as many as 49.59% (Purbowati *et al.*) [15]. The weight and DP of each cattle breed in SHS was presented at Illustration 3.

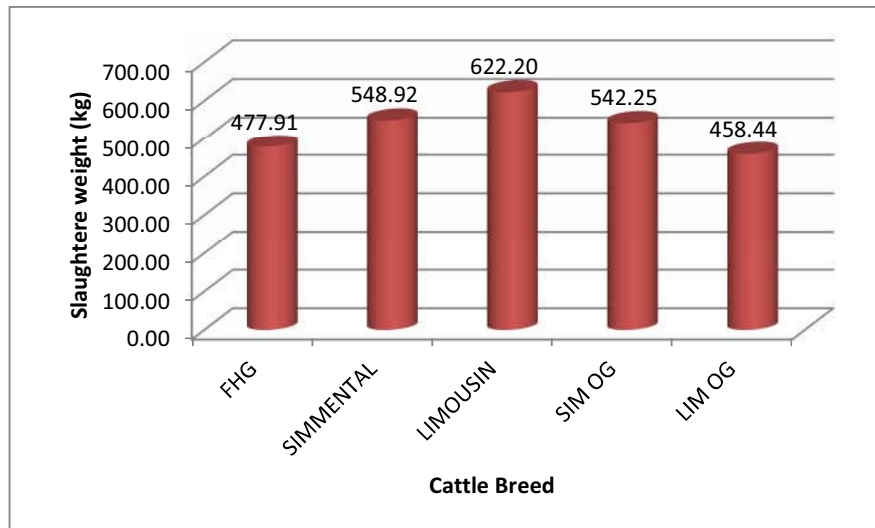


Illustration 2. The Average of Slaughter Weight of Cattle Breed at SHS

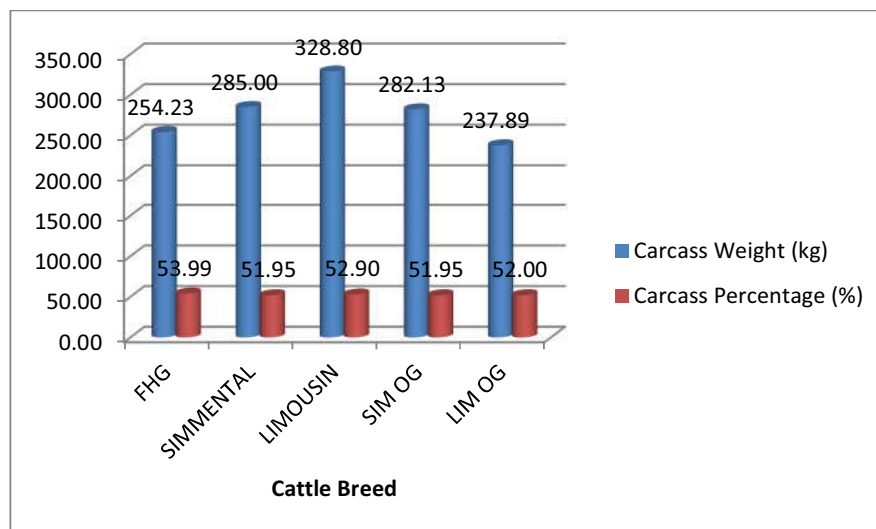


Illustration 3. The Carcass Weight and Carcass Percentage of Cattle at SHS

4. Conclusion

The conclusion of the study was the breeds of cattle slaughtered at Slaughter House in Salatiga were mostly young Frisian Holstein, considerably young age (2,34 years old), male, with the body weight of 529.94 kg, belongs to large frame score, and the DP (52.56%) were moderate.

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