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Value Added of Market Players in the Broiler Supply Chain in Kota Kupang

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ABSTRACT

A survey was conducted in Kota Kupang to analyze the added value and factors influencing the added value obtained by broiler breeders and traders in Kota Kupang. The sampling methods were used in three stages, namely: first, the market determination was used using the census method; second, sample traders used a non-proportional random method; and sample farmers used the method of snowball sampling. The sample in this study was 25 respondents from breeders and 25 from traders. Data collection was carried out through observation, interviews, and documentation. The data analysis methods used are value-added analysis and linear multiple regression analysis. The research results show that the added value obtained by broiler chicken breeders in Kota Kupang is IDR 1,518.00/kg live weight, and broiler chicken traders are IDR 18,053.00/kg live weight. The conversion factor for breeders is IDR 1,620, and for traders, IDR 5,333. The statistical difference test results show no significant difference between the added value obtained by breeders and traders of broiler chickens in Kota Kupang. Linear multiple analysis shows that at the farmer's acquisition level, the factors influencing added value are the number of broiler chickens and production costs. At the broiler chicken trader level, the selling price of broiler chickens, the number of broiler chickens and production costs have no significant effect on the added value obtained.

Keywords: broiler, breeders, and traders

INTRODUCTION

Profit or net income is the primary goal of market players, such as broiler supply chain players. In the broiler chicken supply chain in Kota Kupang, there are differences in the time required by broiler chicken breeders and traders. It is suspected that there are differences in profits obtained by broiler chicken breeders and broiler chicken traders due to differences in production time and costs.

The supply chain is a coordination system between human resources, information activities, and other resources that move products from producers to consumers. (Rahmawan 2017) There are three main parties in the broiler chicken supply chain: chicken breeders (suppliers), broiler chicken traders, and household buyers (customers).

Broiler chicken breeders need quite a long time to produce broiler chickens ready to be marketed, so the production costs are high. The time required by broiler chicken breeders in one production period is a primary consideration in determining the selling price of marketed broiler chicken products. According to Ratnasari et al. (2015), broiler chickens are marketed at a live weight of 1.3–1.6 kg per chicken and are reared for 5–6 weeks. The rise and fall of production costs in the broiler chicken farming business will impact the rise and fall of broiler chicken meat products marketed. The production costs that broiler chicken farmers must incur consist of two types of costs, namely, fixed costs and variable costs. Fixed costs incurred by broiler chicken farming include depreciation of cages, equipment and taxes, while costs incurred for variable costs include feed costs, medicine costs, labour and electricity costs. Inputs that significantly influence production costs are feed, DOC and medicines. Added value is the increase in value or selling price of certain commodities due to the processing process, extending the storage, transportation or processing period. (Rianti et al, (2022).

In this research, it is essential to analyze added value to see the level of justice obtained by breeders and traders. This research examines the added value obtained by broiler chicken breeders and broiler chicken traders in Kota Kupang. Based on the ideas above, research was conducted entitled Value Added by Market Players in the Broiler Chicken Supply Chain in Kota Kupang.

RESEARCH METHODS

Sample Determination Method

The population of this study consisted of broiler chicken entrepreneurs and broiler chicken traders spread across Kupang City. The market determination method is based on a census, namely taking the entire market population as the overall sample. The method for determining trader respondents uses a non-proportional random method. Non-proportional random technique that every member of the population has the same chance.

The method for determining sample markets uses the census method; namely, all markets in Kota Kupang are used as samples with a total of 5 markets. The method for determining sample traders uses a non-proportional random method. This method is used because every broiler chicken trader has the same opportunity to be used as an example trader. The number of sample traders was as many as five from each market, so the total sample traders were 25. The method for determining sample breeders was snowball sampling by tracing breeders supplying broiler chickens to five markets in Kota Kupang. The number of sample breeders taken was 25, supplying broiler chickens to markets in Kota Kupang.

Types and Sources of Research Data

Primary data consists of respondents' data, including gender, age, education, family responsibilities, and the length of the business they run. Data on broiler farming business actors: DOC purchase price, feed costs, cage depreciation costs and selling price of broiler chickens per head to traders. Broiler chicken trader data: the purchase price per chicken from broiler chicken entrepreneurs, the cost of depreciation of the cage, and the selling price of broiler chickens per head to consumers. Secondary data includes data obtained from the institution concerned, such as data from the livestock service and literature closely related to this research.

Data analysis

According to (Ramli and Anggraini (2012), the Hayami method of added value analysis is a method that estimates changes in the value of raw materials after receiving treatment. Data analysis for objective one was obtained using descriptive, added-value methods. (Hayami 1987) Added value is the added value of a commodity due to the treatment given to the commodity in question; the added value analysis used in this research is the method (Hayami et al. 1987), with the steps taken to analyze the added value of the method these are:

a. Create a commodity flow that shows the form of the commodity, location, storage time, and the treatment given to the commodity in question.
b. Identify every transaction that occurs according to financial calculations.

Comparison of added value obtained by breeders and traders

Test the statistical difference in added value between breeders and traders based on decision-making if the sig value. (2-tailed) < 0.05, then there is a significant difference between the average added value obtained by breeders and broiler chicken traders in Kota Kupang. On the other hand, if the value is sig. (2-tailed) > 0.05, no significant difference exists between the average added value obtained by broiler breeders and traders in Kota Kupang.

Data analysis for objective 2 used multiple linear regressionulang yo analysis, namely, factors influencing the added value obtained by actors in the broiler chicken supply chain. Linear regression analysis is a statistical technique used to explain independent variables against dependent variables. It is using analysis in software using SPSS 22.

$$Ytrader=a+b\_1\ X\_1+b\_2\ X\_2+b\_3\ X\_3+e$$

$$Ybreeder=a+b\_1\ X\_1+\ b\_2\ X\_2+\ b\_3\ X\_3+e$$

RESULTS AND DISCUSSION

Added Value for Broiler Chicken Breeders and Traders

Added value occurs because a commodity undergoes processing, transportation and storage in production. The discussion of added value is divided into three parts: a). The conversion factor shows the amount of output produced from one input unit. b). The direct labour coefficient shows the labour required to process one input unit. c). The output value shows the output value produced from one unit.

Table 1 Added value of broiler chicken breeders in Kota Kupang

Output, Input, Price		Formula	Breeder	Trader
1	Output Production Results (Kg)	a	8.040,8	383,040
2	Raw Material Input (Kg)	b	4.962	71,820
3	Labor Input (HOK)	c	44	38
4	Conversion factor	d = a: b	1,620	5,333
5	Labor Coefficient	e = c: b	0,009	0,529
6	Output product price (Rp/kg)	f	25.621	33.550
7	Average Wage (Rp/HOK)	g	48.371	43.333
Revenue, Income and Added Value				
8	Raw Material Input Price (Rp/kg)	H	10.000	10.880
9	Other input contributions (Rp/kg)	i	30.000	150.000
10	Output product value (Rp/kg)	j = d x f	41518,206	178933,3
11	a. Added Value (Rp/kg)	k = j-h-i	1.518	18.053
	b. Value Added Ratio (%)	i = k: j x 100%	3,657	10,089
12	a. Labor Income (Rp/kg)	m = e x g	428,925	22927,513
	b. Labor Department	n = m: k x 100%	28,252	126,999
13	a. Profit (Rp/kg)	o = k-m	1.089	-4.874
	b. Profit Rate (%)	p = o: k x 100%	71,748	-26,999
Remuneration for factors of production				
14	Margins	q = j-h	31.518	168.053
	a. Labor Income (Rp/kg)	r = m: q x 1001%	1,361	13,643
	b. Other Input Contributions	s = I: q x 100%	0,012	0,006
	c. Company Profits	t = o: q x 100%	3,456	-2,900

Source: Primary data analysis 2023

Table 1 shows that broiler chicken farmers buy raw material input in feed IDR 10,000.00/kg; on average, farmers sell output (broiler chickens) of IDR 25,621.00/kg. The conversion factor for broiler chicken breeders is 1.620, which means that every input of IDR 1,000.00 will produce a product of IDR 1,620.00 or an additional IDR 620.00. The results of the conversion factor of this research are more significant than those conducted by (Miftah et al. (2018) with the title analysis of the added value of processed palm sugar from the joint venture group palm sugar. The research results show that the conversion factor is 0.1818.

The labour coefficient for broiler chicken farmers is 0.009 HOK/period. The labour coefficient is obtained from the division between labour input and raw material input. Labour wages at the farmer level are IDR 48,371/HOK. This value is smaller than research conducted by (Syarif et al. 2013) entitled Analysis of the added value of beef floss in the Mutiara Hj home industry. Mbok Sri in Kota Palu. The research results show that the labour coefficient obtained is IDR 0.37 HOK.

The contribution of other inputs is the division of the total other inputs by the number of raw materials used. Based on this research, the contribution of other inputs to broiler chicken breeders is IDR 30,000.00/kg or 72.25% of the output value of broiler chicken breeders; the contribution of other inputs consists of medicines.

The research results show that broiler chicken breeders produce an added value of IDR 1,518.00/kg live weight (3.65% of output value), with a value-added ratio of 3.657%. According to (Mardesci, 2019), there are three categories of added value: 1) low category if the value-added ratio is <15%, 2) medium category if the value-added ratio is 15%–40%, 3) high category if the value-added ratio is >40%. Added value is obtained from the reduction between output minus the price of raw materials and other input contributions and a profit of IDR 1,089.00/kg (2.62% of the output value and 6.97% of the margin). The results of this research are smaller than research conducted by (Badri 2019) with other livestock commodities, namely Etawah crossbreed goat milk products, with the added value produced from fresh milk into pasteurized milk of IDR 10,491/lt.

The profit obtained by the farmer was IDR 1,089.00, with a profit percentage of 71.748%. Profits are obtained from added value minus labour income. The results of this research

are greater than those conducted by (Rahmi and Trimo 2020) in Genteng village, Sukasari subdistrict, Sumedang district. The research results show that processing tomato raw materials has a profit percentage of 64.73%.

Table 1 shows that broiler chicken traders buy raw material input in the form of feed for an average of IDR 10,880.00/kg, and on average, traders sell broiler chickens for IDR 33,550.00/kg. 6.08% of the output value is raw materials. The conversion factor for broiler chicken traders is 5.333, which means that every input of IDR 1,000.00 will produce a product of IDR 5,333 or an additional IDR 4,333.00. The conversion factor is obtained from the division between output and input.

This research shows that the labour coefficient at the broiler chicken trader level is 0.529 /period. The contribution of other inputs is the division of the total other inputs by the number of raw materials used. Research data shows that the contribution of other inputs to broiler chicken traders is IDR 150,000.00/kg. Other input contributions include transportation and telephone (communication).

The research results show that broiler chicken traders obtain an added value of IDR 18,053.00/kg live weight (10.08% of the output value); this value is obtained from the reduction between the output value and the contribution of other inputs and the price of raw material inputs. Even though the added value is at the wholesaler level, the share of labour is significant, so traders experience a loss of IDR 4,874.00/kg with a loss percentage of 26.999%; profits are obtained from the reduction between added value and labour income. Broiler chicken traders can still do business because the losses incurred are included in labour costs. According to Wantasen and Paputungan (2017), the law of diminishing returns applies to the production function. If one labour input is increased and another input remains constant, the output resulting from each additional labour force will decrease.

The difference in added value obtained by broiler breeders and traders in Kota Kupang is significant. Breeders obtain smaller added value compared to the added value obtained by traders. Breeders gain an added value of IDR 1,518.00/kg in live weight, while for traders, it is IDR 18,053.00/kg. The difference in the added value obtained is IDR 16,535.00/kg live weight. A similar thing was also conveyed by (Krova et al. 2021) in a study entitled Institutional Innovation and a Review of the Ban on Abandoning Female Cattle to Increase the Added Value of Beef Breeders.

Test results of different added value obtained by broiler chicken breeders and traders in Kota Kupang. The results of the test analysis in Table 2 show that the sig. (2-tailed) of 0.394 > 0.05 and t statistic -0.860 < 1.96 (t0.05). These results indicate no significant difference between the added value obtained by breeders and broiler chicken traders in Kota Kupang is accepted.

Factors that Influence the Added Value of Broiler Chicken Breeders and Traders

Tests included the F and t-tests to determine the factors that influence the added value of broiler chicken farmers in Kupang City. The F test determines the effect of all independent variables on the dependent variable. The t-test shows the effect of each independent variable on the dependent variable.

The F test determines the effect of all independent variables on the dependent variable. The results of the F test analysis show that the significant value is 0.000 <0.05. shows that the independent variables consisting of the selling price of broiler chickens, the number of broiler chickens, and production costs all significantly affect the added value obtained by broiler chicken farmers in Kota Kupang. The t-test shows the effect of each independent variable on the dependent variable.

Table 2. Breeders' F Test Results

Anova						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	33753414835.240	3	1125113945.080	16.818	.000[b]
	Residual	1404846926.760	21	66897472.703		
	Total	4780188762.000	24			

a. Dependent Variable: Added Value

b. Predictors: (Constant), Production Costs (X3), Selling Price of Broiler Chickens (X1), Number of Broiler Chickens (X2)

From the results of the F test carried out, it was found that the selling price of broiler chickens (X1), the number of broiler chickens (X2) and production costs (X3) simultaneously had a significant effect on the added value obtained by farmers. It is based on a sig value of 0.000 < 0. 005. The variation in added value can be explained by the variables selling price of broiler chickens (X1), number of broiler chickens (X2) and production costs (X3) of 70.6%.

Table 3. R square test results for breeders

Model Summary				
Model	R	R Square	Adjusted R Square	Std. An error in the estimate
1	.840[a]	.706	.6664	8179.08752

a. Predictors: (Constant), Production Costs (X3), Selling Price of Broiler Chickens (X1), Number of Broiler Chickens (X2)

Based on the results of the analysis in Table 3, it is known that the R Square value is 0.706. It means that the diversity of added value Y can be explained by 70.6% by the simultaneous use of variables X1, X2, and X3, and other factors outside the research model influence the remaining 29.4%. The results of the t-test analysis in this study can be seen in Table 4.

Table 4. Results of analysis of the influence of each independent variable on the added value obtained by broiler chicken farmers in Kota Kupang

Model		Unstandardized Coefficient		Standardized Coefficients	T	Sig.
		B	Std Error	Beta		
1	(Constant)	118072.421	65955.966		1.790	.088
	Selling price of broiler chickens	-1.463	1.351	-.129	-1.083	.291
	Number of broiler chickens	7.258	2.517	.829	2.883	.009
	Production cost	-.001	.000	-1.528	-5.300	.000

Source: Primary data analysis 2023

Based on the analysis results in Table 4, a constant value of 118072.421 was obtained. This figure indicates that if the selling price of broiler chickens (X1), the number of broiler chickens (X2) and production costs (X3) are assumed not to change, then the farmer value-added variable (Y) will increase. Based on the analysis above, a multiple linear regression model was obtained: Y = 118072.421 – 1.463 + 7.258 – 0.001. The coefficients X1 and X3 have a negative sign, while the coefficient X2 has a positive sign. It can be assumed that an increase in X1 and X3 will cause the added value obtained to decrease. While X2 has a positive sign, which means it is in the same direction as the added value obtained, an increase in the number of broiler chickens will cause the added value obtained to increase.

The selling price of broiler chickens (X1) has a significant value of sig. 0.291> 0.05 indicates that the selling price of broiler chickens does not have a real influence on the added value obtained. The regression coefficient for the selling price of broiler chickens (X1) obtained was -1.463. This coefficient indicates a negative relationship between the selling price of broiler chickens and the added value obtained. An increase of Rp.1.00 in the selling price of broiler chickens causes an added minus value of -Rp. 1,463.00. With the assumption that the other independent variables have a fixed value, the added value decreases because the portion of the increase in the selling price of broiler chickens is smaller than the portion of the increase in production costs incurred. These results differ from research conducted by (Ginting et al. (2021) on the International Market. This research aims to analyze North Sumatra processed cocoa's competitiveness in the international market and the factors influencing its competitiveness in the Malaysian and Singaporean markets. The results of research on cocoa prices have a significant effect on competitiveness in international markets.

The number of broiler chickens (X2) has a significant value (sig.) 0.009 <0.05, indicating

that the number of broiler chickens has a significant influence on the added value obtained, and the regression coefficient value is 7,258. This coefficient shows that there is a positive influence on the number of broiler chickens on the added value obtained by farmers, and an increase in the number of broiler chickens by one head will increase the added value of broiler chicken farmers by Rp. 7,258.00 assuming the other independent variables are fixed values.

Production costs (X3) have a significant value (sig.) 0.000<0.05, explaining that production costs have a significant influence on the added value obtained, and the regression coefficient value of -0.01 is negative. It indicates that every Rp. 1.00 increase in production costs will cause the added value to decrease by Rp. 0.01, assuming other variables remain constant.

Based on the F test on broiler chicken traders in Kota Kupang, the results showed that the number of broiler chickens (X1), the selling price of broiler chickens (X2) and production costs (X3) simultaneously did not have a significant effect on the added value obtained by traders. It is based on the sig value. 0.106 > 0.05.

Table 5. Trader F test results

Anova						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1063379382.534	3	354459794.178	2.303	.106[b]
	Residual	3231761213.626	21	1538933991.125		
	Total	4295140596.160	24			

a. Dependent Variable: Added Value

b. Predictors: (Constant), Production Costs (X3), Selling Price of Broiler Chickens (X1), Number of Broiler Chickens (X2)

From the R square analysis results in Table 6, we get a value of 0.248. It means that the diversity of added value Y can be explained by 24.8% by the simultaneous use of variables X1, X2, and X3, and other factors outside the research model influence the remaining 75.2%.

Table 6. R square test results for traders

Model Summary				
Model	R	R Square	Adjusted R Square	Std. An error in the estimate
1	.498a	.248	.140	12405.37751

a. Predictors: (Constant), Production Costs (X3), Selling Price of Broiler Chickens (X1), Number of Broiler Chickens (X2)

Source: 2023 analysis data

Based on the analysis results in Table 7, a constant value of -13288.913 is obtained. This figure indicates that if the selling price of broiler chickens (X1), the number of broiler chickens (X2) and production costs (X3) are assumed not to change, then the trader's added value variable (Y) will increase. Based on the analysis results the following multiple linear regression model was obtained: Y = -13288.913 + 0.689 – 47.759 + 0.001. The coefficients X1 and X3 have a positive sign, while the coefficient X2 has a negative sign. It can be assumed that X1 and X3 are in the same direction as the added value obtained. As the selling price of broiler chickens and production costs increase, the added value obtained will also increase. Meanwhile, X2 has a negative sign, which means it is in the opposite direction of the added value obtained; every increase in the number of broiler chickens will cause the added value obtained to decrease.

The selling price of broiler chickens (X1) has a significant value (sig) of 0.095 > 0.05, explaining that the selling price of broiler chickens has an insignificant influence on the added value obtained, and the regression coefficient value of 0.689 is positive. An increase of IDR 1.00 in the selling price of broiler chickens will increase the added value obtained by broiler chicken traders by IDR 0,689.00, assuming other variables remain constant.

Table 7. Analysis of the influence of each independent variable on the added value obtained by broiler chicken traders in Kota Kupang

Model	Unstandardized Coefficient		Standardized Coefficients	T	Sig.
	B	Std Error	Beta		
1 (Constant)	-13288.913	26241.047		-.506	.618
Selling price of broiler chickens	.689	.395	.381	1.746	.095
Number of broiler chickens	-47.759	93.092	-.692	-.513	.613
Production cost	.001	.001	.842	.613	.546

Source: Primary data analysis 2023

The number of broiler chickens (X2) has a significant value (sig) of 0.613 > 0.05, and the regression coefficient value of -47,759 is negative. It means that the number of broiler chickens (X2) does not have a significant influence on the added value obtained by broiler chicken traders (Y), and an increase in the number of broiler chickens will cause the added value obtained by broiler chicken traders to decrease by -Rp. 47,759.00, assuming other variables remain constant. It differs from what was conveyed by (Yosifani et al., 2021) in a study entitled The Added Value of Soybeans to Yellow Tofu and the factors that influence it. The research results show that one of the factors that has a significant influence on added value is capacity or production amount.

Production costs (X3) have a significant value (sig) of 0.546 > 0.05, and the regression coefficient value of IDR 0.001 is positive. It means that production costs (X3) do not have a significant influence on the added value obtained by broiler chicken traders (Y), and an increase of IDR 1.00 in production costs will cause the added value obtained by broiler chicken traders to increase by IDR 0.001 with the assumption other variables remain constant.

CONCLUSION

Based on the results and discussion of this research, it can be concluded that the added value obtained by business actors in the broiler chicken supply chain in Kota Kupang: The added value obtained by farmers is IDR 1,518.00/kg live weight and the added value obtained by traders is IDR 18,053.00/kg live weight. Factors influencing the added value obtained by business actors in the broiler chicken supply chain include the following: At the farmer level, broiler chickens' selling price does not significantly influence the added value obtained. In contrast, the number of broiler chickens and production costs significantly influence added value. At the trader level, the selling price of broiler chickens, the number of broiler chickens and production costs do not significantly affect the added value obtained.

REFERENCES

Mardesci, H. 2019. Analisis Nilai Tambah Permen Air Kelapa. Jurnal Teknologi Pertanian, 8(2), 112-116.

Rizky, A.B. 2019. Analisis Nilai Tambah Diversifikasi Produk Susu Kambing Peranakan Etawa (PE) Di Peternakan Ranting Ameh, Kenagarian Bukik Batabuah (Diploma Thesis, Andalas University). http://scholar.unand.ac.id/42297/

Wantasen, E., & Paputungan, U. 2017. Faktor-faktor yang mempengaruhi nilai tambah usaha ternak sapi di Desa Tumaratas Kecamatan Langowan Barat. ZOOTEC, 37(2), 294-302.

Ginting, N. M., Rahmanta, R., & Lindawati, L. 2021. Analisis Daya Saing Kakao Olahan dan Faktor-Faktor yang Mempengaruhi Daya Saing Kakao Olahan Provinsi Sumatera Utara, Indonesia di Pasar Internasional. Agro Bali: Agricultural Journal, 4(3), 425-437.

Hayami, Y., Kawagoe, T., Morooka, Y., & Siregar, M. 1987. Agricultural marketing and processing in upland Java: A perspective from a Sunda Village. https://hdl.handle.net/20.500.12870/4023

Krova, M., Sobang Yohanis, U. L., Lalus Matheos, F., Morin, S. U. M., & Nendissa, D. R. 2021. Innovation of institutions and prohibition re-review outer-island marketing of cows to increase value added of beef cattle. RJOAS 11(119): 174–85. DOI 10.18551/rjoas.2021-11.20

Ramli, M., & Anggarini, I. P. (2012). Nilai Tambah Pengolahan Ikan Salai Patin (Kasus di Desa Penyasawan Kecamatan Kampar, Kampar). Berkala Perikanan Terubuk,40(2), 85-95.

Miftah, H., Yoesdiarti, A., & Maulana, M. H. 2018. Analisis nilai tambah olahan gula aren di kelompok usaha bersama (KUB) Gula semut aren (GSA). Jurnal Agribisains, 4(2), 8-14.

Rahmi, I., & Trimo, L. 2019. Nilai Tambah Pada Agroindustri Dodol Tomat (Studi Kasus Pada Usaha Kelompok Wanita Tani Mentari Desa Genteng, Kecamatan Sukasari, Kabupaten Sumedang). Journal of Food System and Agribusiness, 3(1): 1–7.

Ratnasari, R., Sarengat, W., & Setiadi, A. 2015. Analisis pendapatan peternak ayam broiler pada sistem kemitraan di Kecamatan Gunung Pati Kota Semarang. Animal Agriculture Journal, 4(1), 47-53.

Rianti, T. S. M., Syanthori, A. D., & Sari, D. K. 2022. Nilai Tambah Pengolahan Sambal Boran Kemasan Pada UKM Silvana Food. Media Agribisnis, 6(1), 23-29.

Syarif, H. M., Safri, M., Abd Rauf, R., & Howara, D. 2013. Analisis nilai tambah abon sapi pada industri rumah tangga mutiara Hj. Mbok Sri di Kota Palu. e-J.Agrotekbis 1 (4) : 370-376.

Yosifani, D. Y., Satriani, R., & Putri, D. D. 2021. Nilai tambah kedelai menjadi tahu kuning dan faktor-faktor yang memengaruhinya. Jurnal SEPA, 18 (1): 101-111. https://doi.org/10.20961/sepa.v18i1.47688