The Influence of Business Management on Income and The Risk Of Income in The Broiler Chicken Farming

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ABSTRACT. Broiler meat is an important commodity to support national meat production and increase farmer's income. However, the broiler farmers are generally in a weak position in terms of poultry management. They require best management practices for increasing the business volume and income as well. This study aims to study the achievement of broiler farming business management, and the influence of the business management on income and its income in their broiler farms. This research was conducted in Lamongan regency. It used the primary data from selected the broiler farmers. The analysis method used was descriptive approach and multiple regression. The result shows that the achievement of broiler business management comprises planning 67.6 percent, organizing 65.68 percent, directing 84.18 percent, coordination 75.43 percent, and control 77.58 percent. The management of broiler business has a positive effect on income but negatively affects the income risk. In addition, the income of broilers is positively influenced by the cage size, experience, and business volume, and conversely, this is negatively affected by seed prices and feed prices. Meanwhile, the income risk of broiler business is positively influenced by seed price and feed price, and contrarily it is negatively influenced by the size of cage and the business volume.

Keywords: *cage size, plasm-core, poultry, seed*

JEL Classification: D19, L21, Q12

INTRODUCTION

In Indonesia, broiler chicken is a promising business commodity, as a source of income and animal protein for poor households. Poultry business of broiler has also contributed significant return and source of income for the farmer (AL-Masad, 2010; Ike & Ugwumba, 2011; Mustafa & Ashfaq, 2012; Suwarta, Irham, & Hartono, 2012).

The performance of the broiler industry at the national level is presented as follows. The broiler production in 2010 dominated a national meat demand, contributing as much as 1.21 million tons (51.33 percent) from total meat production 2.37 million tons. Meanwhile, the meat consumption is fulfilled by broiler as much as 3.80 kg (49 percent), and in 2011 rose to 60 percent. The total demand of broiler chicken is greater than the amount of its production. In 2010, the amount of production (supply) broiler achieved 3.36 million tons, while the amount of demand was 4.11 million tons, or faced the deficit of 749 thousand tons (Simatupang & Maulana, 2010).

Problems in broiler chicken production must be overcome, namely, the country has a deficit, and demand for meat will continue to increase (Simatupang & Maulana, 2010). From these problems, it is necessary to increase the production and obtain an opportunity of the profitable poultry business.

Management is an important factor for overcoming the problem of broiler chicken production. Therefore, it is necessary to consider how to manage the business of broilers optimally. A properly business management could increase income and reduce the risk of income of broilers farmer.

The business management is one of the indirect independent variables that is important, and significantly determines the success of a business.

A good management can improve the productivity and profit of the poultry industry. An 88 percent of business failures are due to ineffective management (Downey & Erickson, 1987). According to Ochieng et al. (Ochieng, Owuor, Bebe, & Ochieng, 2011), by adopting a full intervention management package, the performance will be more productive rather than modifying and selective.

It finds that a broiler business income is negatively affected by (a) the seed price, (b) the feed price, and (c) the age of the farmer (Suwarta et al., 2012). Conversely, broiler farm income is positively influenced by (a) the area of the cage (business volume), (b) the partnership, and (c) the manufacturer's core. According to (AL-Masad, 2010), the profitability of broiler farming is influenced by the selling price of the broiler, doc price, feed price, labor cost, medicines cost, depreciation cost of building and machinery maintenance, heating and lighting cost, mortality rate and FCR. (Bandara & Dassanayake, 2006) state that the profit of farmers is influenced by broiler price per kg of live weight, chicken price, feed price, cost of medicine, vitamins, chemical (MVC), and FCR. (Hartono, 2005) finds that poultry business profits are influenced by doc real prices and real prices of feed, while the real price of drugs, real wages and cages have no effect.

According to AL-Masad, 2010; Ike & Ugwumba, 2011; Mustafa & Ashfaq, 2012; Suwarta., Irham., Hartono, 2012), it appears that the income function has not included the management factor as an independent variable.

(Suwarta et al., 2012) states that by cross-table analysis of the influence of broiler farm management achievement on income, it shows that the management pattern of independent farmer supports the plasm-core farmers and independent plasm-core ranchers, yielding the achievement of farm business management equal to 68.38, 80.38 and 73.93 percent, respectively. Those indicate that the farm management pattern shows a significant influence on farm income. The achievement of plasm farmer management shows influence more significant than the independent farmer to the increase of income (0,0862, α=0.01). Meanwhile, the management achievement of a core of the manufacturer has more influence than plasm farmer to increase income (0,0373, α=0.05)

The poultry business management as a production factor is thought to have an effect on an income function. By reviewing the function of income, it is expected to find the factors that affect the broiler business income and its risk (Suwarta et al., 2012). Connecting a management business in the income function will provide opportunity to find a model of income function and its risk, and improve a resource management of broiler farm.

Based on the description above, the problems are stated in term of business fam management. This research aims to explore the effect of business management on income and income risk of farm broiler chicken.

RESEARCH METHOD

East Java province notes in three large provinces producing broiler chicken with West and Central Java, with the population is more than 50 million broilers. In 2010, the East Java province produced 57 million chickens and increased 150 million chickens in 2011.

The research was conducted in Lamongan regency, where there was also as central production area of broiler chicken. The Broiler production in Lamongan regency is the highest compared other areas in East Java. The district areas with the highest population of broiler chicken were selected, that was Muntup, Sugio and Kedungpring district.

The primary data sampling was conducted to obtain the following variables. The personal character of broiler farmer was explored, including age, education, experience, and type of business pattern. The Primary data of poultry business conditions were broiler population, size of the cage, a volume of feeding, usage of drugs-vitamins, labor, type of cage, harvest age, and feeding mode. The primary data management included planning, organizing, directing, coordinating, and controlling. Meanwhile, the more detailed primary data were done by recording and calculating a price variable such as feed, seed, vitamin, drug, chemical, labor wages, and broiler.

The determination of the number of samples with the consideration that is a statistical analysis

would be multiple linear regression. It requires minimum samples of 30 broiler farmer. This research selected 50 broiler farmers. This is expected to meet the standard sample size for analysis.

The research used random sampling method. The number of samples was 50 broiler farmer commercial (with 500 broilers or its above) including plasm farmers. On the other side, the independent farmers were not classified as commercial businesses (below 500 broilers).

The analysis method for accomplishing the factors that influence the income and the risk of income of broilers business used a function as follows:

$$\text{Ln } I^* = \beta_0 + \beta_1 \ln Px_1^* + \beta_2 \ln Px_2^* + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 X_5 + \beta_6 \ln X_6 + \beta_7 \ln X_7 + \beta_8 D_1 + \beta_9 D_2 + \beta_{10} D_4 + \beta_{11} D_5 + \epsilon_i$$

$$\text{Ln } \epsilon i^2 = \beta_0 + \beta_1 \ln Px_1^* + \beta_2 \ln Px_2^* + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 X_5 + \beta_6 \ln X_6 + \beta_7 \ln X_7 + \beta_8 D_1 + \beta_9 D_2 + \beta_{10} D_3 + \beta_{11} D_4 + \epsilon_i$$

in which,

I^*	: real income (Rp)
ϵi^2	: risk of income
PX_1^*	: real seed price
PX_2^*	: real feed price.
X_3	: cage size (m2)
X_4	: age of farmer
X_5	: education (year)
X_6	: experience (years)
X_7	: business management
D_1	: dummy variables, d1=1 if broiler business volume exceeds average volume, D1=0 if other.
D_2	: dummy variables, D2=1, divided feeding method, D2=0 if other
D_3	: dummy variables, D3=1, if harvest age is shorter than average age, D3=0 if other
D_4	: dummy variables, D4=0 if broilers farming as a side job, D4=1 if other
ϵ	: error,
β_0	: constant,
β_1-β_7	: elasticity of independent variable,
β_8 - β_{11}	: parameter of dummy variable.

If the model of regression testing shows symptoms of heteroscedasticity, then to determine the percentage of the influence of independent variables on the dependent variable used statistical Likelihood Ratio (LR). LR comes from the maximum limit and maximum constrained (Theil, 1971).

The descriptive analysis of farming business management was conducted to determine the performance of broiler farm management, including (a) the planning, with a maximum score of 33, (b) the organizing, with a maximum score of 19, (c) the directing, with a maximum score of 22, (d) the coordinating, with a maximum score of 14, and (e) the controlling, with a maximum score of 19. The total score of management will find a value of the maximum of 107 and minimum of 33.

RESULT AND DISCUSSION

Income of Broiler Farm

The result of model analysis of broiler business income (Table 1), shows that the coefficient of determination (R2) = 0.993, it means that 99.3 percent of broiler business income is influenced by independent variable in the model. Meanwhile, 0.7 percent of broiler poultry business income is influenced by independent variables outside the model. This statistical analysis shows that the model can be used in explaining the income function of broilers farm.

Table 1. Estimate of Income Function of Broiler Farm

No.	Estimate Variables	Coefficient
1	Seed price (X_1)	-0.658**
2	Feed price (X_2)	-0.571*
3	Cage size (X_3)	0.372**
4	Age of farmer (X_4)	0.027-ns
5	Education (X_5)	0.001-ns
6	Experience (X_6)	0.032*
7	Business management (X_7)	0.432**
8	Dummy Variables	
	Business volume (D_1)	0.036*
	Feeding method (D_2)	0.019-ns
	Harvest age (D_3)	-0.041-ns
	Farming as a site job (D_4)	0.027-ns
	Constant	25.189**

N=50, R2=0.993, F=252.909**
**, *, and ns denote a level of probability (α) at <0.01, <0.05 and >0.05 respectively

Meanwhile, the estimate variables that show a significant effect (p-value 0.05) on the income of broilers business are: (i) the seed price, negatively affected, (ii) the feed price, negatively affected, (iii) the cage size, positively affected, (iv) the experience, positively affected, (v) the business management, positively affected, and (vi) the volume of business, positively affected. On the other side, the variables of age, education, feeding method, harvest period and farming job do not

indicate a significant effect on income of the broiler farm.

Seed price (PX1). The price of seeds shows a negative affect significantly on broiler farm income, with regression coefficient -0.658 (α=0.01). This means that if the price of seeds rises of 10 percent, it will decrease the farm income of 6.58 percent. The work of other researchers also finds results and corresponding directions, including Suwarta (2011) finds the regression coefficient 0.989 (α=0.01); Hartono (2005) obtains the number of -0.486 (α=0.05); Mustafa and Ashfaq (2012) discovers -0.671 (α=0.01); and Dassanayake and Bandara (2006) finds -0.671 (α=0.01)

Price of feed (PX2). The feed prices negatively affect broiler farm income, with the regression coefficient 0.571 (α=0.05). This means that if there is an increase in feed prices of 10 percent, it brings about a 5.7 percent decrease of broiler business income. Conversely, a 10 percent decrease in feed price will improve 5.7 percent of broiler business income. Studies of other researchers also obtain similar results. Suwarta (2011) obtains regression coefficient 0.8438 (α=0.01). The similar coefficient found by Hartono (2005) of -0.340 (α=0.05); Mustafa and Ashfaq (2012) of -0.701 (α=0.01); and Dassanayake and Bandara (2006) of -3.021 (α=0.01).

Size of the cage (X3). The coverage area of the cage significantly has a positive effect on broiler poultry business income, with regression coefficient 0,372. This means that if the cage area extended by 10 percent, the income of broiler business will increase 3.72 percent. Suwarta (2011) and Hartono (2005) obtain the similar result with regression coefficient 0.04169 (α=1) and 0.701 (α=0.05).

Experience (X6). The experience has a positive effect significantly on broiler poultry business income with regression coefficient 0.032 (α=0.05). It means that every experience increasing 10 percent will increase 0.32 percent in broiler business income. The similar finding is also found by Amos (2016). Experience is the length of time for farmers to carry out and develop the broiler business. The long experience of farmers leads to accumulating more management knowledge about broilers business. It generates the more skilled for a farmer in managing the broiler farm.

Business management (X7). The variable of business management shows a significantly positive effect on broiler business income, with a regression coefficient of 0,432 (α=0.01). It means that if the business management of broilers improves 10 percent, the income of broiler business will increase 4.32 percent. The research of Suwarta (2011), with the cross-table analysis, is found that broiler business management positively affects the income of broilers business.

The achievements of broiler farm management determined by management pattern. The pattern consists of three management group: (i) the supported plasm-core cooperation which produces a unit of production equal to 80.38 percent; (ii) the independent plasm-core cooperation which produces a unit of production equal to 73.93 percent; (iii) the independent farmer which produces a unit of production equal to 68.38 percent (Suwarta, 2011).

Business volume. The dummy variable of the volume of broiler business reflected a business volume measurement or total production of broiler farm. It means that the higher business volume will generate an increase in farm income. This is in accordance with the formulation of the dummy in the equation, in which it is found a positive regression coefficient of 0,036 (α=0.05). This can be said that an increase of income of broilers business also as a result of improving efficiency in farm management.

Income Risk of Broilers Farm

The analysis result of income risk function (Table 2) obtains the value of $R2$=0.997. It means that 99.7 percent of broiler business income risk is influenced by the independent variable in the model, while 0.3 percent remaining is influenced by independent variable outside the model. In addition, the value of F-test=505.855 is (α=0.01) which means independent variable in the model jointly affect the income of broilers business. With these results, the model can be used to describe findings of the research.

The estimate variables of income risk function showing a significant effect on the income of broilers business are: (i) the seed price, positively affected (α=0.10), (ii) the feed price, positively affected (α=0.01), (iii) the cage size, negatively

affected (α=0.01), (iv) the business management, negatively affected (α=0.01), and (vi) the volume of business, negatively affected (α=0.10). On the other side, the variables of age, education, experience, feeding method, harvest period and farming job do not indicate a significant effect on income risk of the broiler farm.

Seed price (X1). The price of seeds shows a positive effect on broiler business income, with a regression coefficient of 1.389. It means that if the price of seed rises 10 percent, the income risk of broiler business will increase 13.89 percent. Conversely, if the price of seed drops 10 percent, it will stimulate 13.89 percent decline in the income risk of broilers business.

Table 2. Estimate of Income Risk Function of Broiler Farm

No.	Estimate variables	Coefficient
1	Seed price (X_1)	1.389*
2	Feed price (X_2)	2.366**
3	Cage size (X_3)	-3.334**
4	Age of farmer (X_4)	0.027-ns
5	Education (X_5)	0.263-ns
6	Experience (X_6)	0.036-ns
7	Business management (X_7)	-2.572**
8	Dummy Variables	
	Business volume (D_1)	-0.286*
	Feeding method (D_2)	0.252-ns
	Harvest age (D_3)	-0.211-ns
	Farming as a site job (D_4)	0.828-ns
	Constant	83.331**

N=50, R2=0.997, F=505.855**
**, *, and ns denote a level of probability (α) at <0.05, <0.10 and >0.10 respectively

Feed prices (X2). The price of broiler feed significantly affected the income risk of broiler farm with a regression coefficient of 2.366. It means that feed price increase by 10 percent leads to 23.66 percent increase to the income risk.

Area of the cage (X3). The area of the cage showed a negative affect significantly on the income risk of broiler business with the regression coefficient of -3.334. It means that expanding 10 percent cage area would lower 33.34 percent the income risk of broiler business.

Business management (X7). The management of broiler business has a significantly negative effect on income risk of broiler business with the regression coefficient of -2.572. It means that if the business management of broilers improves 10

percent, the income risk will decrease 25.72 percent of income risk. The explanation of the effect of business management on income risk is correspondingly discovered with previous discussions

The volume of business (D1). The size of farm business showed a negative influence on the income risk of broiler farm with a regression coefficient of -0.266 (α=0.10). As stated in the previous discussion, the farmer with management pattern of supporting core-plasm cooperation has advantages concerning the income risk of their broiler farm. This cooperation means that the interaction within supported plasm-core is useful to protect farmer against a various risk of the farm, including in risk of decreasing income. The plasm-core organization of the broiler farm can explain risks sharing among parties and manage all resources in the broiler farm.

Farming Management and Its Implication

The analysis of farming business management shows an interesting result. The total achievement of business management of broiler farming discovers a score of 78.62 and is equal to 73.48 percent of the total score of 107. This score comprises a management functions as follow:
i. The planning, with the score of 22.32, and is equal with 67.64 percent of the total score of 33
ii. The organizing, with the score of 12.48, and is equal with 65.58 percent of the total score of 19
iii. The directing, with the score of 18.52, and is equal with 84.18 percent of the total score of 22
iv. The coordinating, with the score of 10.56, and is equal with ideal 74.53 percent of the total score of 14
v. The controlling, with the score of 14.74 score, and is equal with 77.48 percent of the total score of 19

The research generally finds that business management of the broiler chicken farm shows a high achievement, with the score above 65 percent. The highest score is displayed by directing component at 84 percent. Most of the broiler farms require the real action to directly do their farms management. The real steps are more important than other management functions because their farm business is still in a household scale, with a simple organizational structure.

In general, the research encounters the important results. The variables influencing income and risk of income also significantly implicate on the farm business management. Table 1 and 2 indicate variables that show a very significant of regression coefficient with high t-value. Those variables can provide alternative managerial actions for improving the broiler farm and prosperity of the farmer. Those variables are the seed price, the feed price, the cage size, and the business management pattern.

The variables of seed price, feed price, and cage size are relatively easy to define in managerial action in the broiler by the farmer itself. This associates with the subject of the technology or technical management matters in the daily life of the farmer.

The factor that ia relatively difficult to be managed by farmers is business management respecting to participation in core-plasm management. Although it is difficult to manage, the involvement of farmers in the plasm-core organization will gain many benefits. These benefits include increasing from business volume, increasing to income and reducing of business risks.

The economic scale of broiler business is closely related to the income risk (Suwarta, Irham, & Hartono, 2010). The farmers who raise above 5000 broilers encounter the risk income of 65.21. Meanwhile the farmers that have less than 5000 broilers are deal with the higher risk income of 83.23 with F-value=6.001 (α=0.05).

CONCLUSION AND SUGGESTION

The broiler business management of broiler affects the income of broilers. In addition to management, broiler poultry income is also positively influenced by the size of the cage, the poultry experience, and the business volume. The income of broiler business is negatively influenced by the price of seeds and the feed price.

The business management provides negative influence on the income risk of broiler farm. The risk income of the broiler farm is also negatively influenced by the cage size and the business volume.

The business management associates farmer's participation in core-plasm management. The involvement of farmers into the plasm-core organization meets many advantages. These include increasing business volume, obtaining the additional income and reducing of business risks.

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