

SOME FACTORS AFFECTING TO FARM SIZE OF DUCK FARMING

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Abstract- The purpose of this research was to know some factors affecting to farm size of duck farming (case study in Pinrang district, South Sulawesi province, Indonesia). This research was conducted in 2013. Total sample was 45 duck farmers which was selected from 6 regions in Mattiro Sompe sub district, through stratified random sampling. Data were collected through interviews using questionnaires and observation. Multiple regression equation was used to analyze the data. Dependent variable was duck population, while age of respondents, farming experience, land size, education, and income level as independent variables. This research revealed that R^2 was 0.920. Simultaneously, age of respondents, farming experience, land size, education, and income level influenced significantly to farm size of duck farming ($P < 1\%$). Variables which influenced significantly to farm size of duck farming were farmers income ($P < 1\%$) and land size ($P < 5\%$).

Keywords- Duck, Dry System, Factors, Farm-Size.

I. INTRODUCTION

Duck is one of poultry meat and eggs producers. There are two kind of duck maintenance method namely traditional and intensive methods. Traditional method means that ducks are released in the morning until late afternoon, while intensive method, ducks are kept in the stable all day [1]. There are two kind of duck farming systems namely wet and dry system. On a dry cage only provide water for washing the face and drinking activities. Ducks activity is restricted so that the energy obtained from food intended for the production of eggs, and the advantages of a dry cage is to minimize the smell of duck feces. Wet cage is equipped with an enclosure for the needs of the ducks that are used for bathing activity, drinking, swimming, and assist the process of mating [2]. Duck farms of different systems cause differences in the quality of eggs produced. In the intensive farming systems, duck cages with all needs met and served by the breeder [3]. Feeding the programmed coupled with the provision of vitamins and supplements will greatly affect the quality of eggs produced. On wet caged maintenance system, while ducks released in the cage area then duck will look for their own food in the pool or brought streams. Source feed derived from rice fields and river environment in the form of insects, snails, small frogs and so on [4].

There are many similarities between chicken and duck rearing. Breeding is largely similar for both. Ducks have approximately the same housing requirements as chickens, especially when they only require night shelter. If the ducks are outside during the day, just like chickens they will be capable of searching for a large part of their feed [5].

Local duck of Indonesia has the genetic quality and potential to be developed as a prolific egg producer. Ducks are classified as one of waterfowl which belongs to the class Aves, Order Anseriformes, Anatidae family, sub-family anatinae, and genus

Anas. Ducks classified into three types, namely: laying ducks, ornamental ducks and duck meat. Laying ducks reared for their eggs obtained, ornamental ducks kept as ornamental ducks and broiler ducks reared for meat. Farm broiler ducks laying ducks has not been as popular, because it generally needs to be in the market filled with duck meat from culled laying ducks or fattened male ducks [6]. One of which included genus Anas is Indonesia local duck. Almost entirely local ducks in Indonesia are descendants of Indian Runner ducks nation, a nation that is known as duck egg producer and has adapted well to the environment Indonesia since centuries ago. Indian Runner ducks potential as a source of animal food is big enough [7, 8].

Based on 2007 data from the Directorate of Livestock Cultivation Non ruminantia, Director General of Livestock, Ministry of Agriculture, there are 12 species of ducks known Indonesian native who has been widely cultivated. Twelfth local ducks are ducks Cirebon, Tegal duck, duck Magelang, Mojokerto duck, duck Alabio, Bali duck, duck Cihateup, Pitalah duck, duck Centella asiatica, ducks Kerinci, Metaram duck, duck shadow, and ducks Damiaking. Central Java has two types of poultry ducks as commodities that have the potential as a duck [9].

The number of poultry, especially ducks scavenging, has decreased substantially since the disease broke out in 2003. Ducks have been identified as carriers and conveyers of the HPAI H5N1 virus [10]. Alabio duck originally maintained by grazing marshes, rivers or rice. Pattern maintenance is mainly done on the house in the swamp with floating wooden blocks [11]. In Philippine, duck maintenance method was developed to integrate with fish. Ducks maintained above the fish pond [12]. Duck in Europa developed commercially with complex management aspects [13].

The availability of feeds, cost of inputs and housing, use of hired labor, age of respondents and membership of cooperative society had significant

($P > 0.05$) relationship with involvement in duck production [14].

Factors affecting to the size of animal husbandry farms are: commercial production, forage crop acreage, age, education, income level, member of cooperatives and agricultural support [15].

Farmer education level is an indicator of the quality of the population and is the key variable in the development of human resources. In animal husbandry, from the education factor expected to help the community in an effort to increase production and productivity of livestock kept. Adequate education level will have an impact on improving the performance and management capabilities that run the farm [16]. High and low level of education of farmers will instill attitudes towards the use of more modern farming practices and more quickly implement a business [17].

Experience is a factor that greatly determines the success of a business, with his experience breeder will gain valuable guidelines to obtain future business success. Age and experience will affect the ability of farmers farming in running the business. Experienced breeders will be more careful in acting [18]. Raising the experience gained from the parents for generations. Long experience gives an indication that the knowledge and skills of farmers on livestock maintenance management has a better ability [19].

Most of farmers (85%) were young and middle-aged and 70 per cent of them could read and write. Eighty per cent of the respondents were men and 20 per cent were women. Their experiences in duck production ranged from 1 to 5 years [20]. In Philippine duck farmers lacked of technical know-how such as farm size and management practices; access to capital and extension service [21]. Business scale is the amount of effort that is linearly determines the rate of return (yield) which may be obtained from the livestock traders physical production that will be achieved. Business scale becomes important to be taken into account in livestock trading business activities in relation to achieve what is termed as an economic of scale [22].

Key to the success to produce optimum financial income and to maintain the sustainability of the business scale is the availability of a wealth of assets per business scale with adequate amounts and in appropriate combinations [23]. Revenue is one of the most important elements of the formation of the income statement in a company. Revenue can be defined as revenue and may also be interpreted as income. according to Financial Accounting Standards words "income is defined as income and words revenue as revenue, earnings (income) includes both revenue and profit [24].

Land area is the total area of farming land which farmers cultivated the respondents either self-owned or rented [25]. The land area determined farm income, living standards and household welfare level of farmers. Extensive land tenure will affect the scale

of business, because the more extensive farm land, the higher the production so that helped increase farmers' income.

Pinrang is one of regencies in South Sulawesi which is famous as duck farming. It takes about 5 hours from Makassar by car. Duck is the second choice for consumers to fulfill their demand for meat. Many restaurants provide fried duck and other recipe is called paleko. The development of duck in Pinrang regency shows up and down. Total population of duck in 2013 was 785,701 birds. The second most populous of duck was in Mattiro Sompe sub district. There is 141,526 birds. Most of farmers have small size farm in Mattiro Sompe sub district. The minimum farm size of duck was 500 birds and the maximum was 3,000 birds for every farmer [26].

The farm size of duck farming has never increased since farmers started their farming. This was due to land constraints as a result of increasing human population and lack of capital. Duck is reared since Day Old Duck (DOD) at a starter period, then farmers sell ducks at the age of 2 months. Ducks are reared intensively close to their house with dry systems. In this study, it is necessary to know factors affecting farm size to help determine the strategies to be followed in attempts towards increasing the farm size of duck farming Mattiro Sompe sub district.

II. MATERIALS AND METHODS

This study was conducted for 2 months started from April to May 2013 in Mattiro Sompe sub district, Pinrang regency, South Sulawesi province Indonesia. The population in this study were all duck farmers. To calculate the sample size, we used the formula as follows [27]:

$$n = \frac{N}{1 + Ne^2} \quad (1)$$

where :

N = Number of unit in the population

n = Sample size

e = Acceptable error term (10%)

Total sample of this research was 45 duck farmers. Sample was determined through stratified random sampling from 6 villages namely Mattombong village 5 breeders, Patobong village 10 farmers, Samaenre village 5 farmers, Tongang Mattongang village 11 farmers, Massulowalie village 5 farmers and Sibolong village 8 farmers. Samples were choosed by random sampling.

Data used in this research were quantitative data namely duck populations, age of respondents, farming experience, land area, number of family, education, and sex. Primary data were obtained from interviews with farmers directly using questionnaire. Secondary data were obtained from reports of Animal Husbandry Service and Central Bureau of Statistics.

The collected data were tabulated, and analyzed by using SPSS program. To determine the factors that influence the farm size of duck Mattiro Sompe sub

district, Pinrang regency, the data were analyzed using linear regression models as directed by [28] and [29] as follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + e \quad (2)$$

where:

Y = measured of farm size of duck population (bird)

a = constant

b_1, b_2, b_3, b_4, b_5 = regression coefficient for $X_1, X_2,$

X_3, X_4, X_5

X_1 = age of respondent (year)

X_2 = experience in farming (year)

X_3 = land size (m^2)

X_4 = education (year)

X_5 = income level (IDR)

e = standard error

Farm size measured the number of duck in every farm; Age of respondents measured the length of life of respondents; Experience of farming showed the length of time respondents do farming; land size measured the wide of land belong to respondents; education showed the length of respondents study in formal insitution; income level refered to amount of money respondents have.

F test is used to test the multiple linear regression model of factors that affect farm size of duck farming in Mattiro Sompe sub district with significance level of 1% - 5%. To determine the independent effect of partial (socio and economic factors) on the dependent variable (farm size of duck farming), t - test was used.

III. RESULTS AND DISCUSSION

A. SOCIO-ECONOMIC CHARACTERISTICS OF BEEF CATTLE FARMERS

Based on the results of the study, the majority of respondents consisted of men (77.8%) and women (22.2%). This mean that the role of men in duck farming was greater than women. This was because women were busy with domestic job such as take care of children, take care of house and cooking. This research agree with that of [20] who stated that majority of duck farmers were men.

Age of the respondents was divided into productive age (68.9%) and unproductive age (31.1%). This indicated that most farmers were in productive age. Majority of respondents education level came from elementary school (42.2%). To rear duck was not important to have a high education. Most respondents have breeding experience less or equal to 5 years (66.7%). Their duck population fell between 1000 - 2000 birds (51.1%). On average, income level was IDR 1,273,102 per farm per month.

B. FACTORS AFFECTING TO FARM SIZE OF DUCK FARMING

The multiple regression analysis was performed to know factors affecting to farm size of duck farming.

The result of multiple regression analysis was presented in Table I.

TABLE I
MULTIPLE REGRESSION ANALYSIS OF FACTORS
AFFECTING FARM SIZE OF DUCK FARMING

Item	Standarized Coefficient	T	Sig
Constant	4.977	2,240	0,031 ^{ns}
Age (X_1)	-0.024	-0.090	0.927 ^{ns}
Experience (X_2)	0.355	0.519	0.607 ^{ns}
Land size (X_3)	1.559	2.989	0.005*
Education (X_4)	0.041	-0.607	0.548 ^{ns}
Income level (X_5)	0.907	17.257	0.00**
F test sig			
$R^2 = 0.920$			

Note: ns: not significant; ** significant at 1%,
* significant at 5%.

As it was shown in Table I, the coefficient of determination (adjusted R-square) = 0.920, indicated that 92.0% variation in the overall of farm size of duck farming could be explained by five independent variables included in the model, while 8.0% was influenced by other variables which were not included in the model. The results of F test revealed that the independent variables namely age of respondent (X_1), farming experience (X_2), land size (X_3), education (X_4) and income level (X_5) were simultaneously affect significantly ($P < 1\%$) on farm size of duck farming. Income level was significant at $P < 1\%$ on farm size of duck farming. This suggests that duck farmers should increase their income and land size in order to increase the farm size of their business. This research results agreed with that of [] who stated that income level was one of determinant factors of animal husbandry farming size. Land size was significant at $P < 5\%$. This agreed with that of [16].

The equation of regression was as follows:

$$Y = 4.977 - 0.024 X_1 + 0.355 X_2 + 1.559 X_3 + 0.041 X_4 + 0.907 X_5 \quad (3)$$

Based on equation 3, the coefficient regression of age was negatif and not significant. Every increase 1 year age of respondent, the farm size will decrease by $0.024 m^2$.

The coefficient of experience in farming was positif and not significant. Every increase 1 year the length of experience in farming of respondent, the farm size will increase by $0.355 m^2$. This agreed with that of [18].

The coefficient of land size was positif and not significant. The bigger the land size of respondents, the bigger the farm size. Every increase by $1 m^2$, the farm size will increase by $1.559 m^2$. This agreed with that of [25].

The coefficient of education was positif and not significant. The more educated of respondent, the

bigger the farm size. Every increase the length of education of respondent by 1 year, the farm size will increase by 0.041 m². This agreed with that of [15]. Finally, the coefficient of income level was positif and significant. The higher the level of income of respondent, the bigger the farm size. Every increase farmers income by IDR 1, the farm size will increase by 0.907 m².

CONCLUSION

It can be concluded that farm size of duck farming can be affected by socio and economic factors.

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