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A Model of Broiler Chicken Business Development through Farmer Capacity and Socio-Economic Capital of the Community

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Abstract- *Chicken breeding is a business that is widely done and developed by the community including broiler chickens (broiler) by the community in Maros Regency, especially in Bantimurung, Moncongloe and Maros Baru Sub-Districts. However, broiler chicken business also faces various obstacles in its development, due to the relatively high business risk. The purpose of this research is to find out the development model of broiler chicken business through strengthening the socioeconomic aspects of the community in Maros Regency. The type of data used in this study is primary data obtained from interview activities with questionnaire. Data analysis used is inferential statistical analysis with SEM method approach. Variables developed in the model include 4 (four) latent variables (constructs) namely; Individual Characteristics (X1), Economic Factors (X2), Social Factors (X3) and Business Development (Y). The results of the study obtained that the model of broiler chicken business development in Maros Regency, ideally carried out through strengthening individual characteristic factors (age, education and experience) and economic factors of the community (feed, price certainty and access to capital).*

Keywords- *Livestock, Broiler, Socio-Economic, SEM.*

I. INTRODUCTION

Chicken breeding is a business that is widely done and developed by the community including broiler chicken farms (broilers). Broiler chickens or so-called broiler chickens are the flagship breed of chickens from the nations of chickens that have high productivity power, especially in producing meat. This breed of chickens has a very rapid growth, which can generally be harvested in 30-40 days with an average weight of >1.0 kg, so it makes many of the breeders who choose broiler chickens to be bred as meat-producing chickens [1]. Broiler chickens are the result of interbreeding, so the genetic quality can be said to be good. According to [2] that broiler breed is a breed of chicken breeds superior to the cross from the nation of chickens that have high productivity power, especially in producing meat. Furthermore, [3] mentioned that broiler chickens are one of the poultry livestock cultivated economically with a fairly rapid growth in producing ready-to-cut meat with a relatively short cultivation period, both male and female.

In general there are various types of broiler chickens, among others; Super 77, Tegel 70, ISA, Kim cross, Lohman 202, Hyline, Vdett, Missouri, Hubbard, Shaver Starbro, Pilch, Yabro, Goto, Arbor arcres, Tatum, Indian river, Hybro, Cornish, Brahma, Langshans, Hypeco-Broiler, Ross, Marshall"m", Euribrid, A.A. 70, H&N, Sussex, Bromo, CP 707, and Cobb [4]. Although the development of broiler chickens in Indonesia was only known in the 1960s, broiler chickens in Indonesia only grew rapidly in the 1980s, and became very popular and became very commercial to become suppliers of animal protein needs, especially the highest meat [5]. In Indonesia there are several types of broiler chickens that are commonly bred, namely; 1) Cobb, is the most popular breed of broiler chickens bred. This type of broiler cobb chicken can also be said to be a type of chicken that easily adapts to tropical environments. 2) Ross, is a broiler breed based in england. Features in broiler ros chickens have feathers all over their body that are yellow and have a high endurance. 3) Hybro, is a broiler breed that has better endurance in tropical climates and is more focused on its development.

Now, broiler chickens are widely developed by the community in the form of businesses with relatively large populations. People began to use private land or rent to build broiler chicken coop and its supporting facilities [6]. It is further stated that the maintenance of broiler chickens is carried out by the farmer himself as a private business or employs employees with adjusted salaries. The dynamics of profit and loss are often experienced by farmers due to various factors as the consequences of a business being run. Broiler chicken farming is a relatively high-risk type of business, due to production costs and relatively large business capital. This is as stated by [7] that broiler chicken farming business is inseparable from some of the obstacles faced that become quite complex obstacles during the maintenance period of broiler chickens, namely the high level of risk faced. The risk is broadly divided into 3 parts, namely; a) production risk, b) price risk, and c) social risk.

Therefore, it takes various efforts so that the high risks faced by broiler chicken farmers can be controlled, so that the development of broiler chicken farming business can be done optimally and give maximum profit in the efforts carried out.

II. METHODLOGY

Types and Data Sources. The type of data used in this study, is the primary data obtained from interview activities with questionnaire. According to [8] that primary data is the data obtained first by researchers for research purposes. The data

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was obtained from respondents who are broiler chicken farmers in three sub-districts, namely Bantimurung, Moncongloe and Maros Baru sub-districts. The total number of respondents interviewed was 220 respondents. The types of data collected in the study are detailed as follows:

TABLE 1. Research variables and indicators

Variables	Indicators	Symbol
Individual Characteristics (X_1)	Age	X1.1
	Education Level	X1.2
	Breeding Experience	X1.3
Economic Factors (X_2)	Feed	X2.1
	Price Certainty	X2.2
	Access to Capital	X2.3
Social Factors (X_3)	Work Ethic	X3.1
	Labor	X3.2
Business Development (Y)	Cage Capacity	Y1
	Productivity	Y2
	Business Cooperation	Y3

Data Analysis. Data analysis used is inferential statistical analysis with SEM method approach. The SEM (Structural Equation Modeling) method is a statistical technique used to build and test statistical models that are usually in the form of causal models [9; 10]. Furthermore, [11] mentioned that SEM method is a multivariate analysis technique that allows researchers to test the relationship between complex variables both recursive and non-recursive to obtain a comprehensive picture of the model studied. The advantage of SEM method is that it can test together (simultaneously) all the variables in the model [12]. Furthermore, it is mentioned that in sem method there are 2 models that are the basis of sem method development, namely; a) measurement model and b) structural model. The measurement model is a model that describes the relationship between indicators and constructs (latent variables). Meanwhile, structural models are models that describe the relationship between constructs (latent/unobserved variables or variables that are not measured directly), which generally consist of independent and dependent variables [9].

In this research the research variables developed include; independent variables (free variables) include; characteristics (X1), economic factors (X2), and social factors (X3). While the dependent variable (its bound variable) is business development (Y). Graphically the structure model developed in this study is described as follows:

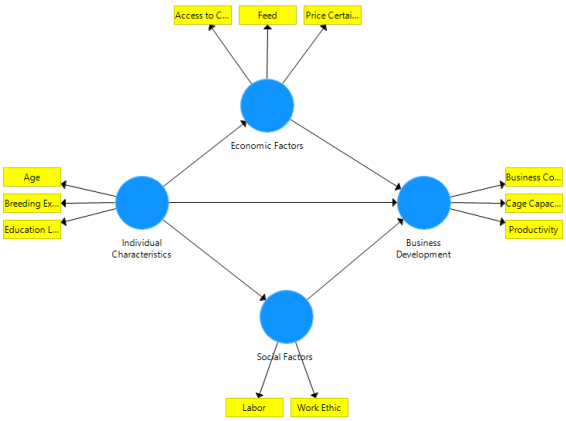

Fig. 1. Structure model

Based on the description of the construction model, as shown in the picture above, shows the relationship between variables to be tested, and becomes the basis of research hypothesis testing as follows:

TABLE 2. Research hypothesis

Hypothesis	Description
Hypothesis-1	There is a significant relationship/influence between individual characteristics and the development of broiler chicken business in Maros Regency
Hypothesis-2	There is a significant relationship/influence between individual characteristics and economic factors
Hypothesis-3	There is a significant relationship/influence between individual characteristics and social factors
Hypothesis-4	There is a significant relationship /influence between economic factors and the development of broiler chicken business in Maros Regency
Hypothesis-5	There is a significant relationship /influence between social factors and the development of broiler chicken business in Maros Regency
Hypothesis-6	There is a significant relationship/influence between individual characteristics and the development of broiler chicken business in Maros Regency through economic factors
Hypothesis-7	There is a significant relationship/influence between individual characteristics and the development of broiler chicken business in Maros Regency through social factors

Furthermore, a series of hypotheses are statistically tested to see if there are any influences between these variables.

III. Results and Discussions

SEM model developed in this research is SEM PLS (Structural Equation Modeling-Partial Least Squares). According to [13; & 14] that the SEM-PLS method can provide a systematic evaluation of the model under review. Meanwhile, according to [15] that SEM PLS method is a multivariate statistical technique that can be used to handle many response variables as well as exoplanator variables at once. It is further stated that PLS analysis is a good alternative to multiple regression analysis methods and regression of the main components, since this method is more robust. Broadly speaking, the SEM PLS model consists of 4 (four) stages of modeling, namely; 1) Evaluation of measurement model (outer model), 2) Evaluation of structural model (inner model), 3) Analysis of variable intervening and 4) analysis/hypothesis test.

Evaluation of measurement models (outer model). Evaluation of measurement model or commonly called outer model is an analysis that is intended to know the relationship between the construct (latent) and the indicator. Evaluation of measurement model is done by estimating the loading value of factor which is the resulting value of each indicator to measure latent variable. The value is illustrated from the outer loading value, with an assessment indicator for decision making of significance (>0.7). The test results of the measurement model (outer model) obtained that the overall indicator used in the model significantly reflesikan its construct variables with an outer loading value above >0.7.

Based on the results as in the diagram above obtained that the overall indicator used to reflesikan the construct variable

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has an outer loading value above 0.7 so that it can be accepted and used in the model. It is in accordance with [16] that the individual reflective size is stated to be high or good enough (significant) when it has an outer loading value of more than >0.7. Thus, the model can be continued to evaluate the structural model. More details as in the following figure 2.

Structural model evaluation (inner model). According to [17] that the structure model is a model to describe the relationship (correlation) between its construct variables (latent variables). The main evaluation in testing the structural model is the evaluation of the T-Statistical value which is the value to describe the significance of the model. T-Statistics evaluation is done with a confidence level of 95% (sign. 0.05) with a 2-way method (two tailed). The t-test assessment indicator (t-statistic) is that the value must be above >1.96 then it is declared significant or by looking at the p-Value value must be less than alpha <0.05. Here are the results of the t-test analysis (t-statistics).

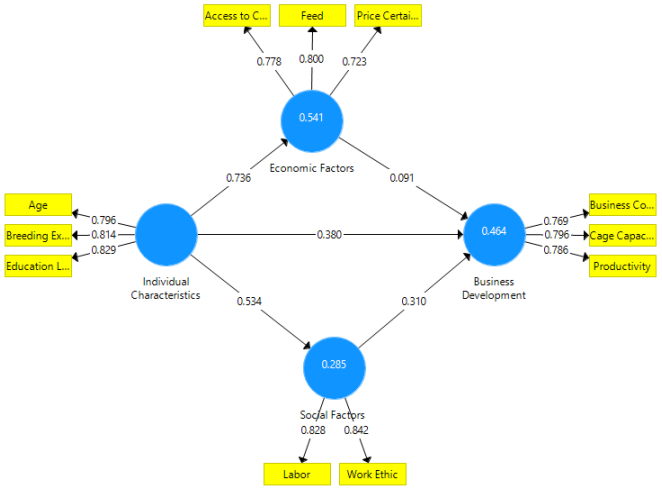

Fig. 2. Model PLS Algorithm

TABLE 3. Value of t-statistical test

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Social Factors -> Business Development	0.091	0.079	0.080	1.145	0.253
Individual Characteristics -> Business Development	0.380	0.388	0.071	5.354	0.000
Individual Characteristics -> Economic Factors	0.736	0.736	0.045	16.492	0.000
Individual Characteristics -> Social Factors	0.534	0.530	0.091	5.871	0.000
Economic Factors -> Business Development	0.310	0.302	0.072	4.304	0.000

The results of the analysis were obtained that there is 1 variable that has no effect in the model, namely, variable social factors to the development of broiler chicken business in Maros Regency, where the t-statistical value (t-calculate) obtained a value less than the t-table (1.145<1.9600) and the value of P-Value greater than the value of α (0.253>0.05). Furthermore, an assessment of the fit or not the resulting model. According to [18] that there are 5 (five) criteria that can be used to measure the resulting model fit. It is further mentioned that SmartPLS provides bootstrapp-based inference statistics from the SRMR criteria. According to [19; 20], in addition there are also fit model sizes namely criteria d_ULS (euclidean square distance) and d_G (geodesy distance), where the d_G criteria is built on the calculation of EIGEN PLS-SEM values. Indicator fit model can be estimated from NFI value. Here are indicators of models declared fit.

TABLE 4. Fit Model Estimation

	Saturated Model	Estimated Model
SRMR	0.022	0.028
d_ULS	0.990	1.084
d_G	0.694	0.740
Chi-Square	592.718	625.727
NFI	0.568	0.544

The result of the analysis was obtained that the value of SRMR 0.022 which means the model is quite good. This is in accordance with Bentler (1980) that a value less than 0.10 is categorized as matching. The NFI criteria value also indicates that the acceptable relative model of 0.568 or 56.80% of the resulting model has been declared fit. Thus it can be concluded that the model is quite good. According to [22] that the closer NFI to 1, the better the suitability of the model.

Variable intervening analysis and hypothesis test. After the model is declared fit, then an intervening variable analysis is carried out by looking at how much the influence of variable intervening (social factors and economic factors) affects dependent variables (business development of chicken breeding).

The result of the analysis was obtained that the influence of intervening variables seemed insignificant where obtained the value of t-statistics = 1888 where the value is less than the value of t-table = 1.9600. It also appears that from P-value where the value is large from alpha (0.06>0.05). Thus, it can be concluded that the role of mediating variables, namely social factors and economic factors are not significant in increasing the production of skipjack fish catch on Buhung Pitoe Island. In detail the results of the analysis of the influence between construct variables are presented in the following table:

TABLE 5. Hypothesis test

Hypotheses		Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P-Values	Decision (Relationship/ influence)
H1	Individual Characteristics -> Business Development	0.380	0.388	0.071	5.354	0.000	Significant Positives
H2	Individual Characteristics -> Economic Factors	0.736	0.736	0.045	16.492	0.000	Significant Positives
H3	Individual Characteristics -> Social Factors	0.534	0.530	0.091	5.871	0.000	Significant Positives
H4	Economic Factors -> Business Development	0.310	0.302	0.072	4.304	0.000	Significant Positives
H5	Social Factors -> Business Development	0.091	0.079	0.080	1.145	0.253	Insignificant Positives
H6	Individual Characteristics -> Economic Factors -> Business Development	0.165	0.162	0.052	3.196	0.001	Significant Positives
H7	Individual Characteristics -> Social Factors -> Business Development	0.067	0.058	0.059	1.140	0.255	Insignificant Positives

Based on the table above obtained that there are 2 (two) hypotheses that are not proven, namely; H5 hypothesis; that there is no significant relationship / influence between social factors and the development of broiler chicken business in Maros Regency, and Hypothesis H7 that there is no significant relationship / influence between individual characteristics and the development of broiler chicken business in Maros regency through social factors. Thus, it can be concluded that a good model to be developed related to the improvement of broiler chicken business development in Maros Regency is a model of individual characteristic relationship to business development and or model through economic factors (feed, price awareness and access to capital). Graphically as in the following figure:

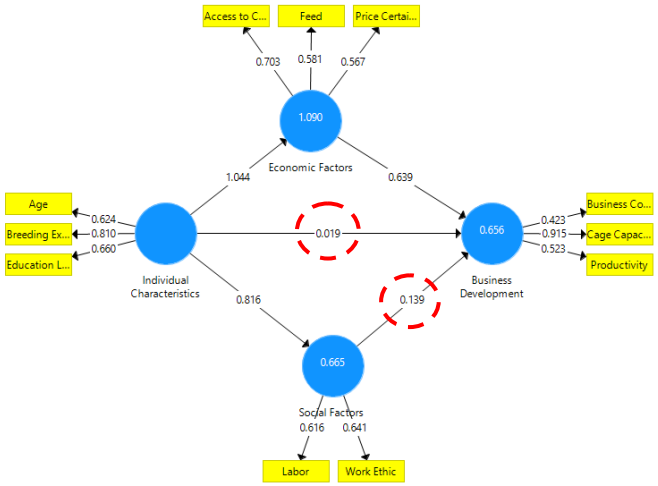

Fig. 3. Bootstripping Models

IV. CONCLUSION

The results of the study obtained that the model of broiler chicken business development in Maros Regency, ideally carried out through strengthening individual characteristic factors (age, education and experience) and economic factors of the community (feed, price certainty and access to capital).

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