

Identification of Resources in the System of Broiler Farming Business

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ABSTRAK

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Aksesibilitas terhadap sumber daya secara teori berpengaruh terhadap pengembangan usaha peternakan broiler di suatu wilayah. Penelitian ini bertujuan untuk merumuskan indikator sumber daya yang berpengaruh terhadap pengembangan usaha peternakan broiler. Penelitian dilakukan pada bulan Agustus 2017 hingga Januari 2018 di Kabupaten Malang, Provinsi Jawa Timur, Indonesia. Jumlah sampel sebanyak 100 peternak ayam broiler. Variabel penelitian terdiri dari sumber daya finansial, teknologi, fisik, ekonomi, lingkungan, sosial, Sumber Daya Manusia (SDM), dan pengembangan usaha peternakan broiler. Data dianalisis menggunakan metode SEM dengan SmartPLS 2.0. Hasil penelitian menunjukkan bahwa pengembangan usaha peternakan broiler dipengaruhi secara langsung dan signifikan oleh sumber daya finansial, fisik, ekonomi, dan SDM, namun tidak signifikan oleh sumber daya teknologi, lingkungan, dan sosial. Pengembangan usaha peternakan broiler secara tidak langsung melalui SDM dipengaruhi secara signifikan oleh sumber daya finansial, teknologi, fisik, dan ekonomi. Kesimpulan dari penelitian ialah sumber daya teknologi berperan penting walau tidak secara langsung karena harus didukung oleh SDM peternak dalam pengembangan usaha peternakan broiler.

Kata Kunci: Sumber Daya Usaha Ternak, Pengembangan Bisnis, SDM, Ayam Pedaging.

ABSTRACT

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Accessibility of resources in theory can affected the development of broiler farming in a region. This research was conducted with the objectives to formulate indicators of resource wich is influence to the development of broiler farming business. The research was conducted in August 2017 up to January 2018 in Malang District of East Java Province, Indonesia. The number of sample is 100 respondents of broiler farmer was participated in this research. The observed variables consist of: (a) financial resources, (b) technology resources, (c) physic resources, (d) economy resources, (e) environmental resources, (f) social resources, (g) human resources, and (h) business development. The data was analyze used by SEM with SmartPLS 2.0 analysis tool. The results indicate that the development of broiler farming business is directly influenced with significant value by the financial, physic, economic, and the human resources, but not affected by technology, environmental, and social resources. The development of broiler farming business is indirectly influenced through quality of human resources is affected by the financial, technology, physic, and economy resources. The conclusion of this research is that technology resources play an important role indirectly, because it must be supported by human resources in the model development of broiler farming business.

Key Words: Livestock Business Resources, Business Development, Human Resources, Broiler Chicken

INTRODUCTION

The high growth of Indonesian population (1.38 per year) is directly proportional to the increasing public demand for chicken meat which reaches 9 kilograms per capita per year. This shows that the poultry industry in the broiler sector is an industry that has great potential to be developed in developing countries such as Indonesia. The potential is seen from several advantages of the poultry sector: (a) short harvest

period, (b) land efficiency, (c) small capital, and (d) availability of industry from upstream to downstream which is a unity of agribusiness and agroindustry systems, so as to absorb many of the workforce as tangible assets (David 2009; Hunger & Wheelen 2003; Pearce & Robinson 2013).

The poultry industry grows faster along with the increase of meat consumption of 7.75 kg/capita/year from chicken meat of 3.80 kg (49%), while from beef is only 0.36 kg (0.05%), and the rest comes from other

livestock meat. Increased consumption of chicken meat in the future leads to an increase in water use.

The role of government in efforts to promote the poultry industry in Indonesia, especially broiler has been arranged in the form of business partnership based on: (1) Government Regulation Number 44 of 1997 on partnership, (2) Decree of the Minister of Agriculture Number 940/Kpts/OT.2010/10/97 on guidelines of partnership of agricultural enterprises, and (3) Law Number 9 of 1995 concerning small businesses. Partnerships are business partnerships between small and medium-sized businesses or large businesses by demonstrating the principle of mutual need, mutual strengthening, and mutual benefit. (Gocsik et al. 2015) stated that the broiler breeding sector has the best perspective in the short and medium term for market development. How to overcome market failure, increase adoption, productivity, and welfare is done with a business partnership system (Ragasa et al. 2018). Contract farming is a sales arrangement between a farmer and a firm, agreed before production begins, which provides the farmer with resources or services. Many governments and donors promote contract farming as part of agricultural development policies (Ton et al. 2018).

The objectives of developing agriculture and livestock sectors are: (1) increasing revenues, (2) balancing business, (3) increasing group resources, (4) increasing business scale, and (5) improving business ability, making it strong and self-reliant. Lambrecht and Ragasa et al. (2018) argue that agricultural partnerships are one of the private-led strategies to improve market coordination and smallholder welfare. This is because according to Huh et al. (2012) the price of the contract is determined at the beginning of the season when the market price is still uncertain. Currently, many family farms are closing down, being rented out or sold outside the family, and also in European (here termed non-family farm transfer) (Joose & Grubbström 2017).

The development of livestock farming business is inseparable from the role of farmer resources (Amam et al. 2019a). Livestock farming business resources include financial, technology, and physic resources (Amam et al. 2019b). Livestock farming business resources also consist of economy, environmental, and social resources (Amam et al. 2019a). The greater the farmer's access to resources, the greater the farmer's chances of developing their livestock farming business. This research aims to formulate resource indicators that influence the development of broiler farming business in Malang District.

MATERIALS AND METHODS

The Research was conducted in August 2017 up to January 2018 in Malang District of East Java Province, Indonesia. 100 respondents as broiler farmer was participated in this study who was determined by purposive sampling. The Respondents were chosen by Animal Husbandry and Animal Health Departmen of Malang District. The exogenous and the endogenous variables are in Table 1.

Data collection used observation and survey methods with interview and questionnaire techniques. The questionnaire uses a likert scale of +1 to +5. The data were analyzed by SEM (Structural Equation Modeling) with SmartPLS 2.0 analysis tool. The model was estimated through partial least squares with SmartPLS (Küster et al. 2016).

The new indicator test results from the outer model value, that is the specification of the relationship between the latent variables and the indicator, also called the outer relation or measurement model, which explains the characteristics of latent variables with the indicator or variable manifest (Willy & Jogiyanto 2015; Wiyono 2011; Sholihin & Ratmono 2013).

The reflective indicator model, the equation is written as follows:

$$X_i = \lambda_{xi} \xi_i + \delta_i ; Z_i = (\lambda_{zi} \eta_i) + \varepsilon_i ; Y_i = (\lambda_{yi} \eta_i) + \varepsilon_i$$

The hypothesis in this research (based on Figure 1) was that the financial resources (X_1), technology resources (X_2), physic resources (X_3), economy resources (X_4), environmental resources (X_5), and social resources (X_6) have an effect on the human resources (Z) and the development of broilers farming business (Y) in Malang district.

RESULTS AND DISCUSSION

Indicator Test

Indicator test of X_1 , X_2 , X_3 , X_4 , X_5 , X_6 , Z , and Y used PLS (Partial Least Square) methods is a test that can directly eliminate invalid and ineligible indicators. Indicators that meet the requirements are having an outer loading value >0.500 , whereas if the outer loading value <0.500 then the indicator is invalid and does not meet the requirements. Indicator testing results on Table 2 showed that all indicators are >0.500 , means that all of them can be used as factors.

Table 1. Exogenous and endogenous variables and indicators used in the experiment

Exogenous Variables	Indicators	
Financial Resources (X ₁)	Primary income	X _{1.1}
	Income from broiler farming business	X _{1.2}
	Side income from non-farm business	X _{1.3}
	Income from other livestock farming	X _{1.4}
	Amount of saving	X _{1.5}
	Broiler population	X _{1.6}
Technology Resources (X ₂)	Post harvest marketing	X _{2.1}
Physic Resources (X ₃)	Mastery of information facility	X _{3.1}
	Use of household electricity	X _{3.2}
Economy Resources (X ₄)	Number of family member's involvement	X _{4.1}
	Use of leisure time to recreation	X _{4.2}
	Credibility of broiler farmer	X _{4.3}
Environmental Resources (X ₅)	Utilization of manure for fertilizer	X _{5.1}
	Utilization of agricultural waste for broiler feed	X _{5.2}
Social Resouces (X ₆)	Role in social organization	X _{6.1}
	Relationship with village official	X _{6.2}
	Relationship with health workers	X _{6.3}
	Relationship with livestock service	X _{6.4}
	Relationship with feed suppliers	X _{6.5}
	Relationship with Day Old Chicken (DOC) suppliers	X _{6.6}
Endogenous variables		
Human Resources (Z)	Total worker	Z ₁
	Number of harvests per year	Z ₂
Business Development (Y)	Income increases	Y ₁
	Broiler population increases	Y ₂
	Worker increases	Y ₃
	Pen of production increases (on farm)	Y ₄

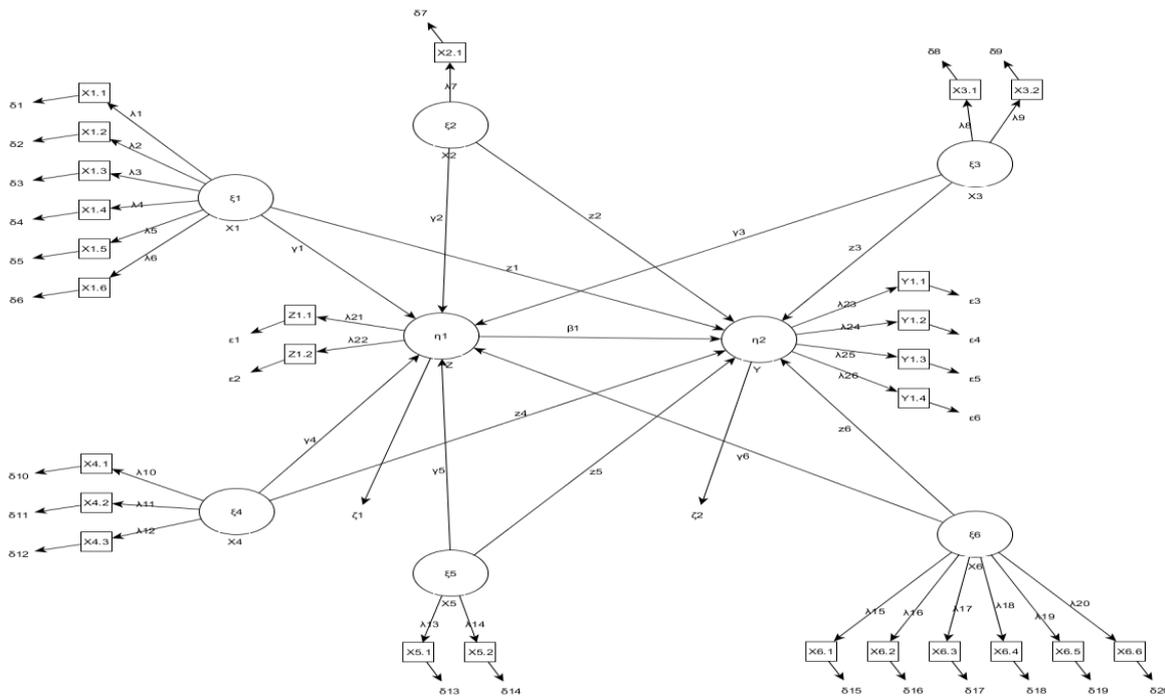


Figure 1. Variable relationship model used in the experiment

Structural test

SEM (Structural Equation Model) analysis with PLS (Partial Least Square) methods can not be separated from model testing or outer model results consisting of convergent validity, discriminant validity, value of AVE (Average Variance Extracted), value of CR (Composite Reliability), and value of CA (Cronbach’s Alpha). Test model of the development of broiler farming business consist of value of AVE, CR (Composite Reliability), and (CA) Cronbach's Alpha is as presented in Table 3.

Factors affecting development of broiler farming business

The result showed that X₁, X₃, X₄ and Z also have significantly affect to the Y (Table 4) at the level of α 5%. The path coefficients from the influence of them to the Y respectively are 18.8%, 8.6%, 23.8% and 45.8%, meaning there were positive influence of X₁, X₃, X₄ and Z on the Y. The greater the role of them, the greater the Y. Otherwise, the result showed that X₂, X₅ and X₆ do not significantly affect the Y at the level of α 5%. It shows that the data does not support the research, meaning that the X₂, X₅ and X₆ do not affect the Y.

The Financial resources affect the development of broiler farming business. In general, high income from broiler farming, side income from non-farming businesses, income from other livestock farming, amount of savings, and the broiler population led to the development of broiler farming business increased by 0.188 (18.8 %). This shows that the more access the farmers in obtaining financial resources, the higher the development of broiler farming business. Indarsih et al. (2010) said that contract broiler farming was chosen because risk sharing 27.6% and financial credits 25,8%, while Septiani et al. (2017) said that the difference in production costs with risk and the total production cost without risk was about 8% to 10%.

The Technology resources does not affect the development of broiler farming business. In general, knowledge of post-harvest marketing did not lead to the development of broiler farming; due to low knowledge of DOC selection the production alternative deals with selecting good breeds of chicks, low knowledge of broiler feed technology, low knowledge of broiler health and mooring management, ignorance of body weight and FCR appeared to be most efficient for small or/and large projects (Sherif & Al-Kahtani 1999). Indarsih et al. (2010) said that contract broiler farming was chosen because the guarantee of marketing 23.3%.

Table 2. Matrix indicators used in the experiment

Indicators	Outer Loading	Result	Indicators	Outer Loading	Result
X _{1.1}	0.597	valid	X _{5.2}	0.827	valid
X _{1.2}	0.673	valid	X _{6.1}	0.569	valid
X _{1.3}	0.798	valid	X _{6.2}	0.728	valid
X _{1.4}	0.669	valid	X _{6.3}	0.696	valid
X _{1.5}	0.680	valid	X _{6.4}	0.741	valid
X _{1.6}	0.798	valid	X _{6.5}	0.784	valid
X _{2.1}	0.998	valid	X _{6.6}	0.630	valid
X _{3.1}	0.761	valid	Z _{1.1}	0.945	valid
X _{3.2}	0.917	valid	Z _{1.2}	0.587	valid
X _{4.1}	0.789	valid	Y _{1.1}	0.798	valid
X _{4.2}	0.724	valid	Y _{1.2}	0.939	valid
X _{4.3}	0.543	valid	Y _{1.3}	0.936	valid
X _{5.1}	0.830	valid	Y _{1.4}	0.931	valid

Table 3. Value of outer model used in the experiment

Variables	AVE	CR	CA	R Square
Y	0.816	0.946	0.925	0.564
Z	0.619	0.755	0.451	0.705
X ₁	0.499	0.855	0.807	
X ₂	1.000	1.000	1.000	
X ₃	0.711	0.829	0.612	
X ₄	0.481	0.731	0.442	
X ₅	0.686	0.814	0.544	
X ₆	0.462	0.835	0.768	

Table 4. Value of inner model in farming business development

Test	t statistic (t table=1.660)	Path Coefficient
X ₁ . Financial resources → Y. Business development	2.421	0.188
X ₂ . Technology resources → Y. Business development	0.558	-0.064
X ₃ . Physic resources → Y. Business development	1.821	0.086
X ₄ . Economy resources → Y. Business development	2.445	0.238
X ₅ . Environmental resources → Y. Business development	1.207	0.104
X ₆ . Social resources → Y. Business development	1.051	-0.100
Z ₁ . Human resources → Y. Business development	2.904	0.458

Table 5. Value of inner model in human resources

Test	t statistic (1.660)	Path Coefficient
X1. Financial resources → Z. Human resources	2.629	0.169
X2. Technology resources → Z. Human resources	6.092	0.561
X3. Physic resources → Z. Human resources	2.308	0.206
X4. Economy resources → Z. Human resources	2.312	0.199
X5. Environmental resources → Z. Human resources	1.514	0.110
X6. Social resources → Z. Human resources	1.604	-0.155

The Physic resources affect the development of broiler farming business. In general, the control of information facilities and control of household electricity led to the development of broiler farming business increased by 0.086 (8.6%). It shows that the more access farmers in obtaining physic resources, the higher the development of broiler farming business, so the capital is not the main reason to work with the integrators (Indarsih et al. 2010).

The economy resources affect the development of broiler farming business. In general, family labor, the opportunity to use leisure time for recreation, and the credibility of farmers led to the development of broiler farming business increased by 0.238 (23.8%). This shows that the more access farmers in obtaining economy resources, the higher the development of broiler farming business.

The environmental resources does not affect the development of broiler farming business. In general, the use of sewage for fertilizers and the use of agricultural waste for animal feed did not lead to the development of broiler farming business is increased due to the high level of air pollution, the level of soil contamination, water pollution, and sound pollution. The government involvement was needed to encourage poultry industry growth and legislation on maintaining environment (Indarsih et al. 2010).

The social resources do not affect the development of broiler farming business pattern, due to low relationships with other farmers which resulted in low information and minimal role. So new investors should be encouraged to overcome instability price (Indarsih et al. 2010). Male herders were more experienced, received more benefits, showed greater interest in discussions on topics related to farming, followed information from TV and radio, and received more services offered by veterinary clinics, which proved more beneficial for them (Aldosari 2018).

The result (Table 5) showed that X₁, X₂, X₃ and X₄ significantly affect the intervening variable that is the Z. t arithmetic shows their number greater than the value of t table that is 1.660 at the level of α 5%. It shows the hypothesis that there are influence are

accepted, so that X₁, X₂, X₃ and X₄ significantly affect the Z. The coefficient of parameters from the influence of them to the Z, respectively are 16.9%, 56.1%, 20.6% and 19.9%. Meaning there are positive influence of them on Z. The greater the role of them, the greater the quality of Z.

The opposite of that, there are two indicators that X₅ and X₆ which have t arithmetic smaller than the value of t table was 1.660 at the level of α 5%. It shows the hypothesis was rejected, so the X₅ of Z. It shows that the data does not support the research, meaning that the X₅ and X₆ do not affect the quality of Z.

Factors affecting human resources

Financial resources affect the human resources of broiler farming business. In general, the high income of farmers from broiler farming and non-farm side business accompanied by the fulfillment of daily family necessities caused the quality of human resources increased by 0.169 (16.9%). It shows that the more access farmers in obtaining financial resources, the higher the quality of broiler farmer. Huang et al. (2018) says that contract farming has been increasingly found to benefit smallholders in developing countries, yet much less is known about its role in the poultry industry where economies of scale could be more prominent, but direct experience with producer contracting allowed cooperatives to evade institutional and ideological lock-in (Hogeland 2015).

The technology resources affect the human resources of broiler farming business. In general, knowledge of post-harvest marketing led to human resources of broiler farming business increased by 0.561 (56.1%). This shows that the more acces farmers in obtaining technology resources mastery, the higher the quality of broiler farming business. Pivoto et al. (2018) Smart Farming (SF) involves the incorporation of information and communication technologies into machinery, equipment, and sensors for use in agricultural production systems, so this can only be achieved through increased use of emerging technologies and automated systems (Føre et al. 2018)

such as geographical and farm related risk factors for Newcastle disease (Wiseman et al. 2018).

Physic resources affect the human resources of broiler farming business. In general, the mastery of information facilities and the mastery of household electricity causes the human resources of broiler farming business increased by 0.206 (20.6%). This shows that the more access farmers in obtaining physic resources, the higher the quality of of broiler farming business, so modified farming has generated new opportunities and new forms of added value to the available resources (Pasmans & Hebinck 2017).

The economy resources affect the human resources of broiler farming business. In general, family labor, the opportunity to use leisure time for recreation, and credibility of farmers causes the human resources of broiler farmers increased by 0.199 (19.9%). This shows that the more access farmers in obtaining economy resources, the higher the quality of broiler farming business. Women's off-farm work in particular is frequently cited as a source of empowerment for farm women. However, little attention is paid to the joint strategies of how both men and women together challenge the dominant narrative of gender on the family farm (Cush et al. 2018).

The environmental resources do not affect the human resources of broiler farming business. In general, the utilization of manure for fertilizers and the use of agricultural waste for animal feed does not cause the human resources of broiler farming business to increase due to high levels of air pollution, soil pollution levels, noise pollution, and water pollution, because water quality problems as a way to prevent diffuse agricultural pollution (Vincent & Fleury 2015) so livestock farming is one of the most environmentally threatening industries worldwide (Rivero & Daim 2017). So Hu et al. (2017) said that driven by the growing demand for food products of animal origin, industrial livestock and poultry production has become increasingly popular and is on the track of becoming an important source of environmental pollution.

The social resources do not affect the human resources of broiler farming business. Social Farming (SF) engages groups at risk of social exclusion in agricultural activities with the aim of including them in society, providing them with job opportunities, and empowering them (Guirado et al. 2017). In general, rule in social organization, relationships with village officials, relationships with health workers, relationships with livestock services, relationships with feed supplier, relationships with DOC suppliers, and relationships with financial institutions, and relationship with marketer company (postharvest) do not lead to poor human resources of broiler farmers due to low relationship with farmers others that resulted in low information of farmers who accompanied the lack of

role in community organizations, so the bargaining power of farmers is low, especially in broiler sale price that closely related to livestock marketers (Khan et al. 2018) said that the people of fish consumption and preference is high in the study area and people prefer fish more than chicken and meat for consumption purposes.

CONCLUSION

The model of broiler farming business development directly was influenced by financial resources 18,8%, physic resources 8,6%, economy resources 23,8%, and human resources 45,8%. The model of broiler farming business development indirectly through human resources was influenced by financial resources 16,9%, technology resources 56,1%, physic resources 20,6%, and economy resources 19,9%. This research showed that technology resources play an important role indirectly, because it must be supported by human resources in the model development of broiler farming business.

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