

KNOWLEDGE OF TECHNOLOGY POULTRY PRODUCTION AND ENTREPRENEURSHIP FOR DEVELOPMENT OF INDIGENOUS CHICKEN FARMS

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ABSTRACT

The objective of this study is to analysis the knowledge of technology poultry production and entrepreneurship for the development of indigenous chicken farms. The research location Sidrap and Bone regencies, South Sulawesi Province, Indonesia. The data collected through direct observation and structured interviews with 96 indigenous chicken farmers. The data analyzed by descriptive statistics and Spearman's Rank correlation. The results showed that the knowledge of farmer respondents in technology poultry production and entrepreneurship was categorized as inadequate. Spearman's Rank correlation analysis results show that in the technology poultry production, knowledge of suitable feed, and control and prevention of disease have a positive and significant relationship with the development of indigenous chicken farms. In entrepreneurial knowledge, knowledge of results-oriented and the opportunity-seeking have a positive and significant relationship with the development of indigenous chicken farms

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1. INTRODUCTION

The total population of Indonesia based on the latest Susenas data for 2017 reached 237,641,326 people or as many as 62,537,192 households, and as many as 31,400. 282 households (50.21 percent) reside in rural areas, of which 10.70 percent are poor (Central Bureau of Statistics, 2018). To alleviate the rural poor, the government continues to promote poverty alleviation programs which are divided into three groups, namely family-based social assistance programs, poverty alleviation programs based on community empowerment and poverty alleviation programs based on the empowerment of small and micro-businesses. However, the poverty alleviation program still faces various obstacles, including programs that do not focus on the most important assets of rural communities (Madjid, 2017). One important asset owned by rural communities in Indonesia is indigenous chicken because almost every rural household rearers the chicken, which is operated as a backyard farming and on a very small scale of farms (Pramudyati, 2009; van Eekeren et al., 2006). This indigenous chicken farms have been recognized as an important tool to accelerate the pace of poverty reduction and be able to reach the poorest people in rural areas and improve food security and nutrition in poor households by increasing meat consumption and as a source of high-quality protein (McLeod, 2007; Suryana and Hasbianto, 2009; Thieme et al., 2014). The indigenous chicken farm in Indonesia has great potential to develop, especially in production center areas such as South Sulawesi (Hidayat and Asmarasari, 2015) due to the large population and genetic resources of the indigenous chickens. According to data from the agriculture ministry, South Sulawesi has the third-largest population of indigenous chickens in Indonesia after Central Java and East Java with a population reaching 29, 243 million in 2016. Besides its great potential, the indigenous chicken farm also has good prospects for developing, because it has market opportunities, market demand cannot be met by existing supply, and market demand is expected to continue to increase with increasing consumer purchasing power and strong consumer preferences for the freshness and flavor typical of indigenous chicken eggs and meat. Likewise, there have been many efforts made by the government to encourage the development of indigenous chicken farming, such as the existence of the INTAB program, JPS, assistance programs from SOEs, breeding programs, and avian influenza disease prevention programs and others. However, in reality, these indigenous chicken farms do not develop, they operate on a very small scale and not encouraged to expand to a larger farm scale. The implication is that profitability and

household income from the indigenous chicken farm are low, and therefore, the contribution of the farm to poverty alleviation in rural areas is also not optimal (Putri et al., 2014; Ilham, 2016). The very slow development of indigenous chicken farms in rural areas is not only happening in Indonesia, but also in many developing countries such as Kenya (Munyaka, 2010), Swaziland (Siyaya and Mikah, 2013); Nigeria (Chah et al., 2014), and the Philippines (Chang, 2007). Because of these conditions, practitioners and researchers since a decade ago, are very concerned about the future of indigenous chicken farms as trade liberalization and rapid changes in the structure of the poultry industry occur because the business scale is very small, relatively inefficient, and will not be able to face increasingly fierce competition from overseas poultry products and from domestic poultry products (Ahuja and Sen, 2007; Narrod et al., 2008; Mcleod et al., 2009).

The findings from various studies show that the main obstacle to develop indigenous chicken farms is due to the lack of knowledge of farmers in keeping the indigenous chicken farms has so far only been managed based on local/traditional knowledge (Muhiye, 2007; Adetayo et al., 2013; Rahman et al., 2015). This clearly illustrates that increasing the human resource of farmers, especially in the aspect of knowledge must be the right solution to be able to encourage the development of indigenous chicken farms in rural areas (Adetayo et al., 2013). Moreover, previous studies of small scale businesses have shown that businesses have limited knowledge which is a very important asset in determining their survival and development (Pozdnakova, 2012; Jani, 2011; Juárez et al., 2016). Several pieces of research were done to describe the technology poultry production practices (Lopez Jr. et al., 2014) and entrepreneurship business (Inyang and Eko, 2015) undertaken by indigenous chicken farmers in different parts of the country. However, no research has been conducted on the knowledge of technology poultry production and entrepreneurship of native chickens farms. On that basis, the objective of this study is to analysis knowledge technology poultry production and entrepreneurship for the development of indigenous chicken farms.

2. RESEARCH METHODS

Because the main problem in this study was the problem of the influence of the variable type of knowledge on the development of indigenous chicken farms, the research strategy chosen is quantitative research. According to Amaratunga et al. (2002) quantitative research is associated with a positivistic approach which states that truth can only be obtained through direct observation or experience. In this study, because the object of the research was the indigenous chicken farms, so the type of research to be used is the type of survey research (direct observation and interviews) The study carried out in South Sulawesi, namely in Bone and Sidrap Regencies from April to October 2019. The selection of these two districts as research locations was based on the consideration that these two regions represented the role of indigenous chicken farming in poverty alleviation, where Sidrap district was the district that has the smallest of indigenous chicken population and the lowest number of poor people, while Bone has the highest population of indigenous chicken and the largest number of poor people. From each district, two villages will be selected with the highest number of indigenous chicken populations and the lowest number of poor people and 2 villages with a small number of indigenous chicken populations and the largest number of poor people. The population in this study was the indigenous chicken, which is owned and managed by smallholder farmers in the districts of Sidrap and Bone, and the targeted farmers who had been engaged in native chickens farms activities with the number of chickens kept ranging from 3 -50 adult chickens. The number of the indigenous chicken farms determined as samples in this study uses the Lemeshow formula, this is because the total population is unknown or infinite. The following Lemeshow formula is:

$$n = \frac{z^2 \cdot p \cdot (1-p)}{d^2} \quad (1)$$

d2

Information :

n = Number of samples

z = z score at 95% confidence = 1.96

p = maximum estimate = 0.5

d = alpha (0.10) or sampling error = 10%

so if based on these formulas the minimum number of samples needed in this study is 96.04 or a minimum of 96 respondents. Of the 96 respondents, subsequently allocated proportionally according to the sample districts, 48 respondents for Bone District, and 48 respondents for Sidrap District. This research used probability sampling (random sampling) designs (techniques) to obtain samples of farmers respondent Primary data collected by the survey method. The survey method used consisted of direct observation and interviews. The interview was conducted in a structured manner using the help of a questionnaire. This questionnaire contained a list of questions made in the form of open questions and multiple-choice questions. Before the questionnaire was used, it was first tested on 20 prospective farmers of respondents to be tested for reliability and validity. The development of indigenous chicken farms was measured as the number of chickens reared by farmers for two years later. Respondent farmers were asked to indicate on three-point Likert type scale ranging from 1 =

decrease, 2 = not increased, and 3 = increase. Knowledge in this study adopted by NwariejI et al. (2017), as it covers technology poultry production and entrepreneurial knowledge. Meanwhile, knowledge of technology poultry production was measured using four items. These items measured the extent technologies applied by farmers to improve the production of the indigenous chicken farms successfully, and it measured as genetic improvement and selection: local chicken selection to be done at every generation that production was not decreasing, among others avoid inbreeding is constantly. improved housing: the availability of housing and facilities are the condition main to deficient production levels local chicken, suitable feeding: local chicken fed enough and regular are necessary to allow for maximum production of meat and eggs, disease prevention and control: the majority of local chicken disease can be prevented with vaccination on time, began when chicken was 7 days and may continue to be sold every three months. Next, seven items measuring knowledge of entrepreneurship. These items measured the extent of entrepreneurship skill applied by farmers run the indigenous chicken farms successfully and is measured as the innovative and accept new ideas and information: I am innovative and accepting new ideas and information, decision-making: I have good decision-making skills to run my local chicken farming, independence and confidence: I have high independence and confident to run my local chicken farming, leadership: I have good leadership skills to run my local chicken farming well, results-oriented: I work earnestly so that the results of my local chicken farming are satisfying, take risk: I have risk-taking to run my local chicken farming, opportunity-seeking: I was able to look for business opportunities for my local chicken farming development. Respondent was asked for both two knowledge to indicate on five-point Likert type scale ranging from 1 = strongly disagree to 5 = strongly agree Data analysis performed in this study, namely: descriptive statistical and Spearman's correlation coefficient analysis. Descriptive statistical analysis in this study used to categorize the development of indigenous chicken farms, entrepreneurship knowledge and technology production knowledge. Spearman's correlation coefficient analysis used to analyze the relationship between business entrepreneurial knowledge and technology of poultry production practice knowledge and development of indigenous chicken farms. Data processing using SPSS (Statistic Package of Social Sciences) version 21

3. RESULTS AND DISCUSSION

3.1 Development of the indigenous chicken farms

Development of indigenous chicken farms is presented in Table 1. From Table 1, it appears that the majority (54.17%), 52 of 96 farmer respondents stated that the number of chickens kept this year was decreasing and not increasing in number compared to last year. While those who stated that the number of chickens being raised now increased compared to last year was 45.83%, 44 out of 96. Furthermore, around 99% of the respondents' farmers expressed their willingness to develop their indigenous chicken farm, while the rest stated that they would not develop

3.2 Knowledge of Poultry Production Technology

Knowledge of farmers in technology poultry production is presented in Table 2

From Table 2, it appears that on average the technology poultry production knowledge of the farmer respondents was in the inadequate category with an average score of 2.80. Components of technology poultry production knowledge categorized as inadequate were genetic improvement and selection with a score of 2.15 and suitable feeding with a score of 2.30, while the component of knowledge that is categorized as less adequate was improved housing with a score of 3.25 and disease control and prevention with a score of 3.50.

3.3 Knowledge of Entrepreneurship

Knowledge of entrepreneurial of farmer respondents is presented in Table 3.

From Table 3, it appears that, on average, the knowledge of entrepreneurial in the farmers' respondents was in the inadequate category with an average score of 2.59. The components of entrepreneurship knowledge that are categorized as inadequate, namely innovative and Accept new ideas and information with a score of 2.40, make a decision with a score of 2.25, independence and confidence with a score of 2.20, leadership with a score of 2.15, and take risks with a score of 2.60. While the components of entrepreneurship knowledge that are categorized as less adequate, namely the results-oriented with a score of 3.40, and the opportunity of seeking a score of 3.10.

3.4 Knowledge For The Development of Indigenous Chicken Farms

The purpose of this study is to design a knowledge of technology poultry production and entrepreneurship for developing indigenous chicken farms in rural areas, which can be determined by using Spearman Rank correlation analysis. The results of the analysis of the Spearman Rank correlation can be seen in Table 4. The results of the Spearman correlation analysis in Table 4, are then designed in an empirical as presented in Figure 1. Figure 1 reveals the variable knowledge of technology poultry production, the results of the analysis of the Spearman's rank correlation show that the knowledge of genetic improvement and selection ($r_s = + 0.143$; $p = 0.082 > .05$), and improved housing ($r_s = + 0.125$; $p = 0.075 > .05$) is not significantly correlated with the development of indigenous chicken farms at a 95% confidence level. This finding agreed with the views of Nwarieji et al. (2016) farmers are not generally knowledgeable about adequate housing and genetic improvement and selection. Furthermore, there is a positive and real relationship between suitable feeding

knowledge ($r_s = +0.194$; $p = 0.029 < .05$) and disease control and prevention knowledge ($r_s = +0.206$; $p = 0.022 < .05$) with the development of indigenous chicken farms at a confidence level of 95 %. Although the relationship is weak with a correlation coefficient value of 0.194 and 0.206, the relationship was active/positive which means that if the knowledge of farmers about suitable feeding and disease control and prevention is high then the development of indigenous chicken farms is also high, conversely, if the knowledge of farmers about suitable feeding and disease control and prevention low, the development of indigenous chicken farms is also low. These findings are in line with the study of Nwarieji et al. (2016) who conclude that feeding skills and disease management skills significantly enhance sustainable productivity in Small Scale Poultry Farming in Orumba North and South of Anambra State. A similar situation was reported by Ershad and Bogra (2016) who examined the technical knowledge of indigenous chicken farming from farmers in Bangladesh and found that close to 78% of farmers had low levels of knowledge, 18% were intermediate, and 4% were good about breeding, feed, housing, and disease control and prevention. Added, Hai et al. (2008) and Alam et al. (2018) observed a high prevalence of farmers' lack of knowledge (70%) in rural Bangladesh about disease and feed. Inadequate feed also reduces the chicken's resistance to diseases and parasites. Murangiri (2016) who examined the challenges affecting the development of indigenous chicken farms in Kenya, found that the main challenges faced by farmers to increased chicken production were the high incidence of diseases, and feeds especially high prices. Justus et al. (2013) noted that technical skills are required in indigenous chicken production specifically in disease control and feed supplementation.

For the entrepreneurial knowledge variable, the results of the Spearman correlation analysis for innovative and accept new ideas and information ($r_s = + 0.148$; $p = 0.075 > .05$), make a decision ($r_s = + 0.123$; $p = 0.116 > .05$), independence and confidence ($r_s = + 0.101$; $p = 0.064 > .05$), leadership ($r_s = + 0.113$; $p = 0.137 > .05$), and take risks ($r_s = + 0.125$; $p = 0.095 > .05$) was not significantly correlated with the development of indigenous chicken farms at 95% confidence level. Furthermore, there is a positive and real relationship between knowledge of results-oriented ($r_s = + 0.182$; $p = 0.038 < .05$) and the opportunity-seeking ($r_s = + 0.226$; $p = 0.013 < .05$) with the development of indigenous chicken farms at a 95% confidence level. Although the relationship was weak with a correlation coefficient value of 0.182 and 0.226, the relationship is active/positive, which means that if the knowledge of farmers about the results-oriented and the opportunity-seeking was high, the for development of the indigenous chicken farms was high, conversely, if knowledge of farmers about the results-oriented and the opportunity-seeking was low, the development of indigenous chicken farms was also low. These results are in line with the opinion of Cooney (2012) that the entrepreneurial skills needed for business development are the ability to results-oriented and identify and exploit business opportunities. This finding extends the previous research by Machmud and Sidharta (2016) who examined the relationship between achievement orientation, discovery business opportunity and business performance in Indonesia, with the study results concluded that achievement orientation and discovery business opportunity significantly influenced business performance.

4. CONCLUSION

The results showed that most (54.17%) of the respondents' farmers stated that the level of development of their indigenous chicken had decreased and did not develop. The level of knowledge of the respondents' farmers about the technology of poultry production on average was in the inadequate category with an average score of 2, 80. Likewise, the level of respondent farmer's knowledge about entrepreneurship on average is in the inadequate category with an average score of 2.59. Spearman's rank correlation analysis results for knowledge of the technology of poultry production shows that there was a positive and significant relationship between knowledge of suitable feed and disease control and prevention with the development of indigenous chicken farms. For entrepreneurship, knowledge shows that there was a positive and significant relationship between knowledge of results-oriented and opportunity-seeking with the development of indigenous chicken farms. Considering the important role of suitable feed, and disease control and prevention knowledge for the development of indigenous chicken farms, it is recommended that the government for extension programs should be introduced among farmers to focus more on feed, control and disease prevention along with increased access to formal funding sources and providing subsidies for feed purchases and vaccines. Besides, the importance of the role of results-oriented and opportunity seeking for the development of indigenous chicken farms, it is recommended that the government must motivate farmers to develop their indigenous chicken farms and provides entrepreneurship training programs for them. The limitation of this research is that it does not cover many knowledge variables such as social economics, financial, market, and marketing management knowledge, and the data were statistically analyzed. Future studies should attempt to combine statistical analysis and case studies to cover many knowledge variables that can explain the development of indigenous chicken farms. The findings from this study cannot be generalized to all developing countries. The next study must be carried out in several other developing countries.

Conflict of Interest

The authors clarified that there is no conflict of interest with any financial, personal, or other relationships with other people or organization related to the material discussed in the manuscript.

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ANNEXURE

Table 1. Distribution of respondents based on level of development of indigenous chicken farms

Level of Development Of Indigenous Chicken Farms	Number	Frequency
Decrease	28	29.17
Not Increased	24	25.00
Increase	44	45.83
Total	96	100

Table.2. Knowledge scores of technology poultry production for farmers respondents

Knowledge of technology poultry production	Average score	Category
Genetic improvement and selection	2.15	Inadequate
Improved housing	3.25	Less Adequate
Suitable feeding	2.30	Inadequate
Disease control and prevention	3.50	Less Adequate
Average	2.80	Inadequate

Table 3. Knowledge scores of entrepreneurship for farmers respondents

Knowledge of Entrepreneurship	Average score	Category
Innovative and Accept new ideas and information	2.40	Inadequate
Make a decision	2.25	Inadequate
Independence and confidence	2.20	Inadequate
Leadership	2.15	Inadequate
Take risks	2.60	Inadequate
Results oriented	3.10	Less adequate
Opportunity seeking	3.40	Less adequate
Average	2.59	Inadequate

Table 4. Analysis of spearman rank correlation results

Knowledge Component	Coefficient Correlation (rs)	p-value
Poultry production Technology :		
Genetic improvement and selection	+ 0.143 ^{ns}	0.082
Improved housing	+ 0.125 ^{ns}	0.075
Suitable feeding	+ 0.194 [*]	0.029
Disease control and prevention	+ 0.206 [*]	0.022
Entrepreneurship:		
Innovative and Accept new ideas and information	+ 0.148 ^{ns}	0.075
Make a decision	+ 0.123 ^{ns}	0.116
Independence and confidence	+ 0.101 ^{ns}	0.064
Leadership	+ 0.113 ^{ns}	0.137
Take risks	+ 0.125 ^{ns}	0.095
Results oriented	+ 0.182 [*]	0.038
Opportunity seeking	+ 0.226 ^{**}	0.013

Note: NS = not significant, * = significant at $p < 0.05$, ** Significant at $p < 0.01$

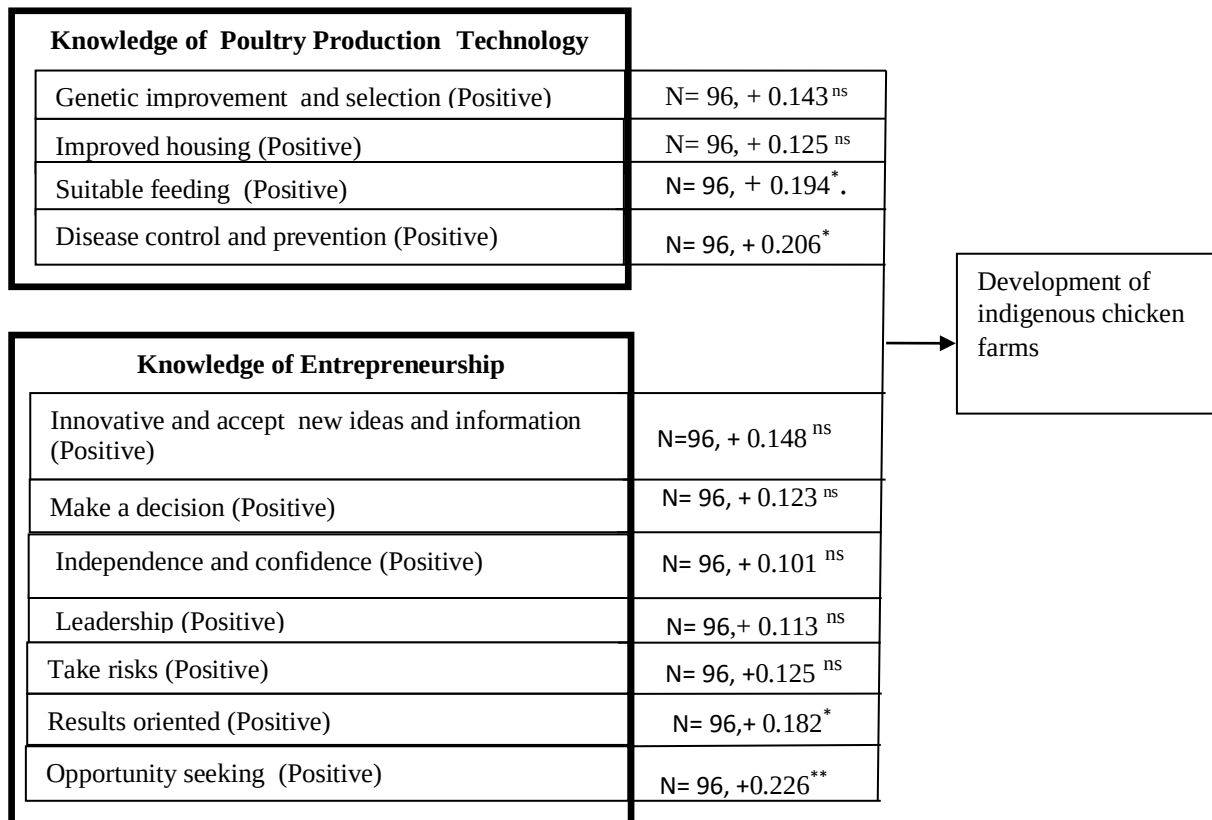


Fig. 1. Knowledge of technology poultry production and entrepreneurship for the development of indigenous chicken Farms