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Analysis of the Knowledge Level of Breeders of Native Chickens on Nusalaut Island

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ABSTRACT

The purpose of the research was to investigate the knowledge breeders of the native chicken in Nusalaut Island in relation to good native chicken production practices. Both village and respondents were selected used purposive sampling method. The variables were knowledge of the farmers, sex, age, education, household dependency rate, length of experience, and the level of income from main job. The results showed that majority (72%) respondents attained primary school, average dependency rate 4.9 ± 1.75 persons, majority (70%) low income, more men possessed high knowledge than women (p= 0.047), length of experience affect knowledge significantly (p= 0.184) and education affect knowledge highly significantly. It was concluded that although native chicken breeders have good knowledge about chicken production in overall, but there are certain knowledge gaps on feeding and controlling diseases.

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INTRODUCTION

Native chicken in Indonesia provides over 200 million people with adequate protein for proper nutritional consumption and well-being. This condition motivates stakeholders to get involved in rearing this poultry, which is politically in line with the government's agenda to achieve food self-sufficiency, thereby regulating the importation of food (Hidayat & Asmarasari, 2015). Moreover, native chicken farms in Indonesia have great potential for growth due to the large population and genetic resources (Hidayat & Asmarasari, 2015). According to data from the Ministry of Agriculture, in 2019, Indonesia was the fourth-largest poultry population in Asia, with approximately 3,149,382 reared by 20,851,901 farmers (Directorate General of Livestock Services, 2020). In addition, this business also has good prospects for growth due to its market opportunities. The existing supply cannot fulfil market demand because it is expected to powerfully boost consumers' purchasing power and preferences for the freshness and distinctive taste of native chicken meat (Pramudyati & Agung, 2009). However, despite having great potential and prospects, most farmers cannot take advantage of these opportunities to grow their farms (Kazemi-Lomedasht *et al*., 2019). In this sense, native chicken farm growth must be able to achieve sufficient growth to improve the economy by creating wealth and jobs in rural areas as well as improve food security and nutrition for the community and, most importantly, to survive (McLeod, 2003; Padmaningrum & Widyas, 2021).

The existence of a chicken population on Nusalaut Island, which has small island characteristics, is the result of the interaction of the dimensions of the natural environment, the dimensions of knowledge and technology, the economic dimensions and the social dimensions of the community on the small island. As a small island community, the people on Nusalaut Island have a livelihood pattern that balances sources of livelihood from the marine environment with those from the land environment. During the east season, the wind blows hard and the waves are big, so people depend on food found on land in the form of plants in gardens, hunting wild pigs or depending on the consumption of chickens kept around the house (Aziz, 2019).

The knowledge of raising chickens that has been obtained from generation to generation has many weaknesses, sometimes many people even apply the wrong way of raising livestock, so that the results are not optimal. It is time for the development of native chicken breeder entrepreneurship in the countries of the Nusalaut Island to be enriched by animal husbandry science and technology in more advanced native chickens (Aziz, 2019). In other words, there is a gap in the knowledge of breeders between generations now compared to the level of knowledge that breeders should have in order to develop native chicken entrepreneurship. Especially, in related to the technical aspects of raising native chickens, as well as aspects of supporting the natural environment including climate, soil, topography, availability of road facilities and infrastructure to support production, distance to settlements and availability of feed sources from plantation crop waste for the development of the chicken farming business (Abdulhak & Darmawan, 2013; Trisiwi, 2016).

Based on these background, the author is interested in conducting research "Analysis of knowledge breeder level native chicken on Nusalaut Island". This initial study is important to carry out as a basis for assessing the technical and managerial training needs required by breeders so that the free-range chicken breeders and breeding business on Nusalaut Island can achieve its vision in terms of native chicken productivity, fulfilling community nutrition and increasing community income (Hayanti, 2014).

MATERIALS AND METHOD

Time and place of research. This research conducted in May 2022 in Nalahia State (Village), coordinates: 3.64643° S, 128.77932° E. Nalahia State is included in the Nusalaut District area, located in Nusalaut Island, Central Maluku Regency, to the south is Titawai State, to the west is Sila State and to the east is Ameth State.

Research methods. The research approach used is qualitative descriptive research using survey methods. In general, this method is in the form of qualitative research, namely a method that bases data interpretation on qualitative data.

Source of sample. Samples taken from the population must be truly representative. The selection of village samples was carried out deliberately using a purposive sampling method based on information on the largest number of chickens in the village. Information about the vilage that have the largest number of native chickens, namely Leinitu, Sila and Akoon, was obtained from correspondence with the Head of the Nusalaut Island District, while information about chicken breeders who have more than 5 years of experience and are raising at least ten native chickens. The number of respondents interviewed was 38 chicken breeders.

Method of data collection. Data and information collection techniques were carried out through interviews with farmer respondents and field observations. The data used in this research are primary data and secondary data. Primary data was obtained through direct observation, interviews with chicken breeders on Nusalaut Island, while secondary data was obtained from related agencies such as BPS. Data collected from breeders includes: characteristics of native chicken breeders, and knowledge in rearing native chickens (seeds, housing, feed, disease control and marketing).

Data processing activities are carried out using the following procedures (Koentjaraningrat, 1989): (1) Editing the data that is collected needs to be read again and corrected if there are still things that are wrong or still doubtful; (2) Group the questionnaires according to the classification that has been carried out; (3) Code data according to the code book that has been prepared; and (4) Enter data and tabulate data using SPSS 20.

Data analysis. Determine the respondent's level of knowledge about free-range chicken farming systems (seed parameters, housing, feed, maintenance and disease control), it is calculated based on the comparison of the correct answer value divided by the total knowledge value.

RESULTS AND DISCUSSION

A. Characteristics of Native Chicken Breeders in Nalahia State

Individual characteristics are traits or traits inherent in individuals that relate to aspects of life in their environment. These characteristics are considered to be the main considerations for implementing a community-based program. The good or bad performance of a person in carrying out work cannot be separated from factors in society itself. Characteristics will have a big influence on the level of adoption of technological innovation (Rogers 2003). Das (2013) stated that in the spread of new ideas or diffusion of innovation in a social system, the perpetrators have at least three personal characteristics, namely: (1) socio-economic status including age, education, social status and business scale; (2) Communication behavior includes social participation, contact with instructors, cosmopolitanism and exposure to mass media; and (3) personality, including empathy, ability to take risks and so on. The individual characteristics of farmers observed in the research are: age, formal education, business experience and availability of labor, and cosmopolitan nature or access to information.

Knowledge of the potential or strength of breeder resources in detail will help in the accuracy of preparing extension programs, so that the community empowerment process can be more targeted and changes can be achieved more quickly. The speed at which individual changes occur is determined by the synergy of the breeder's internal variables. Therefore, in an effort to achieve the effectiveness of counseling in two maintenance bases, the synergy of the association of internal variables based on the age variable is presented in **Table 1**.

The breeder's age is one of the supporting factors in running a native chicken farming business, because differences in age can describe a person's behavior which is obtained from differences in experience and the nature and type of structure in behavior (attitude).

Table 1. Age Groups of Native Chicken breeders Respondents in Nalahia State.

Age group	Frequency	Percent
Non-productive	5	17.9
Productive	23	82.1
Total	28	100.0

Source: Processed Research Data (2023).

B. Formal Education

Formal education is one of the factors that supports breeder competence, because the knowledge they have can influence them to think more rationally, choose alternatives and quickly accept or implement an innovation (Soekartawi 2005). This shows that the higher a people level of education, the stronger the potential for critical power in thinking more rationally and determining whether or not to adopt an innovation. Formal education level of respondents in Nalahia State presented in **Table 2**.

Table 2. Formal Education Level of Chicken Farmer Respondents in Nalahia State.

Formal Education	Frequency	Percent
Elementary School	8	28.6
Senior high School	14	50.0
Junior high School	6	21.4
Total	28	100.0

Source: Processed Research Data (2023).

Table 2 shows that the formal education level of breeders has an elementary school education of 28.6 percent, a junior high school education of 21.4 percent and a high school education of 50 percent. These results illustrate that the management of native chicken businesses is supported by human resources which are quite good. Mulyasa (2014) states that education plays a role in creating a quality society or presenting individuals who have strong, creative and professional excellence in their respective fields. This description shows that in an effort to form superior, tough, creative and professional breeders in managing native chicken businesses, additional educational support is needed. The type of education that is considered appropriate is non-formal education or counseling in accelerating the increase in the ability and capacity of human resources managing free-range chicken businesses. Increasing skills in implementing native chicken business technology packages and dynamic openness of breeders to all information to support business development is an appropriate type of counseling to support the competence of native chicken breeders in Nalahia State.

C. Livestock Business Experience

Experience is everything that appears in a person's life history. A person's experience determines the development of knowledge and skills. Experience is the result of a process experienced by someone which influences the information received. Experience is the basis for forming individual views to provide responses and appreciation. Having no experience at all with an object psychologically tends to form a negative attitude towards that object. People who have been in a job for a long time will be more skilled and tend to produce better results than people who are new. Profile of business experience variable can be seen in **Table 3**.

Table 3. Groups of Length of Experience Raising Native Chickens in Nalahia State.

Experience Group (Years)	Frequency	Percent
>= 5	4	14.3
1–2	18	64.3
3–4	6	21.4
Total	28	100.0

Source: Processed Research Data (2023).

Table 3 shows that from the business experience variable, it was found that the rearing of native chickens in Nalahia State is dominated by new breeders (1-2 years), namely 64.3 percent, 3-4 years as much as 21.4 percent and with experience >= 5 years as much as 14.3 percent. Soekartawi (2005) explains that farmers who are more experienced will absorb agricultural technology innovations more quickly compared to farmers who have no or less experience.

D. Scale Enterprises

The scale of the business influences the farmer's competency in managing the native chicken business. The size of the number of livestock owned will encourage the rise of farmers' motivation to do business (**Table 4**). Farmers whose livestock are small will have an impact on enthusiasm/motivation and work creativity so that the income obtained can be better (Soekartawi, 2005).

Table 4 shows that the scale of livestock businesses managed by breeders in Nalahia State is still small, however, with the existence of state programs in the form of increasing household food security through native chicken farming businesses, it tends to psychologically motivate breeders to further deepen their knowledge and skills using new technology and innovation to produce better native chicken productivity. According to Soekartawi (2005), farm/livestock business size is always positively related to innovation adoption. If the

business scale variable is linked with the productive age variable, efforts to increase the knowledge and skills of native chicken breeders in Nalahia State can be carried out in a persuasive and intensive counseling process so that breeders can be motivated to increase the scale of their business. The process of increasing the business scale is intended so that the incentives obtained by farmers can also increase, but the increase should be focused **on** breeders who still have a low business scale. Apart from that, intervention can also be carried out in the form of providing assistance to increase business scale with conditions that can be reached by farmers.

Table 4. Scale of Native Chicken Farming Business in Nalahia State.

Native Chicken Business Scale	Frequency	Percent
> 15	4	14.3
1 – 5	13	46.4
6 – 10	11	39.3
Total	28	100.0

Source: Processed Research Data (2023).

E. Breeders Knowledge in Managing Native Chickens in Nalahia State

Raising native chickens is one of the components of a multi-managed farming business, where the livestock will be integrated with other commodities cultivated by farmers where the native chicken farming business is only a part-time business. Based on the characteristics of the management of native chicken breeders businesses, the knowledge and skills of breeders play a very important role and are needed to play an effective role in optimizing increased production and productivity of native chicken farming businesses in Nalahia State. The knowledge and skills possessed by breeders determine ways of behaving or thinking, adapting to various situations that underlie and reflect a person's behavior and performance in his life (Mangkuprawira 2004). Purwanto (2002) states that the quality and quantity of knowledge a person has and what type of knowledge he has mastered plays an important role in his work.

F. Knowledge about Native Chicken Seeds

The results of research related to knowledge about native chicken seeds owned by breeders in Nalahia State can be seen in the following **Table 5**.

Table 5. Breeders Knowledge about Native Chicken Seeds and Breeding.

Knowledge Aspect	Breeder Assessment (%)		
	Don't know	Know	Very know
Mention the age of the chicken to be used as seed	92.9	7.1	0
Mention the quality of prospective seed chickens	92.9	7.1	0
Mention the characteristics of a good chicken	96.4	3.6	0
Know how to select chicken seeds	100.0	0	0
Find out the age at which chickens are ready to mate	100.0	0	0
Know the signs that a chicken is ready to mate	100.0	0	0

Source: Processed Research Data (2023).

The **Table 5** shows that overall farmers' knowledge about aspects of native chicken seeds and breeding in Nalahia State is still very low; although some experienced breeders state that chickens that are good for replacement generation are selected livestock, namely those that have high production in the form of offspring and are based on progeny tests, namely the developmental achievements of the offspring.

G. Chicken Farmers Knowledge about Cages and Housing

The cage is an important aspect in a native chicken farming business because the cage functions to protect the chickens from environmental influences that have a negative effect on the product and makes production management easier. The results of the research regarding breeders' knowledge about cages and housing can be seen in the **Table 6**.

Table 6. Breeders Knowledge about Native Chicken Cages and Housing.

Knowledge Aspect	Breeder Assessment (%)		
	Don't know	Know	Very know
Mention the requirements for a good cage	92.9	7.1	0
Mention a good cage location	92.9	7.1	0
Mention the types of cages	92.9	7.1	0
Know the importance of cage cleanliness	92.9	7.1	0
Mention cage equipment	92.9	7.1	0
Know the signs that a chicken is ready to mate	100.0	0.0	0

Source: Processed Research Data (2023).

As can be seen in the **Table 6**, breeders have very low knowledge regarding cages and housing, because all farmer respondents do not have cages. Chickens are left to roost in the trees around the house all night. However, in-depth interviews with several breeders revealed that even though they do not have cages, breeders are aware and understand that the cleanliness of the tree branches where chickens roost needs attention because it can be a source of breeding diseases. For this reason, farmers often clean tree branches that have accumulated with chicken droppings.

H. Knowledge about Chicken Animal Feed

Chicken feed is useful as a source of energy for basic living and production, namely producing meat and eggs. **Table 7** shows the results of research regarding chicken breeders' knowledge about chicken feed.

Table 7. Knowledge of breeders in Nalahia State Regarding Chicken Feed.

Knowledge Aspect	Breeder Assessment (%)		
	Don't know	Know	Very know
Mention the types of feed in full	89.3	10.7	0
Learn about the benefits of giving vegetables	17.9	82.1	0
Mention the types of nutrients present in certain types of feed	92.9	7.1	0
Know the composition of good chicken feed	92.9	7.1	0

Source: Processed Research Data (2023).

The research results in **Table 7**, above state that overall breeders have low knowledge about chicken feed. It is interesting here that the majority of farmers know the benefits of giving vegetables to chickens. This is because most of the respondents have been practicing it for a long time so that the results can be observed and become knowledge for them. The vegetables usually given are the remains of leafy stems/leaves, tubers in the form of remains of cassava tubers and taro. Farmers also observe that chickens that roam around in the morning often eat young grass. According to breeders, chickens that are regularly given vegetables look healthier because their eyes are brighter, their movements are more agile and their feathers are brighter/shinier. Apart from rice and corn, native chickens also need support from green leaves/vegetables as well as garden residues as strengthening feed. Providing fish scraps/fish innards is a high quality animal feed ingredient and providing additional booster feed will show fairly good livestock production (Mustaqim, *et al*., 2023).

I. Knowledge about Chicken Diseases

Control and treatment of native chicken diseases is absolutely necessary for the continuity of production and profits of a native chicken farming business. The research results show that the level of farmer knowledge about disease and disease treatment is quite good. Farmers can observe when disease attacks usually occur and how to deal with them (**Table 8**).

Table 8. Knowledge of Farmers in Nalahia State Regarding Diseases and Treatment of Chicken breeders Diseases.

Knowledge Aspect	Breeder Assessment (%)		
	Don't know	Know	Very know
Know the impact of weather on sick chickens	67.9	32.1	0
Know the signs/symptoms of sick chickens	10.7	89.3	0
Mention the name/name of the type of chicken disease	92.9	7.1	0
Know how to treat sick chickens	75.0	25.0	0
Know how to prevent chickens from getting sick	96.4	3.6	0

Source: Processed Research Data (2023).

Breeders have sufficient knowledge (32.1%) that especially cold weather and continuous rain can cause their chickens to be susceptible to disease. They recognize the characteristics of sick chickens and can name their characteristics (89.3%), but do not know exactly what type of disease is affecting their chickens (92.9%). As many as 75 percent of the respondent farmers admitted that they knew how to treat their sick livestock, although they were not quite sure that this treatment could cure sick chickens. The majority (96.4%) of farmers stated that they were overwhelmed because they did not know how to prevent this disease. However, several breeders who have more than ten years of experience raising free-range chickens stated that when the rainy season approaches when chicken diseases are rampant, they: (1) are forced to sell their chickens before the disease takes hold, (2) give them more food, especially fish resulting from excess fishing (rather than ultimately being buried), fish innards and shellfish which are easily obtained on the coast around his house, (3) deliberately not keeping chickens when the rainy season approaches. Apart from that, experienced breeders too. Therefore, experienced breeders tend to plan when to produce chickens, namely deliberately not raising young chickens before the rainy season because young chickens and chicks are susceptible to chicken diseases at that time; in addition they avoid releasing chicks too early after settling. The chicks are kept for several weeks and will be released when their feathers have grown enough and their legs are strong enough to walk with their parents in search of food.

J. Knowledge about Harvesting Production and Marketing

The results of research related to breeders' knowledge about harvesting and marketing native chicken products can be seen in the **Table 9**.

Table 9. Knowledge of Farmers in Nalahia State regarding Diseases and Treatment of Chicken Diseases.

Knowledge Aspect	Breeder Assessment (%)		
	Don't know	Know	Very know
Know how to store chicken meat/eggs	7.1	92.9	0
Find out the selling price of chicken locally	28.6	71.4	0
Know the right time to sell chickens	28.6	71.4	0
Know the right way to sell	32.1	67.9	0

Source: Processed Research Data (2023).

As many as 92.9 percent of respondents knew how to store meat/eggs properly for consumption or sale. Eggs are very good when stored in the refrigerator, but if the household does not have a refrigerator, they are traditionally stored by immersing them in rice. Farmers do not know how to preserve eggs using other methods. Most farmer respondents (71.4%) knew about the standard selling price for live chickens based on weight and body size. Adult male chickens are usually priced (Rp.100,000 – 125,000) more expensive than adult female chickens (Rp.85,000 – 95,000). According to breeders, in order to get maximum profits, chickens should be sold directly without intermediaries to consumers; because if you use an intermediary, the 'tired costs' for the intermediary will be reduced. The right time with maximum benefits is just before Christmas or other church days.

CONCLUSION

Despite farmers' knowledge about native chicken rearing systems, the majority of them (64.3%) have high knowledge. There is still a gap in farmers' knowledge, especially in terms of feed and disease control, because even though they can recognize early chickens that are infected with disease, they do not have the knowledge of how to treat it. There is a significant difference between the level of knowledge regarding native chicken rearing systems in terms of gender, age group and education.

AUTHORS CONTRIBUTION

V. Selubun designed and conducted the study, analyzed and interpreted the data, and wrote a draft of the manuscript. A. Tualessy designed the research, analyzed and interpreted the data. While, H. Jesajas reviewed the draft manuscript, and supervised the entire process.

CONFLICT OF INTEREST

The authors declare no conflicts of interest, and will take full responsibility for the content of the article, including implications of AI-generated art.

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