Sustainability of KUB chicken business from human capital perspective: case study from central Lombok regency

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Abstract. KUB chicken has a great business potency for small enterprise to meet the growing demand of raw material for culinary tourism named Taliwang Chicken, owing to its fast growth trait. Human capital is very important in the management of KUB growing chicken enterprise to be sustainable from an economic, ecological, and social perspective. This paper aims to examine the sustainability of KUB growing chicken enterprise from the perspective of human capital. A survey was conducted from July to September 2021 in Central Lombok Regency as a center for developing of KUB chickens covering 35 farmers. The independent variable observed was human capital consisting of knowledge, skill, motivation, and attitude, while the dependent variable was business sustainability including economic sustainability, ecological sustainability, and social sustainability. These variables were measured using the Likert scale with five alternative answers. The study shows that the KUB growing chicken enterprise has a quite good level of sustainability in term of economic dimension, and high level in terms of ecological and social dimensions. Human capital assessment in the KUB growing chicken enterprise revealed quite high-range reflecting it's have a great contribution to sustainability. Hence, it is concluded that human capital plays significant roles to sustain small scale KUB growing enterprise.

1 Introduction

Public demand for local chicken commodities has increased rapidly in recent years, due to the change in people's preferences to organic food [1]. The distinctive taste and low-fat content make local chickens attractive for middle and upper class. Local chicken is widely used in various famous culinary such as Kalasan Fried Chicken, Mbok Berek Chicken, including a very popular culinary in the West Nusa Tenggara area, especially Lombok Island, namely Taliwang Chicken.

Taliwang chicken requires local chicken with small to medium size, which is around 0.4–0.6 kg. It takes at least 15-16 thousand local chickens every day to meet the needs of restaurants and street tents that sell Taliwang chicken. To meet the high demand with the appropriate size, it is necessary to have a type of local chicken that can be harvested in a short

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time. In this regard, one alternative that can be relied on by farmers is the Kampung Unggul Balitbangtan (KUB) chicken. KUB chicken is a type of local chicken that has gone through a long selection for six generations with fast growth trait as the advantage. KUB chickens can be harvested at the age of 35-45 days to meet the needs of Taliwang chickens [2].

The relatively short business turnover accompanied by increasing demand has caused the KUB chicken business in the Lombok Island is develop quite rapidly. This can be seen from the KUB chicken population which is increasing every year. In 2016 the number of KUB chickens in NTB was only 109,168 heads, but in 2019 there were 1,103,000 KUB chickens [3]. The largest population of KUB chickens is in Central Lombok Regency, so it is not surprising that Central Lombok is the center of KUB chicken business in NTB Province. Currently, there are more and more farmers who have started KUB chicken farming, both breeding and growing.

As a comparison with other poultry farming businesses, a study showed that broiler farming businesses have weaknesses in terms of economic, ecological, and social aspects of sustainability. Economically, the low sustainability of the broiler farming business is judged by the weak business capacity of farmers who manage the business. Viewed from the ecological and social aspects, broiler farming tends to trigger environmental pollution, inaccessible and does not provide benefits to the community. Social relations that are less harmonious with the surrounding community may interfere with business continuity in the long term. These things show that business sustainability is closely related to the human capital factor as a business actor [4].

Humans are a very important capital factor as a driving force for a business as well as money and natural resources. Human capital is defined as covering knowledge, skills, competencies, and other attributes embedded in individuals that are relevant to economic activity [5]. Human resources as capital have a significant role in improving the production process and increasing business competitiveness [6]. The qualitative dimensions of human resources, such as the expertise and skills possessed by a person will affect that person's productive ability. In line with this, a study shows that labor productivity in broiler farming in Kejayan District, Pasuruan Regency, East Java is significantly influenced by human capital which includes business scale, work skills, work discipline and work motivation [7].

Based on the description above, it can be said that human capital has an important position in efforts to maintain sustainability and business development, including the KUB chicken farming business. However, it is realized that information of the condition of human capital and how human capital contributes to the sustainability of the KUB chicken business in the context of the socio-economic conditions of the people in Central Lombok Regency is still very limited. This information is important because it can be used as a reference for the preparation of a sustainable KUB chicken business development plan. This study was conducted to determine the condition of human capital in the KUB chicken business in Central Lombok Regency and how the sustainability of the KUB chicken business in Central Lombok Regency is viewed from the perspective of human capital.

2 Methodology

2.1 Data Collection Approaches and Techniques

The research was carried out from July to September 2021. The location of the research was chosen deliberately, namely Central Lombok Regency as a center for producing local chickens with a population of 3,074,683 local chickens or 37.21% of 8,262,646 local chickens in NTB Province [8], where 25% of the population of local chickens in Central Lombok Regency are KUB chickens.

This study was designed as a survey of farmers who run a KUB chicken business. Consider that there is no definite data on the number of KUB chicken farmers in Central Lombok Regency, the sampling was carried out using the snowball sampling method. Sampling in snowball sampling is a stratified technique, starting with one or several people then spreading based on links to the beginning of the case [9]. In the snowball sampling technique, the beginning starts from someone who fits the research criteria. Then based on direct or indirect relationships in a network, the next respondent or the next sample unit can be found. And so on, this sampling process continues until it gets enough information and a sufficient number of samples to be analyzed in order to draw conclusions [10].

2.2 Data and Analysis Method

The data collection during the survey is all information related to human capital and business sustainability. The independent variables observed were knowledge (X1), skills (X2), motivation (X3) and attitudes (X4), while the dependent variable was business sustainability (Y). Business sustainability is the ability of farmers to manage their business in order to be sustainable in terms of economy, ecology and social. The economic aspect emphasizes the level of profit obtained by KUB chicken farmers, the ecological aspect is related to the level of awareness of farmers towards biosecurity and environmental sustainability, while the social aspect assesses the level of contribution of the livestock business to the surrounding community [4]. These variables were measured using the Likert scale with five alternative answers which were scored in the form of numbers (1-5). [11] states that the Likert scale can be used to measure the social factors (psychology and sociology) of a person or group of people and also to measure social phenomena that occur in society.

In this study, the knowledge and skills variable scores were assessed in the form of a percentage score and determined by measuring the value of the question items that compose it. Based on each question item, the maximum score selected by all or some respondents, and the average score, namely the total score divided by the number of respondents.

$$Average\ score = \frac{Total\ score\ of\ each\ statement}{Number\ of\ respondent} \quad (1)$$

The percentage score is the average score of all respondents' answers divided by the maximum score then multiplied by 100%, or it can be stated in the following formula [12]:

$$\%\ Score = \frac{\text{Average scote}}{\text{Maximum score}} \text{ x } 100\% \quad (2)$$

For example, in the knowledge variable there are ten question items. The total score of all respondents' answers is 1383, so that the average score of all respondents is 1383: 35 = 39.51. It is known that the maximum score chosen by the respondent is 5, so the total maximum score is 10 x 5 = 50. The percentage score is obtained by calculating the average score divided by the maximum score and multiplied by 100%, namely 39.51/50 x 100% = 79.03 %. Thus, the knowledge value of respondents is 79.03%.

The calculation of scores on motivation, attitude and business sustainability is similar to the method above, namely from the percentage score of the constituent indicators where each of these indicators also has a maximum score and an average score. In the motivational variable there are three indicators, namely existing motivation, relatedness and growth, the attitude variable has indicators of cognitive, affective, and conative aspects while the sustainability variable has economic, ecological and social indicators. The data obtained were analyzed using descriptive analysis.

3 Results and Discussion

3.1 Respondent Characteristic

3.1.1 Age

The age of respondent is in the productive age range and tends to be dominated by young people, namely under the age of 50 years (Table 1). This shows that millennials have a fairly high interest in the livestock sector, especially the KUB chicken business. With a fairly broad association in the era of digital communication via the internet, it is easy for young people to get access to adequate information about KUB chickens. The success achieved by KUB chicken farmers in various places has a positive influence for farmers in the central Lombok area to follow in the footsteps of these successful farmers in trying KUB chickens. In line with this, a study conducted in Baringo Kenya showed that younger breeders were very enthusiastic about starting the local chicken business because they saw the business as very profitable [13]. The following is the distribution of respondents based on age.

Table 1. Age distribution of respondents.

Age (years)	Amount	Percentage (%)
< 18	-	-
18 - 30	6	17.14
30 – 50	18	51.43
> 50	11	31.42
Total	35	100.00

3.1.2 Education

Based on the level of education, the distribution of farmer respondents is mostly high school graduates and upper (Table 2). This shows that the KUB chicken business has getting interested by various levels of public education. KUB chicken business is considered quite feasible to do to get the expected income. The level of education has a positive relationship with the management of the chicken business, where along with the high level of education, the possibility for better management will be greater so that resulting better performance [13-14]. Formal education owned by farmers is very important to be supported by non-formal education in the form of counseling and training. These two things should ideally be given before starting the business, so that farmers have sufficient knowledge to carry out their business [15-16].

Table 2. Distribution of respondents based on education level.

Education	**Amount**	**Percentage (%)**
< primary school	2	5.71
Primary school	4	11.2
Yunior High School	2	5.71
Senior High School	15	42.86
Bachelor	12	34.38
Total	35	100.00

3.1.3. Farming Experience

Table 3. Distribution of respondents based on Farming Experience.

Farming Experience	Amount	Percentage (%)
< 3 years	13	37.14
3 – 5 years	8	22.86
6 – 10 years	12	34.38
11 – 15 years	2	5.71
> 15 years	-	-
Total	35	100.00

Experience is something that has been experienced by farmers and forms knowledge so that experience is part of knowledge. The experience of farmers in KUB chicken cultivation from a psychological perspective can be observed from the success and failure of farmers in implementing KUB chicken innovations. Based on the data in Table 3, it is known that the distribution of respondents' business experience is in the range of under 5 years. This means that many respondents are relatively new to the KUB chicken business.

3.1.4 Number of family members

In general, agricultural businesses in rural areas still rely on family members of productive age as workers in running a farm so that their existence is important. However, the large number of Number of Family Members (Table 4) dependents can also burden the head of the family in providing food, clothing, and education costs, if the income earned by the total family workforce is not commensurate with the expenditure. This condition encourages heads of families to increase production by implementing more perfect innovations or looking for other jobs outside of farming [14].

Table 4. Distribution of Respondent Based on Number of Family Members.

Number of Family Members	Amount	Percentage (%)
2 – 3	-	-
4 – 5	20	57.14
6 – 7	14	40.00
> 7	1	2.86
Total	35	100.00

3.2 Human Capital

3.2.1 Farmer's Knowledge About KUB Chicken Innovation

Based on the data in Table 5, it can be seen that the knowledge of KUB chicken farmers regarding KUB chicken cultivation is relatively good. This is because KUB chicken cultivation is relatively simple and technically easy to understand. Farmers know the requirements of a good cage such as sufficient water available, easy to clean, air circulation and adequate sunlight, far from the location of residence and not passed by general traffic. Knowledge of the need for feed and maintenance since the arrival of DOC and subsequent growth phases in KUB chickens is also well known by farmers.

Farmers get information about KUB chicken farming relatively easily. The most widely accessed sources of information by farmers related to KUB chicken cultivation are handphone (HP) and neighbors. Farmers consider that various features on their HP such as YouTube and WhatsApp (WA) provide good enough access to get information about KUB

chickens. Likewise, neighbors can be a source of reference or reference in terms of maintaining and selling KUB chickens. These things make the KUB chicken farm business quite prospective for farmers in Central Lombok Regency. This is in line with the results of the study in Sigi Regency, farmers think that KUB chickens are the best local chickens, because they are easy to maintain and do not require special skills [17].

3.2.2 Skill of Farmers

In general, the skills of farmers in Central Lombok Regency are relatively sufficient. When DOC arrives, brown sugar water with a concentration of 2% is prepared to reduce stress while traveling, DOC is kept in cages installed with heaters at temperatures ranging from 32 – 35º C so that DOCs feel safe and comfortable. Water is provided continuously (ad libitum) while commercial feed is given twice a day in the morning and evening with a fine texture according to the DOC's beak. After one week to four weeks the temperature of the cage can be lowered to about 25ºC. After four weeks, there are farmers who continue to give only concentrated feed because they feel it is more practical, there are also farmers who do mixing to save on feed costs.

In the business of raising KUB chickens, there are several things that are known by farmers quite well but are not carried out properly. For example, farmers know that a good cage is should far from their residence, but in reality, the cage is made in the yard and very close to the house, because the farmer does not have an alternative place to build a cage. In rearing cages, some farmers do not use husk as a base. Sanitary tools such as foot washing tubs are generally not available, but there is a water tap for washing hands. Farmers realize that the condition of the cage is still quite simple and does not meet the ideal requirements, so the farmer is diligent in cleaning the cage and the tools used in the cage such as feed and drinking water. Farmers try to maintain the condition of the cage and the home environment clean and odorless. After harvesting, the farmer cleans the cage using soap and disinfectant, empties the cage for some time to avoid the development of germs. Knowledge and skills can be linear, if farmers' knowledge of corn innovation is high, they will have the skills to apply corn innovation better [14]. This is quite different from the condition of broiler farms, where there are problems of lack of farmer's knowledge about diseases, lack of skills in cultivation and inefficient use of production facilities [18-19].

3.2.3 Motivation

For farmers, motivation to achieve a prosperous standard of living is very important and a priority. This existence motivation is accompanied by the motivation to establish partnerships with other parties (relatedness). Farmers try to establish good cooperation with farmer contacts, seed traders and chicken collector. Farmers consider that partnership with other parties is quite important to maintain the sustainability of their business.

Business continuity is also supported by the motivation for growth and great self-development (growth). Becoming big and continuing to grow is something that naturally arises in farmers. Farmers consider that everything's that can increase their capacity such as increasing knowledge, skills and experience regarding KUB chicken technology are important things to do.

In this KUB chicken rearing business, the motivation of farmers to fulfill their basic needs (existence) is greater than the motivation to establish social relationships with other parties (relatedness) and their desire to develop (growth) [14].

3.2.4 Farmer's Attitude

Farmers are quite sure that by applying the technology as recommended, the KUB chicken business will provide high production. High production means that in terms of quantity the number of chickens that die is low and chicken's heavy when harvested is high so that the selling price becomes more feasible, and then the income of farmers can also increase. On the other hand, farmers admit that to achieve large production, high capital is still needed, especially regarding the procurement of DOC and feed, while the capital they have is mostly from their own capital and the amount is relatively limited. In addition to increasing production, farmers also recognize that the application of recommended technology will prevent chickens from various diseases and reduce the risk of death. If not treated immediately, cases of sick chickens will usually spread quickly and require massive handling. This can have an impact on the emergence of large costs which in the end can cause losses, especially if many livestock die. Therefore, the application of technology is believed by farmers, apart from being relatively cheaper than without applying the technology, it will also reduce the hassles of maintenance.

Feeling happy about the business process carried out will provide a positive stimulus so that the business can take place in the long term. This is due to feelings will encourage farmers to decide whether to continue their business by applying technology or not (conative aspect). According to the farmers, they will try to apply the technology accordance with the recommendations, such as using superior seeds and not using antibiotics excessively. Only on the feeding side, farmers tend to use commercial feed without modifying the feed. Although there are implications for the costs incurred to be greater, this is done by farmers because they are considered simpler and less troublesome. It can be said that in general, the actions taken by farmers are in accordance with the attitudes they have. The more positive the attitude, the farmers will make various efforts to survive in the business. For farmers who have groups, the role of the group as a learning unit can also determine the attitude of farmers. When the farmer sees the success of the group in managing a business, it will affect his attitude as a member to pursue the same business [20].

Table 5. Human Capital in KUB Chicken Business.

Variable	Maximum score	Average score	Persentage (%)
Farmer's Knowledge	50	39.51	79.03
Farmer's Skill	50	38.14	76.29
Farmer's Motivation	145	116.40	80.28
Farmer's Attitude	135	109.54	81.14

3.3 KUB Chicken Business Sustainability

The sustainability of the KUB chicken business in terms of the economic dimension is included in the medium category. Several things that are measured in the economic dimension include the number of business cycles in a year, production capacity, the availability, price and quality of DOC, feed and medicines, ease of sale, satisfaction with selling prices, profit levels and the contribution of income from KUB chicken business on household expenses. For farmers, raising KUB chickens is a prospective business to do. Farmers consider this business relatively easy to do, fast business turnover and market needs are still high. Financially, the KUB chicken business provides a more definite and faster profit than other livestock, such as cattle. Rural communities tend to choose to raise local chickens because they can be cultivated both intensively and semi-intensively, adjusted to the capacity of themselves, both in terms of capital ownership and the technology they mastered [21-22].

The local chicken business remains an attractive option for farmers to develop because the economic value of local chicken is high compared to other livestock, including even broilers. Besides being easy to maintain with fairly simple technology, local chicken is easy to sell at any time when there is an urgent household need [23-26].

Table 6. KUB Chicken Business Sustainability.

Dimensions	Maximum score	Average score	Percentage (%)
Economic dimension	120	84.94	70.79
Ecological dimension	72	56.23	78.10
Social dimension	39	31.83	81.61
Total	231	173.00	74.89

Chicken farming can cause problems for the environment, especially when there is a buildup of ammonia from chicken manure that contains nitrogen. The amount of ammonia will increase if it is decomposed by microbes [27]. Conditions of high humidity, warm temperatures and above-normal pH can exacerbate the situation [28]. One effort that can be done to reduce this is to use rice husks as litter that can absorb dirt and leftover feed so as to avoid excessive moisture [29].

The sustainability of the KUB chicken business in terms of the ecological dimension is high (Table 6). The ecological dimension is measured through the condition and location of the cage, sanitation of the cage and the equipment in the cage and the availability of water. The farmer stated that the KUB chicken business is friendly to the environment. Even though it is located in a residential area, the KUB chicken business does not cause pollution that can disturb farmers and neighbors in the vicinity. The environment is kept clean, and the smell caused by the presence of chickens is almost non-existent. By using fairly simple technology such as the use of lime, husks and regular cleaning of the cage, it is felt that it is able to minimize the adverse effects caused by the existence of the KUB chicken farming business. Breeders emptied the cage after harvest for a minimum of two weeks to avoid the development of disease germs. This low negative impact is one of the factors that makes it easier for the KUB chicken business to be easily accepted by the community.

Socially, the sustainability of the KUB chicken business is assessed from the relationship between farmers and the surrounding community, the involvement of farmers in community social activities and the perception of the local community with the existence of KUB chicken farms around their environment. Based on these several things, the sustainability of the KUB chicken business is classified as high. In addition to being able to minimize the negative consequences of the existence of a livestock business, KUB chicken farmers can also make social contributions to the surrounding community. With the KUB chicken business, farmers can donate both money and goods in various community activities. On a large enough scale, farmers can recruit local residents to help so as to create new jobs for the community.

In various regions in Asia and Africa, the presence of livestock can be used to strengthen social ties through social relationships that are built with family and surrounding communities such as family celebrations, local celebrations, gifts, and barter [26]. In northern Ethiopia, poultry is used to strengthen kinship between husband-and-wife families. In local culture in some quite remote places, a wife who provides a menu of poultry food for her husband is considered capable of building a strong family [22].

4 Conclusion

In general, the condition of human capital in the KUB chicken business in Central Lombok Regency is relatively good. This has positive implications for the sustainability of the KUB chicken business in Central Lombok Regency. In terms of economic, ecological, and social

dimensions, the sustainability of the KUB chicken business is considered quite high. It is necessary to make various breakthrough efforts by both the farmers themselves and the government so that in the future the KUB chicken business will growing up.

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