

## **Welfare Improvement Strategies Kub Chicken Farmers in Central Java Province**

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### **Abstract**

*The sustainability of the KUB chicken business, the increase in farmers' income and the fulfillment of farmers' living needs are the parameters of farmers' welfare. The purpose of this study was to formulate strategies to improve the welfare of farmers in the KUB chicken business in supporting sustainable livestock development. This research was conducted in March 2023 using a questionnaire with a sampling of 10 respondents consisting of farmers, researchers, policy analysts and government officials in Central Java. The method used to determine strategic steps in achieving farmer welfare parameters is AHP (Analytical Hierarchy Process). AHP is a method used to help solve complex qualitative problems using quantitative calculations. Through the process of expressing problems in an organized framework, it is possible to carry out the decision-making process effectively. The results of the research can determine the priority steps that need to be taken, starting from KUR cooperation (ideal: 1.0000 normal: 0.2404 and total: 0.0801), increasing production capacity (ideal: 0.8551, normal: 0.2056 and total: 0.0685), institutional strengthening (ideal: 0.7900, normal: 0.1899 and total: 0.0633), empowerment of millennial breeders (ideal: 0.7900, normal: 0.1874 and total: 0.0625) and the last (ideal: 0.7347, normal: 0.1767 and total: 0.0589) is increasing breeder knowledge.*

**Keywords:** Strategy, farmer, KUB chicken, AHP, super decision.

### **INTRODUCTION**

Welfare can be defined as the aggregate state of satisfaction of individuals. Welfare is the amount of satisfaction obtained by a person as a result of consuming the income received. However, the level of welfare itself is relative because it depends on the amount of satisfaction obtained from the consumption of income.

General parameters that are suitable for Indonesian conditions can be considered in measuring community welfare, including economic parameters, housing, education, health, environment, spirituality, recreation, and social security. (Hertzmark & Chavez, 1976).. Welfare can be seen from two approaches, namely objective welfare and subjective welfare. Subjective well-being can describe various aspects of life, including: employment, economic activity, level of independence, spirit of life. Objective welfare is the level of welfare of

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individuals or community groups measured on average with certain benchmarks, both economic, social and other measures. (Jonidi, 2012).

The parameters of welfare for KUB chicken farmers are the increasing value of assets and the involvement of many livestock groups, the increasing number of breeders, and the increasing livestock population. In addition, welfare can be seen by the increase in the KUB chicken business, the growth of livestock facilities and infrastructure kiosks, workshops, hatching machines, KUB chicken entering the restaurant market and the role of local government funding is reduced. (Sumanto, 2015).

Strategy is a series of competitive decisions or changes and approaches made by management (purposeful steps, medium and long-term goals, necessary structures, mobilization, mission and vision) that lead to the development of internal practices, action plans, policies and guidelines, aimed at improving relations with the external environment, and success to achieve the best performance (Nickols, 2016; Thompson, Jr., 2003). (Nickols, 2016; Thompson, Jr., 2003).. All development activities must essentially be environmentally sound and sustainable development with dimensions of environmental sustainability, economic sustainability, social-cultural sustainability, and political sustainability (Mansi et al., 2020). (Mansi et al., 2020).

The purpose of sustainable agricultural cultivation is to increase and expand the diversity of agricultural products, in order to meet the needs of food, clothing, shelter, health, domestic industry, and enlarge exports and increase farmers' income and living standards.

In realizing the improvement of community welfare, especially for KUB chicken farmers, the right method is needed in formulating the strategy. Central Java has promising potential in the development of KUB chicken. The purpose of this research is to formulate a strategy to improve the welfare of farmers in the KUB chicken business in supporting sustainable livestock development.

Improving the welfare of sustainable KUB chicken farmers requires strategic steps. In determining these strategic steps, decision-making is required in solving a problem or selecting certain alternative behaviors. Decision making is a systematic approach to the nature of the alternatives faced and taking action which according to calculations is the most appropriate action.

AHP (Analytical Hierarchy Process) is a decision support model developed by Thomas

L. Saaty. This decision support model will decompose a complex multi-factor or multi-criteria problem into a hierarchy, according to Saaty (1993), a hierarchy is defined as a representation of a complex problem in a multi-level structure where the first level is the goal, followed by the level of factors, criteria, sub criteria, and so on down to the last level of alternatives. (Dar et al., 2021; Darko et al., 2019; Panchal & Shrivastava, 2022).. With hierarchy, a complex problem can be decomposed into its groups which are then organized into a hierarchical form so that the problem will appear more structured and systematic (Han et al., 2020; Darko et al., 2019). (Han et al., 2020; Lyu et al., 2020; Zayeri et al., 2016)..

Based on the results of observations and information in the field as well as literature studies can be presented with a hierarchy of interests and strategies for the welfare of farmers through the maintenance of KUB chicken seedlings in a simple manner presented in Figure 1.

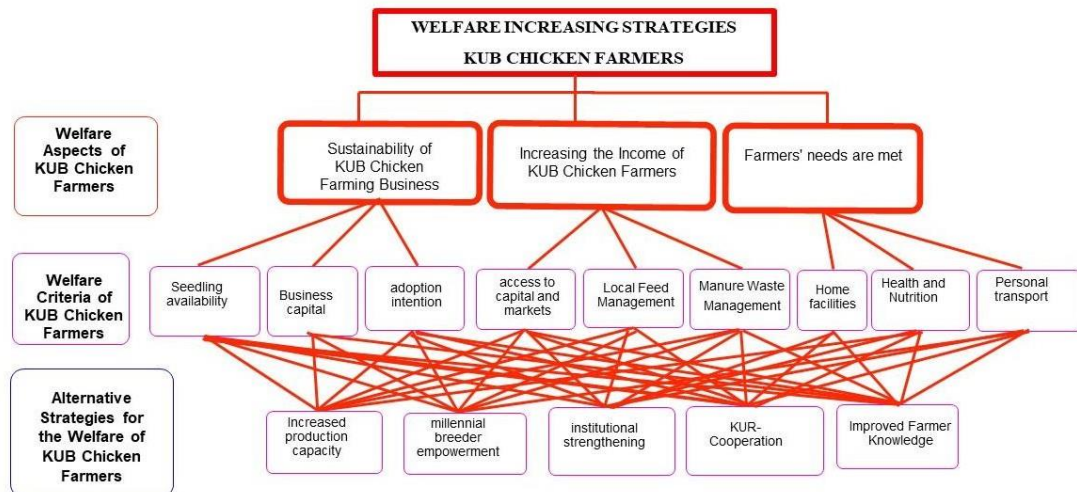


Figure 1. AHP Framework

Based on this figure, the decision hierarchy system has an interrelated form (Das et al., 2022; Leal, 2020; Sinaga, 2019). This hierarchical structure consists of four levels as follows:

1. The first level is the goal of the hierarchical analysis process, namely increasing the welfare of farmers based on KUB Chicken maintenance.
2. The second level is the aspects that become the pillars of improving the welfare of KUB chicken breeders. (Indraini sikombong, 2014; Ramadhan et al., 2020)The determination of this aspect is based on the need for animal protein and the preservation of KUB chicken strains. This aspect of livestock business sustainability is seen as a basic aspect that requires improvement in order to improve the welfare of farmers. b. The aspect of increasing farmers' income from livestock products, the determination of this aspect is based on the importance of efforts to increase the economic growth of farmers which has an impact on the welfare of farmers. c. The aspect of sufficient farmer needs, is a parameter of welfare because it has the ability / purchasing power of households to meet needs.
3. The third level is a criterion of aspects of farmer welfare at the second level, namely: a. On the aspect of the sustainability of the KUB chicken business, several criteria to support it include the availability of seeds, business capital and adoption interest (Sirajuddin et al., 2017). (Sirajuddin et al., 2017).. The three criteria are assumed to affect the sustainability of the livestock business, b. In the aspect of increasing farmers' income from livestock products, there are criteria that are assumed to be access to capital and markets, local feed management and manure management. The existence of these criteria will support the increase in farmers' income, in accordance with previous research, local feed management and manure management affect additional income. c. Aspects of farmers' needs are fulfilled. The criteria assumed are housing facilities, health facilities and nutrition fulfillment, and having a means of transportation.
4. The fourth level is an alternative strategy for the welfare of KUB chicken farmers, which consists of increasing the capacity of seed production, empowering millennial farmers, strengthening institutions, KUR cooperation, and increasing farmer knowledge.

## RESEARCH METHODS

### Study design

This research was conducted in March 2023 using a questionnaire with a sampling of 10 respondents consisting of breeders, researchers, policy analysts and the head of BSIP Central Java. In this study, the sampling used was purposive sampling and the stages of decision making with the AHP method.

AHP is a method used to help solve complex qualitative problems using quantitative calculations. Through the process of expressing problems in an organized framework, it allows for an effective decision-making process.

The decision-making procedure with the AHP method is as follows:

a. Define the problem and determine the desired solution

The problem in this study is that KUB chicken breeders in Central Java need to improve their welfare considering the number of breeders and the KUB chicken population is quite spread in the Semarang area and its surroundings. The analysis was carried out by analyzing government strategies by distributing AHP questionnaires to experts and recapitulating the results of the expert's assessment and determining the right strategy in an effort to improve the welfare of KUB chicken farmers optimally.

b. Create a hierarchical structure that starts with the main goal

After compiling the main objective as the top level, namely the strategy to improve the welfare of breeders, the hierarchy level below it will be compiled, namely suitable criteria, which are determined by three criteria and sub-criteria consisting of the criteria for the sustainability of the KUB chicken business (sub-criteria: business capital, availability of seeds, interest in adoption), criteria for increasing breeder income (sub-criteria: access to capital and markets, local feed management and manure management) and criteria for fulfilling breeder needs (health and nutrition, transportation equipment, and housing facilities). The next hierarchy is to determine alternatives consisting of increasing production capacity, strengthening institutions, empowering millennial breeders and increasing breeder knowledge. (Yu et al., 2021).

c. Create a pairwise comparison matrix

The pairwise comparison matrix in question describes the relative contribution or influence of each element to the objective or criterion level above it. Defining pairwise comparisons results in a total of  $n \times [(n-1)/2]$  judgments, where  $n$  is the number of elements being compared. (Coffey & Claudio, 2021). The result of the comparison of each element will be a number from 1 to 9 which shows the comparison of the level of importance of an element. As in table 1.

Table 1 Comparison weight description table

Weight	Meaning	Description
1	= Equally important	Both options contribute equally to the goal
3	= A little more important	One option is slightly more desirable than the others
5	= Somewhat more important	One option is more desirable than the other
7	= Much more important	Very obviously more important and proven from some facts to be very more important than other options
9	= Absolutely more important	Clear and convincing is much more important than the other options

2,4,6,8	=	Values between odd numbers above	Selected if a compromise between 2 compared options is necessary
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a. Calculate eigenvalues and test their consistency and check the consistency of the hierarchy

This stage is measured in AHP is the consistency ratio by looking at the consistency index. The expected consistency is close to perfect in order to produce a decision that is close to valid. Although it is difficult to achieve perfection, the consistency ratio is expected to be less than or equal to 10%.

Data analyse

Network Stages

The AHP model analysis in this study uses the Superdecision application. There are three main principles in problem solving in AHP according to Saaty, namely: Decomposition/Network, Comparative Judgement, and Rating. The AHP structure in the network stage superdecision system in this study is built based on 4 (four) main clusters at existing stages, namely: Cluster1: Goal, Cluster2: Criteria, Cluster3: Subcriteria, and Cluster4: Alternatives (Mu & Pereyra-Rojas, 2018).. Each Cluster has at least one Node, in this case cluster 1Goal (Node: Improved Livestock Farmer Welfare), Cluster 2Criteria (Node: sustainability of livestock business, and increased needs of farmers are fulfilled) , Cluster 3Sub Criteria (Node: health and nutrition, interest in adoption, means of transportation, access to capital and markets, housing facilities, business capital, availability of seeds, local feed management and manure waste management) and 4 Alternatives (Nodes: increasing production capacity, strengthening institutions, empowering millennial breeders and increasing breeder knowledge).

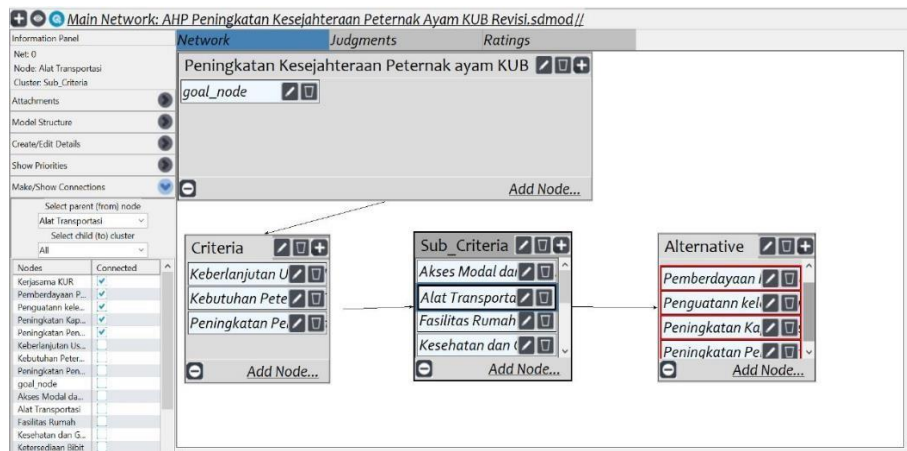


Figure 2. Superdecision AHP Network Model

Stages of Comparative Judgement

The principle at this stage is to make a judgment about the relative importance of two elements at a certain level in relation to the level above. Judgement in the superdecision application is a display window of choices that must be filled in by the decision maker according to the results of the assessment made when filling in the pairwise comparison matrix. (Liu et al., 2020; Lyu et al., 2020).. In contrast to the manual AHP step, Super Decision software presents choices in an individual element comparison between one element and another. The result of this judgment is a weight for each criterion and alternative to produce a



priority choice among several alternatives that are compared. The calculations inputted in this stage are based on the mode numbers from the questionnaire data.

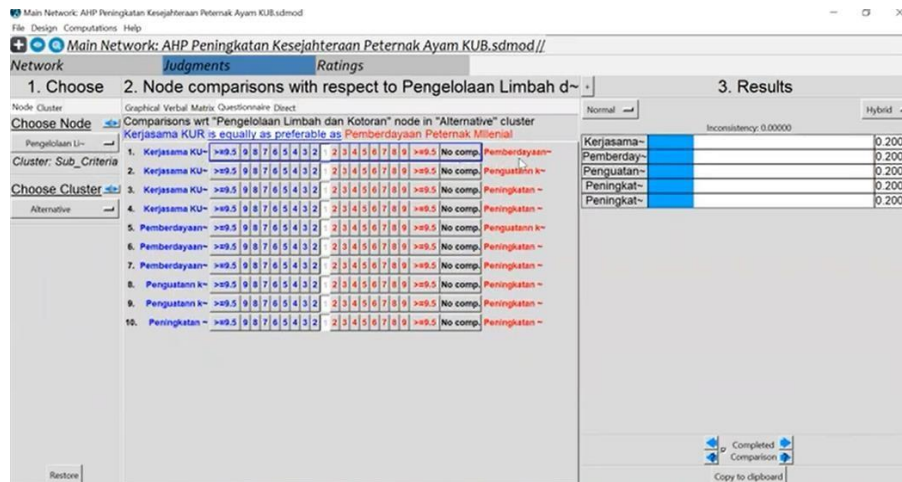


Figure 3. Stages of Comparative Judgement

This assessment is the core of AHP, as it will affect the prioritization of elements (Meshram et al., 2019). At this stage, comparisons are made between nodes in a cluster. Pairwise comparisons were made in cluster1-goal (Improving the Welfare of KUB Chicken Farmers) against nodes in cluster 2-criteria (sustainability of livestock businesses, and increasing the needs of farmers are fulfilled). Each node in cluster 2 is compared with the corresponding node in cluster3-subcriteria. After that, the comparison of the nodes in cluster 3 to the nodes in cluster4-strategy alternatives (increasing production capacity, strengthening institutions, empowering millennial breeders and increasing breeder knowledge) was also inputted. (Leal, 2020). As shown in the figure

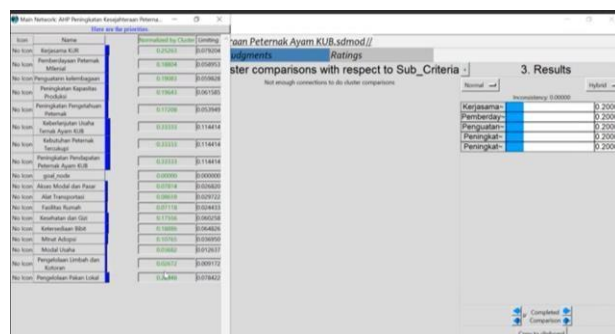


Figure 4. Prioritization of elements at the judgment stage

The judgment also shows the level of consistency of the assessment by the decision maker to see whether the choices made are consistent or not. So that in this stage checking is needed. After all the values are inputted, the next process is to compute the matrix by clicking the computations, synthesize menu (Panchal & Shrivastava, 2022).

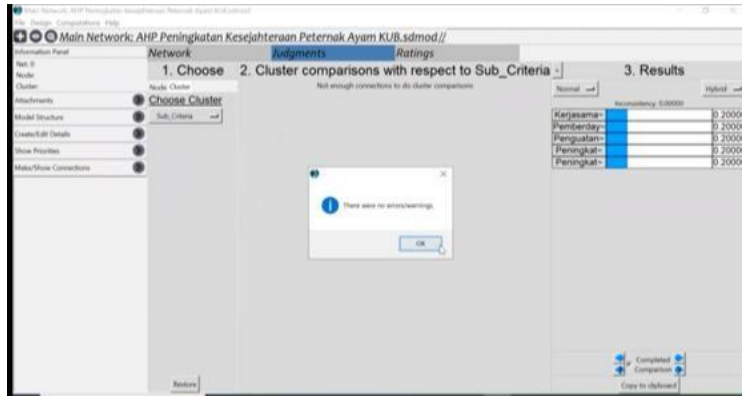


Figure 5. The result of checking the computation menu

In the checking process that has successfully inputted all data, it will appear on the screen as shown in the figure. So it can be ascertained that all data has been inputted.

## RESEARCH RESULTS

### Priority

The results of the comparative judgment as shown in the table resulted in the prioritization of consecutive criteria as (1) the sustainability of the KUB chicken farm ( $N=0.33333$ ;  $L=0.11111$ ), (2) the needs of farmers are met ( $N=0.33333$ ;  $L=0.11111$ ), and (3) increasing the income of KUB chicken farmers ( $N=0.33333$ ;  $L=0.11111$ ).

Within the sub-criteria, local feed management ( $N=0.22847$ ;  $L=0.076158$ ) is the top priority of the criteria for increasing the income of KUB chicken farmers. Next in sequence is the availability of seeds ( $N=0.18887$ ;  $L=0.062955$ ) health and nutrition ( $N=0.17556$ ;  $L=0.058519$ , adoption interest ( $N=0.10765$ ;  $L=0.035884$ ), means of transportation ( $N=0.08659$ ;  $L=0.028864$ ), access to capital and markets ( $N=0.07814$ ;  $L=0.026046$ ), housing facilities ( $N=0.07118$ ;  $L=0.023728$ , business capital ( $N=0.03682$ ;  $L=0.012272$ ), and manure management ( $N=0.02672$ ;  $L=0.008907$ ).

Table 2: Comparative Judgement Results

Name	Normalized By Cluster	Limiting	Node
Sustainability of KUB Chicken Farming Business	0,33333	0,111111	Criteria
Breeders' needs are met	0,33333	0,111111	Criteria
Increased Income of KUB Chicken Farmers	0,33333	0,111111	Criteria
KUR Cooperation	0,24043	0,080143	Alternatives
Local Feed Management	0,22847	0,076158	SubCriteria
Increased Production Capacity	0,20559	0,068529	Alternatives
Institutional strengthening	0,18994	0,063314	Alternatives
Seedling Availability	0,18887	0,062955	SubCriteria

Millennial Farmer Empowerment	0,18739	0,062464	Alternatives
Improved Farmer Knowledge	0,17665	0,058884	Alternatives
Health and Nutrition	0,17556	0,058519	SubCriteria
Adoption Interest	0,10765	0,035884	SubCriteria
Transportation Tools	0,08659	0,028864	SubCriteria
Capital and Market Access	0,07814	0,026046	SubCriteria
Home Facilities	0,07118	0,023728	SubCriteria
Business Capital	0,03682	0,012272	SubCriteria
Waste and Manure Management	0,02672	0,008907	SubCriteria
goal_node	0	0	goal_node

In the criteria for increasing the income of KUB chicken farmers, the main priority is the sub-criteria of local feed management compared to access to capital and markets and manure management. So that one of the efforts to increase farmers' income is to reduce feed costs through local feed management. (Akhadiarto, 2017; Fatmawati & Hartono, 2020; Rauf & Rasbawati, 2015; Sipahutar, IA and Juarsah, 2013). . The utilization and potential of local agricultural waste can be managed into KUB chicken feed. Some research results show that the continuous increase in feed prices greatly affects the income of chicken farmers, the greater the costs incurred for feed price needs, the income that will be received will decrease. (Fatmawati & Hartono, 2020). This is very significant if farmers are able to manage feed from agricultural waste products, considering that feed costs partially have a significant effect on sales profits. (Akhadiarto, 2017; Tumion et al., 2017)..

The sub-criterion of seed availability is the main priority in the criteria for the sustainability of KUB chicken business compared to business capital and interest in adoption. (Rusdiana & Soeharsono, 2019; Sartika, 2012).. Seeds are one of the important resources in maintaining the sustainability of livestock businesses. (Antikasari, 2020). The availability of superior seeds is very strategic, as it determines the upper limit of livestock production. Therefore, efforts are needed to increase innovation to increase the supply of superior seeds, improve the distribution system and increase superior seeds through the development of a national livestock breeding system. (Suprijatna, 2010). Therefore, to be able to increase the capacity of providing superior livestock seeds, the role of the government and the private sector is needed, which can be done through the mechanism of cooperation in breeding livestock seeds.

Health and nutrition sub-criteria are the main priorities in the farmer welfare criteria compared to transportation and housing facilities. Health is the main thing that cannot be separated from human welfare (Adams et al., 2006; McDowall et al., 2023).. Prosperous farmers are farmers who have been able to prioritize nutrition and health needs for their survival. (Abriyani, 2011). The results of their livestock income are expected to support an increase in family nutritional consumption so that with adequate nutritional needs, the body becomes healthy and has a much better immune system.








## Synthesis Result

The results of the AHP synthesis analysis, as in the table show that the alternative KUR cooperation (ideal: 1.0000 normal: 0.2404 and total: 0.0801) gets rank 1, increasing production

capacity (ideal: 0.8551, normal: 0.2056 and total: 0.0685) rank 2, institutional strengthening

(ideal: 0.7900, normal: 0.1899 and total: 0.0633) rank 3, and Empowerment of millennial breeders, (ideal: 0.7900, normal: 0.1874 and total: 0.0625) rank 4 , Increased knowledge of breeders (ideal: 0.7347, normal: 0.1767 and total: 0.0589) rank 5.

Table 3. AHP Synthesis Results

Graphic	Alternatives	Total	Normal	Ideal	Ranking
	KUR Cooperation	0.0801	0.2404	1.0000	1
	Empowering Millennial Farmers	0.0625	0.1874	0.7794	4
	Institutional strengthening	0.0633	0.1899	0.7900	3
	Increased Production Capacity	0.0685	0.2056	0.8551	2
	Improved Farmer Knowledge	0.0589	0.1767	0.7347	5

Source: Author's analysis (2023)

Strategies to improve the welfare of KUB chicken farmers in Central Java based on the results of the study, prioritized first by cooperating with the People's Business Credit (KUR). (Lestari et al., 2016). KUR facilitation from banks is an effort to strengthen access to financing for Micro, Small and Medium Enterprises (MSMEs) in improving the quality of seeds, accelerating population increase and increasing productivity, which will ultimately increase national meat production. (Soviana, 2013). The KUR Livestock scheme established by the government assists capital for business scale-up and the purchase of good seeds. (Ratnawaty et al., 2020; Rusdiana & Soeharsono, 2019).

The second strategy is to increase seedling production capacity. In building a livestock business, increasing production capacity can take advantage of the demand for seedlings that are always sold in the market and can also avoid the adverse effects of fluctuations in the price of chicken seedlings and the abundance of competitors.

The third strategy is institutional strengthening. Institutional strengthening needs to be done because it has an important role and function in driving livestock development in rural areas. (Rusdiana & Soeharsono, 2020). Institutional strengthening in this case, livestock groups can play a single or multiple roles, such as the provision of livestock business inputs (provision of KUB chicken seedlings, local feed management), provision of capital (savings and loan cooperatives and KUR cooperation), and provision of information (counseling through livestock groups), as well as collective marketing of results. The existence of institutional facilities in livestock groups in Central Java, namely the Association of KUB Chicken Breeders (AnaKUB) whose existence has had a tremendous impact on the development of KUB chicken farming in Semarang and its surroundings, including; (1) encouraging and guiding farmers to be able to cooperate in the development of KUB chickens, (2) developing association members through increased facilitation and guidance to members of the

organization, and increasing the efficiency and effectiveness of farming efforts, and (3) increasing the capacity of farmers' human resources through various mentoring activities, and specially designed training for administrators and members.

The fourth strategy is to empower millennial breeders. The existence of the Association of KUB Chicken Breeders (AnaKUB) is very supportive of empowering young people in Semarang and surrounding areas. Based on previous research, 41.35% of farmers in Central Java are less than 37 years old. Thus, many millennial farmers are already interested in developing KUB chicken farming businesses. (Lukman Effendy et al., 2022).. The empowerment of millennial farmers is a very appropriate resource asset to build sustainable farmer welfare. (Afifudin et al., 2023).

The fifth strategy is to increase farmer knowledge. Increasing farmers' knowledge can be done by attending training or counseling organized by the government, local agencies or AnaKUB. Increasing farmers' knowledge is very important to broaden their horizons and improve their skills in animal husbandry management, good breeding management, animal health, and calculation of the economic value of livestock businesses (Ravikumar et al., 2017).

(Ravikumar et al., 2017). So that farmers will continue to improve and develop livestock businesses in a sustainable manner and support the welfare of farmers.

## CONCLUSIONS

Strategies to improve the welfare of sustainable KUB chicken farmers are needed in an effort to improve the development of the Central Java region, which has successfully adopted KUB chickens as one of its livelihoods.

The results of the research using the AHP method can determine the priority steps that need to be taken, starting from KUR cooperation, increasing production capacity, strengthening institutions, empowering millennial breeders and increasing breeder knowledge.

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