Economic analysis of superior native chicken in Tembuku Bangli

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Abstract. Native Chickens are maintained as part-time businesses to utilize the home page, generally maintained traditionally, as a container for the rest of the kitchen and at any time can be cashed. Traditional maintenance causes low productivity and very high chicken mortality rates. Provision of rations that are in accordance with the nutritional needs of native chicken and with a semi-intensive maintenance system can increase chicken productivity while increasing farmer's income and profits. In this regard, research has been carried out to analyze the economic agribissnis of superior native chicken (KUB) that have been carried out in Bali. The survey method was carried out in December 2018 - March 2019 in the Sato Nadi native chicken farmer group. The results shown that the average maintenance of superior native chickens was 200, with semi-intensive cages, feed was obtained by buying at the nearest stalls. maintenance of native chickens at the study site mostly for fattening, egg production and production of day of chick (DOC). The purpose of maintenance is to fatten up to the age of 3 months, whereas if kept for brooders until the age of 1.5 years. For purposes of fattening, the costs spent amounted to Rp. 5,085,950, egg production amounting to Rp. 46,660,000 and for breed production of Rp. 70,170,000. From the feasibility analysis each obtained B/C value of 0.41 (for fattening), 0.26 (for egg production purposes) and 0.65 (for DOC production).

1. Introduction

The role of native chicken as a provider of meat and eggs to meet the consumption of animal protein is very meaningful especially for rural communities. The contribution of native chicken to poultry meat production is quite high. In this regard, the government places the position of native chickens as the main commodity in livestock development policies in Indonesia [1] .The large demand for chicken products in the form of meat and eggs has not been able to be fulfilled by native chicken farmers, especially if the demand is large and continuous. To overcome this problem various technological alternatives need to be sought to increase the productivity of native chickens (free-range) both in terms of the quality of the seeds and their maintenance systems.

The population of native chickens in Bali reached 3,940,439 tails, for 2016, decreased 1.76% when compared to 2015 (4,009,849 tails) [2]. The limited amount of production of native chicken meat and eggs is because there are only a few farmers who want to breed native chickens because their productivity is still very low.

In general, the community raises native chickens by spreading them in the yard and in the garden around the house. A small number of people try to make it semi-intensive and intensive. The main problem in intensive native chicken farming is the high price of feed that meets the requirements for

chicken to grow optimally, on the other hand its productivity is still low. The average egg production of native chickens generally reaches 20% (73 eggs/year/head) in semi-intensive maintenance and around 30% (110 eggs/year/head) in intensive care [3]. The average weight at 3 months of native chicken in intensive care reached 0.80 kg/male and 0.70 kg/female. Another problem is the difficulty of obtaining high-quality seeds, because not many people are looking for local chicken breeds in large numbers. n general, day old chic (DOC) native chicken is difficult to obtain. However, the incubation, which functions as an incubator, causes farmers to still be able to obtain DOC even in small amounts.

To be able to meet the national need for poultry meat, especially chicken meat and eggs, there needs to be an effort to increase the productivity of native chickens in the community, one of which is by providing native chicken breeds that have high production characteristics with low incubation or even none at all. Some time ago, the Indonesian Agency for Agricultural Research and Development through the Ciawi Livestock Research Center has succeeded in producing Superior Kampung Chicken The Indonesian Agricultural Research and Development Agency (KUB), which is expected to be superior to other native chickens. This chicken was obtained through a selection for 6 generations, which has characteristics: the color of feathers varies, such as native chickens, body weight 1200-1600 grams; egg weight of 35-45 grams; first age to lay eggs early (20-22 weeks); higher egg productivity (130-160 eggs/head/year); egg production (henday) 50%; production peak is 65% and more resistant to disease [4]. he superiority of these chickens needs to be disseminated so that farmers can work intensively, commercially and sustainably with the ultimate goal of improving farmers' welfare.

The success of technology dissemination in utilizing new superior varieties and lines is determined, among others, by the ability of the livestock breeding industry to supply up to the hands of farmers. Therefore, the existence of a robust breeding system (productive, efficient, competitive and sustainable) is needed to support efforts to increase production and quality of livestock products [5]. The initial location that became the center of KUB Chicken development in the Bali Region was the Sato Nadhi Freeze Chicken Farmers Group in Jehem Village, Tembuku District, Bangli Regency. In 2018, KUB chickens from Balitnak began to breed and accompanied by BPTP Bali with its livestock team. KUB chicken farming activities include breeding and enlargement, of which there are 20 members engaged in breeding activities, namely hiring chickens to produce eggs and incubating them intensively and the rest are enlargement with a scale of at least 10 and 200 at most.

The purpose of this study was to determine the agribusiness performance of the Superior Native Chicken (KUB) that was maintained semi-intensive by free-range chicken farmers that had been carried out in Jehem village, Tembuku District, Bangli.

2. Material and methods

2.1.1. Material

The study was conducted in Jehem village, Tembuku Bangli sub-district in December 2018-March 2019. The location was deliberately determined by the native Chicken Poultry group that had kept KUB chickens.

2.1.2. Methods

The method used through the survey method with interview techniques using a list of questions (questionnaires) that have been prepared first. Economic analysis is done by analyzing input-output, the data to be searched are; Net income, R/C ratio. To find out the net income of farmers in the business of developing livestock, the following formula can be used [6].

1) $NR = TR - TC$
   $TR = Py.\ Y - (Px.X + TFC)$
   description:
   NR = Net Revenue
   TR = Total Revenue
   TC = Total Cost

Py = Price of output
Y = Output
Px = Price of input
X = Input
TFC = Total Fixed

2) R/C ratio, which can be mathematically written as follows

$$R/C = \frac{P \times H}{B}$$

Information: P = Production H = Production Price B = Total Cost

Feasibility analysis of livestock business development is used to look at the rate of return on farm business costs that have been spent to apply introductory technology. If Gross B/C> 0, then farming is considered financially feasible, because net profits are still greater than the costs incurred.

3. Results and discussion

3.1. Amount and type of livestock

Of the several types of livestock raised by farmers, most of them are native chicken (98.80%), cows only 0.26% and pigs 0.94%. The number of ownership of native chicken in each farmer in the group members was at least 135 and at most 6,690 with a population of 11,819 (Table 1). The types of chickens that are raised almost 80% are Arabian chickens and the other 20% are local native chickens. Breedlings are an obstacle in the cultivation of native chicken so that the development at the farmer level is still very limited (almost 20% of all native chickens raised by farmers). intensively both in terms of housing and rations according to the needs of laying hens. Because the preservation of native chickens is maintained by way of slaughter, it greatly affects the productivity, because the system of maintenance and management of feed is not good.

Table 1. Number and types of livestock in the Chicken Livestock Group Sato Nadi in 2016

Type of livestock	Native chiken	Cow	Pigs	Broiled
Populati on (tail)	11,815	31	113	-
Percentage (%)	98.80	0.26	0.94	-

Maintenance of native chicken does not depend on the season as in food crops, so it can be carried out throughout the year. The production of native chicken eggs is extensively maintained at only 13% [7] and increases to 29% in semi-intensive maintenance [8], whereas if intensively maintained it can reach a minimum of 40% hen day (HD) [9].

3.2. Development of cultivation of Superior Native Chicken (KUB) activities

The availability of superior livestock breeds in a quality community is very limited, while the demand for breed supply continues to increase from time to time. Superior livestock breeds contribute to increasing productivity, accompanied by the availability of sufficient feed, products needed by the community and support for sustainable institutional/marketing networks [10]. Therefore, the role of livestock breedlings is very strategic in the production process, so that the availability of livestock breedlings is needed continuously, both in quantity and quality in a network of livestock industry. The IAARD (cq. Balitnak) has produced and released superior livestock strains (KUB Chickens, SenSi), but those used by farmers are still limited so that efforts need to be accelerated in the supply and distribution of farmers [11]. For this reason, in 2018 in order to accelerate the availability of breeds at the regional level, the coordination of livestock partners "Innovation Partners" was established to determine the breeders as the parent stock that would produce superior introduced chicken breedlings as well as development through a group approach to facilitation of plasma farmers as partners who will manage KUB chickens next.

For Inti farmers as producers of day old chik (DOC) facilities that have been prepared hatching machines, parent stock breeds (imported from innovation partners), brooder cages, marriage cages, enlargement cages along with cage equipment; electricity, gas and clean water installations; and feed, medicines, vitamins and vaccines. The high interest of group farmers in cultivating native chicken has led to the fulfillment of DOC needs that have not been met. This condition is certainly a great opportunity for mining business to produce hatching eggs and hatching of native chickens at the study site. Inti farmers of the maintenance system is intensive, where domestic chicken is grounded throughout the day, the hen is not given the opportunity to incubate the eggs, the eggs are hatched using hatching machines.

Whereas for the plasma farmers the purpose of the production of most farmers at the study site is to produce native chicken ready for slaughter. The maintenance system of native chicken (KUB crossing with Sensi) is almost entirely (100%) applying a semi-intensive system. In the maintenance of semi-intensive systems domestic poultry is no longer roaming freely but has been grounded.

Feed is a very important aspect in the maintenance of semi-intensive and intensive systems, the quality and quantity of feed depends on the breeders. Chicken farms at the study site make their own feed mix with ingredients that are easily purchased around the site. The feed given by the farmer to the age of one month is concentrated feed, then it is gradually mixed with other feed ingredients to the composition of the feed as in the grower period. The feed used in the grower to finisher period consists of a mixture of rice bran (35%), milled corn (40%) and concentrate (25%) with an amount of 60 – 90 g/head/day.

The feed ingredients used at the study site did not differ greatly from the results of other studies as reported [12] that the feed composition of native chicken in the field varied greatly, generally consisting of concentrate, milled corn, bran, some of which forage, grit and vitamins, where the protein content ranges from 12.8 - 16.8% with metabolic energy 2614 – 2750 kcal/kg of feed. The most widely used ingredients were bran namely 50 - 62.5%, maize 18 – 35% and concentrate 7.5 – 20% [13].

Both Inti and plasma farmers who are members of the Sato Nadi native chicken group have conducted disease prevention efforts through routine vaccination of ND (tetelo) and gumboro (Table 2). The mortality rate at the study location at the static period was 6.33%, grower 3.34% and finisher 1.15%. The mortality rate is lower than some other research results. Mortality of native chickens in intensive systems ranged from 7.6 to 12.2%, while rate of native chicken mortality in traditional maintenance up to 6 weeks of age reaching 68% due to attacks infectious diseases, feeding with low number and quality of accidents and predatory attacks [14], while KUB chicken mortality that was maintained intensively during the static period was 11.09%, grower period of 2.24% and finisher period of 1.25% [15]. The actions of farmers to treat attacked animals by giving antibiotics and providing herbs in the form of herbs from spices produced by farmers.

Table 2. Vaccination programs for chickens raised in Inti and Plasma

Place	Chicken Age						
	1 days (DOC)	3 days	1 weeks	2 weeks	4 weeks	3 months	5 months
Plasma	Pabrik/ND/IB	ND/IB	Gumboro A	Gumboro B	ND Lazota	-	-
Inti	Pabrik/ND/Mareks /Pullorum	ND/IB	Gumboro A	Gumboro B	ND Lazota	ND/ IB	ND/ IB

3.3. Analysis of farming

The farming of superior native chicken (KUB) at the plasma level is mostly for the purpose of production of fattening chicken, but there are those who seek for egg production (20%), and a small portion (10%) for the purpose of producing seeds. Of the three types of production objectives, the level of profits and costs incurred from each production goal will be described in Tables 3.4 and 5 below.

Table 3. Analysis of Fattening of KUB chickens (3 months) in a scale of 200 birds

No	Description	Volume	Unit	Price/unit (Rp)	Amount (Rp)
A	Cost				
1.	DOC	200	birds	7,000	1,400,000
2.	Feed				
	- 1 Month	60	Kg	6,620	397,200
	- 2 Month	120	Kg	5,715	685,800
	- 3 Month	150	Kg	5,353	802,950
3.	Drugs	1	Paket	300,000	300,000
4.	Cage Shrinkage	3	month	250,000	750,000
5.	Labor	3	month	250,000	750,000
	Total Cost				**5,085,950**
B	**Receipt**				-
1.	Chicken sales	200	birds	35,000	7,000,000
2.	Livestock manure	1	Paket	150,000	150,000
	Receipt				**7,150,000**
C	**Profit**				**2,064,050**
D	**R/C rasio**				**1.41**
E	**B/C ratio**				**0.41**

In the analysis of the business of native chicken for the purpose of production of chicken fattening (Table 3). Fattening is done until the chicken is ready to cut according to consumer demand, namely the age of 3 months chicken. The amount of feed given in the first month was concentrated with an average consumption of 20 g/head/day, while in the second month the feed was in the form of concentrates, milled corn and rice bran with a consumption rate of 60 g/head/day and the third month 75 g/tail/day.

Table 4. Analysis of laying hens chicken farming for a period of 1 laying period

No.	Description	Volume	Unit	Price/unit (Rp)	Amount (Rp)
A	**Cost**				
1.	Hans	200	birds	40,000	8,000,000
2.	Drugs	1	Paket	100,000	100,000
3.	Feeds	5760	Kg	6,000	34,560,000
4.	Cage Shrinkage	1	Year	10,000,000	1,000,000
5.	Labor	12	OB	250,000	3,000,000
	Total Cost				**46,660,000**
B	**Receipt**				
1.	Eggs Products	25515	item	2,000	51,030,000
2.	Afkir chicken	189	birds	40,000	7,560,000
3.	Chicken menure	1	Paket	350,000	350,000
	Total Receipt				**58,940,000**
C	**Profite**				**12,280,000**
D	**R/C ratio**				**1.26**
E	**B/C ratio**				**0.26**

The output obtained was in the form of fattening body weight ranging from 800-950 g/head. This number does not differ much from that reported by [16], the body weight of native chickens maintained intensively at 12 weeks was 872 g/head [15]. The price of live chicken from fattening for 3 months at the study location is an average of Rp. 35,000/head, with an average ownership of 200 individuals, the profit received by farmers is Rp. 2,064,050. The feasibility analysis of fattening chicken business shows that the B/C value of 0.41 means that this business is considered feasible because the value is above 0, and R/C is 1.41.

Analysis business of native chicken for the purpose of consumption egg production is as shown in Table 4, at a business scale of 200 head, at a scale of 200 mains. Egg production averages 135 grains/head/year or 45%. Egg production average is 35.0 ± 2.5% [17]. From the feasibility analysis conducted by native chicken farming with the aim of egg production the value of B/C is 0.26 and R/C is 1.26. Domestic poultry that is maintained intensively in egg production can reach 40% [18].

For businesses with the aim of producing breeds, the number of hans is 200, the number of roosters is 20, egg production is on average 40%, fertility is 60%, the amount of DOC that can be produced in one production period is 15,309 with mortality of 11%. In this nursery business farmers have to pay for the purchase of hatching machines, to increase production and productivity. The hatching machine owned by the farmers in the study location has a capacity for 1,000 eggs, at a price of Rp. 19,000,000, the machine life is ± 10 years. Feasibility analysis shows an R/C value of 1.65 and B/C of 0.65

Table 5. Analysis of farming breeding for a period of 1 laying period

Description	Volume	Unit	Price/unit (Rp)	Amount (Rp)
Cost				
Hans	200	birds	40,000	8,000,000
Rooster	20	birds	40,000	800,000
Drugs	1	Paket	500,000	500,000
Feeds (hans and rooster)	6336	Kg	5,000	31,680,000
Feeds DOC (0-8 mgg)	3215	Kg	6,000	19,290,000
Cage Shrinkage	1	Year	10,000,000	1,000,000
Labor	12	OB	250,000	3,000,000
Shrinkage of hatching machines (10 year machine life)	1	Unit	19,000,000	1,900,000
Cage Brooder	2	Unit	2,000,000	4,000,000
Total Cost				**70,170,000**
Receipt				
Chicken Afkir	209	birds	40,000	8,360,000
DOC	15309	birds	7,000	107,163,000
Chicken Menure	1	Paket	350,000	350,000
Total Receipt				**115,873,000**
Profit				**45,703,000**
R/C ratio				**1.65**
B/C ratio				**0.65**

4. Conclusion

Within a year of maintenance, productivity and income of farmers from superior chicken Native chikens Badan LITBANG (KUB) provides a very real change when compared with lokal native chickens. Of the three goals of the semi-intensive intensive intensive chicken system, all three deserve further development. Because based on a feasibility analysis showing R/C values above 1, B/C above 0. The level of acceptance and benefits of superior domestic chicken business can still be increased including by suppressing the chicken mortality rate through better livestock health management.

The profitability of egg and seed production can be increased through various efforts to reduce the cost of feed using local feed utilization technology and the use of probiotics and efficient use of males through the application of IB technology.

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