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Study on Identification of Micro Environment Factors in Fattening Business Development Bali Cattle in Barru Regency South Sulawesi Indonesia

Astati[1], Ahmad Ramadhan Siregar[2*], Hastang[2], Muhammad Basir Paly[3]

[1] Program Study of Agricultural Science, Graduate School, Universitas Hasanuddin, Makassar 90245, Indonesia
[2] Department of Social Economy Animal Husbandry, Faculty of Animal Husbandry, Universitas Hasanuddin, Makassar 90245, Indonesia
[3] Department of Animal Science, Faculty of Science and Technology, Universitas Islam Negeri Alauddin, Gowa 90118, Indonesia

Corresponding Author Email: aramadhan@unhas.ac.id

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ABSTRACT

The direction of development of the livestock subsector especially Bali cattle commodity, is the development of the livestock industry managed and developed by farmers with the aim of increasing productivity, population, income and welfare of farmers. This article purposes at presented to identify of microenvironmental towards the development of Bali cattle fattening business. The research was carried out in Barru regency South Sulawesi Province. The sample of farmer include 76 respondents take using the systematics sampling. Survey, interview, and observation methods were applied to gather the data. Data were examined with descriptive statistics. The research was built based on feed units, health units, housing units, and labor units. The outcomes of this study have shown that the micro environment supports progressively for the sustainability of Bali cattle fattening business, so it is hoped that in the future it is necessary to develop a farmer empowerment strategy with government support in implementing the development of the Bali cattle fattening business.

1. INTRODUCTION

The development of beef cattle for the government always directs farmers to increase productivity, so that there is an increase in population, income, and welfare of farmers. However, all of this has not been realized based on field phenomena that show that the direction of development of the livestock subsector is mainly the Bali cattle commodity, namely the development of the livestock industry managed and developed by farmers with the aim of increasing productivity, increasing population, increasing income and welfare of farmers. the decline in interest in raising cattle is caused by the microenvironment such as the unavailability of feed in continuity, the unavailability of medicines, waste management technology is still not optimal, farmer resources are still low, and farming and facilities are not adequate [1]. Most beef cattle farming businesses are people's businesses with characteristics of household business scale, and livestock ownership is small, using simple technology, labor-intensive, azaz-based family organizations, limited capital, labor and management. Small-scale livestock businesses use labor in the family, and there is no need for outside labor because the business is carried out by family members themselves. Labor in animal husbandry is distinguished from family labor and outside the family. Labor outside the family is generally paid labor. Labor comes from farming families is a family contribution to agricultural or livestock production that as a whole is never paid in the form of money. According to the study of Taslim [2], the outpouring of labor varies according to the conditions of the business being run; The outpouring of working time is influenced by the internal and external factors of the breeder [3]. According to the study from Yunilas [4], the outpouring of working time is influenced by age, education, the number of family members, and the number of livestock raised. According to the study of Hartono [5], age, income outside the farming business, area of arable land, number of family members and number of livestock raised.

Thus, the fattening and breeding business development industry of cattle farms in Indonesia can be successfully carried out by farmers if they apply microenvironment factors by implementing variable feed units, health units, cage units, and labor units whose implementation is carried out by Bali cattle breeder institutions. To support the successful development of the Bali cattle fattening business, the microenvironment must be fulfilled in the livestock industry business environment in the form of Bali cattle farmers institutions including feed units, livestock health units, housing units, and labor units as well as mastery of technology, skills by cattle farmers. Factors that need to be misinterpreted in carrying out the development of beef cattle are available resources such as natural resources, human resources, and animal feed resources, mastery of technology, availability of financial resources and marketing of beef cattle. The environmental factors sourced from feed play a 70% role in increasing production [6]. The decline in the local cattle population is partly due to limited feed as a result of shrinkage of the grazing area. Due to limited mastery of feed management, it will be one of the causes of low productivity of local cattle, and if this condition occurs continuously, it can endanger the sustainability of local cattle. Livestock health is

one of the most important factors in the cattle fattening business, and one of the big losses is usually caused by the onset of disease. It is further stated that the cause of the source of the disease that affects cattle is due to farm management, livestock health management, and feed management.

The focus of the research in question is the micro environment or internal environment in the institution of cattle breeders. And the institution of Bali cattle farmers is able to and utilize the resources they have in the Bali cattle fattening business including ownership and being able to manage or empower feed units, livestock health units, cage units, and labor units that carry out Bali cattle fattening business operations.

In Barru Regency at the time of the study, it was seen that the low livestock productivity was illustrated in the low beef cattle expenditure figure of 924 heads in 2019 to 630 in 2020 [7]. This condition is a measure that the livestock results obtained from the cultivation of Bali cattle by farmers are not optimal. The reason is that the maintenance system used is still traditional so that the growth of cows tends to be slow and to achieve the ideal cow body weight to sell at the desired price takes a longer time which has an impact on income. The development of Bali cattle does not only rely on macro environment factors, such as natural conditions and human resources, but must also pay attention to microenvironmental factors related to maintenance management in developing a managed cattle business managed by the institutional management of Bali cattle breeders. The success of farmers leading to the livestock industry, micro environment factors must support, are the availability of feed in continuity, the availability of livestock health unit management, waste treatment technology must support, farmer resources must support, cages and facilities support [8]. If it is related to field conditions in terms of treatment of the development of the Bali cattle fattening business carried out by farmers, it turns out that it has not shown the expected results, even the fattening business tends to decrease in demand [9]. This problem is often faced by farmers in the development of Bali cattle, and in connection with this problem, it is necessary to identify the facts on the ground in terms of answering the problem of declining development of Bali cattle fattening business which based on government programs will be directed at the Bali cattle breeding industry sector managed by farmer institutions. Based on the results of survey, observation and interview on farmers who stated that the back and forth of the development of the Bali cattle fattening business is largely determined by management and availability and is able to implement a microenvironment consisting of feed unit, livestock health unit, housing unit, and labor unit [10].

2. METHOD

2.1 Research location and data collection

This research was carried in South Sulawesi Province. The research location in Barru Regency. The respondent in this study is Bali cattle farmers. Systematics sampling technique by reasoning that 1) farmers have Bali cattle more than 5 heads, and 2) farmers have breeding experience is more than 3 years. A mount of 76 farmers participated in this research.

2.2 Research area

Quantitative descriptive approach of the research to obtained variable feed units, livestock health units, housing units, and labor units. The type of relationship between indicator and variable are reflective (Table 1).

Table 1. Variable and indicators in micro environment factors

Variable	Indicator
Feed unit	Expensive feed
	Feed availability
	Feed machine availability
	Silo availability
	Feed sheds availability
	Land availability
	Labor availability of feed makers
	Availability of feed transportation
	Knowledge of feed making
Livestock health unit	Availability of medicines
	Availability of animal health workers
	Ability to detected livestock diseases
	Availability of facilities and infrastructure of welfare
	Sources of medicines
	Ability to treat livestock
Housing unit	Housing availability
	Availability of workers housing
	Housing cleanliness
	Water availability
	Distance of the housing to residents
	Access road to the housing
Labor unit	Family labor
	Hired Labor
	Number of labor
	Labor Reciprocity
	Labor age
	Labor duties
	Labor formal education
	Labor skills
	Labor non formal education
	Partnering with animal health workers

2.3 Data Analysis

The response of Bali cattle farmers to micro environment factors is measured by using a likert scale, which is scoring by forming six categories to answers expressed by the number of downy mildew 1, 2, 3, 4, 5 and 6. The scoring technique refers to where the highest score is 6 given the most expected answer and the lowest score is 1 for the least expected answer.

The answer score will be calculated using the equation:

$$T \times Pn$$

Data for analyzing the level of support of micro environment factors of development of Bali cattle are made categories using the class interval with formula:

$$\frac{m - n}{b}$$

Based on the class interval formula, the category level of micro environment factors for the development of Bali cattle can be arranged in the category of levels (Table 2).

Table 2. Category level micro environment factors of Bali cattle development

Score	Category
0.00-1.83	Totally not supportive
1.84-2.67	Not supportive
2.68-3.51	Supportive enough
3.52-4.35	Supportive
4.36-5.19	Very supportive
5.20-6.00	Highly supportive

3. RESULT AND DISCUSSION

The result of identification of micro environment development of Bali cattle fattening in Barru regency are presented in Table 3.

Table 3. The result of this study

Variable	Score	Category
Feed unit	3.28	Supportive enough
Livestock health unit	3.43	Supportive enough
Housing unit	4.32	Supportive
Labor unit	2.48	Not supportive

The feed unit variable consists of 9 indicators with an average score of 3.28 including the supportive enough category, meaning that the feed units that need attention and handling are 4 indicators and are weaknesses of the farmers internal aspects, namely expensive feed, feed machines availability, silo availability and labor availability of feed maker. Meanwhile, the elements that support the current conditions in the feed unit can also be used as a strength for Balinese cattle farmers in terms of developing Bali cattle fattening business, there are 5 indicators, are feed availability, feed sheds availability, the land availability, availability of feed transportation, and knowledge of feed making. Therefore, for future improvement, this research contributes to related parties in the development and fattening business of Bali cattle, namely by correcting weaknesses into strengths and taking advantage of opportunities for the development of the Bali cattle fattening business, namely by completing or purchasing feed machines so that feed prices can be resolved, as well as building silo infrastructure according to sustainable needs for the availability of feed in the season. rain and drought, as well as improving knowledge and skills in terms of feed for the workforce of feed makers through the development of capacity building. Meanwhile, indicators that are categorized as supportive, very supportive, and highly supportive need to be maintained and maintained so that they can be functioned sustainably by developing strategies that are in the nature of maintaining strengthening factors that are considered weak into strengths, maintaining those that have become strengths, and creating opportunities so that in the future the Bali cattle fattening business in terms of feed units becomes a profitable strategy for Balinese cattle breeders institutions that Developing a Bali cattle fattening business, and also has an impact on becoming a reliable, independent and sustainable Bali cattle farming business industry.

An independent and sustainable Bali cattle fattening business can be achieved through increasing the productivity of cattle which at any time can be guaranteed the quality of nutrients in the feed given to Bali cattle. Nutrition is a key aspect to improve livestock productivity, sustainable meat production and quality. Feeding with rich concentrates, especially starch sources will increase the daily body weight of the cow [11]. Other stated ways [12], the system model of integrating crops and livestock brings economic benefits, including reduced costs associated with lower inputs and diversification of agriculture that can increase incomes and help alleviate price risks. This system is especially important for smallholder farmers in developing countries, as livestock production can increase the incomes of the rural poor. The study of Bosire [13] added that agricultural and livestock production can be of high economic value if supported by the availability of large tracts of land. States that beef cattle are producers of meat with high economic value, and their presence is needed by the community, and their success is largely determined by the fulfillment of nutrition and livestock health. Feed is the largest production cost in the livestock business, which is around 60% to 70% of production costs, therefore it is very necessary to prepare a cow ration that meets nutritional needs, but must be made by farmers who are economically profitable [14].

Bali cattle rearing management run by Bali cattle breeding institutions needs to be reviewed by submitting health unit activities. variable livestock health unit with 6 indicators that are considered to have an average score of 3.43 including the supportive enough category, meaning that the livestock health unit on 6 indicators is categorized as supportive and in the preparation of a livestock development strategy for the Bali cattle fattening business is an element of strength for farmers that must be developed and maintained. Therefore, for future improvement, this research contributes to related parties in the development of the Bali cattle fattening business by improving and maintaining and developing so that these 6 indicators from supportive to highly supportive categories through the procurement of pharmacies and livestock clinics, increasing the ability of farmer resources in terms of training keswan officers, Train how to detect livestock diseases, how to treat, and improve the ability of the network to cooperate with the source of cattle medicine. With the condition of the development of the Bali cattle fattening business which is currently included in the good category, then for its sustainability, it is hoped that in the aspect of marketing Bali cattle, which of course utilizes transportation, cattle immunity must be maintained properly to prevent transmission to other cattle. According to the study of Callan and Garry [15], mixing cattle in transportation can increase stress which results in increasing exposure to pathogens, as well as lowering the immunity of cattle to disease. Newly held cattle sourced from places outside the fattening business cultivation complex and combined with cattle in the cattle fattening business complex will have adverse consequences or losses if not quarantined cattle contained in the cattle fattening area [16]. Livestock health is one of the factors that can affect the success of beef cattle farming business, because due to diseases that attack cattle, it can reduce the formation of meat and livestock productivity which affects or interferes with the absorption of nutrients. due to animal health problems, it can harm farmers, because it has an impact on livestock death, high medical costs, decreased production, and decreased feed efficiency [17].

From the explanation above, if it is related to the results of this study, health management has been carried out by the Bali cattle farmers institution in the Bali cattle fattening business activities. So in the future, it will only be maintained because it has become a force today, and it is feasible to develop the Bali cattle fattening industry. In general, there are two types of breeders in terms of implementing livestock health

management, namely farmers who do not apply biosecurity without wanting to apply biosecurity in the future, and farmers who only run for a short time this is due to low knowledge about cattle health management [18]. This research has also been conducted by the study of LeBlanc [19]. Animal health management is closely related to efforts to prevent infection from infectious agent agents through efforts to maintain biosecurity through hygiene methods, and sanitation of cages, good feed management, and increasing the immune system of livestock through the administration of drugs and multivitamins.

Livestock business related to the profits obtained by farmers, in this case it is related to investments such as housing [20]. This requires business actors, especially breeders, to consider handling management so that cattle productivity does not decrease, for example identifying diseases in beef cattle that are kept intensively (caged) [21].

The variables of the housing unit of the 6 indicators that are considered to have a score value of 4.32 are included in supportive category, meaning that the cage units that need attention and handling there are 1 indicator and are weaknesses of the internal aspects of the breeder, is the availability of working housing, while the elements that support the current conditions in the farming unit as well as can be used as a strength for Bali cattle farmers in terms of developing the Bali cattle fattening business there are 5 indicators are housing availability, housing cleanliness, water availability, distance of the housing to residents, and access road to the housing. Therefore, for future improvement, this research contributes to related parties in the development of the Bali cattle fattening business by maintaining and developing 5 indicators of cage units, and 1 indicator must immediately complete the recruitment of cage children who before carrying out operational tasks properly, then in the future to recruit cage children must meet the elements of the noble value of humanity, namely sincere needs, honest, responsible, biased trust, commitment, openness, and cooperation. After the value is met by the recruited stall children, it is continued with the improvement of capacity building through the improvement of Bali cattle maintenance management by training.

Thus, the results of this study there are 5 strengths of farming units that have been fulfilled in their application to carry out the Bali cattle fattening business, and one indicator that needs improvement because it concerns attitude problems in the care of fattened cattle, but in the future feasibility for the development of the Bali cattle fattening industry is worthy of being used as a basis for consideration. The livestock business related to the profits obtained by farmers, in this case it is related to investments such as farming [20]. According to the study from Compton et al. [21], require business actors, especially farmers, to consider handling management in the form of farming units so that the productivity of cattle does not decrease, as a result of disease infection in beef cattle raised due to unsupportive farming [22]; The housing should be arranged properly so that the cattle feel comfortable and it has a direct effect on increasing productivity and production and it is better to shift from the traditional maintenance system which characterizes the pen close to and even integrated with the farmer's house as a result of which the productivity of cattle is low. The results of this study which received a very supportive category deserve to be developed and maintained because it has predictable strength useful for the development of the Bali cattle fattening industry.

Livestock business resources are a potential value owned by farmers for their livestock business. As in many developing livestock systems, small-scale cattle farmers in Indonesia seek to maximize profitability by minimizing inputs [23]. For small farmers, labor is a constraint that limits the number of livestock that can be kept [24].

The variable of the labor unit on average of the 10 indicators that are considered to have a score of 2.48 is included in the category of not supportive, meaning that the labor unit that needs attention and handling there are 8 indicators and is a weakness of the internal aspects of breeders, are using family labor, hired labor, number of labor, labor reciprocity, labor age, labor duties, labor formal education, and partnering with animal health workers. These 8 indicators provide a warning to internal institutions or individuals in the use of labor in the development of a professional cattle fattening business, including the need to use a productive-aged workforce with a minimum level of formal education diploma, supported by non-formal education expertise, and in handling repayment wages there must be openness and clarity in written rules, and also when using partner officers from keswan should be supported by rules and operational costs. For 2 indicators that must be maintained and improved, are labor skill and labor non formal education, this is intended so that the institutional or individual scope of breeders can be developed professionally and sustainably. Labor is measured in terms of the outpouring of working time which is influenced by age, education, the number of family members, and the number of livestock raised [4]. The outpouring of time is determined by age, income outside the farming business, area of arable land, number of family members, and the number of livestock raised [5, 25]. Age, experience, education, land area and the number of livestock raised affect the outpouring of working time contained in labor units that are engaged in beef cattle breeding. So, with the results of this study, 8 indicators must be the main concern if in the future it moves to develop the Bali cattle fattening industry. And two other indicators that are considered good are an expert or professional workforce and a workforce that is willing to attend high formal education that produces a skilled workforce that must be maintained because it is a strength for the institution of farmers who are struggling with the development of a Bali cattle fattening business in Barru regency.

4. CONCLUSIONS

The development of the livestock industry managed and developed by farmers with the aim of increasing productivity, population, income and welfare of farmers.

The implication of this study is Bali cattle farmers, who are also managers and workers, manage variable that hope supportive. Farmers can be application by taking account the support of each variable. Farmers must be instilled with entrepreneurial spirit in order to raise awareness of their needs, increase productivity of Bali cattle and income. It is envintage that by nurturing this entrepreneurial spirit, farmers will be creative and innovation.

This research is limited to identify micro environment factors to development Bali cattle fattening. A more comprehensive study is required for applying the variable used to the research areas with either uniform condition or different condition to determine the consistency of the research model developed.

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NOMENCLATURE

b	number of score
m	highest score
n	lowest score
Pn	likert score number selection
T	total number of respondents who voted

APPENDIX

The result of validity on the research innsruments:

Variable	Indicator	Score	Category
Feed unit	Expensive feed	1.88	Not supportive
	Feed availability	5.03	Very supportive
	Feed machine availability	2.61	Not supportive
	Silo availability	2.37	Not supportive
	Feed sheds availability	3.30	Supportive enough
	Land availability	4.80	Very supportive
	Labor availability of feed makers	2.79	Supportive enough
	Availability of feed transportation	3.37	Supportive enough
	Knowledge of feed making	3.38	Supportive enough
	Availability of medicines	3.36	Supportive enough
Livestock health unit	Availability of animal health workers	3.78	Supportive
	Ability to detected livestock diseases	3.87	Supportive
	Availability of facilities and infrastructure of welfare	3.12	Supportive enough
	Sources of medicines	3.24	Supportive enough
	Ability to treat livestock	3.20	Supportive enough
Housing unit	Housing availability	4.87	Very supportive
	Availability of workers housing	2.74	Supportive enough
	Housing cleanliness	4.34	Supportive
	Water availability	5.01	Very supportive
	Distance of the housing to residents	4.04	Supportive
	Access road to the housing	4.92	Very supportive
Labor unit	Family labor	2.58	Not supportive
	Hired Labor	1.80	Totally not supportive
	Number of labor	1.93	Not supportive
	Labor reciprocity	1.97	Not supportive
	Labor age	2.43	Not supportive
	Labor duties	2.25	Not supportive
	Labor formal education	2.26	Not supportive
	Labor skills	3.51	Supportive enough
	Labor non formal education	3.14	Supportive enough
	Partnering with animal health workers	2.82	Supportive enough