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Factors That Determine the Income of Beef Cattle Farmers and Its Contribution to Household Income

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Abstract: This study aimed to analyze the determinants of farmer characteristics, external support, and management on farmer income and the contribution of beef cattle farming business to household income. The study was carried out in Sukabumi Regency, Indonesia. This research applied a quantitative approach through survey method, with a research population of beef cattle farmers included in the cattle farmer group. Samples were determined through cluster random sampling. A total of 50 beef cattle farmers were selected as the research sample. Primary data were obtained through questionnaire. Research variables consisted of cattle farmer characteristics, external factors (X2), management of beef cattle (X3), and income of cattle farmers (Y). The technique of data analysis applied in this study was descriptive statistics and correlation. Based on the results of the study, it is concluded that the income of cattle farmers ranged from USD 80 to 3,700, with an average annual income of USD 823.26. Income gained from cattle farming contributed to 40.9% of total income of cattle farmers. The income of cattle farmers has a significant positive correlation ($p < 0.05$) with level of formal education, number of cattle ownership, government support, quality of stock, origin of ancestor, quality of forage feed, feeding, the use of supplement/concentrate feed, cage condition, and sanitation. The research found that farmer income can be increased through improving cattle farmer behavior, increasing number of cattle owned, strengthening government support, improving the quality of cattle raised, having ancestors with traceable origin and good quality, good quality forage feed, feeding according to need, the use of supplement/concentrate feed, improved cage conditions, and adequate sanitation.

Keywords: cattle farmer income, management, beef cattle.

决定肉牛养殖户收入的因素及其对家庭收入的贡献

摘要: 本研究旨在分析农民特征、外部支持和农民收入管理的决定因素以及肉牛养殖业对家庭收入的贡献。该研究在印度尼西亚苏卡布米摄政进行。本研究采用定量的调查方法,将肉牛养殖户的研究人群纳入养牛养殖户组。通过整群随机抽样确定样本。共选取50名肉牛养殖户作为研究样本。主要数据通过问卷获得。研究变量包括养牛场特征、外部因素(X2)、肉牛管理(X3)和养牛场收入(是)。本研究中应用的数据分析技术是描述性统计和相关性。根据研究结果得出的结论是,养牛户的收入在80美元到3,700美元之间,平均年收入为823.26美元。养牛收入占养牛户总收入的40.9%。养牛户的收入与正规教育水平、养牛数量、政府支持、牲畜质量、祖先来源、饲草饲料质量、饲养、补充剂/浓缩物的使用呈显著正相关($p < 0.05$)饲料、笼子条件和卫生条件。研究发现,可以通过改善养牛户行为、增加养牛数量、加强政府扶持、提高养牛质量、祖先可追溯、品质优良、优质饲料、按需饲养等方式增加农民收入。、使用补充/浓缩饲料、改善网箱条件和适当的卫生条件。

关键词: 养牛农民收入, 管理肉牛。

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1. Introduction

Development in the livestock sector plays an important role in national development, considering the increasing demand for animal protein along with the increasing population and income. Nowadays, people are increasingly aware of consuming nutritious food since animal protein greatly supports their intelligence and stamina [1]. One animal protein source is meat, and beef cattle are considered as meat producing animals which are able to meet the need for animal protein. Improvement and development of beef cattle farming is necessary to ensure the fulfillment of dietary needs.

The business of beef cattle farming has great potential to be developed. However, the challenges faced are also quite large. These challenges include the traditional business system, the lack of land to provide forage, and the relatively low level of education and skills of breeders. This causes the standard of living, welfare, facilities and infrastructure owned by farmers to be limited. On the other hand, smallholder breeders are still similar to farmers in general. Most smallholder farmers' business consists of not only raising beef cattle, but also working as rice and horticultural farmers. Some of them raise beef cattle only as a side resource and for additional income. Therefore, the contribution of the beef cattle business to household income needs to be assessed.

Livestock is one of the sectors with high potential to be developed in Sukabumi Regency for its vast area suitable for livestock farming, particularly poultry and ruminants. However, the beef cattle farming business in Sukabumi Regency is still a smallholder farming business with a traditional beef cattle farming system. Cattle farming is a side job for some cattle farmers since they are farmers in the field. The low level of education and skill of cattle farmers affects cattle farming management and production. If the supporting factor of production is less available, the productivity of beef cattle farming will decrease and eventually lead to declining production. Cattle farmers are less detailed in calculating the costs used in cattle farming, thus resulting in low income. Therefore, the calculation of revenue and expense in the beef cattle farming business is necessary. Furthermore, several factors are expected to be not yet considered by cattle farmers, which might increase the income of cattle farmers if applied. This study was aimed to descriptively analyze characteristics, external support, management, and income of beef cattle farming on household income besides analyzing factors that determined the income and contribution of beef cattle farming business to household income.

2. Research Methods

This study was conducted in Sukabumi Regency, West Java, Indonesia. The study applied a quantitative approach through a survey method. This study is considered an explanatory research study that aims to investigate the correlation between the variables under study. The research population comprised beef cattle farmers included in the cattle farmer group. Samples were determined through the random cluster sampling technique. The selected samples were located in four sub-districts: Ciracap, Jampang Kulon, Surade, and Jampang Tengah. A total of 50 beef cattle farmers were selected as the research sample.

The types of data used in this study were primary and secondary data. Primary data were collected through a questionnaire and direct interview with the sample or research respondent. Secondary data were obtained from the Ministry of Agriculture, a government office related to agriculture or animal husbandry, literature study, and other relevant sources. Research variables consisted of characteristics of cattle farmers (X1), which included indicators of the level of formal education, level of internship/course/training experience, length of time to complete business, and number of beef cattle ownership. External factor variables (X2) consisted of indicators of the level of government support, farmer group support, and market support. Beef cattle management variables (X3) contained the indicator of beef cattle breed, origin of cattle ancestry, the use of forage feed, feeding techniques, the use of concentrate feed, workers, cage condition, and sanitation. Moreover, the dependent variable was income among cattle farmers (Y).

The data analysis technique applied in this study comprised both descriptive and inferential statistics. Descriptive statistics were gathered to descriptively analyze the characteristics, external support, management, and income of cattle farmers, as well as the contribution of beef cattle farming business to household income. Moreover, inferential statistics included the correlation test to analyze factors that determined the income and contribution of the beef cattle farming business to household income.

3. Results and Discussion

3.1. Individual Characteristics of Cattle Farmers

The majority of cattle farmers (Table 1) were of primary school graduates. Several cattle farmers did not even attend school/graduates from primary school, while some others attended school and graduated from higher education. The reason for the predominantly low level of formal education among cattle farmers is economic. This is mainly due to the assumption that

schools charge high amounts of money. Thus, the cattle farmers had no opportunities to continue their study since their parents asked for their help with farming during their adolescence. This finding is in line with Dayat and Anwarudin [2], who reported that a farmer's level of education was dominated by elementary school graduates due to low school attendance and the unaffordable cost of education. Since most of the farmers were old, this result supports the findings of Harniati and Anwarudin [3], Wardani and Anwarudin [4], Nazaruddin and Anwarudin [5], Dayat et al. [6], and Anwarudin et al. [7]–[9] to provide cattle farmer regeneration.

Table 1 Individual characteristics of cattle farmers

Indicator	Total	Percentage (%)
Level of Formal Education		
Not attending school/not graduated from primary school	7	4.76
Primary School	93	63.27
Middle School	29	19.73
High School	13	8.84
Higher Education	5	3.40
Course/Internship/Training		
Never	98	66.67
1 – 3 days	28	19.05
4 – 7 days	10	6.80
More than 7 days	11	7.48
Beef Cattle Farming Business Period Length		
Just started this year	3	2.04
1 – 10 years	130	88.44
11 – 20 years	11	7.48
More than 20 years	3	2.04
Cattle Ownership		
2 cattle	18	12.24
3 cattle	73	49.66
4 cattle	28	19.05
5 cattle	11	7.48
6 cattle	8	5.44
7 cattle	2	1.36
8 cattle	1	0.68
9 cattle	1	0.68
10 cattle	1	0.68
11 cattle	0	0
12 cattle	1	0.68
13 cattle	1	0.68
14 cattle	2	1.36

Most cattle farmers were found to have never attended any courses, internships, or training sessions. Further, only a small part of them had participated in any training sessions with a duration of three days, a week, or more than one week. Course/internship or training is essential for cattle farmers, especially if they do not have an academic background in agriculture/livestock farming. However, some cattle farmers were interested in attending technical training in the livestock sector, particularly if the training related to feeding, disease, stock, and the treatment of cattle farming waste. Their wish should be followed up since, according to Anwarudin et al. [7], education outside of school has an important role in increasing knowledge and skill, as well as mindset and behavioral development in conducting cattle farming.

Farming experience is reflected by the length of time of cattle business done. Based on the results of this study, the majority of cattle farmers have a farming experience of 1-10 years. Experience owned by a person will be used as a reference when taking a decision for every action. It is in line with Anwarudin et al. [8], who mentioned that the past experience of a person might determine the consequence in the future. Therefore, experience could determine someone's behavior. In their study, Anwarudin et al. [10] reported that business experience will affect the entrepreneurial behavior of cattle farmers. This statement is confirmed by the results from Helmi et al.'s [1] study, which showed that the application of innovation technology plays an essential role in increasing farming productivity, and hence, will further improve the welfare of farm households regarding indicators, namely, the food security of farm households.

Cattle ownership in Sukabumi varies considerably. Cattle farmers, who were also the respondents of this study, owned cattle in a range of 2-14 cattle. Most cattle farmers only owned three cattle, with an average of 3.84 cattle. Hence, the business scale is still considered small. Several cattle farmers revealed that cattle farming activity was done to increase their income besides farming, which is their main source of income. Some cattle farmers also mentioned that raising beef cattle is similar to saving since cattle can be sold anytime they need money.

3.2. External Factors of Cattle Farmers

In this study, the external factors of cattle farmers consisted of government support, farmer group, and market. The majority of cattle farmers believed that government support was still low (Table 2). Several cattle farmers were quite familiar with government programs that support cattle farmers, such as providing incentives and financing for beef cattle breeding through the subsidy of low interest. This policy has not yet been enjoyed by smallholder cattle farmers who were also respondents in this study. One of the government programs that has greatly benefited cattle farmers is Artificial Insemination (AI). Government policy to increase the population of beef cattle will contribute to beef consumption in the short term while increasing the economic status of cattle farmers in the long term. Therefore, support to develop the infrastructure, AI, inseminators, training, and policy support is required to strengthen the effort to increase the beef cattle population sustainably. Besides increasing the beef cattle population, the SIWAB program aims to achieve beef self-sufficiency, including the target to be achieved in 2026. One action done in the UPSUS SIWAB program is developing beef cattle farming through Artificial Insemination (AI). AI is hoped to maximize the genetic potential of beef cattle to produce domestic calves continuously. The UPSUS SIWAB program is expected to boost the

domestic cattle population; thus cattle population will further grow.

Table 2 External factors of cattle farmers

Indicator	Total	Percentage (%)
Government Support		
Very low	49	33.33
Low	63	42.86
High	16	10.88
Very high	19	12.93
Farmer Group Support		
Very low	36	24.49
Low	59	40.14
High	30	20.41
Very high	22	14.97
Market Support		
Very low	0	0
Low	43	29.35
High	81	55.10
Very high	23	15.65

Furthermore, according to most cattle farmers, the support of farmer's institutions for beef cattle farming was still low. Farmer's institution in the form of farmer group rarely focuses on livestock farming since its content is mostly related to agriculture. Moreover, several cattle farmers mentioned that institutional supports, so far, are not yet properly managed, and in general, economic performance in the rural area is dominated by weak farming businesses. The weakness of cattle farmers arose due to the lack of business capital for business development. Therefore, an increase in the business performance of cattle farmers is achieved through institutional support from the government by providing technology, facility, and infrastructure, low-interest business loan, and stability of cattle and beef selling prices. The results of this study confirmed the finding of Mutiah et al. [12] that the institution of cattle farming was still considered to play an insignificant role, particularly in terms of its cooperation with capital. Generally, in the case of groups of farmers, they have not yet established partnerships with other institutions.

A different result was obtained in terms of the external factors of the cattle farmers as indicators of market support. Most of the cattle farmers perceived that market support for beef cattle farming was already high, indicating that cattle farmers were able to sell beef cattle without difficulty. Several marketing channels used by beef cattle farmers were a village trader, large trader, and direct to a slaughterhouse. The results of this study supported the finding of Sumantri et al. [13] that there are three marketing channels in the beef cattle farming business: Channel I is from the cattle farmer to the slaughterhouse through two types of trader, a village trader and large trader; Channel II is from the cattle farmer to the slaughterhouse through just a village trader; and Channel III is from the cattle farmer directly to the slaughterhouse. Similarly, Koesmara et al. [14] reported a marketing channel from the cattle farmer to the final consumer through two

middlemen, the *belantik* and beef trader, while another marketing channel was from the cattle farmer to the final consumer through one middleman, the beef trader.

3.3. Beef Cattle Management

To achieve maximal income, six requirements must be fulfilled: (1) the use of cattle stock with good and guaranteed quality; (2) the availability of adequate feed, both in terms of quality and quantity; (3) the ability to apply optimal reproduction management; (4) the application of appropriate zoo-technical knowledge; (5) the prevention and control of disease; and (6) the marketing of the cattle product. All six factors should be supported by a good recording system [15].

Most respondents in this study (Table 3) raised a cross of Ongole or Brahman (*Bos indicus*), followed by a cross of Simmental or Limousine (*Bos taurus*). However, there were also cattle farmers who raised several cattle breeds, and only a small number of farmers raised a local breed. The results of this survey showed that cattle farmers already had knowledge about superior breeding practices. The study conducted by Socheh et al. [16] reported that the slaughter weight of the Ongole breed reached 313.29 kg, with a highest weight of 400 kg and an average slaughter weight of 363.99 ± 27.85 kg. Moreover, the slaughter weight of the Limousine breed was 344 kg, with a highest slaughter weight of 517 kg and an average slaughter weight of 422.72 ± 30.35 kg. In other words, the Limousine breed was bigger than the Ongole breed. Fathoni et al. [17] and Putra and Agung [18] mentioned that different genetic potentials might lead to different growth rates and body size, which eventually results in a different carcass size. Panjono et al. [19] revealed that the slaughter weight of the Limousine breed amounted to 541.63 ± 47.44 kg with a carcass weight of 278.84 ± 24.12 kg, while the slaughter weight of the Ongole breed reached 366 kg [20]. Different cattle breeding, management systems, and environments were factors that have been found to affect cattle growth [16].

Beef cattle cultured by farmers were mostly produced from AI. This situation indicates that cattle farmers were already aware of the importance of AI and superior ancestral genealogy. Superior males and females have great potential to pass on superior characteristics to their offspring; conversely, inferior males and females can pass on inferior traits to their offspring. The cattle farmers also mentioned that calves produced from AI had higher economic value. The results of this study were in line with the report of Hastuti et al. [21] that the economic value of calves produced from AI (IDR 2,565,062.45 or USD 171) was higher than those from natural mating (IDR 2,274,051.00 or USD 151.6). Similarly, revenue from cattle produced from AI was also higher than that from natural mating.

Table 3 Management of beef cattle (Part 1)

Indicator	Total	Percentage (%)
Quality of beef cattle breeds		
Cross of Limousine / Simmental / <i>Bos taurus</i>	42	28.57
Cross of Brahman / Ongole / <i>Bos indicus</i>	46	31.29
Local breeds	16	10.88
Combination (more than one breed)	43	29.25
Quality of the Origin of Cattle Stock		
Unknown/natural mating	29	19.73
Mating of superior male	22	14.97
Superior female and male	7	4.76
Artificial Insemination	89	60.54
Quality of Forage Feed		
Indigofera	1	0.24
Dwarf elephant grass	65	15.37
King grass	75	17.73
Elephant grass	17	4.02
Native grass, etc.	125	29.55
Rice straw	140	33.10

The types of forage used by cattle farmers varied and included elephant grass, king grass, dwarf elephant grass, native grass, and rice straw; some farmers were already familiar with Indigofera. Unfortunately, many cattle farmers still used straw residue from the rice harvest, even though ammoniation is still used by other farmers in the processing of the straw before it is received. To increase productivity, the quality of forage given to beef cattle should be considered. Therefore, the selection of forage seeds with high productivity and nutrient quality is required [29]. One of the forage grasses that contains a high amount of nutrients, in addition to having high productivity, is dwarf elephant grass [22]. Based on the data of 147 respondents, there was only one respondent who knew about and used Indigofera. In terms of nutrients, it has been reported that Indigofera is a shrub legume that can be used as a high-quality forage food [23]. Agronomically, Indigofera is easy to grow due to its high reproduction potential in creating hard-seed pods; excellent regrowing characteristics that allow the progressive growth of branches, resulting in high leaf production; and responsiveness to fertilizer application through media (soil) or directly applied to the leaf surface by leaving the stem at a height of 75–150 m [24].

Almost all cattle farmers reported rarely calculating the amount of forage feed or concentrate feed needed by their cattle because they still performed traditional cattle farming and did not yet think of commercial cattle farming for business purposes. The findings in the field showed that most of the cattle farmers fed their cattle *ad libitum* (unlimited/always available). However, there were also some cattle farmers who still provided inadequate feeding quantities. Ideally, the feeding quantity is 10% of the body weight and *ad libitum* for pregnant heifers or under the assumption of a forage need of 30–40 kg/cow/day [25]. Despite a high amount of uneaten feed, *ad libitum* feeding is still better than feeding with an inadequate quantity.

Table 4 Management of beef cattle (Part 2)

Indicator	Total	Percentage (%)
Level of Feeding Technique		
unconsidered	10	6.85
Less than 10% Body Weight	17	11.64
<i>Ad libitum</i> (unlimited)	100	68.49
10 - 20% Body Weight	20	13.70
Level of Concentrate Feeding		
Never	57	39.04
Rarely	58	39.73
Frequently	21	14.38
Always	11	7.53
Level of Cage Condition		
Uncaged	2	1.37
Less than adequate	49	33.56
Adequate	8	5.48
More than adequate	88	60.27
Level of sanitation		
Inadequate	2	1.37
Less than adequate	11	7.53
Adequate	58	39.73
More than adequate	76	52.05

The majority of respondents self-managed their cattle. This condition was understandable considering that the number of cattle owned by the farmers was only three on average. Several cattle farmers said that they were still able to self-manage their cattle. Cattle farming was done in between other farming activities. When they had heavy work activities in their farming, family members were able to help. Additional workers were needed by cattle farmers who owned more than five cattle.

The results of the survey found that the cattle farmers mostly had adequate cattle enclosures. Several enclosures were made of wooden or concrete structures with concrete flooring. However, cages with soil base were still found. Unfortunately, there were also cattle farmers who still had no access to cages. In these cases, cattle were left in the backyard or tied up at the edge of the house. As confirmed by Rusdiana et al. [26], in most places where cattle were herded, farmers followed a similar practice—cattle were put in cages and loosely tied up so that they could move in the space around the house.

Most cattle farmers were already aware of the importance of sanitation and employed adequate measures to ensure the cleanliness of the cages and the environment surrounding cattle. Cattle were bathed often, and their cages were cleaned every morning and afternoon. According to several cattle farmers, it was easy to keep cages with concrete floors clean, and that cages with soil base were difficult to clean. According to Hadipour et al. [27], cleanliness and sanitation of the cage is highly important to prevent diseases, particularly those caused by worms. Several parasitic nematodes commonly found in cages include *Bunostomum sp.*, *Strongyloides sp.*, *Ostertagia sp.*, *Trichostrongylus sp.*, *Cooperia sp.*, *Toxocara sp.*, and *Trichuris sp.*, of which the first three are highly prevalent. Therefore, improvement of the cage

management and cattle farming system is necessary and is done through adequate feeding. Cattle should be treated regularly for the diseases caused by parasitic worms so as to control worm infestation and reinfestation.

3.4. Income of Cattle Farmers and Contribution of Income Gained from Cattle Farming

It was observed that for the cattle farmers included in this study, cattle farming was a side job; they actually earned their livelihood from farming. Moreover, several cattle farmers were also found to be running other businesses.

Table 5 Income of cattle farmer and contribution of income gained from cattle farming to household income

Source of Income	Range (USD)	Average (USD)	Percentage (%)
Cattle Farming	80 – 3,700	823.26	40.90
Farming	33.33 – 2,666.67	539.61	26.81
Other Business	13.33 – 6,666.67	649.91	32.29
Total	126.63 –13,033.34	2,012.78	100

The income gained from cattle farming ranged from USD 80 to USD 3,700, with an average of USD 823.26 per year. The lowest value was obtained from selling calves. According to several farmers, financial circumstances often forced them to sell their cattle. Based on Table 5, the income from beef cattle farming contributed the most (40.9%) to their total income. In fact, the average income gained from cattle farming was found to be higher than the average income from farming as the main source of livelihood. Therefore, farmers rely on beef cattle farming as their main income, even though it is only a side job. As mentioned by Sumantri et al. [13], cattle farmers will obtain a marketing margin of USD 170.86 per cow if the animals are sold to a village trader or a slaughterhouse and USD 62.07 per cow if they sell them to a large trader.

3.5. Factors Determining Income of Cattle Farmers

Spearman's rank correlation test was performed to identify variables that have correlation with the incomes of cattle farmers.

Table 6 Correlation between individual characteristics of a cattle farmer and income gained from beef cattle farming

Indicator	Coefficient of Correlation	Significance
Formal education	0.302	0.000
Training/course/internship	-0.027	0.741
Length of time business done	-0.182	0.028
Number of cattle	0.524	0.000

Formal education and number of cattle positively correlated with the amount of a cattle farmer's income. This positive correlation indicates that a higher level of

education will lead to higher income gained from beef cattle farming. A similar result was observed in cattle ownership where a higher number of cattle owned by farmers resulted in higher income. However, a different result was found in the analyses of cattle farming experience and years of business experience. Duration of business negatively correlated with income; thus, the longer cattle farming is conducted, the lower the income gained. This situation is expected to be caused by the old age of cattle farmers. The beef cattle farming business requires considerable human power with the ability to manage and maintain large livestock daily when selling the cattle or purchasing cattle stock.

Table 7 Correlation between external factors and income gained from beef cattle farming

Indicator	Coefficient of Correlation	Significance
Government support	0.3350	0.000
Farmer Group Support	0.013	0.876
Market Support	0.122	0.142

It was found that the only external factor that correlated with cattle farmer income was government support. The positive coefficient of correlation shows a unidirectional relationship. The stronger the government support for beef cattle farmers, the higher the income gained. Some government programs that have greatly benefited cattle farmers are strengthening farmer institutions and artificial insemination (AI). Institutional strengthening can improve the bargaining position of farmers [28]. Through AI mating, calves produced are expected to have superior quality, grow quickly, and have large bodies, hence the price will be high when sold. According to Rusdiana and Soeharsono [11], AI during 2015-2017 is a part of the Breeder Cattle Mandatory Pregnancy Program (UPSUS SIWAB), which aimed at boosting the domestic population of beef cattle.

Based on Table 8, all indicators of beef cattle management, such as cattle quality, the origin of the ancestor, forage quality, feeding quality, the use of concentrate feed, number and quality of workers, cage condition, and sanitary quality, obtained positive coefficients of correlation with beef cattle farmer income. Positive coefficients of correlation indicate unidirectional relationships. Higher cattle farmer income is possible if cattle are high quality with a superior and traceable ancestry. Good quality forage feed, feeding that meets requirements, adequate use of supplement/concentrate feed, cage condition, and sanitation are also factors.

Table 8 Correlation between management and income gained from beef cattle farming

Indicator	Coefficient of Correlation	Significance
Quality of cattle breed	0.158	0.055
Quality of origin of the ancestor	0.222	0.007

Quality of forage feed	0.351	0.000
Level of feeding technique	0.335	0.000
Level of concentrate feeding	0.429	0.000
Number of workers	0.264	0.001
Level of cage condition	0.344	0.000
Level of sanitation	0.365	0.000

The result implicates several possible efforts to increase the income of beef cattle farmers:

a) Improved knowledge and skills of cattle farmers related to adequate innovation and technology in animal husbandry. This could be obtained from formal, informal, and nonformal education.

b) Increase in cattle ownership facilitated with business capital, particularly for purchasing cattle stock and extension and assistance programs.

c) Government support strengthening with programs that provide benefits for cattle farmers.

d) Improvement of beef cattle management, starting from good quality stock, superior and traceable ancestry, good quality forage feed, feeding that meets requirements, adequate use of supplement/concentrate feed, cage condition, and sanitation.

4. Conclusion

Based on the result of this study, it was concluded that income gained from beef cattle farming ranged from \$80–\$3,700 USD with an average of \$823.26 per year. Income gained from cattle farming contributed to 40.9% of total cattle farmer income. The income of cattle farmers has a significant positive correlation ($p < 0.05$) with formal education level, number of cattle owned, government support, quality of stock, ancestry, quality of forage feed, feeding, use of supplement/concentrate feed, cage condition, and sanitation. The research found that increasing farmer income can be done through improving cattle farmer knowledge and skills, increasing cattle ownership, strengthening government support, improving the quality of cattle raised, high quality ancestry with traceable origin, providing good quality forage feed, feeding according to need, use of supplement/concentrate feed, improving cage conditions, and adequate sanitation. This study has limitations, namely that the object of research develops naturally without any treatment by the researcher.

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