Response of Beef Cattle Farmers to The Presence of Farmer Groups in South Parigi District, Parigi Moutong Regency, Central Sulawesi

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ABSTRACT

Livestock farming is a significant sub-sector of agriculture with substantial potential for development. Within this sub-sector, beef cattle farming stands out as a particularly promising enterprise. In South Parigi District, Parigi Moutong Regency, the presence of beef cattle farmer groups plays a crucial role in enhancing livestock productivity and quality. This study aims to ascertain the responses of beef cattle farmers and to evaluate the influence of age, education, and farming experience on these responses towards the presence of farmer groups in South Parigi District, Parigi Moutong Regency. This descriptive quantitative study used snowball sampling to select 32 samples. Data collection was conducted through observation, interviews, and documentation. The collected data were then analyzed using multiple linear regression statistical analysis. The results indicated that the majority of responses were categorized as high (20 respondents, 55.6 %), followed by medium (15 respondents, 41.7 %), and low (1 respondent, 2.8 %). The analysis revealed significant p-values for age (0.046), education level (0.012), and farming experience (0.031), indicating significant relationships between these factors and the responses of beef cattle farmers.

ABSTRAK

Peternakan merupakan salah satu sub-sektor pertanian yang memiliki potensi besar untuk dikembangkan. Dalam sub-sektor ini, peternakan sapi potong merupakan salah satu usaha yang cukup menjanjikan. Di Kecamatan Parigi Selatan, Kabupaten Parigi Moutong, keberadaan kelompok tani sapi potong memegang peranan penting dalam meningkatkan produktivitas dan kualitas ternak. Penelitian ini bertujuan untuk mengetahui tanggapan peternak sapi potong dan untuk mengevaluasi pengaruh usia, pendidikan, dan pengalaman bertani terhadap tanggapan tersebut terhadap keberadaan kelompok tani di Kecamatan Parigi Selatan, Kabupaten Parigi Moutong. Penelitian deskriptif kuantitatif ini menggunakan *snowball sampling* untuk memilih 32 sampel. Pengumpulan data dilakukan melalui observasi, wawancara, dan dokumentasi. Data yang terkumpul kemudian dianalisis menggunakan analisis statistik regresi linier berganda. Hasil penelitian menunjukkan bahwa sebagian besar tanggapan tergolong tinggi (20 responden, 55,6 %), diikuti oleh sedang (15 responden, 41,7 %), dan rendah (1 responden, 2,8 %). Analisis menunjukkan p-value yang signifikan untuk usia (0,046), tingkat pendidikan (0,012), dan pengalaman bertani (0,031), yang menunjukkan hubungan yang signifikan antara faktor-faktor ini terhadap respons peternak sapi potong.

Kata Kunci:
Respon peternak
Parigi Selatan
Sapi potong

1. Introduction

Livestock farming is one of the agricultural sub-sectors with significant potential for development (Chandio, Yuansheng, & Magsi, 2016; Khafi & Azizah, 2023; Nursan & Septiadi, 2020). The development of this sub-sector primarily aims to meet the increasing demand for animal-based food products, including meat, milk, and eggs, in Indonesia. One of the businesses within this sub-sector with developmental potential is beef cattle farming (Dinku, 2019).

Beef demand in Indonesia has shown a consistent upward trend from 2010 to 2019, with an average annual growth rate of 2.34 % (Lumawir et al., 2023). This increase reflects the growing trend of beef consumption alongside population growth and changes in dietary patterns. However, despite the rise in demand, the domestic beef supply has not fully met these needs. According to (Doni, Arfa'i, & Khasrad, 2023) the domestic demand for beef in 2022 was estimated at 700,000 tons, equivalent to approximately 3.6 million cattle. This figure indicates a shortfall in domestic beef supply compared to the total demand.

In Indonesia, beef cattle farming is generally carried out by small-scale local farmers, with an average of 1 to 5 cattle per farmer. The maintenance system applied is often extensive and traditional, where cattle are allowed to graze in fields or open land without intensive supervision (Agus & Widi, 2018; Burrow, 2019; Gayatri, Gasso-tortajada, & Vaarst, 2016; Soumokil & Rehatta, 2024). According to Astati et al. (2023) cattle in this farming endeavor not only serve as a source of animal protein but also play a crucial role in providing the beef needed by the growing population. In 2008, the population of beef cattle in Indonesia was 12,256,640 heads and that the number of beef cattle in Indonesia is around 17,602,538 heads. In 2022, Central Sulawesi Province had a beef cattle population of approximately 461,563 heads, while Parigi Moutong Regency recorded a population of about 35,888 heads.

Beef cattle are the most commonly reared type by farmers, especially in the South Parigi District. Popular breeds of beef cattle include the Bali cattle, Limousin crossbreeds, and Simmental crossbreeds. Originating from Switzerland, Simmental cattle are known as dual-purpose cattle with large body sizes and varied colors, typically white with red or brown patches (Basiel & Felix, 2022). Meanwhile, Limousin cattle, developed in France, are characterized by their fine red coats and slightly longer hair on the head (Estévez-Moreno et al., 2021).

In South Parigi District, Parigi Moutong Regency, the presence of beef cattle farmer groups plays a crucial role in enhancing livestock productivity and quality. These groups often serve as the primary platform for farmers to share knowledge, resources, and experiences. Within these groups, farmers exchange information about the latest cattle maintenance techniques, effective feeding strategies, and innovative livestock health management methods (Azis, Hamka, Bilyaro, & Dani, 2024; Haryanto et al., 2024; Jaya, 2022).

The response of beef cattle farmers to the presence of these groups in South Parigi District reflects various social and economic dynamics occurring within the local farming community. However, the existence of these groups is not always welcomed by all farmers. Some may respond competitively, feeling threatened by the groups' presence (Erwidodo, Ariningsih, Purwantini, & Irawan, 2022). They may fear losing profits or markets if group members compete on selling prices or livestock quality (Naufal Adinar Irsan & Siti Azizah, 2024). Additionally, differences in opinions on methods or strategies might lead to tension or conflicts among farmers. Conversely, other farmers may see these groups as valuable opportunities to improve their businesses. They might benefit from the support and resources available through the group, feeling more motivated to enhance the quality and efficiency of their operations. The social support and collaboration offered by the farmer groups can foster a sense of solidarity and community among farmers, encouraging positive innovation and adaptation in their farming practices (Wedajo & Jilito, 2020).

In addition, the presence of farmer groups in Parigi Selatan District can significantly influence the social and economic aspects of the farming community. Farmer groups, as a platform for farmers to gather, exchange information, and support one another, have great potential to improve production capacity and the efficiency of farming operations. However, to ensure that these groups are truly beneficial, it is crucial to understand the extent to which farmers respond to their existence. Do they feel supported by the farmer groups, or conversely, do they feel they are not gaining significant benefits from them?

Lastly, this research is also relevant in the context of developing livestock policies based on community empowerment. The success or failure of farmer groups in improving production and the welfare of farmers does not solely depend on economic factors, but also on the social and

cultural dynamics within the community. If farmers' responses to the existence of farmer groups are positive, these groups could serve as a model to be developed in other regions with similar characteristics. On the other hand, if farmers' responses are negative, this research will provide a solid foundation for the development of more inclusive policies that are based on the real needs of farmers.

2. Methods

2.1. Type of Researc

This study was descriptive quantitative. Quantitative descriptive research is a research method that aims to objectively describe a condition or situation using numbers (Kim, Sefcik, & Bradway, 2017; Vaismoradi, Turunen, & Bondas, 2013; Yilmaz, 2013).

2.2. Population and Sample

The population is the entirety of an object under study, including all aspects recorded in the field. The research population comprised all the cattle farmers in South Parigi District, Parigi Moutong Regency, totaling 6 farmer groups with 120 individuals.

A sample represents a portion of the population, embodying the characteristics of the population on a smaller scale. The sampling method used was probability sampling with a purposive sampling technique, which involves selecting samples based on specific characteristics, in a predetermined quantity. Based on calculations, 32 samples were used in this study (Etikan, Musa, & Alkassim, 2016; Thomas, 2022).

2.3. Types and Sources of Data

Primary data, which are actual data collected directly from the research subjects, in this case, the group of beef cattle farming. Secondary data, which are data collection was carried out using the literature study technique (Schuster, Anderson, & Brodowsky, 2014). Data were gathered from various sources, including books, documents, and online articles, as supplementary information for this research.

2.4. Research Instruments

To measure the response variable of the farmers, indicators of the variable were articulated into question items arranged in a questionnaire using a Likert scale (Zubaidah, Risna, & Suryani, 2023). A Likert scale is used to gauge perceptions, attitudes, or opinions of an individual or group regarding an event or social phenomenon, based on operational definitions established by the researcher. Each response is associated with a statement or attitude support, expressed in words and categorized in Table 1.

Table 1. Farmer response scores to the presence of farmer groups

Response	Score
Very good	5
Good	4
Fairly good	3
Poor	2
Very poor	1

Source: Inggriati, Yupardhi, & Warmadewi (2018).

2.5. Data Collection Technique

Data in this study were collected using: Observation, is a technique involving systematic observation and recording of phenomena or events related to the research object. Interviews, a data collection technique involving direct questioning with individuals directly related to the study, using a questionnaire as an aid. Documentation, involving the collection of data through field photography and the acquisition of secondary data from related institutions.

2.6. Statistical Analysis

The data collections were analyzed using the Statistical Package for the Social Sciences (SPSS) program (Bhatti, Siyal, Qureshi, & Bhatti, 2019). The data analysis included: (a) univariate analysis (percentage analysis), which was conducted to describe the frequency distribution of each variable, both independent (predictor) and dependent (outcome) variables (Yarnold, 2013), and (b) bivariate analysis, which was performed to determine the relationship between age, education level, and farming experience, using the chi-square test with SPSS version 16.00, with a significance level of $\alpha < 0.05$ (Franke, Ho, & Christie, 2012)..

3. Result and Discussion

3.1. General Overview of the Research Location

South Parigi District is one of the districts in the Parigi Moutong Regency, located in Central Sulawesi, Indonesia. It is approximately 8 km south of the government center of Parigi Moutong Regency. Dolago Padang Village serves as the administrative center of this district. With an area of 199.68 square kilometers, South Parigi District has an estimated population of 23,373 people. The boundaries of South Parigi District, which served as the research site, are as

follows: to the north, it borders Parigi and West Parigi Districts. To the east, it borders Torue District and Tomini Bay. To the south, it borders Torue District and Sigi Regency and to the west, it borders Sigi Regency.

3.2. Respondent Characteristics

The distribution of respondent characteristics based on age, education, and farming experience is shown in Table 2.

Table 2. Distribution of respondent characteristics

Characteristic	n	%
Age		
31 – 40 years	5	13.9
41 – 50 years	12	33.3
51 – 60 years	11	30.6
61 – 70 years	8	22.2
Education		
Elementary School	16	44.4
Junior High School	8	22.2
Senior High School	11	30.6
Bachelor's/Master's/Doctorate	1	2.8
Farming Experience		
< 5 years	9	25.0
5 – 15 years	17	47.2
> 15 years	10	27.8

Source: Primary data (2024)

Based on the results presented in Table 2 the most common age group of respondents is between 41 and 51 years, with 12 respondents (33.3 %), while the least represented age group is 31 to 40 years, with only 5 respondents (13.9 %). These findings are consistent with those of Mahalubi, Rintjap, Malingkas, & Oley (2019), who found that the majority of farmers in Kawangkoan District, Minahasa Regency, were aged between 40 and 60 years (60 %), with the lowest proportion being over 60 years old (13.34 %). Age can significantly influence a person's ability to perform work, as physical abilities tend to improve with age, although a decline in productivity occurs after a certain age.

Education also plays a crucial role in shaping the way farmers approach their livestock farming activities. Farmers with higher levels of formal education are more likely to adopt innovations and changes in livestock management practices, particularly in the study area. The data in Table 2 shows that the majority of respondents have only completed elementary school (16 respondents, or 44.4 %), while the least represented group is those with a higher education level (Bachelor's /Master's/ Doctorate), with only 1 respondent (2.8 %). The low education levels among farmers may hinder their ability to make informed decisions and slow the adoption of new technologies and

innovations in livestock farming. This can result in slow progress and, ultimately, lower success in farming operations. Additionally, the results in Table 2 also indicate that 17 respondents (47.2 %) have 5 to 15 years of farming experience, while 9 respondents (25.0 %) have less than 5 years of experience.

3.3. Farmers' Response to the Presence of Farmer Groups

Egg The responses of farmers to the presence of farmer groups in South Parigi District were presented in Table 3.

Table 3. Farmers' response to farmer groups

Farmer response	n	%
Low	1	2.8
Medium	15	41.7
High	20	55.6
Total	36	100.0

Source: Primary data (2024)

The results presented in Table 3 provide a clear overview of farmers' perceptions regarding the existence of farmer groups. The majority of respondents, totaling 20 farmers (55.6 %), gave responses that fall into the high category, indicating that they have a very positive view of the existence and role of farmer groups. This suggests that most farmers recognize the importance of these groups in supporting livestock activities, such as information exchange, access to resources, and the enhancement of technical skills and knowledge. These groups likely experience significant benefits in terms of economic, social, and business development, which is reflected in their positive assessment of the group's presence.

On the other hand, 15 respondents (41.7 %) rated the groups as moderately beneficial, indicating that while they acknowledge some advantages of being part of a farmer group, they have not fully experienced the significant positive impacts, or their views on the group's relevance are somewhat ambiguous. This moderate perception could be influenced by factors such as ineffective communication between group members or limited access to information and facilities provided by the group. Meanwhile, only 1 respondent (2.8 %) rated the group's impact as low, suggesting that this individual may not have felt the benefits of being in the group or did not see the group's existence as relevant to supporting their farming business. Although this number is small, it highlights a disparity in the understanding or benefits perceived by farmers, which should be addressed by group managers to ensure more equitable engagement and impact across all members in the future.

According to the research results (Table 3), 20 respondents (55.6 %) exhibited a positive attitude towards the presence of farmer groups. This indicates that most of the farmer members in this study view these groups as a crucial element in enhancing their welfare. They may perceive the presence of farmer groups as a means to share knowledge, gain support in terms of resources, and create mutually beneficial networks among farmers (Hadi, 2014). Additionally, farmer groups might also be considered a venue that strengthens solidarity and cooperation in conducting farming activities. In this case, the high response rate demonstrates a deep understanding of the benefits that can be obtained by joining such groups.

Conversely, only one respondent (2.8 %) provided a low response to the presence of farmer groups. This suggests that a small portion of the respondents do not perceive significant benefits or advantages from the existence of these groups. It is possible that this respondent feels that the presence of the groups does not align with their personal needs or goals in their farming business. For instance, they may feel that the farmer groups do not provide relevant contributions to improving the quality or quantity of their

livestock outputs, or they might prefer to operate independently without joining a group (Bizikova et al., 2020; Pelimina & Justin, 2015).

Several factors might influence a negative or less enthusiastic view towards farmer groups (Dessart, Barreiro-Hurlé, & Van Bavel, 2019). One possible reason could be differences in understanding or experience regarding the benefits of such groups. More experienced farmers or those who already have extensive market networks might feel that they do not need the support or cooperation of groups, preferring to operate independently (Kühne, Lambrecht, Vanhonacker, Pieniak, & Gellynck, 2013).

3.4. Relationship of Age, Education Level and Farming Experience with Farmer Response

The relationships between age, education level, farming experience, and farmer response are depicted in Table 4. The results in Table 4 indicate significant p-values for age (0.046), education level (0.012), and farming experience (0.031), suggesting a significant relationship between these factors and the responses of beef cattle farmers.

Table 4. Relationship of age, education level, and farming experience with farmer response

Variables	Farmer response							*p-value*
	Low		Medium		High		Total		
	n	%	n	%	n	%	n	%	
Age									
31 – 40 years	0	0.00	1	20.0	4	80.0	5	100	
41 – 50 years	0	0.00	6	50.0	6	50.0	12	100	0.046
51 – 60 years	0	0.00	5	45.5	6	55.5	11	100	
61 – 70 years	1	12.5	3	37.5	4	50.0	8	100	
Education									
Elementary School	0	0.00	5	31.2	11	68.8	16	100	
Junior High School	0	0.00	3	37.5	5	62.5	8	100	0.012
Senior High School	1	9.1	6	54.5	4	36.4	11	100	
Bachelor's/Master's/Doctorate	0	0.00	1	100.0	0	0	1	100	
Farming experience									
<5 years	0	0.00	5	55.6	4	44.4	9	100	
5-15 years	0	0.00	6	35.3	11	64.7	17	100	0.031
>15 years	1	10.00	4	40.00	5	50.00	10	100	

Source: Data from the analysis (2024)..

Relationship Between Age and Farmer Response

Age is one factor that can influence an individual's work productivity. The age of a person affects their capability to perform their job, as physical abilities generally increase with age, but there is a certain point where productivity may decline (Mahalubi et al., 2019).

The research results displayed in Table 2 indicate that most respondents in this study fall within the productive age category. According to Onogwu, Audu, & Igbodor, (2017) the productive age range for farmers is between 23 –

60 years. Within this age range, individuals are typically in good physical condition to perform heavy physical work and possess adequate experience in managing a business.

Statistical analysis results show a p-value of 0.046, which signifies a significant relationship between age and the response of farmers. This means that age influences how farmers respond to various aspects of their farming enterprise. Younger farmers, for example, maybe more open to adopting new technologies or more modern management methods, while older farmers may be more conservative in their approach. The

mindset of a farmer is closely related to their age, which in turn affects the management processes applied in their farming operations.

Relationship Between Education Level and Farmer Response

Education influences the mindset of farmers and how they conduct their livestock business activities (Pao et al., 2022). Farmers with higher formal education are more likely to accept innovations and changes in cattle farming practices. Highly educated farmers are relatively quicker to adopt innovations.

The research results (Table 2) indicate that most respondents have low education levels, with 44.4 % of respondents only educated up to elementary school. Meanwhile, 30.6 % of respondents have high school education, 22.2 % have junior high school education, and only 2.8 % have higher education up to bachelor's, master's, or doctoral levels. This phenomenon shows that most farmers in the study location still face limitations in terms of formal education. The impact of low education levels is that farmers may find it difficult to understand or adopt new, more complex technologies, such as more modern and efficient livestock maintenance or management methods. Consequently, the innovation process that could enhance the productivity of livestock enterprises tends to progress slower or may not occur at all among farmers with low education levels.

According to Sembiring (2022), farmers with low education levels also often face psychological barriers to accepting change. Additionally, farmers with lower education levels may lack wisdom in making decisions related to their livestock enterprises. Simamora & Matoneng (2024) stated that the decisions not based on deep understanding or mature consideration risk lowering the quality of operational decisions, ultimately affecting the efficiency and success of the farming business. Conversely, farmers with higher education levels, though fewer in this study, are generally more open to change and technology adoption. Higher education enables farmers to more easily access the latest information about developments in the livestock world, enhancing their ability to evaluate and utilize this information within their local context.

Statistical analysis results show a p-value for education level of 0.012, indicating a significant relationship between education level and farmer response. Practically, this suggests that education level plays an important role in determining the extent to which farmers can adopt new technologies or changes in their farming practices. The significant relationship suggests that although most respondents come from low education backgrounds, they still respond very positively to the presence of farmer groups. This can be interpreted to mean that although educational background is not a barrier, other factors such as experience, understanding of the importance of group presence, or perhaps the direct influence of programs or activities run by farmer groups, can affect their perspectives and positive attitudes towards the existence of these groups, even if they do not possess high education levels (Dudzińska, Prus, Bacior, & Kowalczyk, 2017; Serin, Bayyurt, & Civan, 2009).

Relationship Between Farming Experience and Farmer Response

The research results (Table 2) show that 17 respondents have 5 – 15 years of farming experience (47.2 %), more than 15 years of experience is accounted for by 10 respondents (27.8 %), and less than 5 years by 9 respondents (25.0 %). Generally, the majority of farmers at the research site possess considerable experience in managing their farming enterprises. This experience can influence how farmers interact with new technologies or innovations introduced. Farmers with 5 – 15 years of experience have likely encountered various challenges and changes in their enterprises, making them more open to ideas or technologies that could enhance the efficiency and success of their operations.

Farmers with more than 10 years of experience typically possess better knowledge about the characteristics and needs of cattle and are accustomed to various livestock maintenance and management methods. This longer experience often comes with an improved ability to handle problems and find more efficient solutions. However, on the other hand, farmers with more extensive experience might also be more attached to the old ways they know and more reluctant to accept changes or innovations that seem foreign.

In this study, 9 respondents (25 %) have less than 5 years of farming experience. These relatively new farmers may still be in the learning and adjustment phase to more efficient ways of managing livestock. They may be more open to adopting new technologies or innovations, given that they are not yet accustomed to more established traditional methods and are ready to try new things that could improve the success of their ventures (Simamora & Matoneng, 2024).

However, limited experience can pose its own challenges, as they may not fully understand the complexities of cattle farming and need time to acquire practical skills.

Statistical analysis results also indicate a p-value of 0.031 for farming experience, meaning there is a significant relationship between farming experience and farmer response. Farming experience plays a crucial role in shaping the mindset of farmers when facing new challenges or opportunities. More experienced farmers, such as those who have been in the business for over 10 years, typically have a deeper understanding of livestock needs and the dynamics of the farming business overall (McCown, 2002). They are more skilled at managing various situations, such as livestock diseases, feed issues, or other common issues in farming (Šūmane et al., 2018).

4. Conclusion

Based on the analysis conducted, it can be concluded that the majority of the farmer respondents exhibited a high level of response to this study, with 20 respondents (55.6 %) falling into the high category, 15 respondents (41.7 %) in the moderate category, and only 1 respondent (2.8 %) in the low category. Further analysis revealed that the variables of age, education level, and farming experience are significantly related to the farmers' responses, as indicated by the p-values of 0.046 for age, 0.012 for education level, and 0.031 for farming experience. This suggests that older age, higher education levels, and more farming experience are associated with a greater likelihood of farmers providing more favorable responses to the study, highlighting the importance of these demographic factors in influencing the farmers' mindset and behavior in the context of this research.

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