



## Factors Affecting Community Motivation in Animal Husbandry

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**Abstract** | Livestock products are essential commodities in the agricultural sector that play a crucial role in maintaining global food security. Along with the increase in population growth, the need for the fulfillment of protein sources and animal origin is also increasing. This study aims to identify and analyze the main factors that influence people's interest in raising livestock in Aceh Tamiang District. Using the Structural Equation Modeling - Partial Least Squares (SEM-PLS) approach, this study analyzed the influence of various factors, such as infrastructure, knowledge and information, initial capital, challenges, and risks, as well as psychological and motivational factors. Data was collected through a survey of 100 respondents using a questionnaire. The results show that infrastructure is the most important factor influencing community interest in animal husbandry (0.277), followed by challenges and risks (0.255). Further research is needed using other variables that are thought to motivate people in raising livestock to produce a better model and increase the production of livestock products in Aceh Tamiang District.

**Keywords** | Aceh tamiang, Challenges and risks, Infrastructure, Interest in farming, SEM-PLS

**Received** | September 17, 2024; **Accepted** | November 28, 2024; **Published** | March 05, 2025

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**Citation** | Mastuti R, Fuad M, Marnita Y, Gustiana C, Anzitha S, Jamil M (2025). Factors affecting community motivation in animal husbandry. Adv. Anim. Vet. Sci. 13(4): 772-781.

**DOI** | <https://dx.doi.org/10.17582/journal.aavs/2025/13.4.772.781>

**ISSN (Online)** | 2307-8316; **ISSN (Print)** | 2309-3331



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## INTRODUCTION

Livestock plays a crucial role in meeting global food needs by providing protein and essential nutrients that support human health (Augustin *et al.*, 2016; Hussain *et al.*, 2023). Products from this sector, such as meat, milk, and eggs, are significant sources of high-quality protein, vitamins, and minerals (Ponnampalam *et al.*, 2022). Livestock products are essential commodities in the agricultural sector that play a crucial role in maintaining global food security (Cole *et al.*, 2018; Saeed *et al.*, 2021). Food from animal sources contributes 18% to global calorie intake and 25% to global protein intake (Mottet *et al.*, 2017).

In addition, the sector provides livelihoods for one billion of the world's poorest people and employment for nearly 1.1 billion people. Global dairy production is expected to grow from 664 million tons in 2006 to 1,077 million tons in 2050, while meat production is projected to double from 258 million tons to 455 million tons (Rojas-Downing *et al.*, 2017). Besides contributing to food security, livestock also contributes to economic stability (Enahoro *et al.*, 2019) and rural development (Dlodlo and Kalezhi, 2015). Livestock directly meets the nutritional needs of the growing world population (Hossain *et al.*, 2021). In addition to the nutritional aspect, livestock farming is also an essential part of the economic livelihoods and well-being of rural com-

munities, demonstrating the widespread significance of the sector (Bettencourt *et al.*, 2015; Andaleeb *et al.*, 2017). The Food and Agriculture Organization (FAO) estimates that livestock accounts for about 40% of global agricultural output, underscoring the importance of livestock in rural economies (Brown *et al.*, 2021; Naz and Khan, 2018). Food security is strongly influenced by livestock production, while its economic impact extends to various sectors such as breeding, feed production, veterinary services, and meat processing (Nkukwana, 2019). It provides income and employment to millions of people, especially in rural and semi-urban areas, and stimulates related sectors such as transportation, retail and agribusiness.

Livestock farming has great potential to support food security by producing food and lowering costs through increased supply while providing income for farmers and workers that enables access to food (Godber and Wall 2014; Sekaran *et al.*, 2021). However, farmers face various challenges in achieving food security. Previous research has shown that farmer knowledge is an invaluable resource to support sustainable and resilient livestock farming (Kunda *et al.*, 2017). Knowledge and information play a very important role in supporting livestock sustainability and resilience because they are comprehensive, flexible and adaptive. This knowledge tends to view local systems in an integrated manner, covering various dimensions such as social, environmental, economic, empirical, and spiritual (Thomas *et al.*, 2020). Farmer productivity also tends to be low due to limited access to markets, credit, production facilities, extension services, and low selling prices at the farm level (Ulrich *et al.*, 2012; Worldbank, 2012; AGRA, 2017).

The use of technology in the livestock sector is now also an important aspect to improve productivity, animal welfare and sustainability in the livestock sector. The adoption of technologies such as the Internet of Things (IoT), machine learning, as well as advanced sensor systems has brought major changes to traditional practices, enabling real-time monitoring and management of livestock. This transformation is particularly relevant given that the livestock industry was previously classified as a sector with a low level of digitalization, creating a great opportunity for development through the use of digital tools (de Oliveira *et al.*, 2024). Challenges and risks also significantly affect people's interest in engaging in this field. One of the main issues is climate change, which impacts feed production and water availability and increases the risk of livestock diseases (Godde *et al.*, 2021; Pérez-Lombardini *et al.*, 2023). In addition, small-scale farms often face limited access to capital, which prevents farmers from investing in modern technologies and methods that can improve productivity and business sustainability. Psychological aspects also include farmers' attitudes and mental health conditions, playing an important role as factors that determine behaviour in

management. This ultimately impacts the level of animal welfare produced.

Labour also has a significant influence on people's interest in animal husbandry. Sraïri and Naqach (2022), point out that limited income often makes it difficult for farmers to obtain adequate labour, creating a huge burden for them. Sraïri and Ouidat (2022), point out that understanding the use of labour in different farming systems is essential to improve the efficiency and sustainability of the sector. Farmers' interest is also influenced by interest (Mwangi *et al.*, 2020). Many factors influence the clustering of interest in animal husbandry. Understanding these factors is critical to promoting sustainable practices and improving the viability of animal husbandry as a livelihood. Therefore, understanding the factors that influence people's motivation towards animal husbandry is crucial to developing effective strategies to advance the sector. Through a holistic approach involving education, communication and public engagement, the livestock sector can continue to thrive and contribute to global food security while maintaining ecological balance and animal welfare. The purpose of this research is to identify and analyze the main factors that influence people's motivation in animal husbandry. One method that can be used in understanding these factors is Structural Equation Modeling with Partial Least Squares (SEM-PLS) (Yang *et al.*, 2022). This method emphasizes prediction and practical relevance, providing insight into how well the model can predict the outcome variable. The hypotheses in this study are H1: Challenges and risks affect psychological; H2: Infrastructure affects challenges and risks; H3: Infrastructure affects starting capital requirements; H4: Infrastructure affects technology; H5: Infrastructure affects workforce; H6: Knowledge and information affects infrastructure; H7: Psychological affects motivational factors; H8: Starting capital affects psychological; H9: Technological factors affect psychological; H10: Workforce affects psychological (Figure 1).

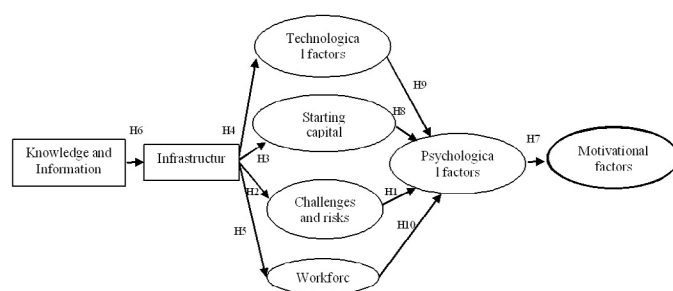


Figure 1: Research model.

## MATERIALS AND METHODS

### SAMPLING AND DATA COLLECTION

This study used purposive sampling to generate focused data. Farmers manually filled out a questionnaire to evalu-

ate various aspects of the developed model. The questionnaires were distributed directly in Aceh Tamiang District, and data collection took place over five months, from March to August 2024. We ensured that the respondents filled out the questionnaire appropriately. This method resulted in a total of 100 responses that could be analyzed. To evaluate the adequacy of the sample size in the partial least squares structural equation model (PLS-SEM), a statistical power analysis was conducted using G\*Power software. The results of the analysis showed a calculated power of 0.95, exceeding the recommended minimum limit of 0.8 (Carranza *et al.*, 2020; Hair *et al.*, 2019), indicating that this sample size is adequate for research purposes. Analysis of the respondents' characteristics showed a distinct gender distribution between females and males (36% males and 64% females). Among the participants, 9% were 20-30 years old, 24% were 30-40 years old, 32% were 40-50 years old, and 35% were >50 years old.

### RESEARCH AND MEASUREMENT INSTRUMENTS

The constructs were rated using a five-point Likert scale, with 1 representing "strongly disagree" and 5 representing "strongly agree". The measurement of the constructs was evaluated by Rafdinal and Senalasari (2021) to examine the factors that motivate people in Aceh Tamiang District to raise livestock. An initial pilot test involving 30 participants from the survey sample was conducted prior to the primary survey, and no significant revisions were required.

### DATA ANALYSIS

In this study, the PLS-SEM analysis method was chosen because of its ability to process multivariate statistical analysis thoroughly. This method allows testing the relationship between variables simultaneously in a conceptual model that includes measurement and structural aspects (Hair *et al.*, 2019). The analysis was conducted using SmartPLS version 3.2.7. In accordance with guidelines from the PLS-SEM literature, this study applied a two-stage procedure: first, evaluating the measurement model, then assessing the structural model (Hair *et al.*, 2019). At the measurement model stage, the reliability and validity of the reflective constructs were examined, while the structural model was assessed through  $R^2$ ,  $f^2$ ,  $Q^2$ , and path coefficient analysis (Hair *et al.*, 2019). Furthermore, IPMA is performed to assess the performance of each independent variable and identify variables that have a significant influence on the dependent variable (Ringle *et al.*, 2016).

## RESULTS AND DISCUSSION

### MEASUREMENT MODEL

The first step in assessing the measurement model is to check the scale reliability of each construct by evaluating the item load. Item loadings must exceed the threshold of

0.708 to meet the established criteria, as described by Hair *et al.* (2019). In this study, almost all items met these criteria except for one item in the psychological factors construct. Furthermore, construct reliability can be further evaluated by calculating the composite reliability (CR) and Dijkstra-Henseler rho ( $\rho_A$ ). CR and  $\rho_A$  values that exceed 0.7 indicate a high level of reliability, as suggested by Rafdinal and Senalasari (2021). The results show that the  $\rho_A$  value is in the range of 0.43 to 0.801, which indicates a moderate to high level of reliability. In contrast, the CR value ranges from 0.769 to 0.887, which signifies high reliability. The internal consistency levels for each construct (Table 1) are:

After the reliability assessment, the next step is to evaluate convergent validity through average variance extracted (AVE). Fornell and Larcker (1981) suggest that the desired AVE value should be greater than 0.5. In this study, all constructs met this requirement, with AVE values ranging from 0.614 to 0.797. Factor loadings were then checked for significance using the bootstrap resampling method with 5,000 sub-samples of the original data to calculate t-statistics, as suggested by Hair *et al.* (2017). The findings indicated that all factor loadings were statistically significant at the 99.9% confidence level. Next, discriminant validity was assessed using the Fornell-Larcker criterion, which requires that the square root of each construct's AVE exceeds its correlation with the other latent variables. This condition was confirmed in this study. In addition, discriminant validity was tested using the heterotrait-monotrait ratio (HTMT). In accordance with the guidelines of Henseler *et al.* (2015) and Hair *et al.* (2019), HTMT values below 0.90 and 0.85 indicate good discriminant validity. In this study, all HTMT values were within this range, indicating strong validity. The results of this study are below the threshold, indicating strong reliability and validity (Table 2).

### STRUCTURAL MODEL

The next stage of the evaluation process is to analyze the structural model. To determine the significance of indicators and path coefficients, the bootstrap method with 5,000 iterations was applied (Chin *et al.*, 2008). Before proceeding with hypothesis testing, the quality of the model is checked using several criteria, such as the coefficient of determination ( $R^2$ ) and cross-validated redundancy ( $Q^2$ ) (Hair *et al.*, 2019).  $R^2$  values of 0.75, 0.50, and 0.25 for endogenous constructs indicate robust, medium, and weak levels, respectively. The analysis resulted in  $R^2$  values of 0.103 for challenges and risks, 0.168 for infrastructure, 0.16 for motivational factors, 0.261 for psychological factors, 0.112 for initial capital requirements, 0.062 for technological factors, and 0.295 for labor. These results indicate that the endogenous variables moderately influence each variable. To complete the structural model evaluation, this study assessed the predictive relevance of the model using Stone-Geisser's  $Q^2$

**Table 1:** Results of the measurement model.

| Construct/item                                                                                                                                         | Loading | Dijkstra–Henseler's rho ( $\rho_A$ ) | CR    | AVE   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------------------------------|-------|-------|
| Knowledge and Information                                                                                                                              |         |                                      |       |       |
| Training or workshops attended affect                                                                                                                  | 0.872   | 0.737                                | 0.88  | 0.787 |
| The existence and role of information sources such as books, journals, and scientific articles                                                         | 0.901   |                                      |       |       |
| Infrastructure                                                                                                                                         |         |                                      |       |       |
| Quality of roads and access to markets                                                                                                                 | 0.779   | 0.673                                | 0.832 | 0.713 |
| The availability of a place to store livestock products                                                                                                | 0.906   |                                      |       |       |
| Technological factors                                                                                                                                  |         |                                      |       |       |
| The ability to adopt and innovate in the use of relevant new technologies                                                                              | 0.849   | 0.435                                | 0.772 | 0.63  |
| Implementation of sustainable agricultural practices                                                                                                   | 0.734   |                                      |       |       |
| Starting capital requirements                                                                                                                          |         |                                      |       |       |
| Availability and ease of access to sources of funding or loans                                                                                         | 0.836   | 0.685                                | 0.827 | 0.616 |
| Financial support provided by the government in the form of subsidies, grants or capital assistance for novice farmers                                 | 0.782   |                                      |       |       |
| Ease of access to credit or microfinance that can be used as start-up capital                                                                          | 0.733   |                                      |       |       |
| Challenges and risks                                                                                                                                   |         |                                      |       |       |
| Animal health issues, livestock waste management, and technologies used in animal husbandry                                                            | 0.819   | 0.798                                | 0.878 | 0.706 |
| Stigma towards the livestock breeding profession, traditional values associated with livestock breeding, and changes in people's consumption patterns. | 0.883   |                                      |       |       |
| Fluctuating agricultural commodity prices, uncertain market demand, and competition from imported livestock products                                   | 0.816   |                                      |       |       |
| Workforce                                                                                                                                              |         |                                      |       |       |
| Availability of skilled labor                                                                                                                          | 0.907   | 0.753                                | 0.886 | 0.796 |
| Labor intensity and time commitment in raising livestock required                                                                                      | 0.878   |                                      |       |       |
| Psychological factors                                                                                                                                  |         |                                      |       |       |
| Psychological resilience and ability to cope with agricultural challenges                                                                              | 0.929   | 0.659                                | 0.779 | 0.645 |
| Satisfaction with farming lifestyle                                                                                                                    | 0.653   |                                      |       |       |
| Motivational factors                                                                                                                                   |         |                                      |       |       |
| Additional income from the sale of livestock products, reduced family expenditure, or improved food security                                           | 0.724   | 0.742                                | 0.834 | 0.627 |
| Cultural values or traditions that encourage raising livestock as part of daily life                                                                   | 0.804   |                                      |       |       |
| Support from family, neighbors or community                                                                                                            | 0.844   |                                      |       |       |

measure (Hair *et al.*, 2019). The analysis results show that all  $Q^2$  values are positive (Table 3), which indicates that the model is less effective in terms of prediction.

Table 4 displays the results of the one-sided hypothesis testing. A one-sided test is recommended when the coefficient is anticipated to have a sure sign, either positive or negative (Kock, 2014). The results show that challenges and risks positively influence psychological factors ( $\beta = 0.105$ ,  $t = 2.316$ ), which indicates the acceptance of H1. In contrast, infrastructure positively influences challenges and risks ( $\beta = 0.255$ ,  $t = 3.512$ ), which leads to the acceptance of H1, H2, H3, H4, and H5. Knowledge and information show a positive influence on infrastructure ( $\beta = 0.348$ ,  $t =$

5.276), which means accepting H6. Psychological factors also influence motivational factors ( $\beta = 0.268$ ,  $t = 5.961$ ), while starting capital requirements have a negative impact on psychological factors ( $\beta = 0.14$ ,  $t = 1.150$ ). Similarly, technological factors and the workforce negatively impact psychological factors ( $\beta = 0.549$ ,  $t = 1.635$  and  $\beta = 0.42$ ,  $t = 1.412$ ) (Figure 2).

Table 5 presents the Impact-Performance Map Analysis (IPMA) for the psychological factors and motivational factors variables. This analysis aims to determine the constructs that have significant importance to the target construct but show relatively low performance (Ringle and Sarstedt, 2017). The initial IPMA focused on psycho-

logical factors. The results showed that infrastructure was the most important factor influencing people's interest in farming (0.277), followed by challenges and risks (0.255). Therefore, the people of Aceh Tamiang Regency will first pay attention to the availability of infrastructure when they want to do animal husbandry business. Meanwhile, the workforce is also the next factor that is mainly considered by the local community. Meanwhile, the second IPMA, focusing on motivational factors, shows that psychological factors are the main factor influencing people's interest in animal husbandry (0.411), followed by infrastructure and challenges and risks (0.114 and 0.105).

**Table 2: Discriminant validity.**

| Fornell-Larcker criterion          | CR    | IR    | KI    | MF    | PF    | SCR   | TF    | WF    |
|------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| CR                                 | 0.84  |       |       |       |       |       |       |       |
| IR                                 | 0.334 | 0.845 |       |       |       |       |       |       |
| KI                                 | 0.369 | 0.42  | 0.887 |       |       |       |       |       |
| MF                                 | 0.431 | 0.35  | 0.475 | 0.792 |       |       |       |       |
| PF                                 | 0.46  | 0.359 | 0.359 | 0.411 | 0.803 |       |       |       |
| SCR                                | 0.469 | 0.348 | 0.338 | 0.302 | 0.343 | 0.785 |       |       |
| TF                                 | 0.459 | 0.268 | 0.358 | 0.43  | 0.356 | 0.117 | 0.794 |       |
| WF                                 | 0.376 | 0.549 | 0.484 | 0.388 | 0.386 | 0.279 | 0.456 | 0.892 |
| Heterotrait-monotrait ratio (HTMT) |       |       |       |       |       |       |       |       |
| CR                                 |       |       |       |       |       |       |       |       |
| IR                                 | 0.486 |       |       |       |       |       |       |       |
| KI                                 | 0.485 | 0.581 |       |       |       |       |       |       |
| MF                                 | 0.545 | 0.552 | 0.677 |       |       |       |       |       |
| PF                                 | 0.699 | 0.607 | 0.55  | 0.636 |       |       |       |       |
| SCR                                | 0.642 | 0.519 | 0.476 | 0.436 | 0.542 |       |       |       |
| TF                                 | 0.808 | 0.531 | 0.636 | 0.766 | 0.728 | 0.317 |       |       |
| WF                                 | 0.489 | 0.781 | 0.661 | 0.535 | 0.528 | 0.39  | 0.806 |       |

**CR:** Challenges and risks; **IR:** Infrastructure; **KI:** Knowledge and Information; **MF:** Motivational factors; **PF:** Psychological factors; **SCR:** Starting capital requirements; **TF:** Technological factors; **WF:** Workforce.

**Table 3: Structural model evaluation.**

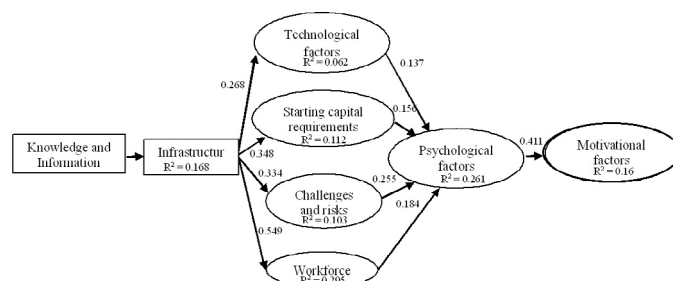
|     | Variance explained (R <sup>2</sup> ) | R <sup>2</sup> adjusted | Predictive relevance (Q <sup>2</sup> ) |
|-----|--------------------------------------|-------------------------|----------------------------------------|
| CR  | 0.112                                | 0.103                   | 0.068                                  |
| IR  | 0.176                                | 0.168                   | 0.109                                  |
| MF  | 0.169                                | 0.16                    | 0.095                                  |
| PF  | 0.291                                | 0.261                   | 0.137                                  |
| SCR | 0.121                                | 0.112                   | 0.059                                  |
| TF  | 0.072                                | 0.062                   | 0.017                                  |
| WF  | 0.302                                | 0.295                   | 0.221                                  |

**CR:** Challenges and risks; **IR:** Infrastructure; **KI:** Knowledge and Information; **MF:** Motivational factors; **PF:** Psychological factors; **SCR:** Starting capital requirements; **TF:** Technological factors; **WF:** Workforce.

**Table 4: Hypothesis testing results.**

| Hypothesis / relationships | $\beta$ | T value | Confidence interval (95%) | p - values | Supported |
|----------------------------|---------|---------|---------------------------|------------|-----------|
| H1. CR -> PF               | 0.105   | 2.316   | [0.065 ; 0.424]           | 0.010      | Yes       |
| H2. IR -> CR               | 0.255   | 3.512   | [0.185 ; 0.492]           | 0.000      | Yes       |
| H3. IR -> SCR              | 0.334   | 4.422   | [0.228 ; 0.487]           | 0.000      | Yes       |
| H4. IR -> TF               | 0.114   | 3.166   | [0.137 ; 0.425]           | 0.001      | Yes       |
| H5. IR -> WF               | 0.277   | 7.678   | [0.435 ; 0.66]            | 0.000      | Yes       |
| H6. KI -> IR               | 0.348   | 5.276   | [0.283 ; 0.544]           | 0.000      | Yes       |
| H7. PF -> MF               | 0.268   | 5.961   | [0.316 ; 0.53]            | 0.000      | Yes       |
| H8. SCR -> PF              | 0.549   | 1.635   | [0.004; 0.332]            | 0.051      | No        |
| H9. TF -> PF               | 0.14    | 1.150   | [-0.042 ; 0.348]          | 0.125      | No        |
| H10. WF -> PF              | 0.42    | 1.412   | [-0.065 ; 0.375]          | 0.079      | No        |

**CR:** Challenges and risks; **IR:** Infrastructure; **KI:** Knowledge and Information; **MF:** Motivational factors; **PF:** Psychological factors; **SCR:** Starting capital requirements; **TF:** Technological factors; **WF:** Workforce.



**Figure 2: Outcome model.**

**Table 5: Importance-performance maps for the target constructs “psychological factors” and “motivational factors”.**

| Constructs                    | Psychological factors |             | Motivational factors |             |
|-------------------------------|-----------------------|-------------|----------------------|-------------|
|                               | Important             | Performance | Important            | Performance |
| Challenges and risks          | 0.255                 | 37.871      | 0.105                | 37.871      |
| Infrastructure                | 0.277                 | 28.229      | 0.114                | 28.229      |
| Knowledge and Information     | 0.116                 | 20.127      | 0.048                | 20.127      |
| Psychological factors         |                       |             | 0.411                | 48.024      |
| Starting capital requirements | 0.156                 | 37.943      | 0.064                | 37.943      |
| Technological factors         | 0.137                 | 35.348      | 0.056                | 35.348      |
| Workforce                     | 0.184                 | 31.85       | 0.075                | 31.85       |

Livestock raising is a profession that has played an essential role in the formation of human civilization for thousands of years. The model found in this study shows that people who have a strong belief that animal husbandry is a rewarding occupation tend to be more motivated to take up animal husbandry. Expectations of success in the livestock busi-

ness and optimism about the future will increase people's motivation. This is consistent with research conducted by [Suleman and James \(2014\)](#) that solid beliefs will motivate people to carry out agricultural activities. The research also shows that the community is aware of the importance of inadequate infrastructure in the challenges and risks in the livestock business. The low value of  $\rho A$  (0.673) in this study is due to the fact that farmers in Aceh Tamiang District still use the traditional concept of grazing on plantations. However, farmers in Aceh Tamiang District realize that improving infrastructure in the current era is very important to speed up and facilitate the distribution of livestock products from producers to consumers, ensuring products remain fresh and of high quality. Optimizing the livestock supply chain is highly dependent on good infrastructure. Infrastructure development in rural areas is proven to significantly reduce production costs and improve the welfare of rural communities while encouraging sustainable agricultural practices ([Wu et al., 2019](#); [Wang et al., 2021](#)). Research shows that improvements in road transport infrastructure directly enhance commercialization and accelerate the circulation of livestock products, ultimately reducing logistics costs and smoothing distribution channels ([Liu and Zeng, 2022](#)). Research conducted by [Lama et al. \(2014\)](#) also showed that transporting animals over long distances is more likely to jeopardize their welfare and meat quality than short trips. This infrastructure is critical in rural areas with limited market access. The improvement of such infrastructure not only improves livestock productivity but also contributes to poverty alleviation by increasing farmers' income and economic stability ([Nhlengethwa et al., 2020](#)). Research conducted by [Shang et al. \(2014\)](#) also shows that improved infrastructure will increase livestock development and industry.

The model also shows that the availability of adequate infrastructure will reduce initial capital. Improved infrastructure, particularly in rural areas of Aceh Tamiang district, will facilitate access to essential services and resources, thereby increasing farm productivity and reducing operational costs. This is consistent with research conducted by [Shamdasani \(2021a\)](#) that infrastructure will influence production decisions. The availability of infrastructure also affects the technology that will be used. The better the infrastructure, the more advanced the technology that will be used. Digital innovation is considered crucial to improve production efficiency and competitiveness in both domestic and international markets ([Subach and Shmeleva, 2022](#)). These technological changes are spurred by the need to automate various aspects of farming, aiming to optimize resource use and simplify farm management ([Vlaicu et al., 2024](#); [de Oliveira et al., 2024](#)). In addition, the adoption of intelligent agricultural technologies is influenced by the existing infrastructure, which can either support or hinder technological advancement. For example, integrated farm

management systems that utilize the Internet of Things (IoT) are essential for creating a connected environment that improves data management and decision-making ([Symeonaki et al., 2022](#)). These systems enable real-time monitoring and control of livestock conditions, which is particularly useful in large operations where manual supervision is impractical. The ability to collect and analyze large amounts of data assists farmers in making better decisions, which can improve animal welfare and reduce environmental impact ([Schukat and Heise, 2021](#); [Norton et al., 2019](#)). The low  $\rho A$  value of the technology factor (0.435) in the results of this study is due to the fact that few people in Aceh Tamiang District are aware of the importance of technology. The lack of access to the village has resulted in farmers being accustomed to the traditional farming concept that has been practised so far. Improving village development and community awareness can be done by increasing collaboration with various parties ([Li et al., 2019](#)).

Infrastructure also plays a crucial role in attracting skilled labor to rural areas ([Kaiser and Barstow, 2022](#); [Shi et al., 2017](#)). The availability of essential services such as electricity, water, and internet access makes rural areas more attractive to highly skilled professionals who are increasingly required to work in modern livestock practices. The results of a study conducted by [Irungu et al. \(2015\)](#) in Kenya also showed that the availability of internet access led young people to make objective choices for profitable ventures. The movement of skilled workers to rural areas can encourage more efficient farming practices and increase productivity, potentially transforming the local economy and improving the welfare of existing farm workers ([Rotz et al., 2019](#)). In addition, the quality of infrastructure also has a direct effect on the adaptability and resilience of the livestock sector workforce ([Nettle et al., 2018](#)).

The resulting model also shows that adequate infrastructure plays a vital role in improving the knowledge and information available to farmers. The results of research conducted by [Khapayi and Celliers \(2016\)](#) also show that limited access to transportation from farms to markets hampers the ability to analyze market information needed for production and marketing planning. Infrastructure will expand access to educational resources, enable better connectivity, and support extension services. [Mapiye et al. \(2021\)](#) argue that extension is the leading information transport for smallholder farmers. Well-maintained roads, reliable telecommunications, and robust transportation networks enable farmers to attend training, obtain up-to-date information, and access markets to exchange knowledge with other industry players ([Barakabitze and Fue, 2017](#)). This infrastructure gives farmers the ability to make informed decisions, adopt new technologies, and improve their practices, ultimately resulting in more sustainable and productive farms. Without adequate infrastructure, farmers can

be isolated from these resources, limiting their ability to innovate and succeed (Shamdasani, 2021b).

Meanwhile, the research model results show that initial capital is not the main determinant motivating farming, with a value of  $\rho_A$  (0.685). This is because raising livestock has been a long-standing culture of the Aceh Tamiang Regency community. Similarly, psychological factors were also shown with an  $\rho_A$  value of 0.659. Support from family and community, along with clear goal setting, are their motivating factors (Nepali, 2021).

Positive psychological aspects are also instrumental in improving the spirit of farming in Aceh Tamiang District. Farmers who are confident in their abilities, enjoy their work, and maintain a positive attitude tend to be better able to face challenges, adopt innovative practices, and remain steadfast in their farming goals (Kunda *et al.*, 2017). In addition, support from family and community, along with precise goal setting, further strengthens their motivation (Nepali, 2021). Meanwhile, the results of the research model show that initial capital is not a determinant of community psychology in animal husbandry, nor does technology affect community psychology. Labor also shows no relationship with community psychology in Aceh Tamiang District as a factor that motivates communities to raise livestock.

One of the main challenges in the livestock sector is the financial uncertainty associated with sizable initial investments (RL and Mishra, 2022; Kotyza *et al.*, 2021). The returns on these investments are often difficult to predict due to fluctuations in market prices, yield variability, and changes in consumer demand. Many prospective farmers need more time to be able to return their investment or generate sustainable profits, which can be a significant barrier (Katchova and Dinterman, 2018). In addition, limited access to credit and debt risk in an unstable industry often add to concerns about entering animal husbandry (Ramprasad, 2019). Other challenges include environmental factors and climate change. Livestock farming is highly dependent on environmental conditions, making it vulnerable to climate change, erratic weather patterns, and natural disasters. In Aceh Tamiang District, additional challenges affecting interest in animal husbandry are market access and economic competition (Lemaire *et al.*, 2014; Rojas-Downing *et al.*, 2017). Farmers often need help in reaching profitable markets, especially in rural or remote areas. The livestock market is highly competitive, with small-scale farmers having to compete with larger farms that have the advantage of economies of scale and better access to resources. The difficulty in obtaining a stable and fair market for their products can be a significant barrier for those considering animal husbandry as a viable occupation (Joshua and Augustine, 2018; Abay and Jensen, 2020).

## CONCLUSIONS AND RECOMMENDATIONS

The results show that infrastructure is the most important factor influencing people's interest in raising livestock (0.277), followed by challenges and risks (0.255). However, the  $R^2$  value of the model produced in this study is still in the low to medium category. To improve the modeling results in this study, it is very important to involve the observation of other variables that have yet to be included in this study so that all factors that motivate the community can be known.

## ACKNOWLEDGEMENTS

The authors express their deepest gratitude to the Ministry of Education, Culture, Research and Technology for their financial contribution. Thanks to this valuable financial assistance, our activities can be implemented successfully and meet the desired expectations. In addition, we would also like to express our deep appreciation and gratitude to the Institute for Research, Community Service, and Quality Assurance (LPPM and PM) of Universitas Samudra, which has provided significant support in realizing this activity. We would also like to thank the Aceh Tamiang District Agriculture, Plantation, and Livestock Service Office and the team and staff involved.

## NOVELTY STATEMENTS

This research is something new in identifying livestock development.

## AUTHOR'S CONTRIBUTIONS

RM leads as the main author, structuring the journal and writing key sections, MF handles the literature review and data analysis, YM writes the results and conclusions, ensuring accurate interpretation.

## LIMITATIONS OF THIS STUDY

This study was conducted with limited variables, thus limiting policy making on factors affecting community interest in animal husbandry as a whole. Although we understand that this study has limitations, in general the results of this study can be a reference for future development so as to increase livestock production.

## DATA AVAILABILITY

The corresponding author will provide the data from this study upon reasonable request.

## CONFLICT OF INTEREST

All authors reported no conflicts of interest.

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