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RESEARCH ARTICLE
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Analysis of the Factors Hindering the Adoption of Cattle Business Insurance by Farmers in Bone Regency, South Sulawesi Province, Indonesia

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ABSTRACT

The objective of this study was to identify the factors that hinder farmers in adopting cattle business insurance. The research was conducted in November and December 2023 in Kahu Sub-district, Bone Regency, and South Sulawesi Province, Indonesia. A total of 68 respondents were included in the study, comprising 34 farmers who had adopted cattle business insurance and 34 farmers who had never adopted the insurance program. The data collection methods employed were observation and interviews. The data were analyzed using the Delphi method, which enabled the opinions of farmers in the field to be obtained, namely those who had utilized insurance and those who had not taken advantage of the Cattle Business Insurance program at all. This approach ensured the acquisition of accurate information complementing the research analysis results. The factors obtained from the Delphi method were then analyzed again using factor analysis tools. The fundamental principle of factor analysis is to simplify the description of data by reducing the number of variables/dimensions and distinguishing priority variables based on the results of the existing ranking. The results demonstrated that five of the nine selected variables exhibited the most significant effect on inhibiting farmers from adopting cattle business insurance. The results of the grouping of variables included in factor 1 (one) are as follows: lack of socialization about cattle livestock business insurance. (X2), the length of the claim approval process (X6), and a lack of awareness of the importance of Cattle Livestock Business Insurance (X8). The variables included in factor 2 (two) are less understood claim procedures (X1) and the short time given at the time of claim (X5).

Keywords: Insurance, Factors, Farmers, Cattle, Business

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INTRODUCTION

Livestock, as one of the sub-sectors, is an integral part of the success of this sector in Indonesia. Livestock production is currently geared towards developing more advanced livestock production, with areas approaching production hubs that involve the development of specific regions, using appropriate technology and applying new fundamentals: efficiency, productivity, and sustainability. Cattle fattening has a bright future as several ASEAN countries now prefer beef from Indonesia, providing a great opportunity to improve the economy and food security. Livestock development efforts focusing on appropriate technology and production center strategies support increased efficiency, productivity, and sustainability, making this sector more resilient and competitive. The bright future of beef cattle fattening is characterized by growing demand, especially from ASEAN countries, which increasingly prefer quality beef products from Indonesia (Sirajuddin et al., 2016).

The development of the livestock subsector in any country plays a very important role and has many benefits from input to output. The livestock subsector is essentially a series to create jobs, alleviate poverty, and promote regional economic growth, followed by increasing consumption of livestock products, which will have a positive impact as a provider of animal protein which is important for the growth and development of the human body and can also help drive the economy of the livestock subsector in a country (Ardiansyah, 2023).

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Beef is a source of animal protein that is much needed by consumers. In addition, beef cattle are a source of meat production that has high economic value in people's lives. This indicates that beef cattle farming is an important part of the economy of rural communities in Indonesia (Akbar et al., 2024).

Beef cattle are among the ruminant livestock that produce meat, also to help meet food needs, especially animal protein. In terms of the problems faced, domestic beef production has not been able to meet the needs due to the still low number and level of livestock productivity (Wahyudi et al., 2021). However, the development of livestock in the community faces various challenges that can be potentially detrimental. Livestock entrepreneurs face several serious challenges, such as livestock mortality, natural disasters, diseases, and livestock losses. If not properly addressed, these challenges can lead to the bankruptcy of the livestock business (Yusuf et al., 2021). Serious efforts are therefore needed to overcome these challenges so that beef cattle production can develop sustainably.

One of the government initiatives implemented by the Ministry of Agriculture of the Republic of Indonesia is the Livestock Business Insurance Program (LBIP), which is a concrete form of pro-farmer policy. LBIP aims to protect cattle farmers from risks such as death and loss of livestock. This program is expected to provide protection to farmers in situations where cattle die due to various causes such as illness, childbirth, accident or loss by transferring the risks and losses to the insurance company. Through the LBIP, the government aims to encourage the sustainability of livestock businesses and provide better assurance to farmers in the face of challenges (Riana et al., 2019).

The Cattle Business Insurance Program receives considerable support from the government, reflecting its importance in maintaining the sustainability of farmers' businesses and the development of cattle farming. However, the reality on the ground often diverges from the goals and objectives that have been set. The objective of the Cattle Business Insurance is to transfer the risk of business losses caused by the death or loss of cattle to the insurance company through the protection scheme provided. The program's objective is to protect cattle farmers from business losses caused by the death or loss of cattle, thereby enabling them to continue operating their businesses without constraints. However, the implementation of this program still requires further attention to ensure that the goals and objectives that have been set can be effectively achieved in the field (Syukur et al., 2021). This is also in accordance with the opinion of Susanto et al. (2021), which underlines the implementation of livestock business insurance is aimed at cattle breeders so that their livestock businesses are protected from all risks, thus enabling them to continue their livestock businesses.

The LBIP/B (Cattle/Goat Business Insurance) program offers substantial advantages to farmers due to the subsidized premium payment from the government. In accordance with the aforementioned program, farmers are only required to pay 20% of the total premium, which equates to IDR 40,000 per person per year. The remaining 80% is covered by the government. Nevertheless, it is crucial to emphasize the importance of implementing the program and disseminating information related to this insurance to farmers. This is because the majority of farmers targeted by the program are members of livestock groups and generally have limited understanding of insurance. Consequently, it is of paramount importance to possess a comprehensive understanding of LBIP/B, as this will enable farmers to comprehend the necessary steps to be taken in the event of a claimable case. Counseling and educational initiatives aimed at farmers on the advantages, claim procedures, and general insurance knowledge will significantly enhance the efficacy and longevity of this program (Haryastuti et al., 2021).

The Bone district is one of the districts that has utilized Cattle Business Insurance, which has the largest beef cattle population in South Sulawesi. The subdistrict of Kahu in the regency of Bone has the largest population of cattle in the entire region. In addition to the district's large cattle population, a significant proportion of farmers in the Kahu sub-district also utilize LBIP. Table 1 presents the number of farmers in Kahu sub-district, Bone Regency who have adopted Cattle Business Insurance.

Table 1: Cattle Business Insurance Participants in Kahu Sub-district, Bone District

No.	Year	Total	Breeder Decrease (%)	Total Livestock
1.	2020	245	53.26	743
2	2021	170	36.95	432
3	2022	45	9.79	105
	Total	460	100	1.280

Source. Secondary Data of the Bone Regency Agriculture Office. Table 1 indicates a notable decline in the number of farmers adopting Cattle Business Insurance over time. In 2020, there was a reduction of 75 farmers, including a percentage decrease of 53.26%. This decline continued in 2021, with the number of farmers participating in the program decreasing by 125 people, representing a percentage decrease of 36.95%. Even in 2022, only 45 farmers remained active in the program. Of this number, only 34 farmers had been participating since 2020, while the rest were new farmers who joined the program in that year. This consistent decline suggests the potential challenges or barriers that farmers may face in adopting or maintaining the Cattle Business Insurance program in the Bone District.

Table 2 illustrates that 200 farmers have adopted LBIP for one to two years, while only 34 farmers have survived for three consecutive years and 34 farmers have never adopted LBIP. It is imperative that the government take note of the significant benefits associated with cattle business insurance. It is evident that a number of factors can result in a significant decline in the number of farmers participating in the Cattle Business Insurance program on an annual basis. Although cattle business insurance offers benefits in terms of protection and the assumption of responsibility for losses experienced by cattle farmers, this livestock insurance also presents obstacles that cause farmers to adopt a skeptical or disagreeable attitude

towards the insurance. The decision to adopt an innovation is influenced by the behavior of the farmers themselves. Consequently, it is imperative to identify the impediments hindering farmers from embracing Cattle Business Insurance.

Table 2: Number of Participants/Livestock farmers in the Cattle Business Insurance Program

No	Duration	Category	Total People
1	0 Year	Yet to Adopt	34
2	1-2 Years	Have Adopted	200
3	3 Years	Continue to Adopt	34
		Total	268

Source: Secondary data from the Bone Regency Agriculture Office.

MATERIALS & METHODS

The method employed to ascertain the factors hindering farmers' adoption of Cattle Business Insurance is descriptive analysis, utilizing the Delphi tool, which is then subjected to factor analysis.

Research Locations and Data Collection

This research was conducted from October to December 2023 in Kahu District, Bone Regency, and South Sulawesi Province, Indonesia. The location was chosen as a research site because, in the first year, farmers in the area participated in the Cattle Business Insurance program, but in the following year, their participation declined significantly.

The data collection process commenced with observations and interviews with beef cattle farmers, which were conducted using a questionnaire or list of questions. The respondents included in this research are breeders who previously adopted the Cattle Business Insurance program and then discontinued their participation in the following year, as well as beef cattle breeders who have not yet adopted the program.

The sample used to assess the factors impeding farmers' adoption of Cattle Business Insurance consisted of 34 individuals who had previously adopted the insurance and 34 breeders who had never adopted it. Thus, the total number of respondents was 68.

Data Analysis

The data analysis aimed to identify the inhibiting factors affecting farmers' adoption of cattle business insurance. This was achieved through a descriptive analysis using Delphi tools, which were then subjected to factor analysis. The Delphi method was employed to ascertain the opinions of farmers who had adopted insurance but only participated for a single year and then ceased, as well as those who had never engaged with the Cattle Business Insurance program. This approach yielded insights that complemented the findings of the research analysis.

In this study, the Delphi method was only employed in the initial stage, as the results of the first stage were directly processed and finalized through factor analysis. The fundamental rationale for utilizing the Delphi method in this study is that it is anticipated that this technique can identify factors that impede the adoption of Cattle Business Insurance. Once all the factors inhibiting farmers in adopting cattle business insurance have been identified through the Delphi method, the factor analysis process can then be initiated.

Factor analysis is widely used in various fields, including psychology, sociology, and marketing research. It is employed to uncover underlying structures or patterns in complex datasets. By reducing the number of variables, factor analysis helps researchers identify the most important factors driving the variation in the data. This technique is particularly useful when dealing with large datasets with numerous variables, as it allows researchers to focus on the most meaningful aspects of the data. Furthermore, factor analysis can facilitate the development of more concise measurement tools by identifying the key factors that contribute to a particular construct or concept. Overall, factor analysis provides valuable insights into the relationships between variables, leading to a better understanding of the underlying factors influencing the phenomena under study.

According to Mastuti (2011), the steps for utilizing the Factor Analysis tool are as follows:

1. Input data on the problem formulation of inhibiting factors that have been obtained from the Delphi Method.
2. Compile a correlation matrix, which depicts the relationship between variables. A high or significant correlation value indicates that the two variables are closely related.
3. KMO MSA (Kaiser-Meyer-Olkin Measure of Sampling Adequacy), an indicator used to assess the suitability of factor analysis, with a minimum value of 0.5.
4. The determination of the analysis procedure (principal component analysis) tests the total variance or the number of factors to be formed.
5. Extraction of factors is commonly achieved by examining eigenvalues with a value of at least one. The arrangement of eigenvalues is always sorted from the largest to the smallest, with the exception that the number of eigenvalues below one is not included in the calculation of the number of factors to be formed.
6. Rotating Factors. Variables are placed into components that are rotated to elucidate the distinction between variables and factors. As a general guideline, a variable should be included with factor 1 (one) if its value is ≥0.5.
7. Interpretation: It is recommended that the factor loading be examined. If the objective is to reduce the data, the factor in question should be identified, and the score calculated.

RESULTS & DISCUSSION

A. Delphi Method Testing Results

The results of the Phase 1 questionnaire, completed using the Delphi method, indicate that there are nine categories of factors inhibiting farmers from adopting Cattle Business Insurance. These include:

1. The procedures for filing claims are not well understood.

The results of the interviews indicated that there is still a lack of understanding of the claim procedure. Farmers reported difficulties due to a lack of knowledge about the initial steps that must be taken before initiating the claim procedure. The lack of socialization from extension workers or officers of the Cattle Business Insurance program was

also identified as a factor affecting this, as revealed by farmers in the field during the interviews.

"I was unaware of the initial steps to be taken when initiating an insurance claim due to the lack of information provided. Furthermore, the program officer did not fully disseminate the claim procedures, merely providing basic information. This resulted in my inability to comprehend the entirety of the claim process. The provision of more detailed information on the claim procedures would have been beneficial for me and other farmers in comprehending the process more effectively."

Hall et al. (2003) identified a lack of interest among farmers in insurance management, which they attributed to insufficient knowledge about claims procedures and a lack of confidence in utilizing available risk management strategies. This finding is consistent with the insights presented in the journal "Understanding Farmers' Perception and Participation in Crop Insurance." Evidence from Rural China by Zhang et al. (2019) indicates that a lack of understanding regarding insurance benefits and claims procedures serves as a significant barrier to farmers' participation in insurance. Moreover, another study by Mishra et al. (2019) indicates that uncertainty regarding the outcome of insurance claims and the complexity of insurance policies can also impede farmers' willingness to take protective measures. Research by Magnan et al. (2015) indicates that external factors such as price fluctuations and climate change also influence farmers' perceptions of insurance benefits. Consequently, a comprehensive approach that incorporates education, training, and direct assistance is crucial to enhance farmers' engagement in risk management through insurance, in alignment with the findings of the literature.

2. Insufficient socialization about cattle livestock business insurance.

The results of the interview indicated that a lack of socialization about cattle business insurance is one of the obstacles faced by farmers. This lack of socialization results in farmers being less interested in participating in livestock insurance, which is considered not to have benefits for them and their livestock. A system that is not implemented properly will result in the value of the benefits of a program being low. This is in accordance with excerpts from interviews with farmers in the field.

"The delivery of information is uneven, which makes it difficult to ascertain the purpose of the insurance. Moreover, the majority of the information is conveyed to the head of the livestock group, despite the potential benefits of disseminating important information to all farmers. Socialization, in the form of counseling and assistance, can facilitate knowledge acquisition."

This finding aligns with the conclusions of Amare et al. (2019), who identified a number of obstacles impeding the success and uptake of livestock insurance. These include uneven information dissemination mechanisms, which make it challenging for farmers to obtain accurate information. Additionally, a lack of supportive environments is the most common constraint among farmers. Furthermore, it is crucial to address these barriers through targeted interventions, such as improving communication channels and creating conducive environments that promote trust and cooperation among farmers. Moreover, they underscored the necessity for the implementation of tailored educational programs designed to enhance farmers' comprehension of insurance benefits and procedures, thereby empowering them to make informed decisions regarding insurance adoption. Ultimately, addressing these challenges is essential for promoting greater uptake of livestock insurance and improving the resilience of farmers against various risks.

This is consistent with the findings of Maulina et al. (2023), which indicate that the efficacy of a program cannot be attributed solely to the ability of individuals or groups to manage the program. The success of the program can be reflected in the quality of service provided to the breeder. The provision of services by extension agents will result in a satisfactory outcome due to the fulfillment of the breeder's wishes (Darmawati and Ningrum, 2022). In this capacity, the extension agent serves as a conduit for knowledge exchange and mediator in the improvement of the agricultural sector. The instructor was deemed successful when the desired outcome could be achieved effectively and when the problem could be resolved. Another perspective is presented by Sumekar et al. (2021), who asserts that the success of the program is contingent upon the performance of the field staff. Consequently, field officers must possess a comprehensive understanding of the subject matter, a proficient set of skills, and an appropriate disposition, which collectively facilitate the attainment of the program's objectives in a straightforward manner.

3. The premium cost of Cattle Livestock Business Insurance

The results of the interviews indicate that farmers view the cost of this insurance as high, as it is forfeited if the insured livestock does not experience the risks covered by the insurance in one year. Farmers expect the policy fee to be refunded if nothing happens, or for the previous year's fee to be used in the following year. This reflects the financial burden that insurance costs place on farmers, especially when their livestock remain healthy and do not experience insurable events. The desire of farmers for more flexible payment arrangements reflects their need for greater financial security and flexibility in managing their insurance costs. The close relationship between farmers' desires and their financial realities suggests the importance of paying attention to farmers' concerns and preferences to improve the effectiveness and accessibility of livestock insurance programs. This is according to excerpts from interviews with farmers in the field.

"Nothing happened over the course of the preceding year, the policy fee was still deemed valid for the following year. However, despite this, we were informed that we would have to pay again for the extension the following year, as it was considered to have been forfeited."

The findings of Sauter et al. (2016) indicate that the cost of premiums, which is perceived as high, is a contributing factor to low awareness and intention to participate in the Cattle Business Insurance program. This suggests the necessity to evaluate and potentially adjust

the premium fee structure to align with the needs and financial capabilities of farmers. Moreover, other approaches, such as counseling and mentoring, may be necessary to enhance farmers' comprehension of the long-term advantages of participating in cattle insurance. In accordance with previous research (Fauziah and Utami 2022), farmers exhibit a lack of awareness regarding the risks associated with their cattle farming business and perceive insurance premiums as exorbitant.

4. The Lengthy Stages of the Insurance Process

The interviews revealed that the lengthy procedures for becoming an insurance member, coupled with the complexity of the claims process, discouraged farmers from participating in the innovation. As articulated by a farmer during a field interview:

"The stages involved in joining the Cattle Business insurance program are perceived as overly complex, and the process of submitting an insurance claim is perceived as more complex than before. Many individuals have chosen to leave the program due to a lack of understanding of the process and the time required to complete it."

This follows the opinion of Dewi (2018), who stated that the community's view of the insurance stages is too long and difficult to implement, which results in farmers feeling reluctant to register their livestock. This perception can be a determining factor for farmers in deciding to participate in the insurance program. Furthermore, she underscored the necessity of streamlining the registration and claims process to enhance its usability, thereby fostering greater participation among farmers and the benefits of the insurance program for them. This, in turn, would prompt the insurance program organizers to assess the existing procedures to enhance their efficiency and affordability for farmers.

5. Short time given at the time of claim

The results of the interviews indicated that farmers perceived the timeframe for submitting claims to be insufficient. Only 5-7 days were allotted for this process, which was deemed inadequate. Additionally, the distance traveled by farmers to collect the necessary files for program purposes was identified as a significant challenge. Even a single unfulfilled requirement could impede the submission of a claim. This finding aligns with the farmers' observations documented during the interviews.

"The initial service procedure for claiming was satisfactory; however, recently, other farmers were given a very limited time to claim. If the predetermined time, namely one week, had passed, it was declared that the disbursement of the claim that had been submitted first could not be done. Furthermore, the submission of claims is becoming increasingly challenging due to the necessity of fulfilling numerous file-related requirements. The distance traveled to fulfill these requirements is considerable, particularly when the time provided for submission is limited."

This is in line with the observations of Pratiwi et al. (2020), who emphasized that the limited timeframe for submitting claims, along with the complex and challenging requirements, and the limited facilities and infrastructure to fulfill the requirements, present significant challenges for farmers. Indeed, even the slightest deviation from the requisite conditions renders the filing of a claim an arduous endeavor. This is the primary reason why the general public is disinclined to enroll their cattle in insurance programs. To address this issue, it is essential to streamline claim procedures and enhance the accessibility and effectiveness of insurance programs by providing farmers with more comprehensive assistance and guidance.

6. Lengthy claims approval process

The interviews revealed that the claim approval process is lengthy, necessitating the involvement of multiple parties, including field officers and representatives from insurance companies such as Jasindo. Additionally, insurers must conduct surveys to verify the veracity of the causes submitted by farmers in their claims. On average, disbursement of funds in this process takes approximately two weeks, or 14 days. Consequently, the duration of the claim approval process is a significant factor influencing farmers' decisions to participate in the insurance program. Initiatives to accelerate the claim approval process could be a pivotal step in enhancing farmer engagement in the insurance program. This aligns with the findings of interviews with farmers in the field.

"The approval process for claims is lengthy due to the necessity of completing numerous steps prior to the issuance of a death certificate. In the event of a claim involving the death of insured livestock, the first step is to contact a veterinarian for a thorough examination. This examination is followed by issuing a death certificate, which is then submitted to the insurance company for processing. In the event of the loss of an insured cow, the insured party must contact the authorized technical officer. A loss report is then prepared with the knowledge of the police. Following this, the insurance company verifies the accuracy of the submitted report and this process can take a considerable length of time."

This aligns with the perspective of Suryaningsih (2018), who posits that the claims approval process is conducted by the insurance company as the executor, concurrently responsible for verifying the report of examination results for death and/or loss. Furthermore, the insurance company is legally obliged to issue a claim approval letter within 14 working days of receipt. With regard to the insurance company, claim payments are processed within 14 working days of the date of claim approval. These payments are made through book transfer to the insured's account. This information serves to highlight the importance of regularity in the claims approval and payment process, with the objective of ensuring fairness and reliability in the implementation of the insurance program. Consequently, a lucid comprehension of these claims procedures can facilitate the expeditious processing of claims for farmers and stimulate greater involvement in the insurance program.

7. The number of field officers or facilitators remains low

The results of the interview indicate that the role of field officers or facilitator's remains limited. However, their function as facilitators does not directly contribute to the empowerment of the group due to the scarcity of extension workers accompanying farmers and their uneven

distribution across villages. Consequently, the guidance and livestock socialization provided to farmers remains minimal. This results in delays in the dissemination of livestock insurance information between districts or villages. This underscores the necessity for augmented resources and a more strategic deployment of field officers to ensure the effective dissemination of insurance information and support to farmers across different regions. This is in accordance with excerpts from interviews with farmers in the field.

"The shortage of personnel impedes the effective communication of essential information to farmers, thereby hindering their capacity to make informed decisions regarding insurance participation. To address this issue, it is necessary to increase the allocation of resources and to deploy officers in a strategic manner, with the objective of ensuring comprehensive information dissemination throughout agricultural communities."

This is consistent with the findings of An-Nisa et al. (2015), which indicate that the availability of human resources, particularly field officers, remains limited in terms of quantity. This results in each officer being required to manage a range of tasks simultaneously. The researchers posit that this condition can impede the ability of officers to provide effective services to farmers, as they must divide their attention among various responsibilities. This underscores the necessity of augmenting the number of field officers to guarantee that each task can be addressed meticulously and expeditiously. Furthermore, the scarcity of field officers impedes the capacity to provide prompt assistance to farmers, which in turn impedes the advancement of the livestock insurance program. Consequently, investment in the expansion of the quantity and quality of human resources in this sector is of paramount importance if the insurance programs are to be successful and effective. This finding is consistent with the findings of research conducted by Fadhil et al. (2021), which indicates that the effectiveness of assistance provided by field officers to livestock groups is contingent upon the presence of an adequate number of officers in each region with a farmer group. This allows for the dissemination of information to be known by every farmer. Another study by Imran et al. (2023) indicated that the limited number of instructors can result in the uneven dissemination of information, which in turn affects the effectiveness of providing extension in the field.

8. A notable deficiency in awareness among farmers regarding the significance of Livestock Insurance.

The results of the interview indicate a lack of awareness among farmers regarding the importance of livestock insurance. This is evidenced by the low participation rate of farmers in the livestock insurance program. Additionally, farmers perceive that insuring their livestock implies a subconscious wish for their animals to become ill or die quickly. This perception stems from the fact that insurance benefits are only received if the insured livestock dies. Furthermore, farmers' lack of interest in the livestock insurance program is influenced by the social environment. Moreover, the existence of negative social stigma associated with livestock insurance also affects farmers' decisions to join the program. The perception that livestock insurance only provides benefits in the event of accidents or livestock deaths is also a determining factor in farmers' lack of interest. As expressed by a farmer in a field interview:

"I am disinclined to enroll in the insurance program because it is akin to wishing for the demise of my livestock. In other words, I will not receive insurance compensation if my insured cattle are in good health. Furthermore, I have heard from numerous farmers that they only participate in the program for a minimum of one year because they do not perceive any benefits. Moreover, the claims process is exceedingly complex and time-consuming."

This is in line with Kristanti's (2019) perspective, which posits that the significance of livestock insurance within the farming community underscores the necessity for government-led socialization initiatives to alter farmers' perceptions regarding the importance of livestock insurance. The objective is not to desire misfortune, but rather to anticipate or mitigate potential risks that may arise, such as the death of livestock. These factors, including age and level of education, influence individuals' perceptions and understanding of livestock insurance. Consequently, a comprehensive approach to socialization is required to guarantee a satisfactory comprehension and active involvement of farmers in the livestock insurance program.

9. Farmers' limited understanding of the process of buying and selling livestock when involved in insurance.

The interviews revealed that farmers believe that insuring their cattle can impede the marketing process due to the name listed in the insurance policy as "A". Consequently, when they wish to sell the animal to other farmers, they experience confusion regarding the subsequent steps to take. This situation complicates farmers' ability to conduct livestock trading effectively. This lack of understanding creates uncertainty and confusion among farmers, making them reluctant to insure their cattle for fear of complicating future transactions. The lack of comprehension regarding the implications of insurance on the cattle trading process represents an additional obstacle for farmers who wish to safeguard their livestock through insurance programs. As articulated by a farmer during a field interview:

"I would never participate in that program for my cattle because I lack an understanding of the insurance program's operational mechanics. Furthermore, if I were to sell them at any point in the future, but the insurance is under my name, I would prefer to avoid any potential complications that may arise in the event of selling them."

This aligns with the findings of Syukur et al. (2021), who observed that farmers participating in the Livestock Insurance Program indicated a preference to sell insured cattle. This preference was attributed to the perceived ease of finding buyers for insured cattle, including those who approached farmers directly. This is because insured cattle will have additional value when marketed, as the insurance company will provide guarantees in the event of death or loss. Furthermore, another advantage of insuring cattle is that they can be used as collateral in banks to obtain credit for capital. This underscores the significance of grasping the long-term advantages of livestock insurance programs in bolstering the resilience of farming enterprises.

Table 3: Classification of Respondent Answers Based on the Research Scale Level of Each Variable

No	Variable	Number of Responses/Scale Rating (people)				
		1	2	3	4	5
1	Lack of Understanding of the Claim Procedures	10	19	19	12	8
2	Lack of Socialization About Livestock Insurance	4	19	21	15	7
3	The Cost of Livestock Insurance Premiums	9	21	17	10	11
4	The Lengthy Process	5	10	23	17	13
5	Short Claim Processing Time	4	9	11	29	15
6	The Length of the Claim Disbursement Process	3	8	15	29	13
7	Low Number of Field Officers	8	28	15	13	5
8	Lack of Awareness Among Farmers	8	20	15	12	13
9	Farmers' Limited Understanding of the Livestock Trading Process When Involved in Insurance	8	14	27	13	6

Source: Processed Primary Data, 2023.

B. Results of Factor Analysis Testing

The variable extraction process in the study, conducted through factor analysis, begins with the grouping of responses to statements given to respondents through questionnaires. This process aims to identify underlying patterns in the data and combine interrelated variables into more measurable factors. Therefore, factor analysis allows for the simplification of complex data structures into dimensions that are easier to interpret. The grouping of respondent answers in this study can be seen in Table 3.

Table 3 presents data on the number of participants who voted and the rating scale employed. A score of 1 indicates a high level of disagreement, a score of 2 indicates disagreement, a score of 3 indicates a neutral attitude, a score of 4 indicates agreement, and a score of 5 indicates a high level of agreement.

First Step Output (Variable Selection)

The initial step in determining the variables to be further extracted can be seen from the KMO MSA, Chi-Square and Significance values. The terms or conditions for the magnitude of these values can be seen in Table 4.

As indicated in Table 4, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (MSA) value is 0.580. This value indicates that the selected variables are suitable for further analysis. This result is consistent with the findings of Van et al. (2017), which confirm that the factor analysis test can be considered feasible if the KMO MSA value exceeds 0.5. Therefore, this conclusion indicates that the sample used in this study is sufficient for factorization, and the underlying factors can be further analyzed with sufficient confidence.

Table 4: First Step Output (Variable Selection) Based on KMO MSA, Chi-Square, and Significance Values

No	First Step Output	Acquisition Value	Terms/Determinations
1	KMO MSA	0.580	≥0.5
2	Chi-Square	51.588	≥0.5
3	Signification	0.045	≤0.05

Source: Processed Primary Data, 2023.

The results of the Barlett Test of Sphericity, calculated using SPSS statistical software, indicate a value of 51.588 with a significance of 0.04. This demonstrates that the Bartlett Test of Sphericity is qualified, as the significance value is below the commonly used threshold of 0.05 (5%). Moreover, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (MSA) value is 0.580, which is above the threshold of 0.5. This indicates that the set of variables is suitable for further analysis. The next step is to analyze each variable to determine which ones are worthy of further analysis and which ones should be excluded.

Anti-Image Matrices

The subsequent step is to ascertain which indicators are suitable for factor analysis. The procedure is as follows: if the minimum sample size adequacy (MSA) value is equal to or greater than 0.5, then the indicator or variable is suitable for factor analysis. Anti-Image Matrices furnishes this data to assist in the selection of feasible variables. This information is available in the Anti-Image Correlation, which is marked "a" and forms a diagonal line. It can be observed that the MSA value for all variables is above 0.5, indicating that the analysis can continue. Once the selection process has been completed, it is possible to observe a number of numbers that form a diagonal and are marked with "a" in the Anti-Image Matrices value section, as well as in the Anti-Image Correlation section. These numbers do not qualify for further extraction. These numbers represent the Measure of Sampling Adequacy (MSA) of each variable, with the standard MSA value set at ≥ 0.5. The results of the variable selection process indicate that certain variables have MSA values that meet the criteria for further extraction. For instance, variables including poorly understood claim procedures (X1) exhibited an MSA value of 0.616, lack of socialization about Cattle Business Insurance (X2) demonstrated an MSA value of 0.613, the brief time frame allotted for claiming (X5) exhibited an MSA value of 0.670, the length of the disbursement process when claiming (X6) exhibited an MSA value of 0.661, and the lack of awareness among farmers regarding the significance of Cattle Business Insurance (X8) exhibited an MSA value of 0.660. Consequently, all of these variables meet the established MSA value standards. However, there were also variables that did not meet the requirements with a MSA value of less than 0.5. These included the variable of farmers' ignorance of the process of buying and selling livestock if involved in insurance (X9) with a MSA value of 0.420, very limited field officers (X7) with a MSA value of 0.424, the cost of Cattle Business Insurance (X3) with a MSA value of 0.447, and the length of the Cattle Business Insurance stage (X4) with a MSA value of 0.437. Consequently, these variables were deemed unsuitable for inclusion in the subsequent extraction process. In conclusion, the initial nine variables subjected to four repetitions of the analysis yielded only five variables that qualified for the subsequent factor analysis extraction process.

Total Variance Explained

The total variance explained indicates the extent to which the formed factors account for the observed variation. If the total initial eigenvalues are equal to or greater than one, the factor can effectively account for the variables and should be included in the variable formation. Conversely, if the initial eigenvalues are less than one, the factor may not sufficiently account for the variables and should preferably not be included in the variable formation. There are several stages involved in factor analysis, starting from variable extraction to interpreting the analysis results. The utilization of the factor analysis method is of paramount importance for the identification of the intricate structure of multiple related variables. Subsequent to the formation of the factors, the subsequent step is to assess the relevance of each factor to the observed variables, as elucidated by Mamahit et al. (2013).

The factor analysis includes five variables, with each variable exhibiting a variance of 1, resulting in a total variance of 5. The Total Variance Explained value can be observed in Table 5.

The initial eigenvalues indicate the presence of two factors, each with eigenvalues of 1,758 and 1,006. Factors with eigenvalues below 1 indicate the absence of members of the factor-forming variables.

Table 2 illustrates that the factor analysis encompasses five components, each with a variance of one. Consequently, the total variance is 5 x 1 = 5.

- If 5 variables are extracted into 1 factor then : 1.758 /5 x 100% = 36%
- If 5 variables are extracted into 2 factors then: 1.006/5 x 100% = 21%

This indicates that if the five indicators are considered as a single factor, the factor is capable of explaining the variance of the indicators by 36%. Conversely, if the indicators are considered as two factors, the two factors are able to explain the indicator variance of 57%, with 36% attributed to the first factor and 21% attributed to the second factor. As they have two factors, the two factors are able to explain 57% of the total variance of the five existing indicators. This figure is noteworthy in that it is able to explain more than 50% of the variance of the five existing indicators.

While eigenvalues demonstrate the relative importance of each factor in calculating the variance of the nine variables analyzed, it is worth noting that:

a. The number of eigenvalues for the six variables is equal to the total variance of the five variables, or 1.758 + 1.006 + 0.884 + 0.714 + 0.638 = 5.

b. The arrangement of eigenvalues is always sorted from largest to smallest, with the criterion that eigenvalues below 1 are not used in calculating the number of factors formed. Of the five components that exist on the basis of eigenvalues, only components 1 (one) and 2 (two) are eligible to calculate the number of factors.

Matrix Components

Once it is established that there are two optimal factors, the matrix component table illustrates the distribution of the five variables on the two factors. The numbers in the table represent factor loadings, which indicate the degree of correlation between a variable and the factors. The matrix components are presented in Table 6.

The data from Table 6 can be utilized to ascertain the inclusion of a variable within a specific factor group. This can be accomplished by examining the correlation value that is the greatest between the variable and the factor (component) that has been formed. The division of variables into the five aforementioned factors is as follows:

1. The claims procedure variable is poorly understood. The correlation value of this variable with factor 1 is 212, while the correlation value with factor 2 is 740. Because factor 2 is greater than factor 1, it is evident that this variable belongs to factor group 2.
2. The variable “lack of socialization about Cattle Business Insurance” exhibits a correlation value of 771 with factor 1 and a correlation value of -169 with factor 2. As the correlation value of factor 1 is greater than that of factor 2, this variable is included in factor group 1.
3. Variable: The short time given during the claim process. This variable's correlation value with factor 1 is -.031, while its correlation value with factor 2 is 732. As factor 2 is greater than factor 1, this variable is included in factor group 2.

Table 5: Total Variance Explained

Component	Initial Eigenvalues			Extraction sums of Squared			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative	Total	% of Variance	Cumulative	Total	% of Variance	Cumulative
1	1.758	35.162	35.162	1.758	35.162	35.162	1.474	29. 471	29.471
2	1.006	20.111	55.237	1.006	20.111	55.273	1.290	25.801	55.273
3	.884	17.686	72.958						
4	.714	14.283	87.241						
5	.638	12.759	100.000						

Source: Processed Primary Data, 2023.

Table 6: Matrix Components

Parameters	Component	
	1	2
Lack of Understanding of the Claim Procedures	212	740
Lack of Socialization About Livestock Insurance	771	-169
Short Time Given During Claim	-.031	732
Lengthy Disbursement Process During Claim	685	197
Lack of Awareness Among Farmers Regarding the Importance of Livestock Insurance	604	374

Source: Processed Primary Data, 2023.

4. Variable: The length of the process when claiming. This variable's correlation value with factor 1 is 685, while its value with factor 2 is 197. As factor 1 is greater than factor 2, it can be concluded that this variable belongs to factor group 1.
5. A lack of awareness of the importance of AUTS. The correlation value of this variable with factor 1 is 604, while that with factor 2 is 374. As factor 1 is greater than factor 2, it is included in factor group 1.

Components of Transformation Matrix

The objective of the matrix transformation component is to identify the factors that have the greatest influence on farmers in encouraging them to adopt Cattle Business Insurance in Kahu District, Bone Regency. The matrix transformation component is presented in Table 7.

Table 7: Total Component Transformation Matrix.

Component	1	2
1	0.789	0.615
2	0.615	0.789

Source: Processed Primary Data, 2023.

Table 7 reveals that the Component Transformation Matrix data indicates a correlation of 0.789 between factor 1 (Component) and factor 2, which exceeds the 0.5 threshold value. This suggests a very strong relationship between the two factors. This indicates that factor 1, which relates to the lack of socialization about Cattle Business Insurance, and factor 2, which relates to the short time given when claiming, can be considered appropriate for the purpose of summarizing or describing the five variables that inhibit farmers in adopting Cattle Business Insurance.

The results of this analysis permit the identification of the factors that most influence the barriers to adopting cattle business insurance. The eigenvalues, which are greater than 1, indicate the existence of two component factors. Consequently, it can be concluded that the most significant inhibiting factors are the lack of socialization about cattle business insurance and the short time given when claiming. This indicates that these two factors are interrelated and have a significant impact on inhibiting farmers from adopting Cattle Business Insurance.

Grouping of Inhibiting Factors

The following factors are the most significant impediments to the adoption of Cattle Business Insurance in the Kahu sub-district of the Bone district. This can be observed in Table 8.

Table 8: Factors Hindering Farmers in Adopting Cattle Business Insurance.

Parameters	Component	
	1	2
Lack of Understanding of the Claim Procedures	212	740
Insufficient Socialization About Livestock Insurance	771-	169
Short Time Given During Claim	-.031	732
Lengthy Disbursement Process During Claim	685	197
Farmers' Lack of Awareness Regarding the Importance of Livestock Insurance	604	374

Source: Processed Primary Data, 2023.

Table 8 illustrates that the initial extraction process, involving the selection of nine variables, resulted in the identification of five influential and five inhibiting factors for farmers in adopting Cattle Business Insurance. The total variance explained by the factors formed from the test results is two, with each factor having eigenvalues of 1.758 and 1.006. This is in accordance with the definition of the eigenvalues value, which states that if the total eigenvalues value is greater than 1, then the factor can explain the indicator well and should be included in the formation of indicators.

The results of grouping variables includeed in factor 1 (one) are as follows: lack of socialization about Cattle Business Insurance (X2), the length of the claim approval process (X6), and lack of awareness of the importance of Cattle Business Insurance (X8). Variables included in factor 2 (two) are poorly understood claim procedures (X1), and short time given at the time of claim (X5).

The subsequent step is the designation of the factors that have been formed. The designation of factor group 1 (one) as "variable members" refers to the variable members in factor group 1, namely: The three variables, X2, X6, and X8, are all included in the category of obstacles that farmers face in adopting Cattle Business Insurance. This is due to the main cause, namely the lack of socialization from extension officers about Cattle Business Insurance (X1). This lack of socialization affects other factors, namely X6 and X8. Therefore, factor group 1, namely knowledge and awareness of farmers, should be given a name.

The consequence of inadequate socialization about Livestock Business Insurance is a lack of knowledge among farmers, which in turn results in a lack of awareness regarding the benefits of participating in the program. Furthermore, farmers' unawareness of the importance of Livestock Business Insurance can also be influenced by the inadequate socialization they receive. Consequently, negative thoughts may arise among farmers, who perceive that insuring their livestock under the Livestock Business Insurance program implies wishing for their animals to get sick or die quickly. A poorly functioning system can diminish the benefits of a program, affect its effectiveness, and reduce farmers' interest and participation in the program.

This is consistent with the findings of Chand et al. (2023), which highlight several significant barriers perceived by farmers. These include their low level of knowledge about insurance programs, lack of updated information, slow accessibility to livestock services, difficulty in obtaining claims, high premium rates, lack of trust in insurance companies, and lack of timeliness. The findings of this study demonstrate that these challenges represent significant obstacles to farmers' adoption and participation in livestock insurance programs. This underscores the importance of addressing these issues through a comprehensive and integrated approach, as well as enhancing farmers' awareness and education about the benefits and procedures of insurance. Furthermore, efforts to enhance transparency, accessibility, and the quality of services provided by insurance providers are of paramount importance in addressing these challenges. Finally, enhanced collaboration between governments, relevant agencies, and the private sector can facilitate the development of more effective and sustainable solutions to enhance livestock insurance adoption.

This perspective is consistent with that of Akinola (2014), who posit that farmers should be furnished with knowledge about livestock insurance to enhance their awareness of the importance of livestock insurance. This enables them to develop a more comprehensive understanding of risk management in farming. The

objective is to enhance their capacity to make informed decisions regarding risk management, thereby improving their overall risk management capabilities.

The specific naming of factor group 2 refers to the member variables within factor group 2, namely X1 and X5. Both of these variables belong to the inhibiting category perceived by farmers in adopting livestock insurance, such as poorly understood claim procedures and the short time given during of the claims process. Sometimes, the duration of the claims does not comply with ins claims. To represent these two factors, the specific name given to factor group 2 is "Insurance Procedures."

The insurance procedures that are perceived as difficult to implement are attributed to the farmers' lack of understanding of the claims process. In some instances, the duration of the claims does not align with insurance regulations, which has led to farmers being reluctant to register their livestock. This lack of understanding can impede the efficient claims process, resulting in discomfort and doubt among farmers. Furthermore, it is essential to enhance farmers' awareness and understanding of the applicable insurance procedures.

Thorup et al. (2012) posit that the lack of uptake of livestock insurance is attributable to the perceived difficulty of the insurance procedures by farmers. This difficulty in understanding and implementing claims procedures, coupled with the lack of adequate information, presents obstacles for farmers to participate in insurance programs. This underscores the necessity to simplify and elucidate insurance procedures for farmers. It is evident that more intensive educational efforts and socialization can help overcome these barriers and increase farmers' participation in livestock insurance programs. Therefore, it is crucial that there be cooperation between the government, insurance companies, and farmer organizations in order to provide the information and support that is needed by farmers.

This is also consistent with the views of Sudirman et al. (2020), which emphasize that one of the key factors in increasing public interest in livestock insurance is by simplifying insurance procedures. Furthermore, government involvement is considered crucial, as it can provide greater comfort and confidence in insurance certainty. By streamlining the procedures involved, the general public can more readily comprehend and engage with insurance programs, thereby fostering greater participation. The collaboration between the government, insurance companies, and other stakeholders is of paramount importance in creating an environment conducive to increasing interest and participation in livestock insurance. Consequently, joint efforts are required to devise procedures that are more readily comprehensible and accessible to the general public.

Conclusion

The results of the analysis of factors inhibiting farmers in adopting Cattle Farming Business Insurance from nine initial variables revealed that five variables had a significant impact on farmers' decision to adopt cattle Farming Business Insurance. These variables include: claim procedures being poorly understood (X1), a lack of socialization about Cattle Business Insurance (X2), the limited time available for claims (X5), the length of the claim approval process (X6), and a lack of awareness of the importance of Cattle Business Insurance (X8).

The clustering of this factor includes two factors. The variables included in the first factor are (X2), (X6), and (X8), all of which fall into the category of obstacles that farmers perceive in adopting Cattle Business Insurance. This is due to the lack of socialization conducted by extension officers regarding Cattle Business Insurance (X1), which in turn affects other factors such as X6 and X8. Consequently, the initial group of factors is designated as follows: The second factor is the knowledge and awareness of farmers. In contrast, the variables included in the second factor are X1 and X5. Both are also included in the category of perceived barriers to the adoption of Cattle Business Insurance, such as the poorly understood claim procedures and the short time limits for making claims. To represent these two factors, the second factor group is designated as follows: The second factor group is named Insurance Procedures.

Limitation and Future Research

The limitations of this study include the limited sample size of one subdistrict, the potential for bias in data collection methods, and the simplification of data through factor analysis. Future research should include replication and expansion of the study, the application of qualitative approaches, and the testing of interventions to address identified barriers and understand changes in behavior over time.

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Authors Contribution

All authors participated equally in the conceptualization, methodology, and interpretation of the study results, thereby ensuring a collaborative effort in every aspect of the research process. This shared involvement serves to illustrate the comprehensive approach taken in the design of the study, the implementation of the methodology, and the analysis of the findings. The collective input of the authors enhances the validity and reliability of the research outcomes, reflecting a unified commitment to scholarly excellence.

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