

Cattle Farmers' Strategies in Flood-Vulnerable Areas in Maro Sebo District, Muaro Jambi Regency

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ABSTRACT

The purpose of this study was to identify factors faced by cattle farmers and to formulate strategies for developing smallholder cattle farming businesses in flood-prone areas. The study was conducted using a survey method, with a sample of 56 cattle farmers through a census from three flood-prone villages in Maro Sebo District, Muaro Jambi Regency. Data collection was conducted from May to July 2025. Data were analyzed using the SWOT method through IFE, EFE, IE, and QSPM. The results showed that the internal and external conditions of livestock farmers were classified as strong (IFE 2.75; EFE 3.52), the strategic position of the cattle farming business in cell II of the IE Matrix (Growth and Build). The recommended strategy based on QSPM is collaboration with the government for flood mitigation programs, the provision of livestock refugee camps, communal pens in flood-safe areas, and feed management technology.

INTRODUCTION

Cattle are a type of large ruminant livestock with high economic value. Beef cattle in Indonesia are highly resilient and adapt well to various natural environments (Ahmadi, 2017; Fadly et al., 2020). Population growth and rising incomes have led to a continued rise in demand for beef, which must be met by smallholder livestock farms, as the majority of beef cattle farms in Indonesia are smallholder farms. Cattle hold significant value for rural communities, as they provide a source of income, prestige, and are considered savings (Devendra, 2017).

Muaro Jambi Regency is located in Jambi Province. One of the sub-districts is Maro Sebo Sub-district. Maro Sebo Sub-district is located on the banks of the Batang Hari River, has an area of 261.47 km² and a population of 21,264 people, most of whom are farmers. The cattle population in Maro Sebo Sub-district fluctuates. The unstable cattle population, in addition to low livestock productivity and semi-traditional husbandry, is also thought to be caused by natural disasters, namely flooding, which is an annual seasonal problem that occurs in the Batanghari River Basin. Seasonal flooding conditions in Maro Sebo Sub-district occur in almost all villages, with water levels reaching 1 meter, inundating houses, access roads, and agricultural land. This condition can last up to 3 months. For the livestock sector, losses due to flooding include damage to livestock grazing land, difficulty in feeding, livestock disease and death, and hampered transportation of production factors and products. The impact of flooding not only threatens human life but also has serious consequences for the livestock sector (Nurmeiliasari et al., 2025).

Several important factors contribute to flooding, including rainfall, the destruction of watershed retention basins (DAS), errors in river channel construction, river siltation, errors in regional planning, and the development of facilities and infrastructure. Flood mitigation efforts, particularly ecological flood prevention, are necessary. However, this must be implemented over the long term. Meanwhile, communities must continue to struggle with their agricultural activities, including cattle farming. An immediate solution is to prepare communities for flooding, which is an annual disaster. Therefore, it is necessary to formulate an appropriate strategy for smallholder cattle farming in flood-prone areas. This will maintain community interest and motivation in cattle farming, and increase production, productivity, and population to meet the community's demand for beef.

The research aims to identify the strengths, weaknesses, opportunities, and threats of cattle farmers in flood-prone areas, as well as to explore strategies for cattle farmers in flood-prone areas in Maro Sebo District, Muaro Jambi Regency.

THEORETICAL REVIEW

Beef cattle are a significant component of rural agribusiness, particularly in integration with other agricultural subsectors, as part of the biological and economic chain of the farming system (Schilling et al., 2021; Smith et al., 2018). The decline in cattle populations is caused by, among other factors, low

productivity, high slaughter rates, high calf mortality, limited land (feed) capacity, low feed quality, and disease (Rohaeni, 2007).

Flooding is defined as the inundation of an area due to water overflowing beyond the area's capacity, causing physical, social, and economic losses (Rahayu et al., 2009). Flooding is a seasonal hazard that occurs when a body of water overflows its banks and inundates the surrounding area. Flooding is a natural hazard that can cause significant damage, both to humans and the economy (Jankelova et al., 2017; Sulasmi, 2025).

According to Suresti and Wati (2012), formulating the right strategy for a business can be done by monitoring the business position and environment, as well as what are the strengths, weaknesses, opportunities and threats faced by cattle farming, so that all problems can be anticipated. Determining the appropriate strategy for developing a beef cattle business is by creating a SWOT matrix. This SWOT matrix is built based on external and internal factors consisting of opportunities, threats, strengths and weaknesses (Ramadhany, et., 2023; Siregar, 2012; Syadsalil, 2021). Strategy formulation is prepared based on the analysis obtained from the application of the SWOT model.

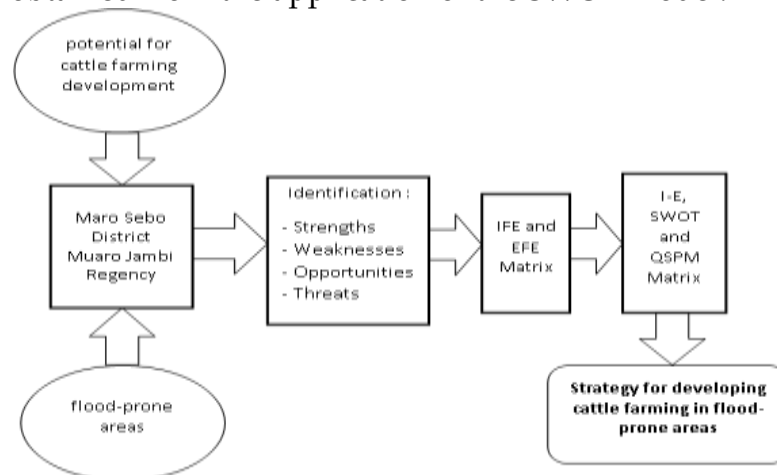


Figure 1. Flow chart of research process

METHODOLOGY

Date and Place

This research was conducted in Maro Sebo District, Muaro Jambi Regency, from May 26 to June 27, 2025.

This research method was quantitative descriptive. Data collection used a survey method, using a questionnaire. The data collected consisted of primary and secondary data. Primary data was obtained directly from cattle farmers, including: farmer identity, husbandry patterns, strengths, weaknesses, opportunities, and threats. Secondary data was obtained from relevant agencies, sub-districts and villages, and books and libraries, including: the profile of Maro Sebo District, cattle population growth, and livestock development policies.

Respondent selection was conducted in two stages. The first stage involved purposive sampling of villages for the study based on flood vulnerability and cattle ownership. Maro Sebo District comprises 11 villages. Three villages prone to flooding and with the largest number of cattle were

selected as study locations: Setiris, Mudung Darat, and Danau Kedap. The second stage involved a census of cattle breeders in three selected villages prone to flooding. The total number of respondents in this study was 56 cattle breeders with the highest flooding risk.

Data Analysis

The collected data was tabulated and processed using mathematical operations. To identify strategies for cattle farmers in flood-prone areas in Maro Sebo District, a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis was used, as outlined by David (2006) and Freddy (2016). Field data was grouped into internal factors (strengths and weaknesses) and external factors (opportunities and threats). Then, an Internal Factor Evaluation (IFE) and an External Factor Evaluation (EFE) matrix were created. The IFE matrix was used to identify internal environmental factors and categorize them into strengths and weaknesses for cattle farmers on flood-prone cattle farms in Maro Sebo District. The EFE matrix was used to identify external environmental factors and categorize them into opportunities and threats, as well as to develop cattle farming strategies vulnerable to flooding in Maro Sebo District.

The position of cattle farming businesses in the study area was analyzed using the IE Matrix tool, which maps the total scores of the IFE and EFE matrices generated in the input stage. The IE Matrix identified nine strategy cells for cattle farmers on flood-prone cattle farms in Maro Sebo District, Muaro Jambi Regency.

A SWOT Matrix analysis was then conducted to clearly identify how the external opportunities and threats faced by cattle farmers can be addressed using their strengths and weaknesses. This SWOT Matrix yielded four possible alternative strategies: SO, WO, WT, and ST. The results of this SWOT Matrix are expected to provide several alternative strategies for cattle farmers managing flood-prone cattle farms in Maro Sebo District, Muaro Jambi Regency, to achieve their initial livestock objectives and maximize their yield.

After developing several alternative strategies, cattle farmers on flood-prone cattle farms in Maro Sebo District, Muaro Jambi Regency, must evaluate and then select the best strategy that best suits the internal conditions of their flood-prone cattle farms. Six steps must be followed to create a QSPM matrix: The total value in the QSPM matrix provides quantitative information that forms the basis for formulating development strategies. The strategy formula thus serves as the final outcome of this research.

RESULTS

Strengths of Cattle Farmers in Flood-Prone Areas in Maro Sebo District

The most dominant strengths identified among cattle breeders in flood-prone areas in Maro Sebo District are relatively long livestock farming experience, a relatively adequate number of livestock, and a community accustomed to dealing with flooding. The results of the study on cattle breeder strengths are listed in Table 1.

Table 1. The Strengths of Cattle Farmer in Maro Sebo District

Cattle Farmer Experience			
No	Cattle Farm Experience (year)	Number of Respondents (Person)	Percentage (%)
1.	1-5	6	10.72
2.	5-10	27	48.21
3.	>10	23	41.07
Total		56	100.00

Number of Cattle per Farmer			
No	Number of Cattle	Number of Respondents (Person)	Percentage (%)
1.	< 5	27	48.21
2.	5-10	20	35.72
3.	> 10	9	16.07
Total		56	100.00

Perception of Flooding			
No	Perception	Number of Respondents (Person)	Percentage (%)
1.	Normal	42	75.00
2.	worry	12	21.43
3.	Very worry	2	3.57
Total		56	100.00

Weaknesses of Cattle Farmers in Flood-Prone Areas in Maro Sebo District

Research on the weaknesses of cattle farmers in flood-prone areas in Maro Sebo District indicates three main weaknesses: low levels of livestock education, the occurrence of livestock diseases in flood-prone areas, and limited livestock evacuation areas. Data on these weaknesses are listed in Table 2.

Table 2. The Weaknesses of Cattle Farmers in Maro Sebo District

Cattle Farmer Education Level			
No	Cattle Farm Education	Number of Respondents (Person)	Percentage (%)
1.	Elementary School	23	10.72
2.	Junior High School	14	48.21
3.	Senior Hig School	19	41.07
Total		56	100.00

Cattle Disease Incidents during the Flood Season			
No	Cattle Deseases	Number of Respondents (Person)	Percentage (%)
1.	Often	37	64.29
2.	Rarely	12	21.43
3.	Never	8	14.28
Total		56	100.00

Availability of Cattle Evacuation Land			
No	Cattle Diseases	Number of Respondents (Person)	Percentage (%)
1.	Easy	12	21.43
2.	Moderate	24	42.86
3.	Difficult	20	35.71
Total		56	100.00

Opportunities for Cattle Farmers in Flood-Prone Areas in Maro Sebo District

External factors that provide opportunities for cattle breeders in flood-prone areas to develop their cattle herds include high demand for cattle, rising cattle prices, and available land evacuation routes.

The demand for cattle presents an opportunity for cattle breeders in flood-prone areas. Research results show that the number of cattle sold in Maro Sebo District during the year was 68 heads. All respondents stated that selling cattle was easy because cattle traders frequently travel around looking for cattle for sale.

Another opportunity for cattle farmers in flood-prone areas is the continued rise in cattle prices. A survey found that cattle prices in Maro Sebo District vary depending on their age, ranging from Rp 15,000,000 to Rp 17,000,000 per head for adults (over one year old) and also depending on their weight. All respondents stated that cattle prices remain very profitable for farmers.

One opportunity for cattle farmers in Maro Sebo District is the existence of a main land route that is still functional and not completely submerged during floods. This opportunity is invaluable as it serves as a crucial "safety route" for livestock evacuation.

Threat Factors for Cattle Farmers in Flood-Prone Areas in Maro Sebo District

Several threats to cattle farmers in flood-prone areas in Maro Sebo District include limited grazing land due to flooding, disrupted land transportation, particularly village roads, and limited feed availability.

When flooding occurs, large areas of land are inundated, making them unusable for livestock raising. Reduced land availability due to flooding is one of the external threats faced by cattle farmers in Maro Sebo District. Flooding causes waterlogging of grazing land and pens, making them unusable. Meanwhile, flood-safe areas are very limited (Ndhlovu and Mpofu, 2018).

Despite the availability of land evacuation routes, a serious external threat looming for livestock farmers is the disruption of land transportation in many areas due to flooding, particularly on village roads. For the livestock sector, this significantly hampers the supply of production factors and marketing.

Flooding poses a significant threat to feed availability, which is one of the challenges faced by cattle farmers in Maro Sebo District. Beef cattle are the primary source of meat, and their success depends heavily on feed, both in quantity and quality. Flooding causes inundation of feed sources, limiting access to fresh forage.

Internal Factor Evaluation (IFE) Matrix

The Internal Factor Evaluation (IFE) matrix from the study can be seen in Table 3.

Table 3. Results of Internal Factor Analysis (Strengths and Weaknesses) of Cattle Farmers in Flood-Prone Areas in Maro Sebo District

Strengths				
No	Strength Assessment	Average Weight	Average Rating	Total
1	Cattle farmers experience	0.25	4	1.02
2	Number of cattle	0.17	3	0.51
3	Farmers are used to facing floods	0.19	3	0.56
Total Strengths		0.61	10	2.08
Weaknesses				
No	Weaknesses	Average Weight	Average Rating	Total
1	Farmer education is low	0.15	2	0.30
2	Animal diseases	0.12	2	0.24
3	Evacuation land is limited	0.12	1	0.12
Total Weakness		0.39	5	0.66
Total Internal Factor		1.00	15	2.75

External Factor Evaluation (EFE) Matrix

The External Factor Evaluation (EFE) matrix is shown in Table 4.

Table 4. Results of External Factor Analysis (Opportunities and Threats) for Cattle Farmers in Flood-Prone Areas in Maro Sebo District

Opportunities				
No	Opportunities Assessment	Average Weight	Average Rating	Total
1	High demand of cattle	0.25	4	1.00
2	High price of cattle	0.18	3	0.54
3	Existence of evacuation routes	0.17	3	0.51
Total Opportunities		0.60	10	2.05
Threats				

No	Threats Assessment	Average Weight	Average Rating	Total
1	The availability of grazing land is decreasing	0.13	3	0.39
2	Obstructed of local access	0.12	4	0.48
3	Feed stock is difficult	0.15	4	0.60
Total Threats		0.40	11	1.47
Total External Factor		1.00	21	3.52

DISCUSSION

Strengths of Cattle Farmers in Flood-Prone Areas in Maro Sebo District

Livestock farming experience is the length of time a farmer has been running a business. The longer a farmer's experience, the wiser their decision-making. Based on the research results, respondents had relatively extensive livestock farming experience, generally exceeding 10 years. This is in line with Mastuti and Hidayat (2008) who stated that the longer a farmer has been farming, the more knowledge they will gain, thus improving their skills in running a livestock business. However, considering that many farmers are still relatively new to livestock farming, intensive extension and training programs are needed to ensure they can quickly adopt and apply the necessary technical knowledge and skills, particularly location-specific knowledge and skills in flood-prone areas. This allows them to address emerging issues, increasing cattle production and productivity, and enhancing the sustainability of their cattle farming businesses.

The results of the study indicate that the number of cattle raised by livestock farmers in the study area is quite large, with the average number of cattle owned by farmers also quite high for a small-scale cattle farming business, namely around 5-9 cattle per farmer. This number of cattle and the number of cattle owned constitute the initial capital for farmers to continue working in the cattle farming sector and become capital for the development of cattle farming in the region. Cattle ownership fundamentally contributes to the economic welfare and fulfillment of the living needs of livestock farmers in Maro Sebo District. According to Alam and Dwijatmiko (2014), regardless of the number of cattle owned by farmers, it is very helpful in increasing income and meeting needs.

One of the advantages of cattle farmers in Maro Sebo District is their ability to adapt to flooding. 75.00% of cattle farmers admit to being accustomed to dealing with flooding. This habit is a strong asset. The flooding that occurs along the Batanghari River is seasonal, occurring every rainy season. The community relies on local knowledge and experience to cope. Farmers avoid excessive panic. They already know how quickly the water rises, allowing them to prepare in advance. They are accustomed to working together and working together to move cattle to higher ground or to makeshift stilt pens, which are usually communal pens. These adaptive skills enable them to make critical decisions more effectively.

Weaknesses of Cattle Farmers in Flood-Prone Areas in Maro Sebo District

The majority of cattle breeders in Maro Sebo District have only completed elementary school. This fact indicates that most breeders have limited access to information and new technology, which can potentially impact their business management skills. Nevertheless, education is a crucial factor in business management. This aligns with the opinion of Nurdiyansah et al. (2020), who stated: "For livestock breeders, education is essential in managing livestock businesses because problems that arise, or increasing livestock production and livestock business management skills, can be resolved if farmers have adequate education. Therefore, increasing access to training and technical extension, tailored to their educational level, is crucial for improving managerial skills and problem-solving for livestock breeders in the region."

The increase in disease outbreaks in cattle during the flood season poses a challenge for cattle farmers in flood-prone areas, including Maro Sebo District. Flooding creates environmental conditions that are highly conducive to the emergence of various diseases in livestock. This occurs due to high humidity, poor sanitation, and physiological stress that lowers the animals' immunity. In many cases, feed and water are contaminated. Flooding presents a multidimensional threat to livestock welfare, ranging from the risk of starvation and contaminated drinking water sources to reduced immunity, which increases susceptibility to disease. According to (Munadi, 2022), cattle diseases can generally cause losses for both farmers and the livestock themselves.

When floods strike, one of the most obvious challenges faced by cattle farmers is the limited availability of safe land for livestock evacuation. This difficulty arises because geographically, flood-affected areas are generally low-lying or basin-like, resulting in almost the entire land surface being inundated. Almost all livestock farmers stated that when the flood season arrives, it is difficult to find areas safe from flooding.

Another challenge for cattle farmers in flood-prone areas is the difficulty of finding evacuation sites, given that nearly all areas around homes and agricultural land are flooded, rendering pens and grazing areas unusable. Evacuation sites are a form of ecological adaptation to save livestock. The existing evacuation sites are very limited in size and not designed for livestock evacuation. According to Kharismafullah (2022), temporary livestock evacuation sites are beneficial during floods, reducing the psychological impact and losses resulting from natural and human-caused disasters.

Opportunities for Cattle Farmers in Flood-Prone Areas in Maro Sebo District

Opportunities for cattle farming in Indonesia remain wide open, given that domestic demand for cattle remains unmet. The demand for cattle is highly dependent on cattle from smallholder farms. This is also true in Jambi Province, which is not a major beef cattle producing region. Therefore, the unlimited demand for cattle presents an opportunity for cattle breeders in flood-prone areas in Maro Sebo District. Besides population growth, demand for beef is also driven by economic growth and public awareness of the importance of consuming beef as a source of animal protein to meet balanced nutritional needs (Sigiro et al., 2023).

Another opportunity for cattle breeders, particularly in flood-prone areas, is the continued rise in cattle prices. The shortage of locally produced cattle leads to high demand, leading to a continued rise in prices. This serves as a driving force and increases the motivation for cattle breeders to venture into the beef cattle sector.

One of the opportunities for cattle farmers in Maro Sebo District in developing their cattle herds during floods is the existence of a main land route that is still functional or not completely submerged during flooding. This opportunity is very valuable because it serves as a crucial "safety route" for livestock evacuation. When the river overflows, this elevated land route allows farmers to move quickly and safely. They can immediately herd their cattle to safe points, higher ground, or to communal pens planned by the government. This smooth access will minimize the risk of physical harm and stress for both livestock and farmers. It also facilitates transportation access for livestock trading. This transportation route also serves as a crucial logistics route for supplying production factors such as supplementary feed and essential medicines.

Threat Factors for Cattle Farmers in Flood-Prone Areas in Maro Sebo District

The reduced availability of grazing land due to flooding is one of the external threats facing cattle farmers in Maro Sebo District. Flooding causes waterlogging of grazing land and pens, making them unusable. This situation forces farmers to seek alternative land or relocate their livestock to safer areas, which are very limited. As a result, livestock farming often faces challenges, particularly in terms of livestock husbandry and feed provision. Flooding reduces the area for husbandry and pens. This situation limits space for pens, grazing, and the provision of green fodder.

Although land evacuation routes provide opportunities, a serious threat to livestock farmers is the disruption of land transportation in several areas, particularly roads connecting villages, residential areas, and agricultural roads. This undoubtedly hampers transportation, making it difficult for farmers to sell their livestock in a timely manner when they need cash. Transportation disruptions also disrupt the procurement of livestock production inputs such as concentrate feed, vaccines, medicines, and vitamins, as well as the implementation of Artificial Insemination. Thus, there is a risk of a decline in production and productivity.

The primary threat posed by flooding to cattle farming in Maro Sebo District is the scarcity of forage, resulting in insufficient quantity and quality. Flooding renders grazing areas unusable, grass between plantations unusable, and fresh forage sources, such as swamps, submerged. Flooding leads to the loss of forage and conventional feed. In flood situations, livestock experience decreased productivity due to the threat of starvation due to lack of feed, disease, and the risk of drowning.

IFE, EFE, and I-E Matrices

The IFE matrix analysis yielded a total IFE score of 2.75. This result indicates that the internal factors of livestock farmers in Maro Sebo District are strong. This

aligns with David's (2004) opinion that a score above 2.5 indicates a strong internal position.

Based on the analysis, the total EFE score was 3.52. The results indicate that cattle farmers in flood-prone areas in Muara Sebo District are able to capitalize on opportunities and address existing threats, thus categorizing them as strong.

The Internal-External (IE) Matrix helps businesses determine the most appropriate strategy based on internal and external evaluations. The IE Matrix provides a framework for farmers to prioritize, optimally utilize resource allocation, and make strategic decisions at the policy-making level. Based on the results obtained using the IFE (2.75) and EFE (3.52) matrix analysis, the IE matrix analysis shows that cattle farming in flood-prone areas in Muara Sebo District falls into cell II, meaning "grow and build." The appropriate strategy for cattle farming in flood-prone areas in Muara Sebo District is an intensive strategy (market penetration, livestock development, and increased production). The "grow and build" strategy indicates that livestock farming requires strategies to grow better and can be developed in flood-prone areas to achieve greater productivity. The strategy that can be implemented by businesses today is an intensive strategy (Setyorini, 2016).

SWOT Matrix (Strength, Weakness, Opportunities, Threats)

The SWOT matrix is a decision-making tool used to determine strategies based on logic to maximize a company's strengths and opportunities while simultaneously minimizing its weaknesses and threats (Abdelbasset et al., 2018; Setyorini, 2016). The SWOT matrix for a cattle farming business in the flood-prone area of Maro Sebo District is shown in Table 5.

Table 5. SWOT Matrix: Cattle Farmer Strategies in Flood-Prone Areas in Maro Sebo District

INTERNAL	STRENGTHS - S	WEAKNESS - W
	1. Cattle farmers experience	1. Farmer education is low
	2. Number of cattle	2. Animal diseases
EXTERNAL	3. Farmers are used to facing floods	3. Evacuation land is limited
OPPORTUNITIES- O	STRATEGIES SO	STRATEGIES WO
1. High demand of cattle	1. Optimize livestock farming experience and land availability to increase productivity to meet high livestock demand and capitalize on rising livestock prices.	1. Utilizing land evacuation routes to collaborate with animal health institutions, facilitating the entry of health workers and medicines to prevent livestock diseases.
2. High price of cattle	2. Utilize local wisdom and flood-prevention habits to plan and implement organized livestock evacuations using available land routes, minimizing potential flood losses and ensuring livestock remain safe for sale.	2. Improving livestock farmers' skills through flood disaster mitigation courses/training to enable them to manage livestock more effectively and
3. Existence of evacuation route		

THREATS - T	STRATEGIST ST	STRATEGIST WT
1. The availability of grazing land is decreasing 2. Obstructed of local access 3. Feed stock is difficult	1. Optimize livestock farming experience by implementing a raised housing system to protect livestock from flooding and disease, and optimize high ground for livestock evacuation with adequate feed. 2. Optimize available land for planting grass and long-lasting feed reserves, and utilize feed preservation techniques such as	1. Improve livestock knowledge and skills to find and provide alternative feeds, as well as traditional medicines that can be used and prepared in the face of flooding. 2. Develop a disease prevention management system during floods by providing adequate feed supplements to prevent

QSPM (Quantitative, Strategic, Planning Matrix) Matrix

The QSPM is a tool that enables strategy development by objectively evaluating strategic alternatives, including identified success factors, internal, and external key factors (Hubeis, 2020).

Table 6. QSPM Matrix: Cattle Farmer Strategies in Flood-Prone Areas in Maro Sebo District, Muaro Jambi Regency

No	QSPM Strategy Alternatives	TAS Score
1	Develop a disease prevention management system during floods by providing adequate feed supplements, to prevent livestock deaths and the negative impacts of difficult feed availability.	5.43
2	Optimizing livestock farming experience and existing land availability to increase productivity to meet high livestock demand and take advantage of rising livestock prices.	5.26
3	Optimizing livestock farming experience to implement a raised barn system so that livestock are not affected by flooding and are protected from disease, as well as optimizing high land for livestock evacuation with adequate feed.	5.10
4	Improving livestock knowledge and skills to find and provide alternative livestock feed, as well as traditional medicines that can be used and prepared in facing the flood season.	5.06
5	Using land evacuation routes to collaborate with animal health institutions, facilitating the entry of health workers and medicines, for disease prevention.	5.05
6	Improving livestock farmers' skills through flood disaster mitigation courses/training so they can manage livestock more effectively and take advantage of rising market demand and prices with better sales planning.	4.87
7	Utilizing local wisdom/customs in dealing with floods to plan and carry out organized livestock evacuation via available land routes, so that potential losses due to flooding can be minimized and livestock remain safe for sale.	4.58
8	Optimize the use of available land to plant grass and long-lasting reserve feed, and apply feed preservation techniques such as silage and hay.	4.37

The purpose of the QSPM matrix is to determine the relative attractiveness of several selected strategies to determine which strategy is best to implement. The strategy with the highest Total Attractiveness Score (TAS) is the best strategy to implement. Based on the results of data processing using the QSPM matrix analysis, of the eight alternative strategies obtained from the SWOT matrix, it can be seen that the selected and most recommended alternative strategy for livestock farmers in flood-prone areas in Maro Sebo District is collaborating with the government on a flood mitigation program for livestock evacuation centers, such as communal pens in flood-safe areas. This has the highest Total Attractiveness Score (TAS) of 5.43 compared to other alternative strategies. This is consistent with the opinion that organizations are important for smallholder farmers (Bizikova et al., 2020; Gill et al., 2016).

The second recommended strategy for cattle farmers in flood-prone areas in Maro Sebo District is to optimize livestock farming experience and land availability to increase productivity to meet high livestock demand, with a TAS value of 5.26. The third recommended strategy is to optimize livestock farming experience by implementing a raised barn system to protect livestock from flooding, with a TAS value of 5.10.

CONCLUSIONS AND RECOMMENDATIONS

1. The strategy of cattle farmers in the flood-prone areas of Maro Sebo District, using IE matrix analysis, is in cell II, meaning "grow and develop." The appropriate strategy to implement is an intensive strategy (market penetration, livestock development, and increased production).
2. The priority strategy is to develop a disease prevention management system during floods to prevent livestock mortality and the negative impacts of difficult feed availability, optimize livestock farming experience and available land to increase productivity, and optimally utilize the farmers' experience by implementing a raised housing system and optimizing elevated land to protect livestock from flooding. This strategy is complemented by adequate feed management technology. Provide some conclusions and the implementation of the research results.

Recommendations

Based on the research conducted, the following recommendations can be made for the future:

1. The government and livestock farmers should collaborate on flood mitigation programs, including livestock evacuation, feed provision during the flood season, and improving livestock farmers' knowledge and skills in dealing with floods.
2. It is hoped that livestock farmers will pay more attention to their strengths and opportunities so they can capitalize on them, while also being alert to weaknesses and threats that could harm their livestock businesses.

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