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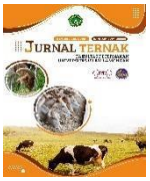

Evaluation Of Internal And External Factors Affecting The Development Of Semi-Intensive Beef Cattle Farmer Groups Integrated With Oil Palm Plantations In Central Bangka Regency

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ABSTRACT

The development of semi-intensive beef cattle farmer groups integrated with oil palm plantations requires an evaluation of internal and external factors to determine strategic business conditions. This study aimed to evaluate the internal and external factors influencing the development of these integrated enterprises in Central Bangka Regency. The research was conducted on 21 cattle groups using a survey approach, field observations, structured interviews, and an assessment of internal and external factors. Data were analysed using the Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) matrices. The results showed a total IFE score of 2.801, indicating a relatively strong internal position, with primary strengths being member motivation, land carrying capacity, and the utilization of oil palm by-products as feed. The total EFE score of 2.680 suggests a supportive external environment. Key opportunities include local government policy support, the role of extension agents, and market demand for beef, while primary threats involve rising prices of commercial feed and veterinary medicines, competition from beef supplied by other regions, and instability in local beef supply. Enterprise development should focus on strengthening capital, feed technology, institutional frameworks, and marketing systems.

Introduction

Beef cattle farming integrated with oil palm plantations is a prime example of smallholder livestock development that is highly relevant for regions with a plantation-based economy and significant feed biomass potential. This cattle-palm integration system utilizes the land beneath the oil palm canopy as grazing areas, while plantation by-products such as fronds, leaves, palm kernel cake, and oil palm sludge can be utilized as supplemental feed. Oil palm leaves and fronds have the potential to serve as alternative forage sources for livestock, thereby supporting oil palm–cattle integration systems based on local feed

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resources [1]. Conversely, beef cattle manure can be repurposed as organic fertilizer, creating a complementary business pattern between beef cattle and oil palm plantations. In principle, integrated crop-livestock patterns can support economic, social, and environmental balance if available resources are managed sustainably [2]. In the context of smallholder farming, this integration is vital for reducing feed costs, expanding local feed sources, and increasing land-use efficiency. Oil palm–cattle integration systems can also be developed by utilizing plantation land as grazing areas and by optimizing local resources as livestock feed [3]

Central Bangka Regency possesses significant potential for developing cattle-palm integration, supported by the presence of livestock groups, oil palm plantation land, and the implementation of semi-intensive rearing systems. The semi-intensive system in beef cattle groups combines limited grazing with confinement in housing, allowing farmers to better control animal health, feeding, and reproduction. However, natural resource potential does not automatically guarantee business success. In practice, livestock groups still face constraints regarding capital, technology adoption, member skills, access to high-quality breeding stock, institutional frameworks, and marketing.

Based on preliminary mapping, natural and human resource potentials indicate that the development of cattle-palm integration in Central Bangka Regency has a sufficient foundational potential, though it remains suboptimal. This finding is important context because natural resource potential (NRP), such as land, forage, water, and oil palm by-products, along with human resource (HR) capacity, are directly related to the strengths and weaknesses of livestock groups. Farmers' willingness to adopt oil palm–cattle integration systems is influenced by perceived benefits, access to information, group membership, extension intensity, and capital support [4] However, potential mapping alone is insufficient to explain which internal and external factors are most dominant in determining business sustainability. Therefore, an evaluation of internal and external factors is required using the Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) approaches. The IFE and EFE approaches are widely used in agribusiness strategy studies because they assist in assessing strengths, weaknesses, opportunities, and threats based on the weight, rating, and weighted score of each strategic factor [5]

IFE and EFE analyses are used to assess the level of importance and the condition of each strategic factor. Internal factors consist of strengths and weaknesses, while external factors consist of opportunities and threats. Through this approach, livestock business development is viewed not only through the availability of potential but also through the group's ability to utilize strengths, overcome weaknesses, seize opportunities, and anticipate threats. The results of this evaluation are crucial as a basis for decision-making and for formulating a more targeted development strategy for semi-intensive beef cattle group enterprises integrated with oil palm plantations. Accordingly, the objective of this study is to evaluate the internal and external factors affecting the development of semi-intensive beef cattle farmer groups integrated with oil palm plantations in Central Bangka Regency.

Method

The research was conducted in Central Bangka Regency, Bangka Belitung Islands Province, involving 21 beef cattle groups implementing semi-intensive rearing systems integrated with oil palm plantations. The location was selected purposively as the region serves as a hub for oil palm plantations, possesses a significant beef cattle population, and hosts livestock groups that utilize palm plantation land for forage and grazing.

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The research subjects consisted of 21 beef cattle farmer groups implementing semi-intensive rearing systems integrated with oil palm plantations. Primary data were obtained through field observations, interviews, and internal-external factor assessments by expert respondents familiar with livestock business conditions. Seven expert respondents were purposively selected based on their involvement and understanding of livestock group conditions. These experts included one representative from the livestock division of the Department of Agriculture and Food Security of Bangka Belitung Islands Province, two from the Central Bangka Regency Department of Agriculture and Food Security, two agricultural extension agents, and two representatives of livestock group leaders. Secondary data were utilized to support regional descriptions, livestock conditions, and the context of cattle-palm integration development.

This study employed a survey method with a quantitative descriptive approach. The research was designed to identify and evaluate the internal and external factors influencing the development of livestock group enterprises. Internal factors encompass strengths and weaknesses, while external factors encompass opportunities and threats.

Internal variables included geographical location, land carrying capacity, utilization of oil palm by-products as feed, integration with other farming enterprises, member motivation, administrative and management capabilities, capital constraints, technology adoption, marketing systems, member education and skills, access to high-quality breeding stock, and livestock farming status as a side business. External variables included local government policy support, government cattle aid programs, the role of extension agents, livestock diseases, rising prices of commercial feed and veterinary medicines, competition from external/imported meat supplies, reproductive disorders, land conversion, and instability of local beef supply.

Research procedures were conducted through identifying field conditions, compiling a list of internal and external factors, validating factors through interviews and respondent assessments, assigning weights, assigning ratings, and calculating weighted scores. Weights indicate the level of importance of each factor, while ratings reflect the condition or response of the livestock groups to those factors.

Data Analysis

Data analysis was conducted using the Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) matrices. The IFE and EFE matrices are strategic analytical tools used to evaluate strengths, weaknesses, opportunities, and threats by assigning weights, ratings, and weighted scores to each strategic factor [14] [5]. The IFE matrix is used to evaluate internal strengths and weaknesses, while the EFE matrix is used to evaluate external opportunities and threats. This approach is relevant for beef cattle agribusiness development as it demonstrates the strategic condition of the enterprise based on the level of importance and response to each factor [5]

The analytical stages involved identifying internal and external factors, assigning weights, assigning ratings, calculating weighted scores, and interpreting the total scores. The weighted score is obtained by multiplying the weight by the rating. The sum of the weights for all internal and external factors is 1.000 each. The total IFE score is used to evaluate internal conditions, while the total EFE score is used to evaluate the external environment. A total value below 2.5 indicates a relatively weak condition, a value around 2.5 indicates a moderate condition, and a value above 2.5 indicates a strong or supportive condition [14]

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Results and discussion

Data analysis and discussion

a. Relationship between Foundational Potential and Internal-External Factor Evaluation

The development of semi-intensive beef cattle enterprises integrated with oil palm plantations must be viewed as a system influenced by natural resources, human resources, institutional frameworks, technology, and markets. While the potential of oil palm land, forage, water, and palm by-products serves as the foundation for the integration system, economic benefits are only realized when livestock groups are capable of managing feed, livestock, institutions, and marketing. The development of oil palm and beef cattle integration should be seen as a system that integrates economic, social, environmental, technological, and institutional aspects to ensure the sustainable benefit of local resources [7]. Therefore, evaluating internal and external factors is a subsequent stage to identify the dominant factors that need to be strengthened and anticipated.

b. Internal Factors for the Development of Semi-Intensive Beef Cattle Group Enterprises

Internal factors reflect the conditions within livestock groups that influence the business's ability to grow. The internal factors in this study consist of strengths and weaknesses, as presented in Table 1.

Table 1 Internal factors of semi-intensive beef cattle group enterprises

No	Strengths	No	Weaknesses
1	Geographical location	1	Capital constraints
2	Adequate land carrying capacity	2	Low technology adoption
3	Group ability to utilize oil palm by-products as feed	3	Inadequate marketing system
4	Cattle farming integrated with other farming enterprises	4	Low education and skill levels of members
5	High motivation of livestock group members	5	Suboptimal access to high-quality breeding stock
6	Administrative and business management capabilities of the group	6	Livestock farming as a side business

Source: Processed Primary Data, 2026.

The primary strengths of the livestock groups are related to geographical location, land carrying capacity, utilization of oil palm by-products, integration of livestock with other farming enterprises, member motivation, and administrative and management capabilities. Geographical location serves as a strength because the groups are situated near oil palm plantation areas, forage sources, grazing access, and local feed ingredients. Land carrying capacity is also crucial, as semi-intensive systems require grazing space and forage availability. The availability of land, forage, and access to feed sources are vital factors for the sustainability of beef cattle enterprises because they are directly associated with the farmers' capacity to maintain production and improve feed cost efficiency [8]. In oil palm plantation areas, the presence of land and feed sources around the plantation can support livestock productivity if managed according to environmental capacity and livestock nutritional needs [9]

The utilization of oil palm by-products as feed is a strategic strength that can reduce feed costs, although it still needs to be improved through processing technologies such as shredding or fermentation. Oil palm fronds, as agricultural by-products, can be utilized as a supplemental feed source for ruminants; however, their utilization requires appropriate

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processing to better support livestock feed requirements [10]. Fermentation technology for oil palm by-products can improve the utilization of local feed resources while increasing farmers' knowledge and skills in feed processing [11]. Oil palm by-products have the potential to be used as ruminant feed, particularly when nutritional quality and feed formulations are adjusted to meet the requirements of beef cattle [12]. Plantation vegetation as well as crop and oil palm industry by-products have potential as cattle feed sources; therefore, strengthening local feed technology is essential in palm–cattle integration systems [7] [9]. Member motivation serves as an important social capital, as group-based livestock enterprises require collective participation and commitment.

Meanwhile, internal weaknesses primarily relate to capital, low technology adoption, weak marketing, uneven member skills, access to high-quality breeding stock, and a business orientation that remains a side activity. In the context of cattle integration in oil palm plantation areas, farmer motivation plays a key role in the sustainability of the integration system as it pertains to perceived benefits, business environment support, and opportunities for income improvement [13]. These conditions indicate that the development of smallholder beef cattle enterprises needs support through institutional strengthening, capital access, technology, and marketing systems to become more competitive [7] [5]. These weaknesses suggest that business development should be directed toward increasing group capacity, capital access, feed technology, reproductive management, business record-keeping, and collective marketing. Beef cattle farmer empowerment should be carried out through capacity building, institutional strengthening, and improved access to resources so that smallholder livestock enterprises can develop sustainably [14].

c. External Factors for the Development of Semi-Intensive Beef Cattle Enterprises

External factors represent conditions outside the livestock groups that can serve as opportunities or threats to business sustainability. The results of the external factor identification are presented in Table 2.

Table 2. External factors for the development of semi-intensive beef cattle enterprises

No	Opportunities	No	Threats
1	Local government policy support	1	Threat of livestock disease outbreaks
2	Government cattle aid programs	2	Rising prices of commercial feed and veterinary medicines
3	Role of livestock extension agents in assisting groups	3	Beef competition from external regions/imports
4	Market demand for beef in the Central Bangka region	4	Reproductive disorders
5	Status as the region with the largest cattle population	5	Land conversion
6	Technological developments	6	Instability of local beef supply

Source: Processed Primary Data, 2026.

The external opportunities shown in the table above arise from local government support, cattle aid programs, the role of extension agents, market demand, Central Bangka's status as a cattle population base, and technological developments. Policy support from the local government and the role of extension agents are critical, as livestock groups still require guidance, mentoring, and access to programs. The development of palm–cattle integration requires legislative and institutional support, as well as stakeholder involvement, to ensure

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that programs do not merely end with cattle assistance but continue with guidance in technology, management, and marketing [7]. Market demand can provide an economic stimulus to increase productivity, but it must be followed by improvements in livestock quality and marketing systems.

External threats include livestock diseases, rising prices of commercial feed and veterinary medicines, competition from beef supplied by other regions, reproductive disorders, land conversion, and instability in local beef supply. An increase in input prices can raise production costs, while competition from beef supplied by other regions can weaken the bargaining position of local farmers. Instability in local beef supply constitutes a threat because unstable local production can increase dependence on supplies from outside the region

d. Internal Factor Evaluation via IFE Matrix

Tabel 3 Strategic Internal Factor Evaluation (IFE) Matrix

Internal Factors	Weight	Rating	Score
Strengths			
Geographical location	0.060	3.57	0.214
Adequate land carrying capacity	0.080	3.71	0.297
Group ability to utilize oil palm by-products as feed	0.097	3.00	0.291
Cattle farming integrated with other farming enterprises	0.090	3.00	0.270
High motivation of livestock group members	0.104	3.14	0.327
Administrative and business management capabilities of the group	0.092	3.00	0.276
Subtotal Strengths			1.675
Weaknesses			
Capital constraints	0.087	2.43	0.211
Low technology adoption	0.078	2.14	0.167
Inadequate marketing system	0.083	2.57	0.213
Low education and skill levels of members	0.082	2.29	0.188
Suboptimal access to high-quality breeding stock	0.078	2.29	0.179
Livestock farming as a side business	0.069	2.43	0.168
Subtotal Weaknesses			1.126
Total	1.000		2.801

Source: Processed Primary Data, 2026.

The total IFE score of 2.801 indicates that the livestock farmer groups have a moderately strong internal position. In the IFE matrix, the total score is used to assess the internal capability of the business to leverage strengths and overcome weaknesses. A higher total score signifies a stronger internal condition in supporting development strategies [5] [6]. This value is higher than the 2.5 midpoint, suggesting that internal strengths are relatively more dominant than internal weaknesses. The strength subtotal of 1.675 is also higher than the weakness subtotal of 1.126.

The highest strength is the motivation of group members, with a score of 0.327. This result indicates that member motivation is the primary capital in group-based enterprises, as it relates to participation, aid management, extension activities, and cooperation. Land carrying capacity obtained a score of 0.297, showing that the availability of grazing space and

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forage remains a determining factor in the sustainability of semi-intensive livestock systems. The ability to utilize oil palm by-products as feed achieved a score of 0.291, highlighting the importance of local feed in reducing production costs.

On the weakness side, the inadequate marketing system obtained a score of 0.213, followed by capital constraints at 0.211. Both factors are directly related to business sustainability. Weak marketing leads to a low bargaining position for farmers, while capital constraints can hinder the purchase of breeders, procurement of supplemental feed, and technology adoption. Beef cattle marketing systems in smallholder farms are generally still simple, which may affect marketing efficiency and farmers' bargaining position [15]. Strengthening the marketing system is crucial because beef cattle marketing strategies involve distribution channels, bargaining power, and the business's ability to achieve better economic value [16]. Therefore, strengthening marketing systems and improving access to capital are essential components of beef cattle agribusiness development strategies, particularly to increase business scale and the competitiveness of local farmers [5]. Beef cattle business development strategies should be directed toward institutional strengthening, improved market access, and better business management so that farmers can better address internal weaknesses and external threats [17] Internal reinforcement should be prioritized in marketing, capital, member skills, and feed technology.

e. External Factor Evaluation via EFE Matrix

Tabel 4 Strategic External Factor Evaluation (EFE) Matrix

External Factors	Weight	Rating	Score
Opportunities			
Local government policy support	0.092	3.29	0.303
Government cattle aid programs	0.094	2.57	0.242
Role of livestock extension agents in assisting groups	0.088	3.00	0.264
Market demand for beef in the Central Bangka region	0.092	2.71	0.249
Status as the region with the largest cattle population	0.083	2.71	0.225
Technological developments	0.091	2.43	0.221
Subtotal Opportunities			1.504
Threats			
Threat of livestock disease outbreaks	0.077	2.43	0.187
Rising prices of commercial feed and veterinary medicines	0.082	2.71	0.222
Beef competition from external regions/imports	0.077	2.86	0.220
Reproductive disorders	0.072	2.43	0.175
Land conversion	0.070	2.14	0.150
Instability of local beef supply	0.082	2.71	0.222
Subtotal Threats			1.176
Total	1.000		2.680

Source: Processed Primary Data, 2026.

The total EFE score of 2.680 indicates a moderately supportive external environment. In the EFE matrix, the total score is used to describe the business's ability to respond to external opportunities and threats. A higher value indicates that the business has a better response to the external environment influencing agribusiness development [5] [6]. This value is above the 2.5 midpoint, suggesting that available opportunities can be utilized for

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business development. The opportunity subtotal of 1.504 is higher than the threat subtotal of 1.176.

The highest opportunity is local government policy support, with a score of 0.303. This indicates that the success of smallholder livestock development cannot be separated from government policies, guidance, and programs. The role of extension agents obtained a score of 0.264 and represents a significant opportunity because extension agents function to assist in technology transfer, livestock health and feed management, reproduction, and institutional strengthening. This finding is consistent with evidence showing that strengthening the capacity of extension agents as agents of change and reinforcing farmer group institutions play important roles in improving group functions and farmers' motivation [18]. Extension services play a role in improving farmers' knowledge, skills, attitudes, and capacity, making them relevant for supporting sustainable beef cattle livestock development. Extension agents also act as mentors in technology transfer, institutional strengthening, and improving livestock group business management [19]. Market demand for beef received a score of 0.249, serving as the economic foundation for production increases.

The primary threats stem from rising prices of commercial feed and veterinary medicines, as well as instability in local beef supply, each obtaining a score of 0.222. Competition from external or imported meat received a score of 0.220. These three threats indicate that livestock groups need to improve cost efficiency, strengthen local production, and build more organized marketing to remain competitive. Local feed efficiency and strengthening the business system are vital because cattle-palm integration has the potential to reduce dependence on external feed and increase the sustainability of smallholder livestock enterprises [2][7].

f. Business Development Implications

A comparison of the IFE and EFE results indicates that the internal conditions of the livestock groups are slightly stronger than the external pressures. This provides an opportunity for livestock groups to develop their businesses through the strengthening of capital, feed technology, institutional frameworks, and marketing. Improvement strategies should begin with the weakest internal aspects, particularly marketing systems and access to capital, while simultaneously leveraging opportunities such as policy support, extension services, and market demand.

The development of feed technology based on oil palm by-products is a crucial direction, as it directly relates to cost efficiency and the characteristics of the research area. The utilization of plantation vegetation, fronds, leaves, palm kernel cake, and sludge (solid) needs to be managed through more measurable feed processing so that the potential of oil palm integration does not merely serve as a source of cheap feed, but also increases the productivity and sustainability of livestock enterprises [7] [2]. Furthermore, collective marketing among groups must be strengthened so that farmers are not overly dependent on middlemen. Thus, the development of semi-intensive beef cattle enterprises integrated with oil palm plantations in Central Bangka Regency should be directed toward strengthening internal capacity while utilizing available external opportunities.

g. Managerial Recommendations

Based on the IFE and EFE results, business development should be directed toward strategies that combine internal strengths with external opportunities. Member motivation, land carrying capacity, and the ability to utilize oil palm by-products should be linked with

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policy support, the role of extension agents, and market demand. This combination can be used to accelerate feed processing training, strengthen groups, and gradually increase business scale. The development of integration-based beef cattle enterprises requires strategies that focus not only on production but also on strengthening institutions, technology, market access, and stakeholder support [7] [5].

Weaknesses in marketing systems and access to capital should be addressed through cooperation among livestock farmer groups. Strengthening farmer institutions through livestock groups or cooperatives can help improve business management, market access, technology adoption, and the competitiveness of beef cattle enterprises [20]. Livestock groups can establish collective marketing patterns, organize sales schedules, improve weight and health record-keeping, and build communication with traders, cooperatives, or purchasing institutions. This step is vital to ensure that livestock groups do not rely solely on individual sales with low bargaining positions.

The threats of rising feed prices and competition from external meat supplies can be anticipated through local feed efficiency and improvements in livestock quality. The use of fronds, leaves, palm kernel cake, and sludge must be directed toward more measurable feed processing. Consequently, the potential for oil palm integration will not only be a source of inexpensive feed but also a foundation for increasing the productivity and competitiveness of local livestock group enterprises.

Conclusion

Internal and external factors play a significant role in the development of semi-intensive beef cattle farmer groups integrated with oil palm plantations in Central Bangka Regency. The total IFE score of 2.801 indicates that the internal condition of the livestock farmer groups is moderately strong, with primary strengths including member motivation, land carrying capacity, and the utilization of oil palm by-products as feed.

The total EFE score of 2.680 indicates that the external environment is sufficiently supportive, with primary opportunities arising from government policy support, the role of extension agents, and beef market demand. Business development needs to be directed toward improving access to capital, strengthening feed technology, enhancing institutional capacity, and developing collective marketing systems.

Suggestions

Local governments and extension agents should strengthen assistance in feed technology, access to capital, and group institutional frameworks. Livestock groups need to improve business record-keeping, enhance the technological utilization of oil palm by-products, and establish collective marketing to increase the bargaining position of farmers.

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