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EMPOWERMENT OF RURAL CATTLE FARMERS: INTEGRATING SUSTAINABLE PRACTICES AND IMPROVED MARKET ACCESS FOR LIVELIHOOD ENHANCEMENT

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ABSTRACT:

Community empowerment through micro-enterprise development can be an effective instrument in poverty alleviation. This study will review sustainable farming practice implementation and improved market access with regard to cattle farmers in Klungkung District, Bali, where there exists strong cultural affinity towards natural conservation. This research, using the theory of sustainable development, which links economic, social, and environmental variables, identifies those interventions that would enhance farmers' management capacity and improve market access. The approach adopted in the study is a qualitative one with a descriptive-analytical design, in which purposive sampling is done from 15 cattle farmers and 5 stakeholders who are involved in livestock management. The results showed marked improvements in health management of the livestock, business planning, and marketing strategies after the intervention. Besides, environmentally friendly agricultural practices, such as the use of organic waste as fertilizer, are also adopted. Marketing groups were formed where farmers could sell directly, thus minimizing dependence on intermediaries, enhancing bargaining power, and improving profit margins. The study has pointed out that the active participation of farmers and stakeholders is very crucial for the success of this empowerment program. Longitudinal studies should be conducted to further monitor the sustainability of the program regarding its long-term impact.

Keywords: *Community Empowerment, Cattle Farming, Sustainable Farming Practices, Market Access*

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1. INTRODUCTION

Community empowerment through the development of micro-enterprises remains a powerful strategy for poverty alleviation in rural areas. Cattle farming remains a cornerstone of rural livelihoods, enabling households to diversify their income, improve food security, and enhance overall economic resilience (Ashley et al., 2018). However, despite its importance, the sector still struggles to achieve optimal productivity and welfare outcomes. Before the implementation of any structured empowerment program, most cattle farmers in rural Indonesia earned minimal income, reflecting the urgent need for interventions that integrate sustainable agricultural practices to enhance their economic well-being (Alta et al., 2023). This situation is exacerbated by ongoing shifts in the food industry, which now demands more sustainable and efficient business practices due to concerns over food security and environmental sustainability, combined with technological disruptions (Sedana Putra P et al., 2024).

While cattle farming contributes not only to the supply of meat and milk but also to food security and quality of life, farmers face persistent challenges—particularly limited access to updated knowledge and best practices (Mumba et al., 2024). This knowledge gap prevents the adoption of more efficient production methods. Compounded by limited exposure to technology and market information, many farmers continue to rely on traditional, inefficient techniques, ultimately reducing their income and long-term viability (Musdhalifah, 2024; Mario, 2019).

Even in the digital era, access to information remains unequal. Though social media is growing in Indonesia, many rural farmers remain excluded from digital knowledge-sharing ecosystems (Andra Wirawan et al., 2024). Furthermore, lack of formal training in business management—such as record keeping, financial planning, and marketing—hampers farmers' ability to optimize their enterprise (Efu & Simamora, 2021). According to Human Capital Theory (Arifin, 2023), education and skill development are key drivers of individual productivity and community income. Therefore, bridging these knowledge gaps through regular training—such as responsible antibiotic use (Ozturk et al., 2019)—can lead to healthier livestock and improved outcomes.

In the context of project management, success is commonly understood as the ability to complete initiatives on time, within budget, and according to quality standards (Kariana, 2024). However, in rural livestock farming, the main constraint often lies not in resources alone but in the lack of managerial knowledge and strategic decision-making capacity (Warsito et al., 2020). Many cattle farmers also lack formal training in key business areas such as financial record keeping, enterprise planning, and marketing, which significantly limits their ability to optimize operations and improve income (Efu & Simamora, 2021).

Another chronic issue is price fluctuation, particularly during holidays, when farmers' dependence on middlemen exposes them to unstable income levels (Ilham & Saptana, 2019). This condition shows that easy access to markets does not automatically translate into higher income for cattle farmers, as the lack of bargaining power and reliance on intermediaries continue to limit their profits (Bila et al., 2022). From the perspective of Market Theory, proper infrastructure and market access are essential for building price stability and strengthening farmers' negotiating position (Perdana et al., 2023). Involvement in collective marketing groups may offer opportunities for farmers to bypass intermediaries and sell directly to buyers.

Unproductive farming also triggers environmental degradation, such as soil damage and water pollution. Sustainable water management systems like irrigation have been shown to address these environmental concerns (Tuomisto et al., 2017). Based on the Theory of Sustainable Development, balancing environmental, social, and economic dimensions is essential for long-term community welfare (Hutajulu et al., 2024). Livestock practices, therefore, must be reframed within sustainability goals.

To further understand internal capacities, this study also draws on the Resource-Based View (RBV), which emphasizes the role of valuable, rare, and inimitable internal resources—such as knowledge and technology access—in achieving competitive advantage (Madhani, 2010). These internal capabilities shape the productivity of livestock businesses. Additionally, the Diffusion of Innovations Theory suggests that the success of new farming practices depends on perceived benefits and ease of adoption (Bate et al., 2018), highlighting the need to design interventions that are contextually relevant and easily implementable by rural farmers.

This study thus aims to investigate the impact of empowerment strategies that enhance management capacity, improve market access, and promote sustainable farming practices in rural cattle farming communities. It focuses particularly on how gaps in management skills and limited market integration reduce income potential (Jensen et al., 2018; McGuinness & Ortiz, 2021). Drawing from the Sustainable Development Theory and RBV, the study examines whether transformative change can occur when livestock farmers are equipped with training, access to technology, and collective marketing strategies (Nettle et al., 2025). It also evaluates whether these interventions enhance collaboration among farmers and between farmers and market actors. Ultimately, this research seeks to offer a holistic approach to building a more productive and sustainable livestock ecosystem in rural Indonesia.

2. METHOD

Culture is a fundamental aspect of humanity, shaping environmental interaction through language, traditions, beliefs, and the complex systems that define identity and social interactions (Lasmi et al, 2024). Bali was chosen as the research location due to its strong cultural ties with the preservation of nature, providing a unique setting to explore the dynamics of sustainable livestock farming within culturally rich communities.

This study employed a qualitative approach with a descriptive-analytical design, which is considered appropriate for exploring complex socio-cultural dynamics in natural settings (Lim, 2024). Qualitative inquiry allows for a deep understanding of participants' experiences and perspectives, particularly in rural communities where informal knowledge systems play a key role in agricultural practices. The focus of the study was to explore and analyze the challenges, practices, and potentials of cattle farming in Klungkung, Bali, as well as to assess the impact of implementing sustainable farming practices and improving market access on farmers' welfare.

Data collection was conducted between June and August 2024, covering a three-month period that included field visits, interviews, and group discussions. Participants were selected using purposive sampling to ensure relevance to the research objectives. The inclusion criteria were: (1) cattle farmers with at least five

years of experience, (2) individuals actively involved in managing their livestock business, and (3) key stakeholders such as representatives from local agricultural offices, NGOs, and market actors supporting livestock management.

The final sample consisted of 15 cattle farmers (11 men and 4 women), and 5 stakeholder representatives (2 from local government offices, 1 NGO representative, and 2 market actors). Data were collected using semi-structured interviews, focus group discussions (FGD), and direct observations. Interviews were conducted with all 20 participants, providing individual-level insights into livestock practices, economic challenges, and perceptions of sustainability.

Two FGDs were held in July 2024, each involving 6–8 participants. The first group included 6 farmers from two different sub-villages (banjar) and focused on daily livestock routines, feed management, and manure utilization. The second group included 4 farmers, 2 government officials, and 2 NGO/market representatives, exploring topics related to policy support, market structure, and sustainability challenges.

Field observations were carried out at 10 farm locations throughout the study period, documenting infrastructure, animal treatment, waste management practices, and interactions during livestock transactions. These multi-method data collection strategies were chosen to triangulate findings and capture both individual and collective dynamics within the cattle farming system.

3. RESULTS AND DISCUSSION

The results of this study reveal clear improvements in the welfare and operational capacity of cattle farmers in Klungkung, Bali, following targeted interventions. These interventions included structured training in livestock health management, business planning, sustainable farming techniques, and the facilitation of direct market access through the formation of collective groups.

3.1 Pre-Intervention Conditions: traditional methods and livestock health issues

Prior to the intervention, most farmers relied on traditional practices passed down through generations, with limited exposure to modern livestock management techniques. Cattle were kept in unsanitary enclosures, and feeding largely depended on household food scraps and foraged vegetation, resulting in poor nutritional outcomes. Veterinary care was reactive, with almost no preventative measures in place, and recordkeeping was virtually nonexistent.

> *"We used whatever feed was available near the house. We rarely used vaccines or supplements. When the animals got sick, sometimes they recovered, sometimes they died." (Respondent 6, male farmer, age 45)*

In the pre-intervention assessment, 9 out of 15 farmers reported experiencing cattle deaths in the previous year. Additionally, 4 farmers highlighted reproductive challenges, such as delayed or failed pregnancies, and slow weight gain. Common symptoms included bloating, hoof rot, and respiratory infections, all of which negatively impacted productivity. Seven farmers reported consistently failing to meet their target market weight for cattle.

3.2 Post-Intervention Improvement

Following structured training sessions held between June and August 2024, all 15 participating farmers adopted at least one new livestock management technique, such as regular deworming, the use of probiotics, improved hygiene, and enclosure maintenance. They were also provided with printed guides and connected to local veterinary services.

> *"After the training, I began using probiotics and cleaning the pen regularly. Now my cattle are healthier and gaining weight faster." (Respondent 3, female farmer, age 39)*

Eleven farmers developed basic business plans with support from facilitators. They began recording feeding schedules, health monitoring data, and financial transactions. Marketing capabilities also improved—10 farmers joined newly established marketing groups, reducing reliance on middlemen.

As a result:

- The average weight of cattle at sale increased by approximately 18%, based on self-reported records.
- Livestock mortality dropped from an average of 3.2 deaths per year per farmer to 0.8.
- Four farmers reported first-time access to premium markets such as Hindu festivals and hotel chains.

3.3 Adoption of sustainable farming pratices

Another key achievement was the implementation of environmentally sustainable practices. At least 9 farmers began composting cattle waste with household organic material, reducing odor and generating supplementary income from fertilizer sales.

> *"Previously, the waste just caused bad smells. Now, we sell solid fertilizer to neighbors." (Respondent 7, male farmer, age 50)*

Observations at 6 of 10 farm sites confirmed reduced runoff and improved drainage conditions. Stakeholders confirmed the ecological value and practical feasibility of the new waste management system.

3.4 Role of stakeholders and collective action

Twelve farmers and all five external stakeholders were identified as playing instrumental roles in the success of the project. Specific actions included:

- Government officials provided vaccine access and supported logistics for market connections.
- NGOs delivered training modules on business literacy and environmental farming.
- Farmers organized peer-sharing sessions, meeting monthly to assess progress and troubleshoot issues.

Two farmer marketing groups were formed during the program, each with 6–8 members. These groups enabled bulk sales directly to slaughterhouses and restaurants, improving bargaining power and increasing profit margins per head of cattle by an estimated 12–20%.

3.5 Indicators of success and long-term implications

The Four main indicators were used to assess success:

- Decreased livestock mortality rates.
- Increased average sale weight of cattle.
- Implementation of formal business planning and recordkeeping.
- Active formation and participation in collective marketing groups.

The participatory research approach—through interviews, focus group discussions, and field observations—proved effective in aligning the intervention with community needs. This approach facilitated the integration of traditional knowledge with modern practices.

These findings provide a foundation for developing more robust community-based programs in rural development and sustainability. Future studies are encouraged to conduct longitudinal monitoring of income, livestock health, and ecological outcomes over the next one to two years. Continued institutional support is essential to sustaining the gains and refining intervention models across different cultural and environmental settings. Figure 1 illustrates the pivotal role of health monitoring in improving livestock productivity and farmer welfare, reinforcing its significance as a cornerstone of successful and sustainable cattle farming practices.

Figure 1. Livestock health monitoring: the key to successful farming

4. CONCLUSION

This research identifies the integration of sustainable farming practices and improvement in market access as key strategies to improve the livelihoods of rural cattle farmers in Klungkung, Bali. Targeted interventions included management training, health management practices, and the establishment of marketing groups that resulted in significant improvements in farmers' livestock management, productivity, and profitability. Also, with the introduction of sustainable farming techniques, environmentalist-friendly practices include organic waste to be used as fertilizers that benefit both farmers and the local ecosystem.

The bottom-line from the findings on economic and community empowerment involves showing how rural communities can gain higher economic stability. This study empowers farmers through the provision of knowledge and tools to conduct efficient management, business planning, and marketing of their products. Direct sales channels reduce intermediaries, thus increasing the bargaining power of farmers, hence their profit margin and more assured sources of income. In addition, the aspect of sustainability in farming will result in environmental conservation by reducing the ecological footprint brought about by the livestock farming business. This corresponds to the concept of sustainable development, which refers to growth that is in balance with economic, social, and environmental considerations.

This required the active participation of all relevant stakeholders: agricultural offices, NGOs, and market actors alike. Grouping beneficiaries into marketing groups created a sense of cooperation among farmers, which had the effect of making them more capable of facing their problems and developing stronger, closer-to-home networks. Such cooperation has increased community resilience to natural shocks and supported longer-term development goals in this area. Moreover, the participatory approach utilized in this research can also serve as a model for community-based development projects in other areas with similar socio-economic and environmental conditions.

4.1 Limitations of the study

The research was conducted in Klungkung, Bali, an area with unique cultural and environmental conditions; thus, the findings may not be universally applicable. The sample size in the study was relatively small, considering 15 farmers and 5 stakeholders, and cannot be representative of the total population of cattle farmers. Moreover, while the study has given positive short-term results, its ability to assess the long-term sustainability of the interventions is limited. Other external factors not accounted for in the study include changing economic situations, policy changes, and even disasters that may affect the results of these interventions.

In this regard, the study calls for an extension of research in other areas as well and including a higher number of samples in the survey in order to ensure valid generalization. Longitudinal impact assessments along with continuous monitoring is also to be made to establish whether or not marketing groups are functional in order to make adjustment towards sustainability. Moreover, it is to be taken into consideration that external influences may alter the outcomes for such a programme.

This research provides insightful results into the potential of sustainable livestock farming practices and improved market access towards enhanced livelihoods for rural communities. The study gives a model that approaches change from an integrated economic, social, and environmental consideration in attempting to empower the community towards sustainable agriculture, with prospects for wider application in other regions.

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