



EMPOWERING FOOD SOVEREIGNTY AND SECURITY IN MALAYSIA: A FRAMEWORK FOR RESILIENT AND SUSTAINABLE CHICKEN FARMING IN RURAL COMMUNITIES

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ABSTRACT

Malaysia experienced a shortage of chicken in 2022, leading to a surge in prices and significant strain on the broiler industry. At the same time, the supply chain of the industry was heavily controlled by cartels lead instability in the demand and supply of the industry. To overcome the issue Malaysia need to come out with an alternative model for the industry. One of the models that can be implemented is through the community's involvement in the industry. Therefore, this paper proposes a chicken farming framework that can reduce reliance on external sources and promote self-sufficiency and resilience among community members. It is developed based on a pilot project funded by the Ministry of Finance through a social enterprise development initiative, supported by the Johor State, Batu Pahat District Veterinary Office, local industry players, suppliers, and local entrepreneurs. The project is located in Parit Sulong, Batu Pahat, Johor with the involvement of 12 participants or small chicken farmers. Upon completion of three farming cycles, the participants were able to generate income increment from 5-10%. Based on that, this paper proposes a new framework focusing on empowering small-scale chicken farmers as new suppliers within the community through enhanced access to resources, capacity-building programs, and sustainable market integration initiatives. This framework can be used to support the sustainability the future of Malaysia's broiler supply chain.

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1. INTRODUCTION

Food sovereignty fundamentally challenges in the agricultural systems as it is driven by power imbalances, capital accumulation, and one-sided agricultural policies. These challenges contributed to poverty, hunger, and food injustice, while also being implicated in the global climate and food crises. Furthermore, the corporate food chain commercialized food, neglecting its significance as a fundamental human right. Other issues in the supply chain practice such as dumping, subsidization, biopiracy, market volatility and resource appropriation, have lead to unfairness and inequality for the poor, indigenous groups and rural labourers (Martínez et al., 2019; Rowe et al., 2024).

In fact, the global food system has been characterized by imbalances and inequalities, with marginalized communities often bearing the brunt of the challenges (Schmitt et al., 2022; Zelber-Sagi et al., 2024). The right of people to determine their own food and agricultural food or food sovereignty, has emerged as critical issues that need to be addressed in a global food system.

In Malaysia, the poultry industry has played a significant role in shaping the country's food landscape, but its impacts on local communities and food sovereignty remain complex and multifaceted. Moreover, the influence of large-scale poultry producers have raised concerns on the ability of local communities to maintain control over their food system (Zainol et al., 2021; Siwar et al., 2022). At the same time as growing population and changing dietary preferences have necessitated a greater emphasis on food crop production, including the poultry industry. Chicken production has been a significant component of livestock production in many parts of the country, often serving as a means of livelihood and economic empowerment for rural and peri-urban households (Conteh et al., 2019; Oljira, 2019; Desta, 2021). At the same time, the industrialization of the poultry sector has led to concerns about the concentration of power and the marginalization of smaller producers (Zainol et al., 2021).

Until today, Malaysia is still heavily dependent on imported feed, primarily corn and soybeans, which increases production costs and vulnerability to global market fluctuations (Lim, 2022; Sharifulden, 2022). This dependence on imported inputs not only increases the industry's vulnerability to global market fluctuations but also limits the industry's ability to be self-sufficient, especially for small-scale farmers (Darko et al., 2020; Stringer et al., 2020; Sharifulden, 2022). Therefore, there is an urge need to counter the issues by empowering the rural community by integrating production and social components at the ground level that are attributed to sustainability and resilient food production.

2. LITERATURE REVIEW

2.1 Malaysia poultry ecosystem at a glance and its challenges

The poultry market in Malaysia constitutes a vital segment of the nation's food industry. The population of chickens in Malaysia was the highest compared to other livestock, amounting to 296,100,613 birds in 2022 as presented in Table 1, surpassing ducks, pigs, and ruminants such as cattle, goats, and buffaloes. The production of

poultry in Malaysia in 2022 was 1,652,980 million tonnes, making it one of the largest in the country's livestock sector (Department of Veterinary Services, 2023).

Table 1: Population of livestock in Malaysia in 2022

Livestock	Chicken	Duck	Buffalo	Cattle	Goat	Sheep	Swine
Population	296,100,613	9,496,739	67,959	733,655	332,306	137,963	1,504,505

Source: Department of Veterinary Services, 2023

Due to the high demand for chicken meat in Malaysia at the time, the government, through the Ministry of Agriculture and Food Industries, issued permits allowing the import of 36,486 tons of chicken carcasses from countries such as Thailand, China, Brazil, and Denmark during the first four months of 2022 to balance the increasing demand (Ahmad, 2022). However, there were still some areas in Malaysia that experienced shortages of chicken meat, especially in morning markets and supermarkets and a sharp increase in chicken prices due to the exceptionally high demand (Awang, 2022; Noh, 2022).

The poultry market continues to exhibit resilience and growth, propelled by the substantial demand for chicken and eggs, which are staples in the Malaysian diet. Factors such as population growth and changing dietary preferences are expected to sustain the poultry markets's positive outlook. The poultry market in Malaysia is expected to continue its growth trajectory in the future.

Several factors drive its development. First, poultry is a popular and economical source of protein among Malaysia's growing population. Rising incomes and urbanization are fuelling poultry consumption. Furthermore, the government's assistance for the domestic chicken business, including subsidies and biosecurity measures, is projected to boost production. The continued shift toward healthier eating patterns is also contributing to increased demand for chicken, which is viewed as a healthier and more lean protein source.

The current frameworks of Malaysia's poultry industry are largely centralized, focusing on large-scale production and import-reliant supply chains. While this model efficiently meets demand, it undermines the goal of food sovereignty by making the nation dependent on external markets for essential inputs like feed (Bottriell, 2023; ESCAP, 2023). The existence of cartels in the broiler industries indicates the nation's unpreparedness to address the situation. The industrialization of chicken production entails numerous challenges, including the potential wipeout of flocks from disease to absorbing potential price hikes from the external market (Jamaludin et al, 2023).

Government policies tend to prioritize large-scale production, frequently neglecting the crucial need to foster resilience at the local level. The centralization of the industry also leads to inequities, with small-scale farmers struggling to compete and contribute meaningfully to national food production, thus limiting their role in enhancing food sovereignty (Shattuck et al., 2018; Corvo, 2020).

Addressing these challenges requires a multifaceted approach that involves a new framework at the community level. One potential solution is through the establishment of community-based agro-entrepreneur models, where local farmers and communities work collaboratively to develop sustainable and self-sufficient poultry production systems. A new community-level framework can be more effective in promoting food sovereignty by decentralizing poultry production and incorporating sustainable practices.

The framework prioritizes the involvement of farmers within the local community in the integration of the supply chain model, promoting cooperative models in which the communities share resources, knowledge, and markets. At the same time, the emphasis is given on the utilization of local resources such as food waste, insects, local crops like palm kernel cake, etc.

This approach contrasts with the current model in the poultry industry which heavily relies on imports and centralized large-scale production. Moreover, the proposed framework can foster a wider and greater connection between producers and consumers, ensuring food security while addressing environmental and health concerns through sustainable localized practices.

3. METHODOLOGY

3.1 Community-based chicken farming framework

Community-based poultry farming frameworks in other countries have been proven to contribute to valuable insights for agriculture food development to be more resilient and sustainable. The frameworks emphasize of the use of local resource, smallholder empowerment, and reducing dependency on external inputs. In Uganda, for example, smallholder poultry production cooperatives have successfully boosted local food security and income generation by allowing small-scale farmers to pool resources, share knowledge, and access markets more effectively (Sentumbwe et al., 2019). While in Brazil's agroecological poultry farming approach integrates farming into diversified agricultural systems, focusing on locally adapted chicken breeds requiring minimal inputs. This model empowers rural communities by allowing them to maintain control over production and distribution, increasing local food security (Altieri et al., 2011). Similarly, in India, self-help groups (SHGs) of women farmers have been a cornerstone in promoting community-based poultry farming. These SHGs often supported by government and NGOs, offering microloans, training, and resources to empower women to raise poultry at a local level (Dash et al., 2018). This decentralized approach fosters economic independence and food security, empowering marginalized groups within the poultry sector.

Based on the success frameworks of a few countries, this paper proposed a new framework based on a pilot that provides a holistic view of building resilient, sustainable chicken farming ecosystems that enhance food sovereignty in rural communities. The framework integrates technical, environmental, and social dimensions, offering a blueprint for rural areas to become more self-reliant and capable of withstanding external shocks. The framework is able to serve as a foundation for policy development and community-led initiatives that ensure long-term food security.

Figure 1 illustrates a structure designed to facilitate the advancement of chicken farming within the community by implementing principles of sustainability and circular economy. The figure delineates a comprehensive intervention plan aimed at promoting sustainable chicken farming and improving livelihood outcomes within a community.

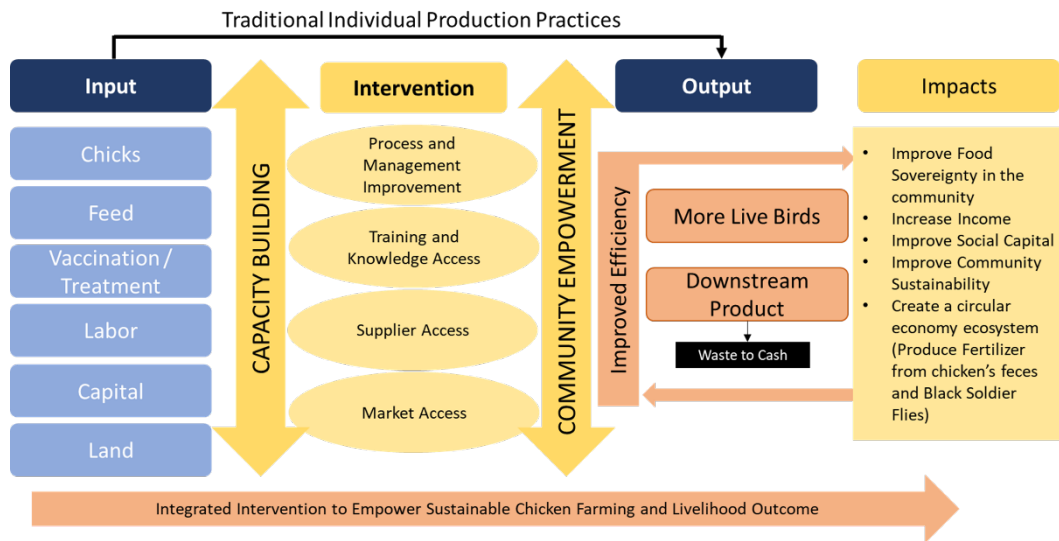


Figure 1: Proposed resilience framework for sustainable chicken farming in the rural community

Source: Adapted from Birhanu et al (2021) with the adaptation of the poultry farming landscape in Malaysia and also the preliminary research by the author

The framework focuses on process innovation rather than traditional small-scale poultry farming practices that focus solely on the number of broiler chickens that can be sold at any given time. This initiative emphasises the comprehensive development of the poultry farming industry for small-scale farmers systematically through strategic interventions and management, training and knowledge access, access to farming resources, and market access. The workflow begins with the Input phase, which identifies the essential resources needed for the project, including chicks, feed, vaccination and treatment, labour, capital, and land. These inputs form the foundation for the subsequent interventions to build community capacity.

In the Intervention phase, to facilitate community empowerment the project focuses on key areas which include process and management improvement, training and knowledge access, supplier access, and market access. These aspects aim to enhance the efficiency of chicken farming operations, which is essential for the community's long-term success.

As a result of these interventions, the output phase is characterized by two primary outcomes: an increase in the number of live birds and the creation of downstream products. These downstream products involve transforming waste, such as chicken faeces and Black Soldier Flies, into valuable resources, effectively turning waste into cash. This approach not only increases the productivity of the chicken farming activities but also adds value to what would otherwise be waste.

The diagram highlights the broader Impacts of the project at the end of the project, which includes improved food sovereignty within the community, increased income, enhanced social capital, and better overall community sustainability. Additionally, the project contributes to the creation of a circular economy ecosystem by producing fertilizers from waste, further promoting sustainable practices. This integrated approach ensures that the community is empowered to achieve greater self-sufficiency and resilience through sustainable chicken farming.

This model considers project inputs, interventions, and desired outcomes, all of which help to improve the community and the availability of chicken in a particular region. The approach consistently strongly emphasizes community empowerment and capacity building, which are crucial to its success. With comprehensive involvement, this model has the potential to be replicated by other communities to ensure the project objectives are achieved.

4. PILOT PROJECT OF CHICKEN FARMING

4.1 Background of community-based chicken farming in Parit Sulong, Johor

The community chicken farming project through the do-it-yourself (DIY) mechanism by rural communities in Johor, specifically in Parit Sulong, Batu Pahat, is a social enterprise development initiative by Universiti Tun Hussein Onn Malaysia through a student startup company. The aim is to improve the socio-economic status of communities, especially in rural areas affected by the COVID-19 pandemic, through community chicken farming by adopting the best and sustainable farming practices. The project participants were selected through a screening process involving interviews, interest tendencies, and suitability of the location for the project in terms of social and environmental aspects.

This project was initiated in 2022 with seed funding from the Ministry of Finance Malaysia through the Social Enterprise (SE) Grant initiative (SE-MOF) to establish a sustainable enterprise capable of generating its income innovatively, by creating job opportunities and income generation, especially for underprivileged communities. Through this project, 12 small-scale farmers were selected to participate and were provided with initial capital, access to skill development and business courses, opportunities to undertake pilot projects, and involvement in improving project operations alongside the project secretariat. This group of participants eventually formed a social enterprise entity through a cooperative, ensuring the project's sustainability. The initiative was then expanded to a higher level with support from relevant government agencies through the establishment of a registered social enterprise.

Various government agencies and existing businesses are involved in this project as an effort to further enhance the feasibility of the project on the ground through various forms of support in terms of technical aspects, experience, and the marketability of the products generated through this project.

4.2 Community-based training and competency enhancement through practical on-the-ground training

As a starting point, various training series were designed to build the competencies of the participants. The selected participants received technical support, equipment, and start-up capital to run their chicken farms. At the same time, local community members interested in venturing into chicken farming with their capital are also provided with training and support. The specific support received by small-scale poultry farmers throughout this program includes:-

1. Courses and training in technical management and business related to sustainable poultry farming with best farming practices, provided by the State Veterinary Department and successful local entrepreneurs.

2. Participants are also experienced in learning real farming through an 'on-the-job training' approach, which includes sharing experiences between experienced farmers and small-scale farmers.
3. Participants are taught technical skills in building chicken coops and managing daily coop operations to ensure they have basic skills and the capability to scale up their farming operations in the future.
4. Entrepreneurial elements are also instilled among small-scale farmers so that they can sell their poultry and are not overly dependent on existing markets, allowing them to earn more income and access broader market opportunities.

4.3 Classroom training

The comprehensive training as presented in Figure 2 included several courses:

1. Potential of poultry farming business;
2. Planning and Management Model of Poultry Farming;
3. Nutrition and waste management of broiler;
4. Disease control and vaccination of broiler;
5. Financial operations and management of small farmers
6. Livestock slaughtering courses and halal management in livestock farming; and
7. Business management courses, business digitization, and marketing.



Figure 2: Series of training and workshops conducted for small farmers

All these training sessions are conducted by certified and experienced instructors from relevant government agencies, local entrepreneurs, university lecturers, and poultry industry professionals. This holistic approach ensures that small farmers not only gain technical skills but also acquire the knowledge needed to sustain and grow their

poultry businesses. By addressing both production and commercialization, this training increases farmers' self-sufficiency, reducing dependence on external inputs and intermediaries (Sentumbwe et al., 2019).

4.4 Hands-On training

The training also involves hands-on learning in real-world environments, allowing farmers to gain experience incrementally through a three-stage process that simulates different scales of poultry farming.

At the initial stage, small-scale farmers are provided with 100 chicks along with inputs to carry out farming activities at their respective locations, allowing them to practice the farming skills taught in the arranged courses, such as care, feeding, maintenance, and the implementation of best farming practices. This phase also provides an opportunity for them to gain firsthand experience as small-scale farmers. Additionally, they are given access to consult on any arising issues during the farming process, with intervention from relevant parties when needed.

Chickens successfully raised according to market specifications are sold to traders at current market prices, with assistance from the local farmers' organization. The proceeds from the sale are used as working capital for the next cycle, and profits from this phase are distributed to the small-scale farmers based on the weight of the chickens sold to the traders.

In the second round of poultry farming, the number of chickens raised increased, taking into account the achievements and experience gained from the farmers' first attempt. The results in the second round are significantly better than the first, in terms of chicken weight, cost control, and the number of chickens sold. For the next round, the small-scale farmers are allowed to rear a total of 499 chickens, the maximum number set by the State Veterinary Department for small-scale poultry farming.

This incremental approach reduces risks and builds confidence, allowing farmers to apply theoretical knowledge in real farming conditions. With each phase, farmers become more skilled, leading to higher survival rates for their flocks and increased productivity, which contribute to food sovereignty and rural economic development.

5. RESULTS AND DISCUSSIONS

5.1 Proposed framework for sustainable community chicken farming for rural community

Based on the pilot project this paper proposed a new framework that can be implemented to expand and sustain the chicken supply chain in Malaysia. The model gives a comprehensive vision of developing resilient, sustainable chicken farming ecosystems that improve food sovereignty in rural areas. The framework incorporates technological, environmental, and social components, providing a plan for rural communities to become more self-sufficient and capable of withstanding external shocks.

The framework emphasizes process innovation above traditional small-scale poultry farming approaches, which focus primarily on the number of broiler chickens that may be sold at any time. This effort focuses on the systematic growth of the poultry farming business for small-scale farmers through strategic interventions and management, training and information access, access to agricultural resources, and market access.

5.2 A multi-stakeholder approach to support the aspirations of comprehensive community development

Cooperation from various key stakeholders is required to ensure its impact can be felt by the community and global development to ensure the success of this project (Maryono et. al, 2024). A multi-stakeholder approach is employed to ensure that all planning and execution can be carried out more smoothly and effectively with the involvement of various parties in the project's implementation.

Figure 3 illustrates a collaborative model focused on a Community Social Enterprise for Small-scale Poultry Farmers, demonstrating the interconnected relationships between key stakeholders: the government, universities, private sectors, and business entities. At the centre of this model is the community social enterprise, which serves as a platform to empower small-scale poultry farmers by facilitating support and collaboration from various sectors.

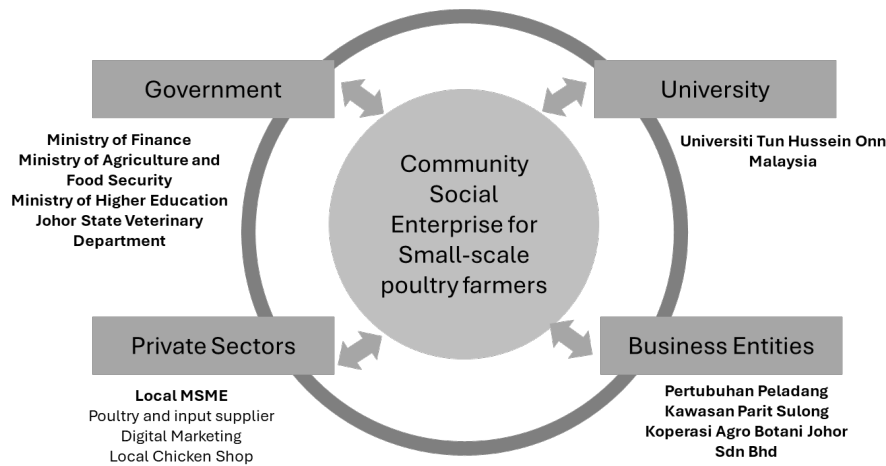


Figure 3: Multi-stakeholder approach to support the development of community social enterprise from small-scale poultry farmers

Source: Author

The government plays a crucial role in providing regulatory oversight, developing supportive policies, and potentially offering subsidies or incentives to promote sustainable agricultural practices within the enterprise. This partnership ensures that the social enterprise operates within a favourable policy environment while contributing to national agricultural goals. The early funds for the development of this project were provided by the respective government entities, which were then utilized as seed capital and to cover associated expenses. Furthermore, supplementary assistance, including advisory services and technical support, is offered to ensure the project's seamless operation.

Universities contribute by bringing research and innovation to the table, offering valuable knowledge transfer and educational programs. Through research on the best practices, sustainable farming techniques, and modern technology, universities equip small-scale farmers with the necessary tools to improve their operations, leading to greater efficiency and sustainability.

The private sector encompasses a range of businesses and industries that offer essential services, products, and infrastructure support. These could include suppliers

of poultry feed, farming equipment, or technology solutions that enhance the productivity and profitability of small-scale poultry farming.

Business entities in the model are likely responsible for creating market linkages, helping to market and distribute poultry products. They play a critical role in ensuring the economic sustainability of the enterprise by facilitating access to larger markets and enabling farmers to generate income from their products.

The two-way arrows between these stakeholders suggest mutual exchange and collaboration. The social enterprise benefits from government policies and regulatory support provides feedback to universities for ongoing research, collaborates with private sectors to improve farming practices, and partners with business entities to access markets. This interconnected model fosters a holistic and cooperative approach, ensuring the sustainability, growth, and success of small-scale poultry farmers within the broader economic and social ecosystem.

This collaborative intervention enhances the flexibility of consulting community poultry farming businesses by diversifying support mechanisms and creating adaptive systems that address local challenges. The closed-loop structure in Social Enterprise (SE) models embedded within the system focuses on optimizing resource use and guiding the community by providing advice on decision-making within a specific locality. This approach enhances flexibility by fostering self-sustaining ecosystems that minimize dependence on external resources and promote circular economies, support local empowerment agenda and optimise resource use.

The community itself enhances business flexibility by promptly responding to local needs, market demands, and resource availability, eliminating the need for external actors. This business model is more resilient to market shocks, more sustainable in resource use, and capable of fostering local economic growth, leading to more self-sufficient and empowered communities. The integration of local knowledge and external expertise ensures that businesses are innovative yet grounded in local realities.

5.3 Development of the supply chain and market access for broiler chickens at the community level

After successfully establishing a group of small-scale farmers and creating a foundational ecosystem for local community poultry farming, the project identifies local suppliers who can provide chicks, feed, and equipment needed for poultry farming within the community. This step is crucial for ensuring a reliable supply of chicks and inputs at the community level while fostering economic spillover within the local community. It helps small-scale farmers obtain farming inputs at competitive prices without compromising on quality.

The project also works closely with local farmers' organizations to ensure that the poultry products can be sold in the local market. The scope of this collaboration includes collecting chickens from small-scale farmers, slaughtering, and selling the poultry products to the community. Additionally, small-scale farmers are allowed to sell their produce directly to residents or traders who can offer the best prices for their products. By-products from poultry farming activities, such as chicken manure, are collected and sold to local farmers for use as fertilizer for crops such as vegetables and oil palm trees. Indirectly, this will provide additional supplementary income for small-scale farmers beyond the revenue from poultry farming.

5.4 The impact on the small-scale farmers community and establishing a sustainable community by empowering food sovereignty

A total of 12 participants took part in this pilot project, all of whom effectively augmented their supplementary income by 5 to 10 per cent following three rounds of chicken farming trials. The majority of participants acknowledge that they acquired a deeper comprehension of optimal broiler chicken farming procedures via the 'learn and do' methodology. Furthermore, ongoing assistance from governmental agencies, academic researchers and local business has enhanced their confidence and motivation to participate in poultry farming.

The initiative of broiler chicken farming by the local community further completes the ecosystem of the local food supply. Previously, most of the residents were involved in cultivating oil palm, vegetables, fruits, and raising ruminants like cows and goats. With the formation of a community group that raises broiler chickens, the local food supply is less dependent on external sources, and the management of farming and slaughtering processes is also assured. This project also supports local entrepreneurs running food-based businesses such as catering and food stalls, where they can sell their farm products at more competitive prices without relying on middlemen.

5.5 Empowering the community through the establishment of small-scale farmer cooperatives to support continuous learning and expand business potential

A social enterprise, Koperasi Penternak Kecil Parit Sulong Batu Pahat Berhad (Small-scale Farmer Cooperatives of Parit Sulong Batu Pahat Limited) was established to support and provide infrastructure and financing mechanisms, particularly in livestock input supply, and output market enhancement, working capital access, technical supports and welfare assistance including social safety. With an enabling environment, the poultry activity learning and improvement process helps the small farmers to improve their lives through a cooperative platform (Jensen and Dolberg, 2002). The ability to farm in a sustainable environment can significantly enhance poultry farming activities and the learning process, thereby helping to lift smallholder farmers' families out of poverty.

This cooperative formation is the first stage to help the marginal farmers come out of the vicious poverty circle. The cooperative will operate as a firm that works for small, collective-owned farmers while supporting social and environmental development in the area (Candemir, Duvallex and Latruffe, 2021).

Through the establishment of the cooperative as a jointly operated social enterprise, small farmers will have access to financial assistance from government bodies set up to protect the interests of cooperatives, namely the Cooperative Commission of Malaysia, through the Tabung Modal Pusingan Koperasi (Cooperatives Working Capital Funds), access to management, business skill development, and exposure to farming technology through the Cooperative Institute of Malaysia (IKMa) and the Malaysian National Cooperative Movement (ANGKASA), as well as business development support from ANGKASA. All these facilities can contribute to the sustainability of cooperative management and further enhance the competency of small farmers in managing organizations, businesses, and welfare management with greater assurance.

Among the facilities offered through the cooperative to small-scale farmers are micro-credit assistance for business expansion and the education of their children,

group insurance for personal and property disasters, contributions during major festive celebrations such as Hari Raya, organisation of community projects, and social and economic development activities for small-scale farmers and the community, which can have a positive impact and provide mutual benefits.

5.6 Empowering Food Security Element Within the Community

Implementing a community chicken farming project in Parit Sulong, Johor, helps to further enhance food security. Before the introduction of this project, local communities relied on sourcing broiler chickens from nearby markets, but now they have an alternative to obtaining broiler chickens from small-scale farmers in their area. Since these small-scale farmers manage and slaughter the broiler chickens within the community, their handling technique provide greater assurance. All the small-scale farmers have also received training on halal slaughter and management from accredited agencies certified by the state religious council.

Moreover, the price of broiler chickens offered by small-scale farmers is also more competitive compared to the current markets, due to the absence of middlemen in marketing broiler chicken products. Local communities can directly purchase the chicken meat from the small-scale farmers at the farm itself. This provides local communities with better alternatives to get chicken at a price that is 10% cheaper than the current market, fresh from the farm, and guaranteed halal.

6. CONCLUSION

The community poultry farming project implemented by rural communities is beneficial for local economic development, especially for the low-income ones, as their market demands a well-organized chicken supply. Implementation of the pilot project in Parit Sulong, Johor is evidence of the potential to implement community-based chicken farming as an income-generation project and economic development for rural communities especially underprivileged people. The effectiveness of this strategy is further strengthened by the technical expertise of the government agencies involved, the strong commitment of the participants, and guidance from experienced entrepreneurs in the poultry industry.

The effective implementation of this model in Parit Sulong, Johor demonstrates its potential for expansion to other appropriate regions in Malaysia especially in rural areas provided there is dedicated project management and effective execution of reform and food sovereignty initiatives.

This project also contributes to poverty alleviation by fostering horizontal technology transfer from industry to the area, providing support for rural development and community empowerment, enabling the utilization of local resources, and promoting local supply lines. This development will eventually enable rural cities to grow by replacing much of the way they've relied on us (cheap labour producing cheap food) into a more sustainable, self-reliant country which in turn will boost more affordable and secured agricultural production in Malaysia.

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