Advances in Consumer Research
https://acr-journal.com/
Volume-2 | Issue-6 | December 2025
Original Researcher Article

Strengthening the Capacity of Community Enterprise Entrepreneurs: A Case Study of the Herbal-Salted-Egg Community Enterprise Group, Chom Bueng District, Ratchaburi Province

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ABSTRACT
This study investigates the operational capabilities and development needs of the Herbal-Salted-Egg Community Enterprise Group in Chom Bueng District, Ratchaburi Province, to propose an evidence-based capacity-enhancement model suitable for community-level agro-processing enterprises. Community enterprises play a crucial role in Thailand's grassroots economic system; however, many continue to face systemic challenges related to inconsistent production processes, inadequate hygiene practices, limited technological adoption, and weak managerial skills. Through a conceptual and case-based methodology, this research integrates empirical lessons from a successful SME model, which demonstrated significant improvements in production efficiency, spoilage reduction, and financial performance through structured interventions. The findings reveal that the community enterprise exhibits capability gaps across ten key operational indicators, including product quality, sanitation, logistics, marketing, and financial readiness, as illustrated in the self-assessment radar chart. These limitations align with problems widely documented in related literature on salted-egg production, food-safety management, and rural enterprise development. Based on the comparative analysis, a five-stage Capacity Enhancement Cycle, comprising diagnostic assessment, skill training, trial implementation, monitoring, and standardization, is proposed as a practical framework for improving product consistency, reducing contamination, strengthening managerial and technical skills, and enhancing market readiness. This framework reflects relevant theories of community-based enterprise development, value addition, and innovation diffusion, demonstrating its potential applicability to other rural food enterprises with similar constraints. Overall, the study contributes a structured, scalable model for strengthening community enterprise capacity and supporting sustainable economic development within Thailand's local agro-processing sector..

Keywords: Community Enterprises, Capacity Enhancement, Herbal Salted Eggs, Rural Agro-Processing, SME Development Model.

INTRODUCTION:

Community enterprises are an important foundational unit within Thailand's economic system, functioning as grassroots business organizations that enhance income distribution, strengthen local resilience, and improve the quality of life of community members. Operated by individuals or groups with shared socio-economic objectives, these enterprises collectively manage key activities such as raw material procurement, production, marketing, finance, and organizational administration. Over time, these operations have evolved into structured groups similar to formal business organizations, covering traditional agriculture, food and beverage processing, weaving, textile production, and savings groups, and are formally registered as either natural or juristic persons (Wutthisarn et al., 2015; Samyot et al., 2016). The Thai government has continuously promoted community enterprise development through legislative mechanisms, including the Community Enterprise Promotion Act B.E. 2548, its amendment B.E. 2562, and related regulations and announcements that govern registration, standards, and representation (Office of the Council of State, 2005; Royal Gazette, 2005, 2019). These legal frameworks, aligned with national strategies and successive National Economic and Social Development Plans (NESDP), emphasize strengthening grassroots economic systems, enhancing community knowledge, and integrating local wisdom with innovation to produce sustainable local enterprises (Royal Gazette, 2006, 2011, 2016, 2022; NESDB, 2010).

Within this national context, community enterprises show a central role in agricultural value-adding, food production, and local product identity formation. Thailand's diverse agricultural resources and its long-standing vision to become the "Kitchen of the World",

reinforced by policy directions highlighted at the 7th APEC Food Security Ministerial Meeting in 2022, create significant opportunities for community-based food producers. These policies support sustainable productivity growth among small and medium enterprises in agriculture, food, and fisheries, promoting food safety, environmental sustainability, and global market access (Board of Investment, 2013; Division of International Agricultural Economics, 2022). Among such food products, salted eggs are a culturally significant and economically valuable preserved food widely consumed across the country. The production of salted duck eggs, a traditional and long-practiced preservation method, has expanded from household production to commercial processing, though inconsistent quality, varying salinity levels, and insufficient hygiene management remain major challenges (Ganesan et al., 2014; Phutharit, 2020).

In this broader landscape, community enterprises producing specialized items such as herbal salted eggs must strengthen their operational capabilities to compete effectively. The Herbal-Salted-Egg Community Enterprise Group in Chom Bueng District, Ratchaburi Province, represents a typical example of a rural agro-processing enterprise with strong traditional knowledge yet limited systematic management, inconsistent product quality, and restricted access to competitive markets. As demand for safe, innovative, and high-quality food products rises, enhancing the production competency, quality control, technology adoption, and managerial skills of such community groups becomes essential for their sustainability. This research, therefore, aims to examine and strengthen the capacity of herbal-salted-egg entrepreneurs through an integrated development framework that aligns traditional production with modern efficiency, food safety standards, and market-driven innovation.

Research objectives

1. To assess the current operational capabilities, production processes, and management practices of the Herbal-Salted-Egg Community Enterprise Group to identify key strengths, weaknesses, and capacity gaps affecting product quality, efficiency, and market readiness.

2. To develop and propose an appropriate capacity-enhancement model for the community enterprise, emphasizing production improvement, hygiene and safety control, technology application, and management skills, by adapting the successful productivity-improvement framework and results demonstrated in the SME case study.

Literature Review

Community enterprise development is grounded in grassroots economic development theory, which views local groups as fundamental drivers of inclusive growth, self-reliance, and community wealth creation. According to this framework, strengthening the productive, managerial, and organizational capacities of community members enhances their ability to generate income, increase bargaining power, and participate more meaningfully in local value chains (Wutthisarn et al., 2015). This aligns with community-based enterprise (CBE) theory, which emphasizes collective ownership, shared decision-making, and the use of local cultural and resource-based assets as mechanisms for sustainable development (Rattananda et al., 2025; Peredo & Chrisman, 2006). In the context of Thailand, these theories are reinforced through national policies promoting community enterprises as essential components of rural economic resilience and grassroots innovation.

Within food-processing enterprises such as herbal salted eggs, the value addition and agro-processing theory is also relevant. This theory explains how transforming raw agricultural materials into higher-value food products enhances income stability, market competitiveness, and product differentiation (Kumar & Kumar, 2020). Salted-egg production further relates to traditional food-preservation theory, which highlights salting as an effective method for reducing microbial activity and extending shelf life (Ganesan et al., 2014). As community enterprises increasingly enter commercial markets, applying technology-adoption theory, particularly Rogers' Diffusion of Innovations, helps explain how small producers adopt new practices, such as mechanized washing or improved hygiene systems, when they perceive clear benefits in efficiency, cost reduction, and product quality.

Several studies support the importance of capacity enhancement in agro-processing and community enterprise contexts. Phutharit (2020) found that standardized saline concentrations significantly improved the consistency and consumer acceptance of salted eggs. Similarly, Waewdao (2008) demonstrated that controlled brine and soil-coating methods improved chemical and sensory properties of salted eggs. Internationally, Ganesan et al. (2014) showed that modifying production steps in salted duck egg processing substantially improved microbial safety and yolk quality. In the broader community enterprise context, Nipon (2022) and Channuwong et al., (2025) emphasized that strengthening managerial skills and production processes increased the competitiveness of Thai community enterprises in regional markets.

Other studies emphasize the importance of training and technology. Boonyanuwat and Suttipong (2021) reported that capacity-building programs in southern Thailand improved food safety practices, enabling community enterprises to expand into new markets. Chayanon et al. (2019) found that productivity training and simple technological enhancements increased output and reduced losses in rural agricultural groups. Likewise, Khumla et al. (2021) demonstrated that community food groups adopting improved sanitation systems and production SOPs achieved higher product quality and buyer confidence. Together, these concepts and prior studies support the need for a structured capacity-development framework, such as the productivity-enhancement model adapted from the salted egg company, to strengthen the Herbal-Salted-Egg Community Enterprise Group in Chom Bueng District. Eventually, the concept framework is shown in Figure 1.

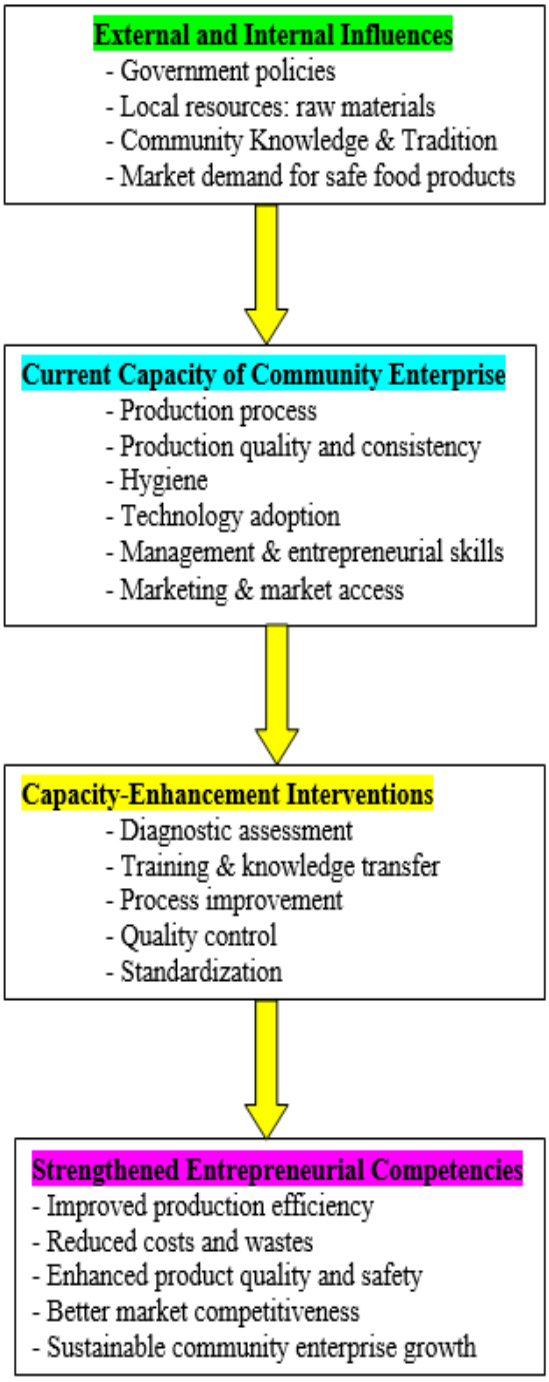

Figure 1 Conceptual Framework

Methodology

This research used a conceptual, case-based methodology focused on integrating empirical evidence from an established SME model into the context of a rural community enterprise. The study begins with a documentary review of operational data, consultation records, SWOT analysis, financial trends, and productivity-enhancement methods documented in the SME case report. This review enables a detailed understanding of efficiency improvement strategies, contamination control practices, and process-standardization methods relevant to salted-egg production.

Building on these insights, the study conducts a contextual adaptation and comparative analysis to examine how SME-level interventions can be scaled and applied to the Herbal-Salted-Egg Community Enterprise Group. Capacity gaps are identified by comparing typical community-enterprise operations with the improved SME model. Finally, a capacity-enhancement framework is developed, incorporating diagnostic assessment, training, process improvement, monitoring, and standardization to strengthen production and managerial competencies in community-based herbal salted egg processing.

Research Results

The findings in this research are divided into 4 parts as follows:

Part 1: Capacity Challenges of the Herbal-Salted-Egg Community Enterprise Group

Based on cross-analysis with the reference case of the herbal-salted-egg community enterprise group and observations commonly found in rural agro-processing enterprises, the Herbal-Salted-Egg Community Enterprise Group faces several operational limitations. These challenges are particularly significant because salted egg production is highly sensitive to hygiene conditions, microbial control, and consistency in brining or salting techniques. The absence of standardized methods leads to inconsistent product quality arising from manual egg washing, uneven salt absorption, and a lack of microbial control measures. Similar to the pre-improvement stage reported in the SME case, where spoilage reached 500 eggs/day, the community group experiences high spoilage levels due to limited knowledge of sanitation and shelf-life extension practices.

Furthermore, the group lacks structured production planning and raw-material management systems, resulting in inefficiency during peak demand and overstocking during low-demand periods. Limited entrepreneurial and marketing skills also constrain market expansion beyond local retail points. In addition, the group struggles with insufficient working capital and low capacity for investment in basic equipment such as semi-automatic washers or sanitation tools, machinery that proved transformative in the SME model, increasing washing efficiency from 8,000 to 20,000 eggs/day. Finally, the community enterprise demonstrates minimal awareness of food safety standards, including Good Manufacturing Practices (GMP), sanitation zoning, or community-level HACCP, which are increasingly essential for market competitiveness.

These constraints parallel the “weaknesses” and “threats” identified in the SME SWOT analysis, particularly limited manpower, low working capital, and market pressure for safer, long shelf-life products, but appear at a more fundamental level within the community enterprise context. The comparison of key operational constraints between the community enterprise and the SME case study is shown in Table 1.

Table 1 Comparison of Key Operational Constraints Between the Community Enterprise and SME (Pre-Improvement Stage)

Category	**Herbal-Salted-Egg Community Enterprise Group**	**SME case study (Before Improvement)**
Product Quality	Manual washing, inconsistent salting, and microbial issues	Contamination issues; spoilage up to 500 eggs/day
Spoilage & Losses	High spoilage due to limited hygiene & shelf-life knowledge	88.75% contamination-related losses before intervention
Production Planning	Unstructured planning, inconsistent supply management	Inefficiencies identified during self-assessment
Technology Use	Mostly manual tools; no automatic washers	No oxidizing disinfectant or optimized washing system before upgrades
Marketing & Entrepreneurship	Limited marketing skills; local sales only	Limited market access; desire to expand
Working Capital	Insufficient funds for equipment	Low working capital; restricted investment capacity
Food Safety Standards	Minimal knowledge of GMP/HACCP	Lack of documented systems before consultant intervention

Part 2: Lessons from the SME Case Relevant to Community Enterprises

The results from the SME case study clearly demonstrate how structured productivity-enhancement interventions can significantly transform small-scale food-processing operations. The SME achieved a 60% improvement in production efficiency by upgrading its washing and handling processes, reducing time loss and enhancing throughput. This improvement was largely attributed to the adoption of an automatic washing system and revised workflow arrangements. Before the intervention, the company produced approximately 8,000 eggs per day, but after mechanization and improved process control, output increased to 20,000 eggs per day, reflecting a dramatic enhancement in operational capacity.

Another major finding is the substantial reduction in spoilage and contamination-related losses. Before improvement, the SME faced significant microbial contamination, resulting in high spoilage levels of up to 500 eggs per day. Through the use of oxidizing disinfectants, improved sanitation, and controlled washing processes, spoilage decreased to only 50 eggs per day, equivalent to an 88.75% reduction in loss. This reduction translated into an estimated 153,360 THB per year in savings from contamination control alone. Combined with efficiency gains, the annual financial benefits exceeded 963,360 THB, underscoring the economic value of systematic production improvements.

Although community enterprises, such as the Herbal-Salted-Egg Community Enterprise Group, operate on a smaller and less capital-intensive scale, the core principles from the SME model are fully transferable. First, standardizing raw material washing is essential, as uneven cleaning directly affects microbial risk and salt penetration. Second, reducing microbial contamination through affordable sanitation practices, e.g., chlorine-based washing solutions. can help minimize spoilage, aligning with the SME's successful contamination-control strategy. Third, improving shelf-life consistency is achievable by adopting simple quality checkpoints and uniform brining or herbal infusion methods. Fourth, training members in productivity and safety techniques, similar to the Kaizen-based training implemented in the SME case, can strengthen skill sets and improve operational discipline. Fifth, establishing simple monitoring and record-keeping systems supports ongoing quality control and decision-making. Finally, the introduction of affordable and appropriate technology, such as semi-automatic washers or basic disinfecting equipment, can significantly enhance output and reduce manual workload without requiring large investments.

Together, these sections provide a practical roadmap for strengthening the capacity of community enterprises, demonstrating that even low-cost, incremental improvements can yield measurable gains in production efficiency, product quality, and economic sustainability.

Part 3: Capacity-Building Components for Community Entrepreneurs and proposed Capacity-Enhancement Model for the Chom Bueng Herbal-Salted-Egg Group

Based on insights drawn from the SME case, this study proposes a unified Capacity-Enhancement Model specifically designed for the operational context of the Herbal-Salted-Egg Community Enterprise Group in Chom Bueng District. The model is structured around five interrelated components—diagnostic assessment, skill training, trial implementation, monitoring, and standardization—each adapted to the limited resources, traditional practices, and scale of rural community enterprises. Together, these components form a low-cost, high-impact framework intended to strengthen production efficiency, hygiene management, product consistency, and managerial capability.

The first stage, Diagnostic Assessment, involves a systematic evaluation of the group's current production practices, sanitation routines, raw-material handling, storage conditions, and internal management processes. Using a simplified version of the SME's 10-indicator assessment tool, this stage identifies critical weaknesses such as inconsistent washing practices, contamination

risks, varied herbal or salt concentrations, and unstructured production planning. These findings form the foundation for targeted capacity-building.

The second stage, Skill Training and Knowledge Transfer, provides members with essential training in hygiene, sanitation, productivity improvement, herbal formula standardization, and basic food-safety principles. Concepts from the SME model, including Kaizen and the "7 Wastes," are adapted into simplified formats suitable for community learning environments. Training in brine control, contamination prevention, and workflow organization equips members with practical competencies to elevate production consistency.

The third stage, Trial Implementation, introduces structured experimentation with improved production methods. These include standardized washing procedures, controlled use of disinfecting agents, calibrated herbal mixtures, and adjustments in salting or curing durations. Small-scale trials allow members to observe changes in spoilage rates, flavor uniformity, and weight consistency, mirroring the SME process that significantly reduced contamination and increased production capacity.

The fourth stage, Monitoring and Adjustment, emphasizes continuous evaluation through checklists, contamination logs, shelf-life assessment, and customer feedback. The goal is to refine processes, adjust herbal formulations, improve packaging, and correct workflow inefficiencies based on real-time data. This iterative approach aligns with the continuous-improvement system applied in the SME case.

The final stage, Standardization and Expansion, focuses on institutionalizing improved practices by creating community-level Standard Operating Procedures (SOPs) for washing, salting, sanitation, storage, and packaging. This stage also prepares the group for basic food-safety compliance, such as GHP or local municipal audits, and supports expansion into wider distribution channels through improved branding and product reliability. By completing all five stages, the enterprise is positioned to achieve higher competitiveness, product consistency, and long-term sustainability.

This section can be concluded in Figure 2.

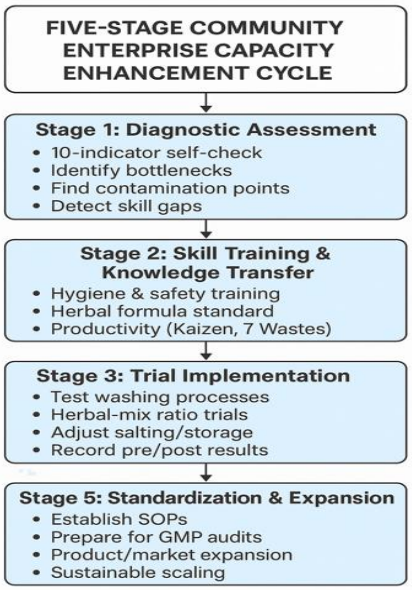

Figure 2 Five-stage community enterprise capacity enhancement cycle

Figure 2 shows the Five-Stage Community Enterprise Capacity Enhancement Cycle, adapted from the productivity-improvement model of SME Intertrade Limited Partnership. The diagram illustrates the sequential stages, Diagnostic Assessment, Skill Training and Knowledge Transfer, Trial Implementation, Monitoring and Adjustment, and Standardization and Expansion, used to strengthen production efficiency, hygiene management, product consistency, and market readiness of the Herbal-Salted-Egg Community Enterprise Group in Chom Bueng District. This model reflects the core interventions that led to significant efficiency gains, contamination reduction, and operational standardization in the SME case, demonstrating its applicability to community enterprise development.

Part 4: Strengthened Entrepreneurial Competencies (Outcome Section)

By progressing through the five-stage cycle, the community enterprise strengthens its internal capabilities across production, quality control, and management. Outcomes include:

1. Improved Production Efficiency – Reduced manual workload, faster washing and processing steps, and smoother workflow organization.
2. Reduced Spoilage and Costs – Lower microbial contamination leads to fewer defective products and better shelf-life consistency.
3. Enhanced Product Quality and Safety – Standardized herbal formulas, controlled brining, and sanitation practices yield more consistent taste, appearance, and safety.
4. Upgraded Managerial and Technical Skills – Members gain structured knowledge in monitoring, problem-solving, and quality assurance.
5. Greater Market Readiness and Competitiveness – With SOPs, improved quality, and emerging compliance with local food-safety standards, the enterprise can access wider markets and build consumer trust.

Collectively, these strengthened competencies support long-term sustainability, economic resilience, and community-level empowerment, reflecting the measurable impacts seen in the SME case.

Discussion

This study demonstrates that the Herbal-Salted-Egg Community Enterprise Group exhibits pronounced capability gaps across all 10 operational indicators assessed in Figure 3. These shortcomings, including inconsistent product quality, weak hygiene control, limited technology adoption, and insufficient marketing capacity, reflect systemic challenges frequently observed in rural agro-processing contexts. The consistently low scores across production efficiency, product standards, management systems, and logistics indicate that the enterprise remains in an early stage of organizational maturity, heavily reliant on traditional practices with minimal integration of modern food-safety and production-management principles.

Figure 3 Self-Assessment of Community Enterprise Capacity

The radar chart findings closely parallel the pre-improvement conditions reported in the SME case study, where SME Intertrade experienced contamination issues, inefficiencies, and high spoilage before adopting structured interventions. The findings of this study stress substantial capability gaps within the Herbal-Salted-Egg Community Enterprise Group, confirming persistent challenges common among rural agro-processing enterprises. The radar chart results, which show low performance across all ten operational indicators, reveal systemic weaknesses in production efficiency, hygiene management, product standardization, logistics, financial readiness, and marketing capacity. These observations align closely with earlier studies on salted-egg production, which emphasize that unstandardized salting, inconsistent sanitation, and inadequate microbial control lead to unstable quality and high spoilage (Ganesan et al., 2014; Waewdao, 2008; Phutharit, 2020). Additionally, the group's limited managerial and technological capabilities mirror the challenges documented in community enterprise scholarship, which identifies internal management inefficiencies and low innovation adoption as key barriers to growth (Channuwong, 2014; Nipon, 2022; Peredo & Chrisman, 2006).

The comparative analysis with the SME case demonstrates that structured capacity-building interventions can significantly improve operational outcomes. SME Intertrade's improvement, particularly the 60 percent increase in efficiency, 88.75 percent reduction in spoilage, and annual savings exceeding 963,360 THB, provides strong empirical justification for adapting the five-stage Capacity Enhancement Model to the community enterprise context. The results affirm Rogers' Diffusion of Innovations theory: when interventions are low-cost, compatible with existing knowledge, and demonstrate clear advantages, they are more likely to be adopted by community groups.

The discussion confirms that the research successfully achieved both objectives. First, the study thoroughly assessed the enterprise's current capabilities and identified gaps in production, hygiene, technology, and management. Second, the research developed a tailored, evidence-based capacity-enhancement model that integrates diagnostic assessment, targeted training, structured trials, monitoring, and standardization to strengthen operational performance. Collectively, these findings demonstrate that the proposed framework offers a practical and scalable pathway for improving community enterprise competitiveness and supporting sustainable rural economic development.

Moreover, the findings of this study present several important implications for strengthening the operational capacity and long-term sustainability of the Herbal-Salted-Egg Community Enterprise Group. First, the results highlight that standardizing production, hygiene, and herbal-salting processes is essential for improving product consistency and reducing spoilage, reflecting the need for community enterprises to move beyond informal practices toward more systematic operations. Low-cost mechanization, such as semi-automatic washing tools, offers a practical means of enhancing efficiency and product quality without requiring substantial investment, which is particularly relevant for small-scale rural enterprises. Some activities can be applied from the findings and used in the Herbal-Salted-Egg Community Enterprise Group in Chombueng district, Ratchaburi province, as shown in Figure 4.

Figure 4 Production activities of the Herbal-Salted-Egg Community Enterprise Group in Chombueng district, Ratchaburi province

At the community level, capability enhancement can strengthen local value chains by enabling the group to supply more reliable, higher-quality products, thus increasing market confidence and income stability for participating households. Improved quality also creates opportunities for expanding into wider distribution channels, supporting national initiatives to elevate community-based food products in line with Thailand's "Kitchen of the World" strategy. From a policy perspective, the findings suggest the need for government agencies and academic institutions to provide targeted training, technical support, and access to small equipment funding. Integrating structured capacity-assessment tools into community enterprise development programs can

help tailor interventions more effectively and ensure sustained capacity growth.

Conclusion

Strengthening the capacity of the Herbal-Salted-Egg Community Enterprise Group requires a systematic and evidence-based approach grounded in both local practice and proven SME productivity-enhancement models. The diagnostic results reveal substantial capability gaps across production efficiency, hygiene management, product standards, technology adoption, and managerial skills—limitations consistent with those widely observed in rural agro-processing enterprises. By adapting the five-stage Capacity Enhancement Cycle originally implemented in the SME case, the community enterprise can transition from traditional, inconsistent production methods toward standardized, quality-driven operations. The integration of training, process trials, continuous monitoring, and SOP-based standardization offers a practical pathway for improving product consistency, reducing spoilage, and enhancing market readiness. Moreover, the findings affirm the relevance of community enterprise development theory, which emphasizes collective capability strengthening as a driver of local economic resilience. Overall, the proposed framework demonstrates strong potential to elevate enterprise competitiveness, support household income stability, and contribute to sustainable community-based economic development in the Chom Bueng District.

Limitations

This study is primarily conceptual and case-based, relying on documentary analysis and comparative evaluation rather than direct empirical data collection within the community enterprise. As a result, the findings depend largely on the accuracy and completeness of the SME case documentation and may not fully capture the real-time operational dynamics of the Herbal-Salted-Egg Community Enterprise Group. The absence of quantitative performance measurements, such as microbial counts, spoilage rates, or productivity metrics, limits the ability to statistically validate the improvements proposed in the capacity-enhancement model. Additionally, the diversity of community enterprises in Thailand means that the model may not be fully generalizable to groups with different resources, product types, or market environments.

Recommendations for Further Studies

Future research should incorporate field-based empirical evaluation to measure the actual impacts of the five-stage capacity-enhancement model on production efficiency, contamination levels, shelf-life stability, and economic performance. Controlled experiments comparing traditional and standardized herbal-salted-egg production processes would strengthen the scientific validity of the proposed interventions. Longitudinal studies are recommended to track organizational learning, market expansion, and enterprise sustainability over time. Researchers should also investigate consumer perceptions of herbal-salted-egg products, including sensory evaluation and willingness-to-pay analysis, to inform product development strategies. Comparative studies across different community enterprises, such as those producing fermented foods, beverages, or preserved products, would help assess the adaptability of the model to diverse local industries. Finally, future studies could explore digital tools, such as mobile applications for quality monitoring or e-commerce platforms, to enhance technological adoption and market access for rural community enterprises

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