

Innovative Model for Driving Agricultural Community Enterprises to Strengthen Local Economic Resilience in Upper Northern Thailand

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Abstracts

This study aimed to (1) examine the innovative competencies required of agricultural extension officers and community enterprise leaders in driving local economies in the upper northern region of Thailand, (2) analyze the factors influencing the development of such competencies, and (3) develop an innovative model that can be practically applied. A mixed-methods approach was employed. Quantitative data were collected from 181 agricultural extension officers across eight northern provinces using a five-point Likert scale questionnaire, which was validated for content validity and reliability (Cronbach's Alpha = 0.911). Qualitative data were obtained from eight supervisors through in-depth interviews and focus group discussions. Quantitative data were analyzed using descriptive statistics, Pearson's correlation, and multiple regression analysis, while qualitative data were analyzed using content analysis.

The findings revealed that the overall level of innovative competency was moderate to high, with strengths in creative thinking and networking, but limitations in knowledge management and research. Significant influencing factors included work experience, organizational support, and participation in professional development training, which collectively explained 48% of the variance. The integration of quantitative and qualitative results led to the development of an innovative model comprising five key dimensions: (1) knowledge and skills base, (2) management and coordination, (3) transformational leadership, (4) marketing and business development, and (5) research and innovation. Four supporting mechanisms were also identified: practical training workshops, coaching and mentoring, pilot projects, and innovation funds. The study recommends that government agencies formulate

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policies and support systems emphasizing the continuous development of innovative competencies at both individual and organizational levels. This includes the provision of training programs and the establishment of regional innovation networks. The outcomes of this research contribute to both academic and policy dimensions by offering a practical framework to strengthen agricultural community enterprises toward economic resilience and sustainability.

Keywords: Innovative Competency; Agricultural Extension Officers; Community Enterprises

Introduction

Community enterprises are recognized as a crucial mechanism for developing Thailand's grassroots economy, particularly in the Upper Northern region, which is endowed with abundant social capital, local wisdom, and diverse natural resources. These resources can be transformed into valuable products or services that generate both economic and social benefits in a sustainable manner. Community enterprises not only serve as a source of income generation but also function as hubs for self-reliance, the strengthening of local networks, and the integration of efforts among government agencies, the private sector, and civil society (Kumthakruea et al., 2025). Nevertheless, agricultural community enterprises continue to face a number of challenges, including limited internal management systems, insufficient access to and application of modern technologies, and difficulties in establishing sustainable and continuous market linkages. These challenges underscore the urgent need to design innovative approaches or models that can enhance competitiveness and enable resilience to the ongoing transformations of the global economy.

In the broader context of structural economic and social change, Thailand is advancing the Thailand 4.0 policy, which emphasizes innovation- and creativity-driven economic development. This policy is also aligned with the United Nations Sustainable Development Goals (SDGs), particularly Goal 1 (No Poverty), Goal 8 (Decent Work and Economic Growth), and Goal 11 (Sustainable Cities and Communities) (Seangyai & Wisutthirattanakun, 2021). Both frameworks highlight the importance of empowering grassroots communities, with community enterprises serving as central actors. Developing an innovative model therefore becomes a key mechanism, not only to foster self-reliance but also to enhance resilience against

economic and social uncertainties, including natural disasters, pandemics, and global market volatility. Without the adoption of a practical and context-specific model, the Upper Northern region may continue to struggle with imbalanced growth and remain unable to unlock its vast economic potential.

Although several studies have examined the competencies of agricultural extension officers and the management of community enterprises, there remains a lack of integrated research that incorporates innovation into a comprehensive, actionable model. Most prior studies have focused on transferring technical knowledge or supporting temporary project-based interventions, which do not provide continuous capacity development for community enterprises. This gap gives rise to three key research questions: (1) What innovative competencies should agricultural extension officers and community enterprise leaders in the Upper Northern region possess to effectively drive sustainable community economic development? (2) What factors influence the success of agricultural community enterprise development, particularly in terms of work experience, organizational support, and opportunities for self-development? and (3) How can an innovative model be designed to fit the specific contexts of local communities in the Upper Northern region? Addressing these questions is critical to developing a model that will strengthen grassroots economic development in Thailand and empower communities in a meaningful and sustainable manner.

Research Objectives

1. To examine the innovative competencies required of agricultural extension officers and community enterprise leaders to drive sustainable community economic development in the Upper Northern region.
2. To analyze the factors influencing the success of agricultural community enterprises, including work experience, organizational support, and opportunities for self-development.
3. To develop an innovative model for driving agricultural community enterprises that can be applied to enhance community capacity and strengthen grassroots economic resilience in the Upper Northern region.

Research Methodology

1. Research Design: This study employed an Explanatory Sequential Mixed Methods Design (QUAN → QUAL), conducted in two systematic phases. Phase 1 (Quantitative): Data were collected through questionnaires administered to agricultural extension officers in order to assess levels of innovative competency and examine key relationships and predictors. Phase 2 (Qualitative): In-depth interviews with supervisors and heads of extension units were conducted to provide deeper explanations of the quantitative findings. The qualitative data were also synthesized to develop a practically applicable innovative model. Integration of findings was carried out during joint interpretation and model construction, using empirical evidence from both phases to triangulate results and validate the consistency of conclusions.

2. Population and Sample: Quantitative phase: Population: Agricultural extension officers from district and provincial agricultural offices across eight provinces in the Upper Northern region (Chiang Mai, Lamphun, Lampang, Phrae, Nan, Phayao, Chiang Rai, and Uttaradit). Sample: 181 agricultural extension officers with at least one year of experience in community enterprise promotion. Sampling method: Simple random sampling from official personnel lists, with proportionate allocation based on the number of officers in each province to ensure representativeness.

Qualitative phase: Key informants: Eight supervisors or heads of agricultural extension units (one per province) with more than 10 years of experience and responsibilities for performance evaluation and monitoring. Sampling method: Purposive sampling, focusing on individuals with direct experience and the ability to reflect on innovative competency dimensions.

3. Research Instruments, Quantitative instrument: A five-point Likert-scale questionnaire divided into four sections: 1. General information (age, gender, education, work experience, organization). 2. Four dimensions of innovative competency: 1) Creative thinking and innovation development. 2) Application of digital technology. 3) Knowledge management and research. 4) Collaboration and networking.

1) Work behaviors related to driving community enterprises.

2) Innovation outcomes/community enterprise progress (e.g., new products, expanded market channels, reduced costs).

Validity and reliability: Content validity was confirmed by three experts (IOC $\geq .67$ for all items). A pilot test with 30 participants in a similar context was conducted, yielding a Cronbach's alpha of 0.911, indicating high reliability.

Qualitative instrument: An in-depth interview guide covering topics such as the role of extension officers in community enterprise development, essential competencies, effective support mechanisms, contextual challenges, and suggested models suitable for local areas. The interview guide was validated by experts and refined through pilot interviews for clarity.

4. Data Collection: Quantitative (Phase 1): Coordination with provincial/district agricultural offices was established to access personnel lists and facilitate data collection. Questionnaires were distributed both in paper form and online (Google Forms). Participation was voluntary and anonymous, with informed consent provided. Data collection lasted approximately four weeks. Participants were informed about objectives, processes, withdrawal rights, and data confidentiality. Qualitative (Phase 2): In-depth individual interviews (60–90 minutes each) and/or small focus group discussions (90–120 minutes) were conducted either at agency meeting rooms or via secure online platforms. Audio recordings were made with consent, supported by field notes. Interviews were transcribed verbatim and analyzed, with strict confidentiality and anonymization. Member checking was performed by sending summaries to participants for verification.

5. Data Analysis, Quantitative analysis: Descriptive statistics (mean, standard deviation, percentage) to describe sample characteristics and levels of innovative competencies. Pearson's correlation coefficients to test relationships between competency dimensions and innovation outcomes ($p < .05 / .01$). Multiple regression analysis to identify predictors of innovative competency (e.g., work experience, organizational support, self-development training), reporting coefficients, multicollinearity checks, and model assumptions (linearity, normality, homoscedasticity, independence).

Qualitative analysis: Content analysis involving familiarization, open and axial coding, categorization into themes/sub-themes, and synthesis of findings. Reliability was ensured by double-coding (two researchers) and calculating Cohen's kappa ($\geq .70$ as target). Member checking and methodological triangulation (quantitative, qualitative, and documentary sources) were also applied. Integration of findings: Quantitative and qualitative results were integrated using a joint display matrix to

identify convergence and divergence. Qualitative insights were used to explain underlying reasons for quantitative patterns, leading to the synthesis of an innovative competency model. The resulting model was then validated by experts (expert validation) and revised for practical application.

Results

The study entitled Innovative Model for Driving Agricultural Community Enterprises to Strengthen Local Economic Resilience in Upper Northern Thailand produced the following results:

Objective 1: To examine the innovative competencies required of agricultural extension officers and community enterprise leaders in driving sustainable community economic development in the Upper Northern region. Quantitative analysis from a sample of 181 agricultural extension officers indicated that overall innovative competency was at a moderate-to-high level ($\bar{X} = 3.87$, $SD = 0.61$). The competencies, ranked from highest to lowest mean score, were as follows:

Innovative Competencies of Agricultural Extension Officers and Community Enterprise Leaders in Driving Local Economic Development in Upper Northern Thailand	Competency Dimension		
	$\bar{X}$	S.D.	Interpretation
1. Creative thinking and innovation development	4.01	0.58	High
2. Collaboration and networking	3.92	0.60	Moderate
3. Application of digital technology	3.84	0.62	Moderate
4. Knowledge management and research	3.72	0.66	Moderate
Overall	3.87	0.61	Moderate

Table 1 Innovative Competencies Required of Agricultural Extension Officers and Community Enterprise Leaders in Driving Community Economic Development in Upper Northern Thailand

The findings indicate that agricultural extension officers demonstrate outstanding competencies in creative thinking and network collaboration, which align with the practical context of their work that requires engagement with multiple stakeholders. However, knowledge management and research received the lowest mean score, reflecting academic limitations and the need to enhance skills in

integrating knowledge into innovative practices for driving community enterprises. From the qualitative perspective, insights from eight supervisors emphasized that successful agricultural extension officers must possess strong communication skills, the ability to persuade and influence, competence in identifying community issues, and the capacity to connect networks of stakeholders. These qualities must be complemented by a passion for community work and the courage to experiment with new approaches.

Objective 2: To analyze the factors influencing the development of agricultural community enterprises, specifically in terms of work experience, organizational support, and opportunities for self-development. The results of the multiple regression analysis revealed that all three independent variables exerted a positive and statistically significant influence on the level of innovative competency ($p < 0.01$).

Independent Variables	B	Beta (β)	t	Sig.
Work experience	0.33	0.35	4.92	0.000**
Organizational support	0.28	0.29	3.45	0.001**
Self-development training	0.21	0.24	2.89	0.004**
Constant	1.12	–	3.10	0.002*

Model summary: $R = 0.693$, $R^2 = 0.480$, Adjusted $R^2 = 0.472$, $F = 55.23$, $\text{Sig.} = 0.000$

Note: ** $p < 0.01$, significant at the 0.01 level.

Table 2 Results of Multiple Regression Analysis on Factors Influencing the Innovative Competencies of Agricultural Extension Officers (N = 181)

From the table, it was found that all three variables work experience, organizational support, and self-development training had a positive and statistically significant influence on the innovative competencies of agricultural extension officers at the 0.01 level. Among these, work experience ($\beta = 0.35$) emerged as the most influential predictor, reflecting that experiential learning plays a crucial role in enhancing innovative capabilities. The regression model yielded an R^2 value of 0.480, indicating that the three independent variables collectively explained approximately 48% of the variance in innovative competency, which is considered a reasonably strong explanatory power.

Objective 3: To develop an innovative model for driving agricultural community enterprises that can be applied to strengthen the capacity and resilience of local economies in the Upper Northern region of Thailand. The integration of

quantitative and qualitative data led to the development of an innovative model consisting of five core components and four supporting mechanisms as follows:

The core components of the model emphasize a holistic set of competencies essential for sustainable community development. These include a solid foundation of knowledge and skills in agriculture, marketing, and management, coupled with the ability to manage groups, build networks, and coordinate across agencies. Transformational leadership is central, enabling individuals to inspire and guide communities in adapting to change. Additionally, marketing and business development skills such as product design, branding, and market linkage are crucial, alongside capacities for research, innovation, experimentation, and systematic evaluation.

To ensure the effective implementation of these components, supporting mechanisms are required. These include practical workshops to strengthen applied skills, coaching and mentoring systems that provide continuous guidance, and pilot projects that foster experimentation and localized adaptation. Furthermore, innovation support funds serve as critical incentives and resources to drive innovation at the community level, thereby reinforcing both the sustainability and scalability of the model.

The findings confirm that designing an innovative model that integrates these components and mechanisms can significantly enhance the resilience of agricultural community enterprises in the Upper Northern region, enabling them to adapt to change and sustainably strengthen local economic capacity. This research thus emphasizes that building community economic resilience cannot rely on a single factor, but requires the integration of individual capacity (extension officers and community leaders) and structural support systems (organizations, policies, and funding) through a systematic process of developing innovative competencies.

Discussion

This study, Innovative Model for Driving Agricultural Community Enterprises to Strengthen Local Economic Resilience in Upper Northern Thailand, generated several key findings that can be discussed as follows:

Objective 1: To examine the innovative competencies required. The results revealed that the overall innovative competencies of agricultural extension officers were at a moderate-to-high level, particularly in creative thinking

and network collaboration. These findings reflect the officers' potential as *change agents* in their communities. This outcome aligns with Competency Theory proposed by Azemikhah (2006), which emphasizes that competencies are not confined to technical knowledge but also include behavioral skills and attitudes conducive to value creation. Similarly, Darawong (2016) demonstrated that individuals with high levels of innovative competency tend to integrate diverse knowledge sources to design products and services suited to contextual needs. These findings correspond to this study, which highlighted extension officers' strengths in networking and creativity. However, the lowest score was found in knowledge management and research, which indicates a developmental gap. This result resonates with Nunyot (2020), who noted that many Thai community enterprises lack effective integration of academic knowledge into practical application, thus underscoring the necessity of strengthening extension officers' competencies in research, analysis, and evaluation to foster sustainable innovation.

Objective 2: To analyze the factors influencing the driving of agricultural community enterprises. The multiple regression analysis demonstrated that work experience, organizational support, and self-development training significantly influenced innovative competencies. This finding can be interpreted within the framework of Experiential Learning Theory (Janthapassa, Chanthapassa, & Kenaphoom, 2024), which argues that deep learning emerges from the integration of direct experience, reflection, and application to new contexts. Officers with longer work experience are therefore more likely to develop innovative thinking. At the same time, organizational support is consistent with the findings of Tailangka, Bodeerat, and Taomitr (2024), who studied agricultural extension motivation in China and confirmed that structural factors such as organizational policies and resource allocation substantially influence competency development. Furthermore, the significance of self-development training is supported by Norachan, Norachan, and Numnaphol (2025), who demonstrated that investment in human capital and lifelong learning has a positive correlation with innovation creation and organizational competitiveness. Collectively, these three factors should not be viewed merely as individual-level predictors but as systemic and behavioral mechanisms that require institutional strengthening to yield sustainable outcomes for community enterprises.

Objective 3: To develop an innovative model for driving agricultural community enterprises. The innovative model developed in this study comprises five

core dimensions knowledge and skills foundation, management and coordination, transformational leadership, marketing and business development, and research and innovation together with four supporting mechanisms: workshops, coaching/mentoring, pilot projects, and innovation funds. This model reflects the integration of both human capital and social capital, which serve as key drivers of local economic resilience. The findings are consistent with Chonlatanon et al. (2023), who reported that successful community enterprises in Southern Thailand relied on strong support networks and extension officers serving as transformational leaders. Moreover, this model aligns with OECD (2022), which stresses that community-level innovation must derive from combining learning by doing with supportive policies and infrastructure. Thus, the proposed model functions not only as a theoretical contribution but also as a practical framework that governmental and local agencies can implement to enhance the capacity of agricultural community enterprises, thereby contributing to the long-term resilience of local economies.

In summary, this discussion confirms that the success of driving agricultural community enterprises in Upper Northern Thailand depends on the integration of individual innovative competencies with structural and policy support mechanisms, in alignment with grassroots economic development strategies and the Sustainable Development Goals (SDGs), particularly inclusiveness, sustainability, and resilience-building.

New Knowledge

From an academic perspective, this study advances the field by developing an innovative competency framework for agricultural extension officers and community enterprise leaders, consisting of five comprehensive dimensions: (1) knowledge and skills foundation, (2) management and coordination, (3) transformational leadership, (4) marketing and business development, and (5) research and innovation. Unlike purely theoretical models, this framework was derived from the integration of quantitative and qualitative findings, thereby reflecting the practical realities of driving agricultural community enterprises in Upper Northern Thailand. It extends the application of Competency Theory and Experiential Learning Theory to the context of local economic development in a concrete and contextualized manner.

From a policy and practice perspective, the study proposes four essential support mechanisms: workshops, coaching and mentoring systems, pilot projects, and innovation funds. These mechanisms provide a structured pathway for government agencies and local organizations to strengthen the innovative competencies of extension officers while enhancing the resilience of community enterprises. As such, this research contributes both to academic knowledge and to actionable policy recommendations, bridging research and practice in ways that support the sustainable development of Thailand's grassroots economy.

Conclusion and Suggestion

The findings indicate that agricultural extension officers and community enterprise leaders in the Upper Northern region of Thailand possess moderate-to-high levels of innovative competency, with particular strengths in creative thinking and network building, but relative weaknesses in knowledge management and research capacity. Key factors influencing innovative competency include work experience, organizational support, and self-development training, which together explained 48% of the variance. Furthermore, the study developed an innovative model comprising five core dimensions and four supporting mechanisms, designed to strengthen the resilience and sustainability of community-based economies in the region. Based on these findings, the study offers recommendations in three key areas:

1. Policy Recommendations

Government agencies and relevant stakeholders should establish a systematic policy framework for developing the innovative competencies of agricultural extension officers and community enterprise leaders. This framework should be integrated into national development plans and grassroots economic strategies, supported by adequate budgets and innovation infrastructure, and enhanced through regional and national collaborative networks to ensure continuity and long-term sustainability.

2. Practical Recommendations

The Department of Agricultural Extension and local administrative organizations can adopt the proposed innovative model as a framework for capacity development. Priority should be placed on conducting workshops emphasizing creative thinking and digital technology skills, establishing structured coaching and mentoring systems for new extension officers, and providing resources through pilot

projects and innovation funds to incentivize context-specific innovations at the community level.

3. Future Research Recommendations

Further studies should expand to other regions of Thailand to compare innovative competencies across different socio-economic contexts. Additionally, future research should explore the role of digital transformation and emerging technologies in enhancing management efficiency and market connectivity of community enterprises, thereby generating updated knowledge to address future challenges and opportunities.

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