Glovento Journal of Integrated Studies (GJIS) | ISSN: 3117-3314
Volume 2 (2026) | Article 53

Community-Embedded Technology Transfer: A Conceptual Case Study of the Huaplee OTOP Market in Thailand

[1,*]Prapapon Kaorop, [2]Sanong Ekgasit

[1]PhD Candidate, Technopreneurship and Innovation Management Program, Chulalongkorn University, Bangkok, Thailand
[2]Professor, Department of Chemistry, Faculty of Science, Chulalongkorn University, Bangkok, Thailand
E-mail: [1]6381036120@student.chula.ac.th, [2]sanong.e@chula.ac.th
*Corresponding author: Prapapon Kaorop (6381036120@student.chula.ac.th)

Abstract- The transfer of research-based agricultural technologies to farmers remains a major challenge in many developing countries. Although universities and research institutions continuously develop innovations intended to improve agricultural productivity and sustainability, the adoption of these technologies within rural communities remains limited. This gap highlights the importance of intermediary mechanisms that facilitate the translation of scientific knowledge into practical agricultural applications.

This study examines the Huaplee OTOP Market in Thailand as a conceptual case of community-embedded technology transfer. Huaplee Market functions not only as a commercial marketplace but also as a community learning platform where farmers, entrepreneurs, and visitors participate in training activities, demonstration programs, and knowledge-sharing networks. These activities create opportunities for agricultural innovations developed by research institutions to be demonstrated and gradually adopted within real farming environments.

The study integrates theoretical perspectives from diffusion of innovation, technology transfer, and community innovation literature to develop a conceptual framework explaining how community markets can function as intermediary knowledge platforms. The framework suggests that community learning environments enhance innovation visibility, enable experimentation, and strengthen social trust among farmers, thereby facilitating innovation adoption.

The study contributes to the literature by conceptualizing community markets as knowledge transfer platforms that bridge academic research and local agricultural practices. It also highlights the role of OTOP markets in promoting safe agriculture and local economic development.

Keywords: Technology Transfer, Community Market, OTOP, Agricultural Innovation, Knowledge Diffusion, Thailand.

I. Introduction

Agricultural innovation is frequently celebrated in policy discourse as a catalyst for rural transformation, yet the persistent gap between laboratory-based research and on-farm practice raises a fundamental question: if the technologies exist, why do farmers not use them? This question motivates the present study and suggests that the problem of agricultural technology adoption is not primarily a scientific one, but a social and institutional one.

Universities and research institutions in Thailand, as elsewhere, continuously generate innovations intended to improve crop productivity, reduce environmental harm, and support sustainable livelihoods. However, the journey from laboratory to field is rarely straightforward. The knowledge embedded in these innovations must be translated, demonstrated, and socially legitimized before farmers are willing to integrate it into their daily agricultural practices. This translation process requires institutional structures that existing technology transfer models have not always accounted for adequately.

The dominant linear model of technology transfer — in which knowledge flows directly from researcher to extension officer to farmer — has been critiqued for decades (Bozeman, 2000; Perkmann & Walsh, 2007). Yet despite this critique, much of Thailand's agricultural development infrastructure continues to rely on top-down dissemination mechanisms that underestimate the social dimensions of knowledge adoption. Farmers do not adopt innovations because they are told to; they adopt them because they see them working in contexts they trust, among people they know.

It is this insight that draws the present study's attention to community markets as potentially underappreciated sites of agricultural knowledge exchange. Community markets in Thailand, particularly those associated with the One Tambon One Product (OTOP) initiative, occupy a distinctive social position: they are simultaneously commercial spaces, community gathering places, and increasingly, structured learning environments. If these

markets can be better understood and designed as knowledge transfer platforms, they may represent a more organic and effective route for agricultural innovation diffusion than conventional extension systems.

Huaplee OTOP Market in Saraburi Province provides a particularly instructive case. Unlike many OTOP markets that function primarily as retail venues, Huaplee has developed over time into a community-based learning environment that integrates demonstration activities, farmer training programs, and peer knowledge exchange. In doing so, it illustrates how a market can serve as what this study terms a community-embedded technology transfer platform — a concept that, to the authors' knowledge, has received limited theoretical attention in the existing literature. The significance of this study therefore lies not only in its empirical focus on one market in Saraburi Province, but in its broader theoretical contribution: the proposition that community markets can function as intermediary knowledge platforms bridging academic research and local agricultural practice. This proposition has implications for how policymakers, researchers, and community enterprise managers think about the infrastructure of agricultural innovation in Thailand and comparable developing country contexts.

While Rogers' (2003) diffusion of innovation framework has been widely applied in agricultural contexts, relatively few studies have examined the specific mechanisms through which physical community spaces — as opposed to social networks or extension systems — facilitate innovation diffusion. Studies on OTOP markets in Thailand have tended to focus on economic performance and product competitiveness (Natsuda et al., 2012) rather than on their potential role as knowledge transfer platforms. This gap in the literature points to the need for a conceptual reframing of community markets as institutional actors in the innovation diffusion process — a reframing that this study undertakes with particular reference to the case of Huaplee OTOP Market.

Accordingly, this study aims to develop a conceptual framework explaining how community markets may function as intermediary platforms that facilitate agricultural technology transfer and innovation adoption within rural Thai communities. This study contributes to the literature by proposing a community market-centered model of technology transfer that integrates diffusion of innovation theory, technology transfer scholarship, and community innovation perspectives.

II. Literature Review

2.1 Diffusion of Innovation

Rogers' (2003) diffusion of innovations framework remains one of the most influential conceptual tools for understanding how new ideas, practices, and technologies spread through social systems. Central to the framework is the argument that adoption is not determined solely by the objective merits of an innovation, but by how potential adopters perceive it relative to five key attributes: relative advantage, compatibility with existing values and practices, complexity, trialability, and observability. While Rogers' framework offers a powerful explanatory lens, it has not gone without critique. Greenhalgh et al. (2004) observed that the original model treats adoption as a predominantly individual cognitive process, thereby underweighting the role of organizational structures, power relations, and institutional environments in shaping diffusion outcomes. In the context of small-scale farming communities in developing countries, this limitation is particularly salient: adoption decisions are rarely made in isolation but are deeply embedded in social relationships, community norms, and collective experiences (Feder et al., 2004). In the Thai agricultural context, research has consistently shown that farmer adoption of new practices is strongly influenced by peer learning and social proof. Studies on integrated pest management adoption in Central Thailand found that farmers' willingness to adopt environmentally safer technologies was significantly associated with the adoption behavior of neighboring farmers and the credibility of demonstration activities organized by community groups (Praneetvatakul et al., 2013). These findings suggest that the observability and trialability dimensions of Rogers' framework are particularly operative in Thai farming communities — and that physical environments enabling such observation and trial deserve closer analytical attention. More recently, scholars have extended the diffusion framework to emphasize the role of social learning environments — contexts in which innovations can be collectively observed, discussed, and evaluated before individual adoption decisions are made (Lundvall, 2010). Community markets with demonstration capabilities may constitute precisely such environments, translating the theoretical constructs of trialability and observability into concrete institutional arrangements.

2.2 Technology Transfer

Technology transfer, broadly defined, refers to the processes through which knowledge and innovations generated within research institutions are translated into practical applications for end users (Bozeman, 2000). As Perkmann and Walsh (2007) note, the term encompasses a wide range of activities — from formal licensing arrangements and joint ventures to informal knowledge sharing and researcher mobility — and the effectiveness of transfer depends heavily on the absorptive capacity of recipient organizations and communities.

The traditional linear model of technology transfer, which assumes a sequential flow from basic research to applied research to commercialization to end user, has been increasingly recognized as inadequate for capturing the complexity of real-world knowledge transfer processes (Etzkowitz & Leydesdorff, 2000). In agricultural contexts, Klerkx and Leeuwis (2008) argue that effective technology transfer requires the involvement of intermediary actors — knowledge brokers, extension services, or community organizations — who can translate scientific knowledge into locally relevant practice without distorting its technical integrity.

In the Thai agricultural sector, technology transfer has historically been managed through state-led extension services operated by the Department of Agricultural Extension (DOAE). While these services have made substantial contributions to farmer capacity development, critics have noted their limitations in reaching small-scale and subsistence farmers in remote areas, and in facilitating the kind of iterative, practice-based learning that effective adoption requires. Community-based organizations, including OTOP market associations, have emerged in this context as potentially more responsive and contextually appropriate intermediaries for technology transfer at the local level.

This study aligns with Klerkx and Leeuwis' (2008) call for greater attention to intermediary actors in agricultural innovation systems, and proposes that community markets represent an underexplored category of such actors — one whose effectiveness may derive precisely from their embeddedness in local social networks and their dual function as economic and learning spaces.

2.3 Community Innovation

Community innovation refers to processes through which communities collectively develop, adapt, and implement solutions to local challenges (Mulgan, 2012). Unlike innovation in corporate or academic settings, community innovation is characterized by its grounding in local knowledge, its reliance on collective participation, and its orientation toward social as well as economic outcomes.

The concept of community innovation is closely related to, but distinct from, social innovation — a broader term encompassing new social relations and arrangements that improve social welfare (Pol & Ville, 2009). What distinguishes community innovation in the present context is its emphasis on place-based learning and the role of existing community institutions — such as markets, cooperatives, and farmer groups — as platforms for innovation activity.

In the Thai rural development context, community innovation has been actively promoted through government programs including OTOP, the Sufficiency Economy Philosophy (SEP) framework associated with His Majesty King Bhumibol Adulyadej's development philosophy, and the community enterprise promotion program under the Community Enterprise Promotion Act of 2005. These initiatives have created institutional space for communities to organize collective economic and learning activities, and have contributed to the emergence of community enterprises that combine commercial functions with knowledge development roles (Natsuda et al., 2012).

Despite this policy momentum, academic research on community innovation in Thailand has tended to focus on product development and market performance rather than on the knowledge transfer and learning processes that underpin community enterprise development. This study addresses this gap by examining how a specific community market — Huaplee — functions as an innovation platform, and by drawing on community innovation concepts to theorize its intermediary role.

2.4 Huaplee OTOP Market

Huaplee OTOP Market, located in Saraburi Province, was established under the national OTOP initiative as a platform for promoting locally produced agricultural products and supporting community entrepreneurship. What distinguishes Huaplee from a conventional retail market is its deliberate integration of learning activities into its operational model: the market maintains demonstration plots for safe agricultural practices, organizes regular training programs for farmers and OTOP producers, and hosts study visits from educational institutions and community organizations throughout Thailand (Huaplee Market, 2023).

This integration of commercial and learning functions positions Huaplee as what the present study conceptualizes as a community-embedded technology transfer platform. The concept draws on Amin and Roberts' (2008) notion of 'communities of practice' — groups of people who share a concern or passion and learn together through regular interaction — but extends it to emphasize the role of physical market infrastructure in enabling and sustaining such communities.

The market's evolution into a multifunctional platform has not been accidental but reflects deliberate strategic choices by its management to position Huaplee as a regional hub for safe agriculture knowledge. This strategic orientation is consistent with the broader goals of Thailand's national safe agriculture development agenda, which aims to reduce the use of chemical inputs in food production and improve the marketability of Thai agricultural products in both domestic and export markets (Office of Agricultural Economics, 2022).

From an innovation diffusion perspective, Huaplee's demonstration plots and training programs directly address the trialability and observability constraints that Rogers (2003) identifies as barriers to adoption. By enabling farmers to observe agricultural innovations under real farming conditions and experiment with them on a small scale before committing to full adoption, the market reduces the perceived risk associated with new technologies and accelerates the diffusion process.

2.5. Agricultural Innovation Technologies and Their Transfer Context

The bio-input agricultural technologies that form the subject of this study's applied dimension represent a growing area of research in sustainable agriculture. These technologies — including mineral-based soil amendment materials, biological crop protection agents, and environmentally compatible plant nutrition systems — are distinguished from conventional chemical inputs by their reduced environmental impact and their compatibility with the growing consumer demand for chemical-free food products.

Research conducted by Ekgasit and collaborators at Chulalongkorn University has produced a range of innovative agricultural materials demonstrating efficacy across multiple crop systems including rice, melon, coconut, tomato, and coffee production in Thai conditions (Ekgasit et al., 2024). However, as the present study argues, the scientific merit of these innovations alone does not ensure their adoption among farmers. The transfer of these technologies from the university laboratory to the farm requires intermediary mechanisms that can demonstrate practical application, build farmer confidence, and integrate new practices into existing agricultural knowledge systems.

This observation echoes a broader pattern in the literature on agricultural research-extension linkages in Southeast Asia. Studies conducted in Vietnam, Cambodia, and the Philippines have found that the distance — not merely physical but also cognitive and social — between research institutions and small-scale farmers constitutes a significant barrier to technology adoption, and that this barrier is most effectively addressed through community-based intermediaries rather than top-down extension systems (Spielman et al., 2011). Huaplee Market's positioning as a bridge between Chulalongkorn University's research outputs and the farming communities of Saraburi Province thus represents a practical instantiation of a model whose theoretical foundations are well established in the international literature.

Table 1: Agricultural Technologies Developed by Ekgasit Research Group

Technology	Application	Expected Benefit
Mineral-based soil amendment	Soil improvement	Improve soil fertility
Bio-based agricultural inputs	Crop production	Increase productivity
Crop protection materials	Pest and disease management	Reduce chemical pesticide use
Sustainable agriculture materials	Agricultural systems	Support safe agriculture

Source: *Ekgasit, S. (2024). Chulalongkorn University Research Report.*

2.6 Conceptual Framework

What this study proposes is not simply a model of how knowledge moves from one point to another, but an attempt to explain why some innovations reach farmers and others do not — and why the answer has less to do with the quality of science than with the social environment in which that science is introduced.

The framework places Huaplee Market at its center, not as a passive conduit, but as an active intermediary that shapes how bio-input innovations are received, interpreted, and eventually tried by farmers. Knowledge originating from research institutions does not arrive at the farm gate intact; it passes through the hands of market administrators who translate it into training programs and demonstration activities, and through the conversations of farmers who observe, question, and reassure one another before committing to change.

This two-step process — from researcher to market, from market to farmer — is what distinguishes this framework from conventional technology transfer models. The market is not a stop along the way; it is where adoption actually begins.

Conceptual Framework Diagram

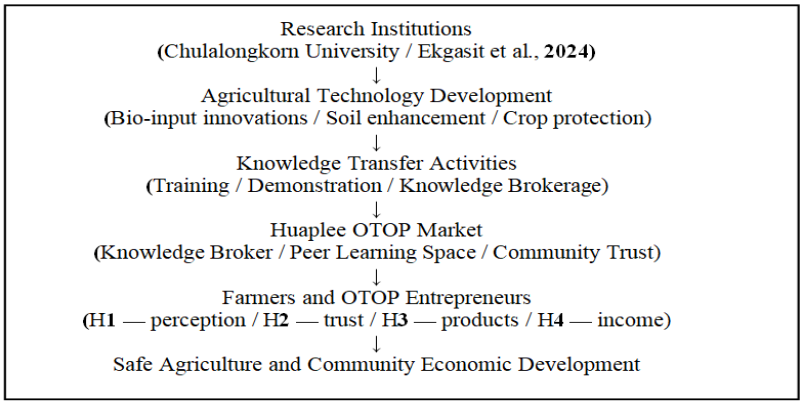

Figure 1: Conceptual Framework Diagram

Theoretical foundations: Rogers (**2003**), Bozeman (**2000**), Klerkx & Leeuwis (**2008**), Mulgan (**2012**)
Propositions for Future Empirical Testing

H1: Farmers who engage with Huaplee's demonstration plots and training sessions are more likely to perceive bio-input technologies as worth trying than those relying solely on government extension services.

H2: Repeated interaction within Huaplee's farmer networks increases willingness to adopt bio-input innovations — driven less by information access than by trust in familiar community sources.

H3: Farmers exposed to bio-input innovations through Huaplee show stronger OTOP product development outcomes than comparable non-participating farmers in Saraburi Province.

H4: Adoption of bio-input innovations improves household income most meaningfully among farmers with stronger ties to Huaplee's buyer and distribution networks — adoption alone, without market linkage, is not sufficient.

III. Materials and Methods/ Methodology:

3.1 Research Design

This study employs a mixed-methods research design that integrates qualitative and quantitative approaches. The rationale for this design choice goes beyond methodological convention: the phenomenon under investigation — community-embedded technology transfer — is inherently multidimensional, involving both the measurable behavioral patterns of individual farmers and the contextual, relational dynamics of a specific community market environment. No single methodological approach can adequately capture both dimensions.

The design follows what Creswell and Plano Clark (2018) describe as a concurrent triangulation strategy, in which qualitative and quantitative data are collected in parallel and subsequently integrated during interpretation to produce a more complete understanding of the research problem. This approach is particularly well suited to exploratory studies seeking to both test propositions derived from existing theory and generate new insights grounded in empirical observation — a dual purpose that characterizes the present study given its conceptual stage of development.

It should be noted that, consistent with the paper's status as a concept paper pending institutional ethical approval, the methodology described here constitutes a planned research design. The empirical data collection phase has not yet commenced and will proceed following ethical clearance from Chulalongkorn University's Institutional Review Board.

3.2 Research Site and Population

The research site is Huaplee OTOP Market in Saraburi Province, central Thailand. The population consists of four groups of stakeholders: farmers participating in market-organized training programs and demonstration activities; OTOP entrepreneurs producing and selling safe agricultural products through the market; market administrators responsible for program design and implementation; and academic experts involved in the development and transfer of bio-input agricultural technologies.

The selection of Huaplee as the research site was not arbitrary but reflects purposive site selection criteria consistent with theoretical sampling principles (Patton, 2015). Specifically, Huaplee was selected because it represents an extreme or deviant case (Yin, 2018) relative to conventional OTOP markets: its unusually well-developed learning infrastructure and its documented linkages with university research programs make it an information-rich site for examining the mechanisms of community-embedded technology transfer. While the

findings may not be directly generalizable to all OTOP markets, they are intended to generate theoretical propositions that can be tested in other community market contexts.

3.3 Sampling Strategy

Given the study's mixed-methods design, two distinct sampling strategies are employed. For the qualitative component, purposive sampling is used to identify informants with direct experience of the market's knowledge transfer activities. Interview informants will be selected from three groups: market administrators (3–5 persons), academic experts associated with the agricultural technology development program (5–8 persons), and farmers who have participated in market training programs (10–15 persons). Theoretical saturation — the point at which additional interviews yield no substantially new insights — will guide decisions about sample size adequacy (Patton, 2015).

For the quantitative component, convenience sampling will be employed to recruit survey respondents from among farmers attending market training sessions and visitors to the market's demonstration plots during the data collection period. A target sample of 150–200 respondents is set based on the requirements of the planned regression and structural equation modeling analyses, consistent with the guidelines of Hair et al. (2019).

3.4 Research Instruments

Three data collection instruments are employed, each designed to address a specific dimension of the research questions.

The semi-structured interview protocol is designed to elicit rich, contextual accounts of how knowledge transfer occurs within and through the market environment. Separate protocols have been developed for each informant group, reflecting the different roles and perspectives of administrators, experts, and farmers. Interview questions draw on the theoretical constructs of knowledge brokerage (Klerkx & Leeuwis (2008), diffusion attributes (Rogers, 2003), and community learning (Amin & Roberts, 2008) to ensure that the data collected are theoretically grounded while remaining open to emergent themes.

The questionnaire survey instrument measures farmers' perceptions of bio-input innovation attributes, adoption intentions, and attitudes toward the market as a knowledge source. Items are adapted from validated scales in the diffusion of innovation and technology acceptance literatures and translated into Thai. To ensure the linguistic and conceptual equivalence of translated items, a forward-backward translation procedure was employed, with the back-translation reviewed by a bilingual academic with expertise in agricultural science (Brislin, 1970). All attitudinal items are measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree) (Likert, 1932).

The observation protocol is designed to document the physical and social dimensions of the market's learning environment, including the organization of demonstration plots, the conduct of training sessions, and the informal knowledge exchange interactions that occur among market participants. Field notes and photographic documentation will supplement the structured observation record.

3.5 Instrument Validation

Content validity of all instruments will be established through expert panel review involving three specialists in agricultural extension, community enterprise development, and research methodology. The Index of Item-Objective Congruence (IOC) will be calculated, with items scoring below 0.50 revised or removed (Rovinelli & Hambleton, 1977). Internal reliability of the questionnaire scales will be assessed using Cronbach's alpha, with a threshold of 0.70 adopted as the minimum acceptable level of reliability (Cronbach, 1951). A pilot study involving 30 respondents drawn from a comparable community market in Saraburi Province will be conducted prior to main data collection to identify and resolve any instrument-related issues.

3.6 Data Analysis

Qualitative data from interviews and observations will be analyzed using thematic analysis following the six-phase approach described by Braun and Clarke (2006): data familiarization, initial code generation, theme identification, theme review and refinement, theme definition and naming, and report production. NVivo software will be used to manage and organize the qualitative dataset. Member checking — the practice of returning preliminary findings to informants for verification — will be employed to strengthen the credibility of qualitative interpretations (Lincoln & Guba, 1985).

Quantitative data will be analyzed using both descriptive and inferential statistics. Descriptive analysis will characterize the sample and summarize perceptual variables. Structural equation modeling (SEM) using SmartPLS will be employed to examine the relationships among the study's theoretical constructs and to test the four hypotheses derived from the conceptual framework. The use of partial least squares SEM (PLS-SEM) is

particularly appropriate for this study given its relatively small expected sample size and the exploratory nature of the research (Hair et al., 2019).

Integration of qualitative and quantitative findings will occur at the interpretation stage, following the joint display approach recommended by Creswell and Plano Clark (2018), wherein findings from both strands are presented side by side to facilitate comparison and synthesis. Convergent findings will strengthen the study's conclusions; divergent findings will be treated as opportunities for deeper analytical reflection.

IV. Results and Discussion:

The analysis presented in this study does not claim empirical proof — it claims something more preliminary but arguably more necessary: a coherent explanation of why community markets like Huaplee are worth studying as sites of agricultural technology transfer in the first place.

What emerges from the conceptual analysis is that Huaplee's effectiveness as a knowledge platform rests on three interlocking conditions, none of which operates independently of the others.

The first is visibility. Farmers in Saraburi Province, like smallholder farmers across Thailand, do not typically adopt new agricultural technologies on the basis of written materials or formal instruction alone. They adopt them after watching someone they know use them under conditions that resemble their own. Huaplee's demonstration plots and hands-on training sessions create exactly this kind of visibility — translating the abstract promise of bio-input innovations into observable, comparable outcomes that farmers can evaluate on their own terms. This aligns with what Rogers (**2003)** identifies as observability and trialability, two of the attributes most strongly associated with adoption in agricultural communities.

The second condition is trust. The market administration at Huaplee occupies an unusual institutional position: it is close enough to the farming community to be seen as one of its own, yet connected enough to Chulalongkorn University's research network to carry scientific credibility. This dual positioning is what makes it an effective knowledge broker (Bozeman, **2000**; Klerkx & Leeuwis, **2008) —** not simply a relay point for information, but a translator whose interpretations farmers are willing to act on. Without this trust, the technical quality of the innovations being transferred would matter far less than it does.

The third condition is collective adaptation. Huaplee's farmer networks do not merely expose participants to new practices; they create a social environment in which innovations are discussed, questioned, modified, and gradually made one's own. This process of collective sense-making is what Mulgan (**2012)** describes as community innovation — and it is what distinguishes genuine adoption from superficial compliance with external recommendations. When farmers adapt bio-input technologies to their specific soil conditions, crop cycles, and resource constraints through conversations with peers at the market, they are not deviating from the transfer process; they are completing it.

Together, these three conditions suggest that Huaplee functions less like a pipeline carrying knowledge from university to farm, and more like a social environment in which that knowledge is continuously tested, translated, and made meaningful. The implications for how agricultural technology transfer is designed and supported in Thailand are significant.

4.1 Research Contribution

This study makes three contributions that, taken together, reframe how community markets are understood in the agricultural innovation literature.

The most immediate contribution is conceptual: by positioning Huaplee Market as a community-embedded technology transfer platform rather than simply an OTOP retail venue, this study opens a line of inquiry that existing research on Thai community markets has largely overlooked. Studies focusing on OTOP's economic performance **(**Natsuda et al., **2012)** have not examined the mechanisms through which markets like Huaplee facilitate knowledge exchange — mechanisms that, this study argues, are as important to rural development outcomes as product quality or market access.

The second contribution is theoretical: the integration of Rogers' (**2003)** diffusion framework with the two-step knowledge transfer model and community innovation perspectives (Mulgan, **2012)** produces a more nuanced account of agricultural adoption than any of these frameworks provides alone. In particular, the emphasis on market administrators as knowledge brokers — rather than passive intermediaries — adds a layer of institutional analysis that strengthens the explanatory power of existing diffusion theory in community market contexts.

The third contribution is practical: the framework developed here offers policymakers and community enterprise managers a language for thinking about what makes a community market genuinely effective as a knowledge platform, and what investments — in demonstration infrastructure, farmer networks, and research linkages — are most likely to produce lasting adoption outcomes.

4.2 Limitations and Future Research

This study is conceptual, and that limitation deserves to be stated plainly rather than apologized for. Concept papers serve a necessary function in research: they make explicit the assumptions and logical structure of an argument before those assumptions are tested against evidence. What this study cannot yet confirm is whether the mechanisms it proposes — visibility, trust, and collective adaptation — operate in practice at Huaplee with the consistency and strength that the framework implies. That question will be addressed in the empirical phase of this research, which will employ the mixed-methods design outlined in Section **3**, following institutional ethical approval from Chulalongkorn University's Institutional Review Board. Of particular interest will be whether the trust relationship between farmers and market administrators varies across different farmer groups — including those with longer versus shorter histories of market engagement — and whether the adoption of bio-input innovations produces measurable income effects that can be attributed to market linkage rather than adoption alone.

V. Conclusion

The argument this study makes is a simple one, even if its implications are not. Community markets in Thailand are not merely places where agricultural products change hands. At their best — and Huaplee represents this possibility more clearly than most — they are places where knowledge changes hands too: where farmers encounter innovations under conditions that make adoption feel like a reasonable choice rather than a risk, and where the distance between a university laboratory and a rice paddy in Saraburi Province becomes, if not small, at least navigable.

Whether this potential is realized depends on deliberate choices: about how markets are designed, how administrators are supported, and how research institutions think about their responsibilities beyond publication. This study has attempted to provide a conceptual foundation for those choices. The empirical work that follows will determine how well that foundation holds.

Ethical Approval: The empirical phase of this research will be conducted following institutional ethical approval from Chulalongkorn University's Institutional Review Board. All data collection procedures will adhere to the ethical standards governing research involving human participants, including informed consent, confidentiality, and the right to withdraw.

Data Availability: Data generated during the empirical phase of this research will be made available upon study completion, subject to ethical approval conditions and participant confidentiality agreements.

Grant /Funding: This research has not received external funding. The study was conducted as part of doctoral research within the Technopreneurship and Innovation Management Program, Chulalongkorn University.

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