Research Article

วารสารวิจัย สมาคมห้องสมุดแห่งประเทศไทยฯ
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Investigation of the knowledge management best practices used by the national outstanding rice seed farmers in Kamphaeng Phet, Thailand[1]

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Abstract

This qualitative research examines the knowledge management practices of farmers who breed outstanding rice seeds in Kamphaeng Phet, Thailand. The study involved 12 farmers with at least 10 years of rice planting experience and who received national awards for breeding outstanding rice seeds, using the snowball sampling technique. Data collection methods included in-depth interviews, informal focus group discussions, and participant and non-participant observations. Triangulation and inductive analysis were utilized to present the results of descriptive data analysis. The research identified six steps in knowledge management practices: knowledge identification, knowledge capture, knowledge organization, knowledge evaluation, knowledge implementation, and knowledge distribution. Internal factors supporting knowledge management success included motivation to produce high-quality rice seeds locally, collaborative learning processes, and equitable profit distribution. External factors included strengthened support for knowledge promotion from the Rice Seed Centre in Kamphaeng Phet and facilitated knowledge exchange between scientific and local wisdom knowledge by the Rice Department of Thailand.

Keywords: Outstanding rice seed farmers; Knowledge management process; Knowledge management success factors

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การจัดการความรู้ของเกษตรกรผู้ผลิตเมล็ดพันธุ์ข้าวดีเด่นแห่งชาติ ในจังหวัดกำแพงเพชร ประเทศไทย[1]

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บทคัดย่อ

การวิจัยเชิงคุณภาพนี้ได้ศึกษาแนวปฏิบัติที่ดีในการจัดการความรู้ของเกษตรกรที่ได้รับรางวัลผู้ผลิตเมล็ดพันธุ์ข้าวดีเด่นแห่งชาติ จังหวัดกำแพงเพชร ผู้ให้ข้อมูลสำคัญคือ เกษตรกร จำนวน 12 คน ซึ่งคัดเลือกแบบเจาะจงโดยใช้วิธีการสุ่มแบบบอกต่อและมีเกณฑ์การคัดเลือกคือ ต้องเป็นชาวนาที่มีประสบการณ์ในการปลูกข้าว 10 ปี และได้รับรางวัลกลุ่มผู้ผลิตเมล็ดพันธุ์ข้าวดีเด่นแห่งชาติ การเก็บรวบรวมข้อมูลใช้การสัมภาษณ์เชิงลึก การสนทนากลุ่มแบบไม่เป็นทางการ การสังเกตแบบมีส่วนร่วมและไม่มีส่วนร่วม การวิเคราะห์ข้อมูลใช้การวิเคราะห์เนื้อหาเชิงอุปนัย และการตรวจสอบสามเส้า ผลการศึกษาพบว่า แนวปฏิบัติที่ดีในการจัดการความรู้ ประกอบด้วย 6 ขั้นตอนคือ การบ่งชี้ความรู้ การบันทึกความรู้ การจัดหมวดหมู่ความรู้ การประเมินความรู้ การนำความรู้ไปประยุกต์ใช้ และการเผยแพร่ความรู้ สำหรับปัจจัยภายในที่เอื้อต่อความสำเร็จของการจัดการความรู้ ได้แก่ ความตั้งใจของเกษตรกรที่ต้องการผลิตเมล็ดพันธุ์ข้าวคุณภาพสูงในท้องถิ่น กระบวนการเรียนรู้ร่วมกันของผู้ผลิตเมล็ดพันธุ์ข้าว และการแบ่งปันผลกำไรจากการจำหน่ายเมล็ดพันธุ์ข้าวที่เป็นธรรม สำหรับปัจจัยภายนอกที่เอื้อต่อความสำเร็จของการจัดการความรู้ ได้แก่ การส่งเสริมความรู้ทางการเกษตรอย่างเข้มแข็งจากศูนย์เมล็ดพันธุ์ข้าวกำแพงเพชร และการจัดเวทีแลกเปลี่ยนความรู้ทางวิทยาศาสตร์และภูมิปัญญาท้องถิ่นอย่างต่อเนื่องของกรมการข้าว กระทรวงเกษตรและสหกรณ์

คำสำคัญ: เกษตรกรผู้ผลิตเมล็ดพันธุ์ข้าวดีเด่นแห่งชาติ; กระบวนการจัดการความรู้; ปัจจัยเอื้อต่อการจัดการความรู้

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[1]บทความนี้ได้ผ่านการนำเสนอในการประชุมและการนำเสนอบทความทางวิชาการระดับชาติ เรื่อง "การจัดการศึกษาและวิจัยทางบรรณารักษศาสตร์และสารสนเทศศาสตร์เพื่อการพัฒนาที่ยั่งยืน" ที่จัดโดยสมาคมห้องสมุดแห่งประเทศไทยฯ เมื่อวันที่ 29 พฤศจิกายน 2566

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Introduction

Recently, the Thai government has demonstrated a commitment to the Bio-Circular-Green Economy Model (BCG Model) by focusing on scientific, technological, and innovative knowledge to create added economic value and striving for a balance between the conservation and use of natural resources and biodiversity. This model has systematically facilitated the generation of heightened value, with a specific emphasis on the processing of high-value rice products (Office of the National Economic and Social Development Council, 2023). Rice culture is globally significant because it ensures food security, preserves cultural heritage and promotes sustainable agriculture. It nourishes billions and shapes societies worldwide. In Thai culture, rice holds deeper meaning as the foundation of ancient traditions, values, and way of life (Her Royal Highness Princess Maha Chakri Sirindhorn, 1995). Thai rice is the consequence of agricultural expertise and knowledge accumulation. According to Thongdee (1994), rice and its associated legends represent Thai knowledge and culture. Rice remains alive. It influences an individual's perspective, worldview, and relationship with rice (Na-Thalang, 2001). Consequently, Thai rice culture represents a way of thinking and management approach that employs a variety of problem-solving techniques. Moreover, environmental and social factors as well as equitable community are considered during rice cultivation. Rice culture has been the subject of extensive research to support innovative economies and preserve ancestral history. Rice culture is a lifestyle centred on rice. Following an understanding of its ecology, environment, and culture, rice was cultivated. When rice is the primary source of sustenance, local technology is required (Polthanee, 2010). In contrast, rice culture illustrates Thailand's economic development. Rice refinement is advantageous to Thailand. It employs both conventional and modern agricultural practices to enhance rice cultivation and harvesting (Khaosaard, et al., 2005).

Kamphaeng Phet province, located in northern Thailand, exhibits a crucial interdependence between its agricultural sector and overall economic structure because of its strategic agricultural infrastructure and advantageous location. Kamphaeng Phet is widely recognized for its significant contributions to the national rice-growing industry. Kamphaeng Phet's favourable topography, including perennial water flow, fertile plains, and tropical climate, create ideal conditions for agriculture. The province's long history of rice production sustains the local economy and bolsters Thailand's position as the world's leading exporter of rice. The province's diverse landscape consists of mountains, pastures, and plains. The province's experiences with rice cultivation provide valuable insight into the complexities and difficulties of farming in Thailand (Kamphaeng Phet Province Agriculture Office, 2017). Farmers in Kamphaeng Phet pass on their knowledge to future generations via customs, rituals, and traditions, thereby fostering the "rice culture." By ensuring optimal rice plant development and high-quality harvests, they preserve family harmony. The cultivation process consists of three phases: grain preparation, water collection, and the farmer's return to work. Rice from the previous period is refined for consumption. During the domestic rice harvest, "Breaking Kwan" occurs, while "Mae Phosop" is used in farmers' discourse. In communication patterns, rhymed couplets indicate the utilization of shared resources.

Rice incorporates elemental components naturally (Boonpitak, et al., 2016).

The article intends to present a comprehensive case study of exceptional rice seed farmers in Kamphaeng Phet, Thailand, with the primary purpose of examining the impact of knowledge management on the sustainable development of communities of practice. By delving into the complex dynamics of these farmers, who have inherited ancestral knowledge through the integration of "rice culture" and advanced agricultural technologies, we can examine their consistent production of high-quality rice seedlings, which has resulted in consecutive prestigious awards since 2020. The findings of this case study shed light on the transformative potential of knowledge management in cultivating and disseminating best practices within the rice seed farming extension, benefiting not only local farmers in Thailand but also rice seed farmers worldwide with valuable insights and implications.

Literature Review

Knowledge management can be defined from an interdisciplinary perspective as the effective learning processes associated with the exploration and sharing of human tacit and explicit knowledge that use appropriate technological and cultural environments for enhancing intellectual capital and performance (Nonaka, and Konno 1998; Davenport and Prusak, 1998; Newell et al, 2009; Jashapara, 2011). Tacit knowledge consists of various components, such as intuition, experience, ground truth, values, beliefs, and intelligence. The tacit component is mainly developed through a process of trial and error encountered in practice. Explicit knowledge is a component of knowledge that can be codified and transmitted in a formal language. (Tiwata, 2002). Regarding knowledge management in the Thai community, Wasi (2005) describes it as concrete respect for the knowledge of people. It strengthens mental, physical, social, and intellectual characteristics. Aesthetically pleasing knowledge management extensions are functional. Fusion of knowledge is productive. It aids in the acquisition of knowledge and problem-solving for anyone interested in community knowledge. Tosakul *et al*. (2005) identify four distinct eras of knowledge management in the Thai community: 1) The period of technological innovation (1978-1977); 2) Knowledge management is feasible using Nonaka, and Konno's cycle of implicit and explicit knowledge generation and exchange, as illustrated by the SECI model as shown in figure 1; 3) In 2002, knowledge management experts argued that sophisticated networks enable human-driven knowledge to be efficient; and 4) Knowledge sharing by broadcasters. Since 2005, public communication has dealt with recurrent obstacles (Phanich, 2005).

Thongdee (1994) described the influence of traditions, rituals, beliefs, environment, and history on Thai farmers' cultivation knowledge. Farmers in Thailand investigated the effects of soil, water, wind, and fire on rice growth. The environment influenced concepts, instruments, and solutions. According to Wangsrikoon (2000), leadership and the unity of farmer community learning is characterized by community

problem-solving. It was essential to the Thai farmers' learning culture that internal, external, and environmental variables influenced community learning, according to Jinawong (2001). Self-assurance, trust, rituals, and participation all improved farmer community learning.

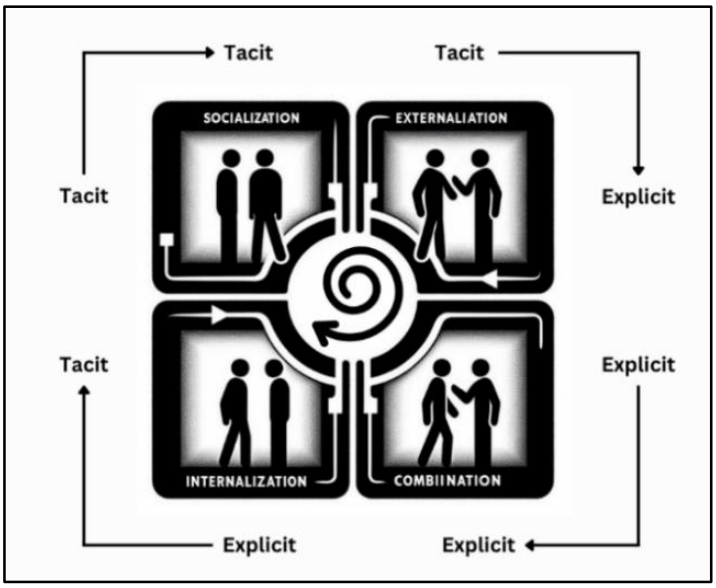

Figure 1. the SECI model (Nonaka, and Konno, 1998; p. 43)

Satsanguan (2002) depicted aspects of Thai farmer cultivation knowledge as rituals. Rice culture consisted of lifestyles, beliefs, novels, stories, music, dialects, idioms, riddles, artwork, superstitious architecture, traditional medicine, and decorum. These circumstances appeared to have a close relationship with Thai farmers' knowledge management. According to the farmers' community learning model proposed by Wattanasiritham (1999), the problem-solving aspect should be balanced with self-assurance, alternative implementation and evaluation, and life integration. Chartbanchachai (2005) discovered that knowledge management promoted intelligence and aptitude, influencing the farmer community's learning through altruism. According to Chinwinitkul (2006), action research enabled leaders to initiate community learning and encourage autonomy. Ngamlamom and Thirasirikul (2018) acknowledged that the requirements for agricultural community trust were to be compassionate, to have elevated objectives, and to think critically. These are the most crucial results of knowledge management research among Thai farming communities, which share certain success-enhancing characteristics, namely "communities of practice."

In addition, there are academic arguments that cast doubt on the knowledge management success of the rice seed producers in Kamphaeng Phet Province, which is recognized as the nation's outstanding rice seed producer community and integrates modern agricultural technology with rice traditional knowledge. It is important to observe that the farmer community of Kamphaeng Phet Province received the award for three consecutive years, from 2020 to 2022. Moreover, Satsanguan (2002),

Wattanasiritham (1999), Chartbanchachai (2005), Chinwinitkul (2006), Ngamlamom (2015), Ngamlamom and Thirasirikul (2018) researched the learning development of agricultural communities. Results indicated that knowledge management processes contributed to increased rice production and enhanced bargaining power in the rice market. Therefore, this research aims to investigate the knowledge management best practices, knowledge management process and knowledge management success factors that contribute to the achievement of the national outstanding rice seed farmers in Kamphaeng Phet, Thailand, as shown in Figure 2.

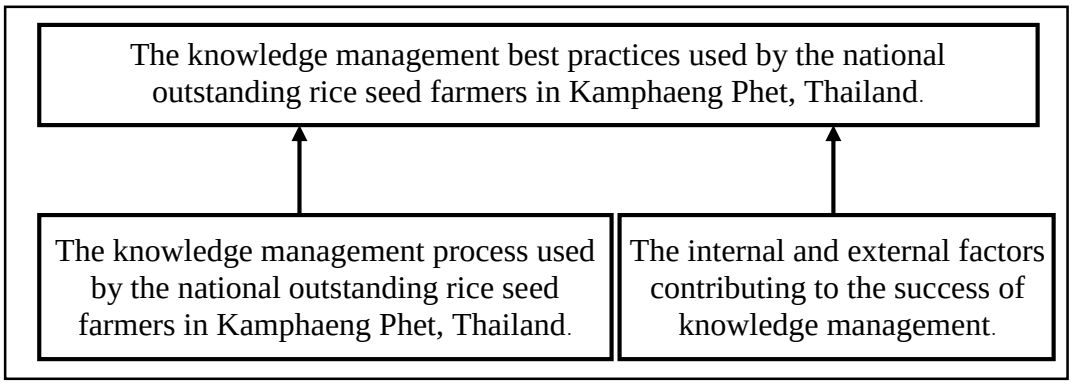

Figure 2. Conceptual framework.

Objective

To investigate the knowledge management best practices used by the national outstanding rice seed farmers in Kamphaeng Phet, Thailand.

Methodology

1) This research uses a qualitative approach to investigate the knowledge management best practices of outstanding rice seed farmers in Kamphaeng Phet Province.

2) Scope of the Research:

2.1) Scope of the Research Area: The data were collected from three communities in Kamphaeng Phet Province: Ban-Rai-Suk-Khum community, Phran Kratai District; Lan-Ta-Bua community, Lan Krabue District; and Khaw-Takhian-Ngam community, Pang Sila Thong District, These three research areas included a community rice centre that received the National Outstanding Farmer Award in 2020, 2021, and 2022 for its exemplary farmer groups, conferred by the Ministry of Agriculture and Cooperatives of Thailand, as shown in figure 3.

2.2) Scope of population: The research aimed to examine the knowledge management practices of outstanding national farmers who had also been awarded the National Outstanding Farmer Award in 2020, 2021, and 2022.

3) Key Informants: This research employed a targeted selection using the snowball sampling technique to identify key informants. The following key informants

were chosen: (3.1) four from the Phran Kratai District; (3.2) four from the Lan Krabue District; and (3.3) four from the Pang Sila Thong District. Key informants were residing in these three communities with a minimum of 10 years of experience in rice seed production with the Ministry of Agriculture and Cooperatives. Additionally, they have to be the recipients of the 2020, 2021, and 2022 National Outstanding Farmer Awards. This research utilized a purposive sampling technique to select a balanced cohort of four key informants from each of the three districts in the research areas.

4) Data collection: This research encompassed in-depth interviews, informal focus group discussion, participant observation, and non-participant observation. Triangulation and inductive analysis were used to convey the results of descriptive data analysis.

5) Research instruments: The instruments encompassed in-depth interview forms, informal focus group discussion forms, and field notes. The quality validation of research instruments was conducted by two experts specializing in local knowledge management and one expert specializing in rice seed.

6) Research Duration: The period of data collecting spanned from November 2022 to June 2023. The researchers conducted in-depth interviews and observations with informed consent. Ethical approval was granted by Kamphaeng Phet Rajabhat University, Thailand (Certificate of Ethical Approval No. 007/2022, issued on May 20, 2022). The termination of data collection occurred upon reaching saturation, denoting the point at which responses exhibited redundancy or similarity.

7) Data analysis: Inductive analysis techniques and triangulation were used in this study to synthesize the data. In order to protect the rights of key informants, strict policies and procedures were put in place to prevent any violation of participants' right to privacy. The conclusions were then expressed through descriptive data narration and inductive analysis.

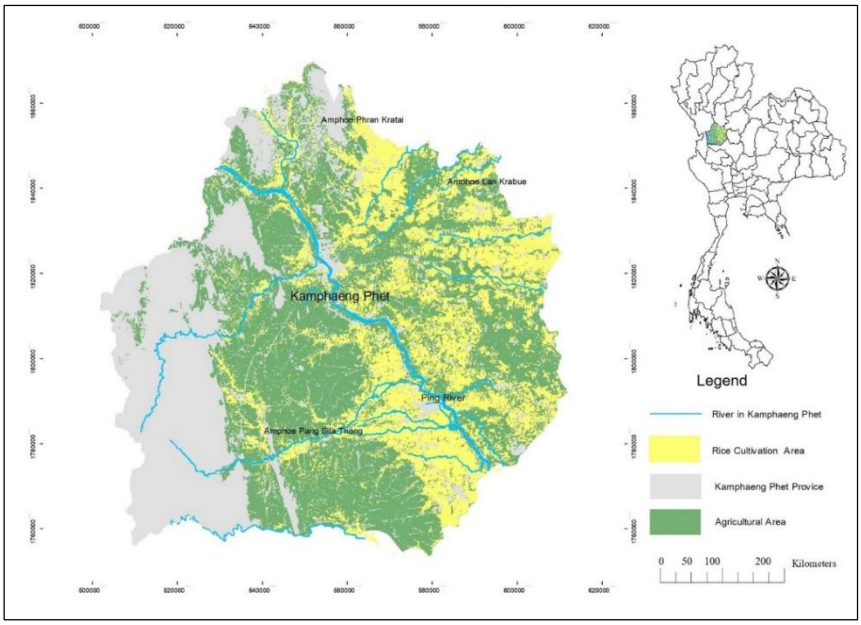

Figure 3. Areas of rice cultivation in Kamphaeng Phet Province

Results

1. The characteristics of research areas

1.1 The Ban-Rai-Suk-Khum community, Phran Kratai District, is the national winner in rice seed production group for 2020. This village is located north of Kamphaeng Phet. This community cultivates healthy, genetically diverse rice seedlings for use by nearby farmers. They combine contemporary science with local rice knowledge. To preserve the quality, they select and store rice seedlings with care. This network provides cultivators in Sukhothai with tested rice seeds.

1.2 The Lan-Ta-Bua community, Lan Krabue District, is the national winner in rice seed production group for 2021. This village is located east of the Kamphaeng Phet. Their success is a result of their primordial terrain and rich cultural history. Their dedication to the cultivation of glutinous rice, which has been passed down through generations of Laotian migrants to Thailand, distinguishes them. They produce and promote exquisite rice using traditional methods.

1.3 The Khaw-Takhian-Ngam community, Pang Sila Thong District, is the national winner in rice seed production group for 2022. This village is located south of Kamphaeng Phet. They cultivate rice seedlings effectively due to their proximity to the region's rice production and export. Because of their exposure to numerous rice varieties, they possess a wealth of knowledge about the grain. Combining their knowledge with state-provided agricultural technologies, they have had remarkable success cultivating rice seedlings. This community's skill in selecting, cultivating, and preserving rice varieties has enabled them to consistently produce high-quality seeds.

Additionally, these three research areas were nationally recognized for producing good-quality rice seeds and their involvement in ongoing knowledge exchange facilitated by the Kamphaeng Phet Rice Seed Centre. As a result, all three research areas in Kamphaeng Phet attained success through the reception of the 2020, 2021, and 2022 Outstanding Rice Seed Producers Group Award from the Ministry of Agriculture and Cooperatives of Thailand.

2. Outstanding farmers' knowledge management process

2.1 Knowledge Identification: Farmers in Kamphaeng Phet sought modern agricultural knowledge at the local rice seed facility, such as area selection, farmer gathering, paddy field maintenance, inspection of mixed rice, eradication of plants, rice seed harvest, and rice seed storage. Farmers integrated ancestral agricultural knowledge, exemplified by the veneration of the rice deity, thereby contributing to the enhancement of overarching agricultural practices. In addition, farmers seek knowledge from other farmers and external sources, such as by attending meetings of rice seed producer networks and taking part in National Rice and Farmer Day.

"I identified knowledge from fellow farmers, and I listened to researchers as they shared their modern knowledge on rice seeds." (Interviewee A1)

2.2 Knowledge Capture: Farmers in Kamphaeng Phet retained their knowledge by (1) Recording via smartphones, i.e., taking digital photographs and short-term videos to document training activities with government agencies. In their fields, digital photographs and brief videos were also found to illustrate issues with the rice seed production process; (2) Documentation involved the meticulous notation of details deemed significant by farmers following their participation in training sessions conducted by government organizations. Additionally, farmers recorded the fertilizers employed and made pertinent notes on the paperwork associated with seed collection; (3) Memorization of ancestrally transmitted knowledge and wisdom regarding rice seed production, including chanting about worshipping the deity of rice and memorizing the favourable time for rice seed harvesting.

"I took notes after the local community rice seed training sessions, making sure to capture the important knowledge. I used smartphones to take pictures and short videos to catch what was happening during the training sessions." (Interviewee B2)

2.3 Knowledge Organization: Farmers in Kamphaeng Phet classified their modern and traditional knowledge into six distinct categories based on the production process of high-quality rice seeds in accordance with national standards.

2.3.1 Seed Selection: Farmers demonstrated a thoughtful approach in selecting seeds, considering cultivar characteristics, yield potential, disease resistance, and adaptability to local conditions. Their knowledge of local rice varieties aided in making informed decisions and utilization of certified local seeds guarantees the quality and authenticity of the chosen seeds.

2.3.2 Seed Preparation and Treatment: Farmers learned various seed treatment techniques to combat seed-borne diseases and parasites, which led to healthier seedlings. Utilizing seed priming techniques such as submersion, disinfection, or coating with substances derived from traditional wisdom enhanced germination and seedling establishment.

2.3.3 Seed Sowing and Field Preparation: Farmers exhibited meticulous attention to detail to ensure prosperous crop establishment. They considered various factors such as sowing methods, planting densities, row spacing, and seed depth. Moreover, soil preparation techniques such as leveling, puddling, and organic matter incorporation fostered optimal conditions for seedling growth.

2.3.4 Crop Management: Farmers had valuable knowledge regarding the care of rice plants during the entire growing season. They categorized their understanding of plant nutrition, fertilizer application, micronutrients, and organic matter enhancement. This included knowledge of proper irrigation techniques, soil moisture maintenance, and indigenous vegetation control wisdom. They also considered organizational factors regarding pest and disease management, techniques for routinely surveying fields, and strategies for appropriately employing control measures.

2.3.5 Integrating traditional and modern knowledge of monitoring grain maturity and moisture content: Farmers determined harvest times suitable for regional cultures. To guarantee the quality of seedlings, precise harvesting and other techniques were necessary. Seed loss was reduced, and seed viability was maintained through threshing, dehydrating, and cleansing the seeds. Additionally, a belief in horoscopes and storage rituals prevented the grain from decomposing.

2. 3. 6 Seed Storage and Preservation: Farmers understood the significance of preserving seedlings in optimal conditions to guarantee their longevity. This required careful consideration of factors such as temperature, relative humidity, and ventilation, as they were crucial for maintaining the viability of seeds. In addition, rice seed farmers understood the importance of employing appropriate seed packaging and labeling procedures to provide additional protection during storage.

"I remember how our folks used to grow rice seeds. We kept that in mind and passed it down from generation to generation. Doing it that way helped the rice we grew give good yields." (Interviewee B4)

2.4 Knowledge Evaluation: In the three research areas, a consistent pattern emerged, signifying that knowledge evaluation took place both before and after knowledge implementation. Additionally, iterative processes were observed intermittently throughout the phase of implementing knowledge. Consequently, farmers evaluated the results of knowledge implementation and reverted to indigenous knowledge if the results were inadequate. In addition, they assessed the applicability of knowledge to their circumstances, denying it if it was not consistent with the community's economic ways and traditions. This process pointed to aligning external knowledge with the community's backgrounds, fostering a relationship between contemporary insights and enduring cultural practices.

" I evaluated the cultivation knowledge after discussions with rice seed researchers and other farmers, but I didn't fully adopt modern methods. I had to assess their compatibility with our traditions." (Interviewee B3)

2.5 Knowledge Implementation: Farmers utilized both internal and external sources of knowledge. They employed ancestral knowledge for rituals and site selection while incorporating modern technologies for efficiency and sustainability, thus preserving indigenous knowledge alongside technological advancements.

"I used to check out the knowledge before trying anything in the rice field, like trial and error. From my experiences, I have mixed local wisdom with modern knowledge." (Interviewee C3)

2.6 Knowledge Distribution: Farmers engaged in group-level knowledge exchange; knowledge was shared through regular meetings and farmer academies, which promoted cooperative learning. Network-level exchange occurred through training, study visits, conferences, and seminars with other farmers.

"Rice seed researchers in Kamphaeng Phet Province used to organize group meetings where farmers could share their tacit knowledge. It really helped spread the know-how of successful farmers among farmers' networks." (Interviewee B1)

In consideration of the foregoing, national outstanding rice seed farmers demonstrated a robust knowledge management framework that involved identifying, capturing, organizing, evaluating, implementing, and disseminating knowledge. This approach integrated both historical and contemporary knowledge, extending the dissemination of knowledge to local and national networks of fellow producers.

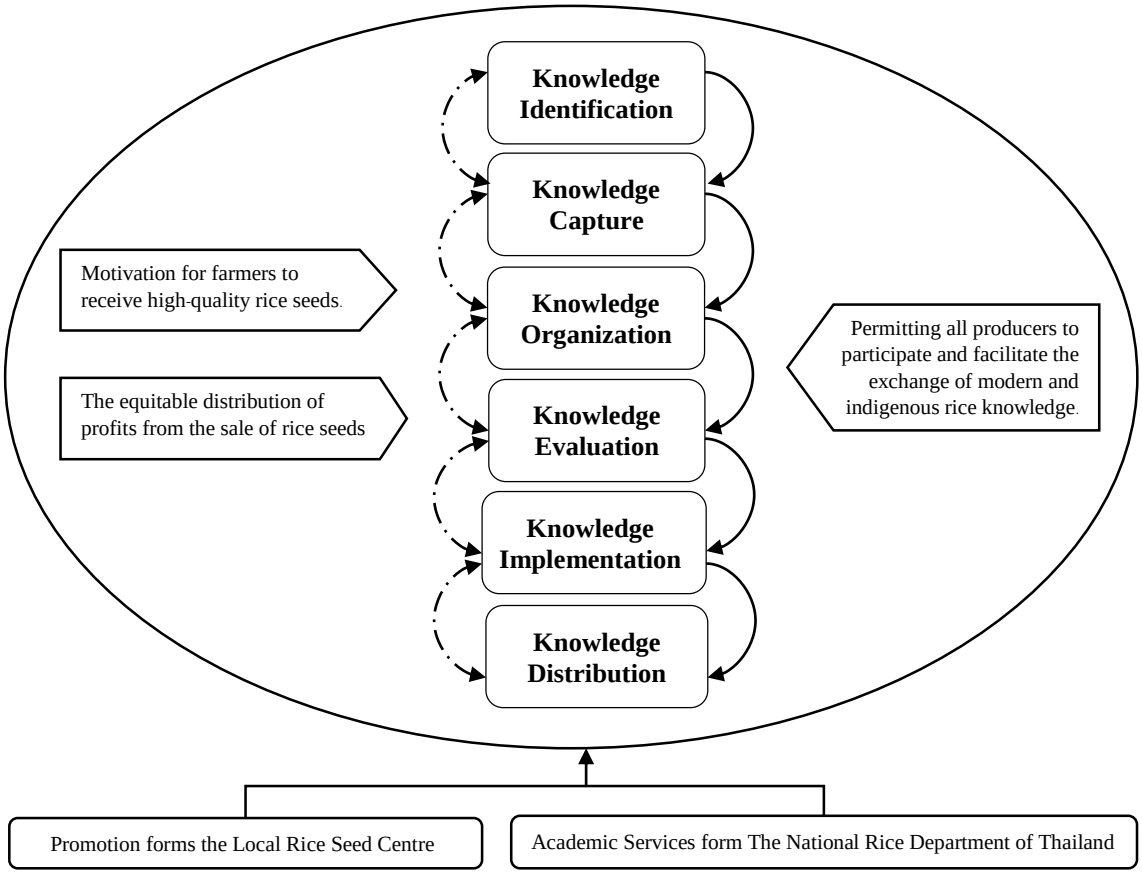

Figure 4. Rice seed farmers knowledge management diagram in Kamphaeng Phet, Thailand.

3. Factors contributing to success of outstanding farmers' knowledge management

3.1 The internal contributing factors were as follows: (1) the motivation of rice seed producers in Kamphaeng Phet, who wanted their fellow farmers to receive high-quality rice seeds that met the requirements of the National Rice Department of Thailand; (2) Permitting all producers to participate in the development of a learning process to facilitate the exchange of modern scientific knowledge and indigenous rice knowledge; and (3) the equitable distribution of profits from the sale of rice seeds among

producers who produced rice seeds in Kamphaeng Phet served as a confidence-building mechanism for sustaining community organizations.

"I stuck to believing in the rice spiritual angel. Every time we planted; our crew would always pray to the rice spiritual angel. It was like a part of our plant cultivation." (Interviewee C1)

3.2 The external contributing factors were as follows: (1) Promotion from the Local Rice Seed Centre in Kamphaeng Phet facilitated the exchange of modern knowledge and indigenous rice knowledge; (2) The National Rice Department of Thailand supported innovative digital content management systems that could access content on smartphones to provide information and knowledge services to cultivators.

"I am really determined to do it, and we all work together equally to meet the national standards for our groups. Moreover, we have good mentors who are rice seed researchers. So, the way we share the income is clear and fair." (Interviewee A3)

Conclusions and discussion

The article investigates the exceptional rice seed production achievements of three villages in Kamphaeng Phet, which consistently garnered national recognition. Each community's success stems from its unique characteristics. The Ban-Rai-Suk-Khum community excelled at integrating modern technology and traditional cultivation techniques, prioritizing seed selection, and providing tested rice seedlings to neighbouring farmers. The prosperity of the Lan-Ta-Bua community lies in the preservation of cultural heritage through traditional glutinous rice cultivation methods. The Khaw-Takhian-Ngam community effectively utilized diverse rice varieties, regional knowledge, and government-provided technology. These communities served as exemplary models, showcasing the successful integration of modern technology, traditional practices, cultural preservation, and knowledge application, offering valuable insights for the agricultural sector.

In addition, outstanding farmers in Kamphaeng Phet developed a comprehensive knowledge management approach with multiple phases. They identified knowledge by seeking contemporary agricultural information, incorporating traditional practices, and participating in training sessions and study tours (Nonaka, and Konno, 1998; Davenport and Prusak, 1998; Newell *et al*., 2009; Jashapara, 2011). They captured knowledge by recording actions, noting important details, and memorizing ancestral wisdom (Thongdee, 1994). The knowledge was then organized into six categories based on the production of high-quality rice seeds (Tosakul *et al.*, 2005). Farmers evaluated knowledge applications and used the philosophy of sufficiency economy (Wattanasiritham, 1999). They implemented knowledge by combining traditional and modern methods, local wisdom, and current technology (Chartbanchachai, 2005). Finally, knowledge was distributed through network-level exchanges, including training and seminars, as well as group-level interactions through meetings and farmer academies (Chinwinitkul, 2006; Ngamlamom and Thirasirikul, 2018). This effective

knowledge management approach combines traditional and contemporary knowledge, facilitating information sharing among local and national networks of farmers (Satsanguan, 2002).

Ultimately, the success of knowledge management among rice cultivators in Kamphaeng Phet Province, leading to consecutive national championships, could be attributed to internal and external factors. Internally, the producers' motivation to provide good-quality rice seedlings, their collaborative learning process that integrated modern and traditional knowledge, and the equitable distribution of profits among producers fostered a cohesive community spirit and ensured long-term sustainability (Wasi, 2005; Jinawong, 2001). Externally, the endorsement and promotion provided by the Local Rice Seed Centre and the National Rice Department of Thailand facilitated the exchange of scientific and indigenous knowledge. Additionally, the success was complemented by innovative digital content management systems and the preservation of farmers' knowledge in digital archives by Kamphaeng Phet librarians.

Recommendations

1) Collaborative engagement should be established among the local community rice seed centre, The Rice Department of Thailand, and academic institutions in the area. The objective will be to enhance the best practices and expertise of the National Outstanding Rice Seed Farmers Group in sustainable rice seed production.

2) Prospective research initiatives are positioned to employ technologies for the preservation and augmentation of best practices in rice seed production. This will encompass the development of agricultural tourism in Kamphaeng Phet Province.

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