# DEVELOPING A KNOWLEDGE MANAGEMENT MODEL FOR SELF-RELIANT COMMUNITIES*

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## Abstract

*The purposes of this study were to develop a knowledge management (KM) model for self-reliant communities, to examine satisfaction with KM operation of self-reliant communities, and to determine factors of success in KM for self-reliant communities. The focus areas and groups were Ban Nam Kliang and Ban Lao Rat Phatthana, Amphoe Wapi Pathum, Changwat Maha Sarakham comprising 8 focus organizations of self-reliant communities:  agricultural cooperative group of Nam Kliang Wiang Chai civic society, mulberry and silk raising group, biological fertilizer group, Thai traditional massage group, toxin-free rice production group, herbal Thai noodle transformation group, cultural conservation group, and savings group with a focus group of 42 persons. The methodology was a mixed methods design, including an application of research and development, participatory action research, as well as quantitative research. The following results were obtained: 1) (a) Developing the KM model for self-reliant communities comprised a community preparation stage with 3 activities: the stage of creating motivation, awareness, participation promoting, and visions with 3 activities; the stage of making plans/developing team potentials with 4 activities, and the stage of implementing plans in practices and work development. (b) The outcome of the KM model trial: KM had sources of knowledge from problems, raising questions, and action by solving problems; the learning process have sources of creating, classifying, storing, implementing, sharing and evaluating knowledge; there must be KM centers for driving the self-reliant communities to share knowledge in both real and simulative forums. 2) Their satisfaction with KM operation was at high level.  3) The factors of success in KM were enthusiasm about learning, researcher and participant leadership, participant team's ability to work, participatory*

*work climate, learning process with work performing techniques, and driving mechanisms with KM centers.*

**Keywords:** developing model, knowledge management, self-reliant communities; participatory action research, mixed methods

## Introduction

Currently the world is experiencing economic, social and technological changes. Present global competitions rely on knowledge. Modern society needs not only funds, labor, natural resources or raw materials for creating production values, but also knowledge for creating added value and intellectual property. The needed knowledge must be basic, advanced, and applied knowledge for production and the creation of different jobs. Development of the new body of knowledge can affect competition and strengthen communities, organizations, and institutes, which are regarded as important foundations of a country's development (Patthamasiriwat, 2004, p. 2). In sharing knowledge, developing the new body of knowledge leading to innovations relying on advanced technology, and socioeconomic development, knowledge foundation can cause knowledge proportions within and outside persons to change. An important element of KM is the process of KM (Wichainpanya, 2005, p. 1). Therefore, Thai society should promote knowledge builders and users to create added value and competitive capability with social purposes to make Thai society valuable, good to live in, and peaceful by using 5 religious principles. These 5 principles are: morality, intelligence, right economy, right state, and strong society. These are in accordance with the Ninth National Plan for Economic and Social Development (2002-2006). This Plan outlines a development vision for the nation:

Thai society is strong and balanced in 3 aspects, namely quality society, society of intelligence and learning, and society of unity and kindness to one another (Watthanasiritham, 2003, pp. 13-14)

In our current society, the most important thing is not resources, labor or money. Rather, it is knowledge. This is an age of a society of learning. KM and the learning process are the most important features. Management of the leaning process for the community can help it discover and develop human potential, until it can rely on itself. Any strong community which can rely on itself must be based on these 4 basic principles: 1) create reliability; 2) rehabilitate relationships; 3) develop management systems; and 4) manage the learning process (Phongphit, Nanthasuwan, and Raekphinit, 2001, pp. 12-13).

Community networks which use KM in Thailand are regarded as organizations of learning to rely on themselves with strength and ability to adjust themselves to become leaders of change in different parts of the country, such as the southern network of Mai Riang Institute of Knowledge Management in Changwat Surat Thani, and Wibun Khemcharoen Institute for Community Development in Changwat Chachoengsao in the East. In northeast Thailand, there are learning centers at Tambon Na Kha and Tambon Pracha Phatthana, Amphoe Wapi Pathum, and Changwat Maha Sarakham (Chantarasombat, 2004, p. 1). These

community networks have upheld the principles of community welfare, community industry, and community enterprises as guidelines for self-reliance. They operate activities by forming groups of occupations. They use available local raw materials for transformation to increase value. Local wisdom is adjusted to current conditions to decrease expenses and increase incomes. Occupations are built for community people. They can solve problems occurring in the community. The people can rely on themselves; and the body of knowledge and the learning process can occur. However, they lack systematic KM of the groups. Also, they lack mechanisms to support the community to work continuously. Thus, the researcher conducted this study by using participatory action research. If the trial of the KM model, together with activities for developing self-reliant communities, achieved beneficial outcomes, it would lead to KM of self-reliant communities and to extend the outcomes to create a new body of knowledge in congruence with the local context.

**Purposes**

The three purposes of this study were as follows:

1. To develop a KM model for self-reliant communities,

2. To examine satisfaction with operating KM for self-reliant communities, and

3. To examine factors of success of KM of self-reliant communities.

**Methodology**

The study was divided into 5 phases:

1. Phase 1 studied documents and related literature, and determined the conceptual framework.

1.1 Studied new theories and concepts of knowledge and KM.

1.2 Studied research involving development of KM models in Thailand and foreign countries.

1.3 Determined research conceptual framework in terms of scope of important activities of the organization in KM, KM cycle, KM model, and factors affecting KM for the target self-reliant communities according to Items 1.1 and 1.2 to be in accordance with local context.

1.4 Drafted a tentative conceptual model for self-reliant communities through experts.

1.5 Examined the appropriateness and feasibility of the drafted KM model for self-reliant communities in Changwat Maha Sarakham by considering the following: 1) common targets; 2) working mechanisms in self-reliant communities and networks; 3) organizing a participatory learning process in the following 6 aspects of KM issues: building knowledge, classifying knowledge, storing knowledge, implementing knowledge, sharing learning, and evaluating knowledge; 4) learning process leading to 15 stages of KM; 5) network of learning issues and building the body of knowledge through the process of participatory action research; 6) basic factors of KM promotion; 7) synthesizing relationships of persons, skills, and ability to manage knowledge; and 8) evaluating indicators of success for self-reliant communities.

2. Phase 2 selected and studied focus villages and self-reliant communities.

2.1 Two villages had the following requirements:

2.1.1 Ban Nam Kliang, Tambon Na Kha, Amphoe Wapi Pathum, Changwat

Maha Sarakham, was selected because it was a village with various groups, and it had continuous development activities at a certain level, but the KM model had not been implemented, together with the work development, which included: civic agricultural cooperative group at Ban Nam Kliang Wiang Chai mulberry and silk raising group, biological fertilizer group, and Thai traditional massage group.

2.1.2 Ban Lao Rat Phatthana, Tambon Pracha Phatthana, Amphoe Wapi Pathum, Changwat Maha Sarakham was selected because it was a village with various groups, it had several activities under development, and it had not implemented the KM model together with the work development which included: toxin-free rice group, herbal Thai noodles group, cultural conservation group, and savings group.

2.2 The reasons for selecting the research area were: there were community organizations which covered the dimensions of community context, establishment, size, and type of interests in participating in activities that included: 1) there were large, medium-sized, and small organization groups; 2) there were several types of organization groups including cooperative occupation groups and a local wisdom group.

2.3 The focus groups were groups of persons involving with people or in important groups leading to continuous learning and KM

3. Phase 3 constructed a KM conceptual model as follows:

3.1 constructed a tentative conceptual model, determined research conceptual framework in terms of scope of major KM activities based on the concepts of Nonaka and Takeuchi (1995), Phanit (2005), and Wiig's (1993) KM process for developing the KM model for self-reliant communities.

3.2 Presented the KM model based on the research conceptual framework in Items 3.1 to 5 experts for checking its content and the construct validities of the model.

4. Phase 4 tried out the tentative conceptual KM model and improved it by dividing it into 5 steps:

*Step 1:* prepared the community. It was the preparation of persons, groups of people, and those involved in participation from the beginning to the end of the project in the issues of self-knowing, knowing resources, and ability to manage basic resources.

*Step 2:* created motivation and awareness, promoted participation and created vision by holding meetings and seminars, study visits and practices. It was learning together and development of participation from the first stage to the stage of participation with willingness in making plans for work development together with the KM plan.

*Step 3:* made plans/developed team potentials. It was learning together and participation in making plans for KM, together with group development plans and team potential development, and core leaders in the issues of interests which could foresee success in piloting, and then promoted raising problems challenging work performance.

*Step 4:* conducted qualitative research for self-reliant communities for creating the leaning process and KM of the focus community organizations in similar issues. Ban Nam Kliang and Ban Lao Rat Phatthana experimented with producing biological fertilizers to use with rice planting to compare with the use of chemical fertilizers.

*Step 5:* upgraded knowledge, improved the plans, and really practised according to the assumptions to achieve the established targets. The herbal Thai noodles group at Ban Lao Rat Phatthana experimented with producing dough for making Thai noodles by group members themselves. The Nam Kliang Wiang Chai civic agricultural cooperative group at Ban Nam Kliang experimented with culturing mulberry seedlings of a rich fruit breed for using their leaves and fruits as raw materials to make tea and wine. They could produce mulberry together in an area of totally 40 rai (i.e., 16 acres).

5. Phase 5 evaluated outcomes of the KM process and learning at the group level, cross-group level, and village level; promoted self-reliant communities to review their outstanding work pieces, and disseminated their works in such different forms as brochures, websites, and then summarized research results by the community organizations, which included: 1) evaluation of the KM process of community organizations; 2) evaluation of leaning at the group and village levels; 3) positive reinforcement, rewarding, and disseminating works on web sites; and 4) a forum for summarizing KM outcomes.

**Results**

The results were presented in three sections, based on the three features of this study:

1. For the results of developing the KM model for self-reliant communities, the following findings are reported:

1.1 The developed KM model for self-reliant communities consisted of these 18 major activities: (1) improving understanding of community leaders, (2) creating teams and core leaders, (3) studying contexts of community organizations, and conditions of KM, (4) creating motivations and awareness of working together, (5) creating visions of KM, (6) making understanding of KM development activities, (7) making plans for KM development activities and knowledge plans, (8) developing basic knowledge of computer for data storage officials, (9) creating indicators of group success, (10) promoting the seeking of knowledge and study visits to outstanding examples of KM, (11) summarizing and reviewing activity plans in the group KM process, (12) piloting by using activities in the KM process, (13) summarizing lessons, reflecting and reviewing KM plans at the group and village levels, (14) upgrading the body of knowledge and KM in other issues to originate the clear body of knowledge in these 6 aspects: creating, classifying, storing, implementing, sharing, and evaluating knowledge; (15) evaluation the KM process, (16) evaluating learning at the group and village levels, (17) positive reinforcement, rewarding and disseminating works on web sites; and (18) a forum for summarizing KM outcomes.

1.2 The following results of trying out the KM model for self-reliant communities were observed: 1) Every organization could originate these 4 groups of learning persons: facilitators, group work performers, record keepers and coordinators.  2) KM with sources of knowledge originated from problems, question raising, and solving problems by using actual action until the appropriate body of knowledge occurred. 3) The leaning process consisted of building knowledge, classifying, storing, implementing, sharing, and evaluating knowledge. 4) 2-4 packages of knowledge were obtained through the KM process of each group. 5) KM centers were found to be drivers of the group to meet and share learning in each village. 6) Websites of the KM centers were

developed as sources of disseminating KM outcomes and sources of the sharing of leaning.

2. The self-reliant communities generally experienced a high level of satisfaction with operating KM of the organization as a whole at a high level. When classified according to the village level, the following outcomes were found: 1) The self-reliant community of Ban Nam Kliang had satisfaction with KM operation at a medium level. The Nam Kliang Wiang Chai civic agricultural cooperative group, Thai traditional massage group, and mulberry and silk raising group reported a high level of satisfaction, while the biological fertilizer group experienced a medium level of satisfaction. 2) The self-reliant community at Ban Lao Rat Phatthana reported a high level of satisfaction with the KM operation as a whole.

3. The factors underlying success of the KM model for self-reliant communities could be summarized as follows:

3.1 The use of leadership of the researcher as the participant, learner, instructor, manager, and reinforcer stimulated the emergence of continuous participatory work. The researcher called himself "a facilitator".

3.2 For important persons in KM of community organization, while conducting the research in the last phase, the team of participants had great intention and work climate for success according to functional roles in KM. In this study these people were called "participants". They called themselves "group work performers" to be in accordance with the community context. Those whose job was to coordinate within group and group member to participant in activities in the village in this study were called "coordinators" who were both formal and informal leaders.

3.3 Provision of opportunities for participants to have participation from the beginning included: thinking together, planning together, action together, checking together, and being responsible for conducting research together could be a significant factor of being network owners. Being members with initiation, visions, participatory working, and better management than at present, would cause continuity and commitment to perform work by themselves. Also reliability in their own organizational body of knowledge and more self-reliance could occur.

3.4 Learning by practising, improving and developing work, raising new questions, and implementing in practice to achieve the goals were the results from participatory action research. These were regarded as the way of life which could cause interactions with one another in their own group and with other groups in the village. There was sympathy which could cause them to love and help each other. They were proud of their human dignity. This was regarded as integrated KM for self-reliant communities and networks.

3.5 People and self-reliant communities were enthusiastic to learn. For work performance in their own groups and sharing learning at the group, village, and cross-village levels, they tried to use tacit knowledge through practice and trying out until they were confident. There were summary of lessons and record keeping as explicit documents. Then the meaningful body of knowledge of the community organizations occurred.

3.6 There were supporting mechanisms of KM centers of community organizations, of which the Tambon Administrative Organization of these villages had been partners. These tambon organizations allotted budgets to support some activities based on the plans/projects,

and their representatives participated in the research as participants.

**Discussion**

From the results of this study the following were interesting issues for discussion:

Developing the KM model for self-reliant communities was appropriate and could be implemented with large-sized, medium-sized, and small-sized groups. Learning activities managed knowledge, together with activity performance, based on the group development plans leading to the operation of KM of community organizations. They were: 1) building knowledge, seeking external knowledge by organizing study visits, training, and practices. These were applied to their own knowledge and their own group. Work was developed to be appropriate and congruent with their local contexts and conditions. There appeared sharing learning, teaching work to group numbers according to the structure of management. There were more learning persons in accordance with Yuwanut Thinnalak's research (2005, pp. 1-17). It was found in her study that the methods of building knowledge were: analyzing situations, problems and obstacles; making the master plan and life plan to be in accordance with the community and families; seeking knowledge from different media, informants, wisdom, and developers. 2) Classifying knowledge could provide more skills and experiences. There were improvements in the structure of management, functional roles of group leaders to originate learning. 3) For knowledge storage, all the groups realized the importance of transcribing the body of knowledge in adherence for teaching work to group members. Record keeping was done individually in each notebook. There was after action record keeping, which could be regarded as important learning, and notes were recorded on their on websites. 4) For knowledge implementation, knowledge of the groups stored in general documents and e-documents was implemented in forms of brochures, narrations, articles, and printed media, which were regarded as important instruments of these groups. 5) For knowledge sharing, participants were resource persons to transfer and teach work to other agencies and interested persons.

In addition, there was knowledge sharing across groups and across villages in the target research area. A facilitator transferred knowledge of the groups by using forums, such as meetings, story telling, and realistic forums, such as Internet or websites. The outcomes were in accordance with the findings of research by Epstein (2000, pp. 38-52). She conducted a study of sharing knowledge in organizations to find out how people used communicative instruments for communication. She defined knowledge within and outside people as tacit-explicit knowledge both in the model and in the method of communication. The study found that communicative instruments were more important to diffusion of complex knowledge than general knowledge. In sharing experiences and knowledge hidden in persons, the use of methods of communication in the form of direct meeting and talking with each other had more fruitful effects than using e-mail. 6) For knowledge evaluation, important learning persons and the work of community groups had connection and relationships with one another based on functional roles. The results of this study were consistent with the established goals in community preparation, creating motivations, public awareness, promoting participation, and creating visions, making plans, taking plans to practice, and development and

evaluation. All these were in accordance with the concepts of Nonaka and Takeuchi (1955, pp. 71-72), and Wicharn Panich (2005, pp. 1-4).

KM is generally believed to consist of: (1) the process of providing knowledge, comprising: building knowledge, seeking knowledge, checking and selecting knowledge, categorizing knowledge, and storing knowledge; the process of transferring/sharing knowledge, upgrading knowledge, and using information and communication technology to support; (2) important KM persons; and (3) instruments or technology used in KM. This study's results were consistent with the concept of KM process of Wiig (1993, p. 51), as illustrated in Figure 1.
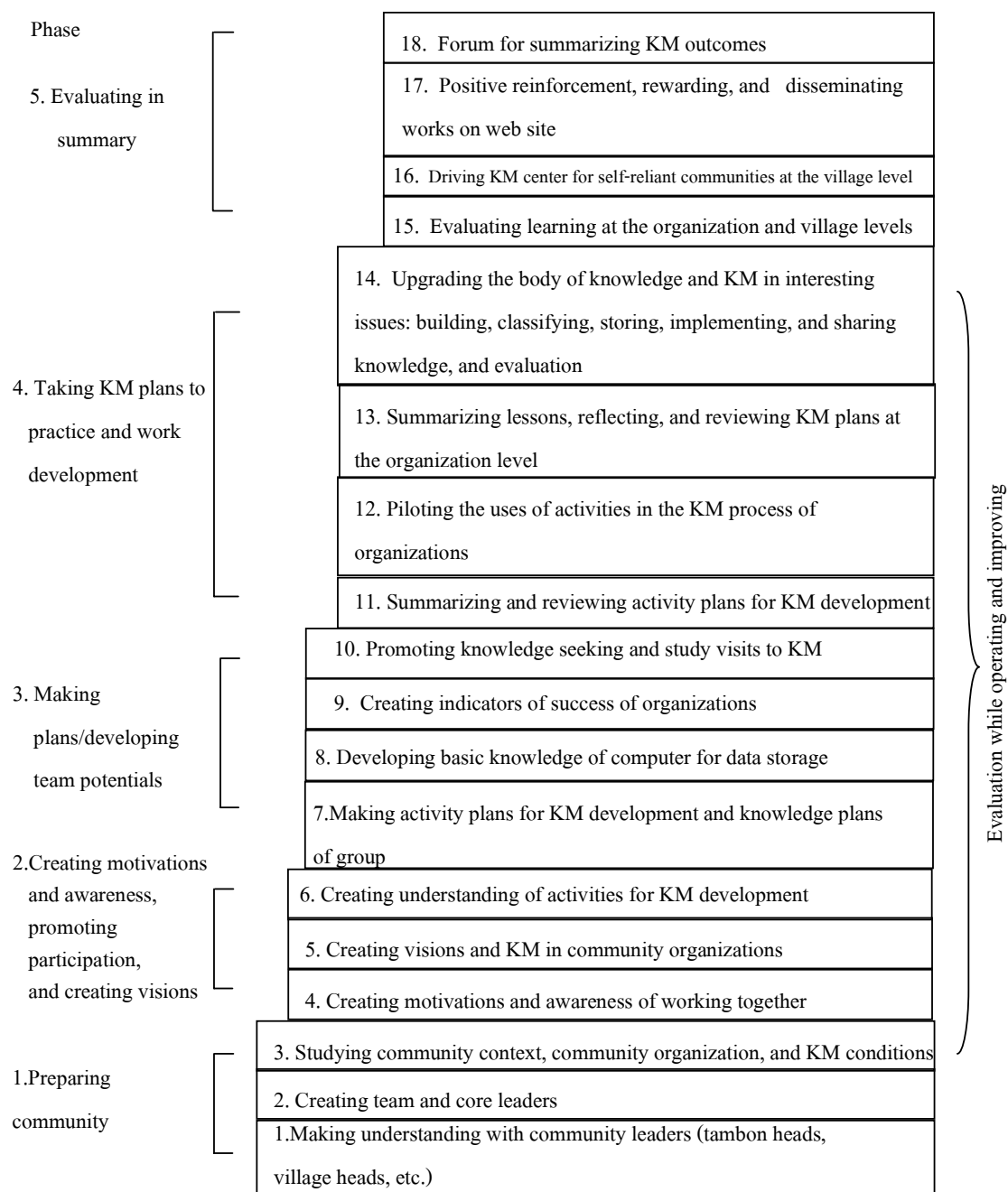
Phase

5. Evaluating in
    summary

18.  Forum for summarizing KM outcomes

17.  Positive reinforcement, rewarding, and   disseminating works on web site

16.  Driving KM center for self-reliant communities at the village level

15.  Evaluating learning at the organization and village levels

4. Taking KM plans to
    practice and work
    development

14.  Upgrading the body of knowledge and KM in interesting issues: building, classifying, storing, implementing, and sharing knowledge, and evaluation

13. Summarizing lessons, reflecting, and reviewing KM plans at the organization level

12. Piloting the uses of activities in the KM process of organizations

11. Summarizing and reviewing activity plans for KM development

3. Making
    plans/developing
    team potentials

10. Promoting knowledge seeking and study visits to KM

9.  Creating indicators of success of organizations

8. Developing basic knowledge of computer for data storage

7. Making activity plans for KM development and knowledge plans of group

2. Creating motivations
    and awareness,
    promoting
    participation,
    and creating visions

6. Creating understanding of activities for KM development

5. Creating visions and KM in community organizations

4. Creating motivations and awareness of working together

1. Preparing
    community

3. Studying community context, community organization, and KM conditions

2. Creating team and core leaders

1. Making understanding with community leaders (tambon heads, village heads, etc.)

Evaluation while operating and improving

Figure 1: Knowledge Management Model for Self-reliant Communities

*Note:* After the forum for summarizing KM outcomes, all the activities are still continuing. Community organization groups may have different readiness and potential, which may begin at Activity 11, summarizing and reviewing activity plans from KM development in a cycle once again by beginning from selecting not a very difficult activity to perform in a pilot form or selecting an activity at the end (e.g., upgrading clear knowledge).

The results were analyzed as basic elements of major activities in KM operation together with development activities for self-reliant communities in the form of participatory action research in the following 5 stages: 1) preparing the community, 2) creating motivation, common awareness, promoting participation, and creating visions; 3) making plans, 4) taking the plans to practice and development, and 5) evaluation. These results could lead to KM in 6 aspects: building knowledge, classifying knowledge, storing knowledge, implementing knowledge, sharing knowledge, and evaluating knowledge. Ban Nam Kliang and Ban Loa Rat Phatthana were not appropriate for rice farming, because they lacked water resources and good soils, and most of the villagers had no land ownership and were poor. These two villages were thus used as strategic focus area of development to be "healthy communities." It began with reviewing community plans and self-reliant communities in 2005, after the communities opened themselves up to learn more about outside communities by learning about making plans/projects from Mahasarakham Univesity and Khon Kaen University. These communities began to realize that working together in groups led to "well-being villages." There was integrated KM by using community organizations to drive it. However, the communities were found to have to rely on outside agencies, particularly living the daily life in terms of the 4 necessities. "How can the community rely on itself?" was the question to solve.

2. The self-reliant communities were typically highly satisfied with the M operation of community organizations. Ban Nam Kliang community organizations experienced satisfaction with KM operation at a medium level. Nam Kliang Wiang Chai civic agricultural cooperative group, Thai traditional massage group, and mulberry and silk raising group had satisfaction at a high level, while the biological fertilizer group at a medium level. Ban Lao Rat Phatthana community organizations were highly satisfied with KM operation. These findings were consistent with the results of research conducted by Boonsong Hanphanit (2003, pp.226-236), who studied developing a KM model in Thai higher educational institutes. His study found that higher educational institute administrators needed KM at a high level, because the organizational groups had an open climate and they trusted each other. All of the members were responsible for KM. They had information systems which could provide information for use. They sought resources for different activities which could enhance the base of knowledge of organizational groups. The biological fertilizer groups in this current study reported a medium level of satisfaction. However, the community organizations at Ban Lao Rat Phatthana had satisfaction with KM operation in terms of KM evaluation as a whole at a high level, and in each item they had satisfaction at a high level in that the members had proud works or pieces of work. The next from most were leadership in KM and KM evaluation. For community organization

groups, it was found that every group were highly satisfied with the KM operation.

3. The factors of success of the KM model for self-reliant communities included: (1) the use of leadership of the researcher and participants as learners, work instructors, internal and external managers and persons to reinforce and stimulate continuous participatory work. The researcher called himself a "facilitator," which was similar to the research of Gruber (2000, pp. 178-188). He studied organizational culture and found that the factors positively influencing the use of knowledge together in the organizations included: (1) a culture of openness and trust in each other; (2) KM for important persons of community organizations; (3) providing opportunities for participants to be included in the research from the beginning; and (4) the learning model using practices from participatory action research. It was the way of life with interactions with one another, which could result in love and help with each other, and human dignity. IT was also integrated in KM and interdisciplinary research, which was consistent with the research finding of Yuwanut Thinnalak (2006, pp. 1-17). She found that building knowledge in congruence with Thai society was regarded as a way to achieve self-reliance. Learning innovation performance in what a person had aptitude could build the body of knowledge for solving problems and could live joyfully in the society. It was also in accordance with the research conducted by Thamrong Udompaichitkul (2005, pp. 1-3) who studied the King's concept of sustainable economy in a case study of Tambon Kut Khong Chai, King Amphoe Khong Chai, Changwat Kalasin. He found that H.M. the King emphasized the importance of the human dimension and the economic dimension,

especially self-reliance. People had to have knowledge about themselves and had to know themselves. In this current study, it was found that Ban Nam Kliang had KM about raising mulberry with rich fruits by receiving knowledge from the Mulberry and Silk Reseach Center in Changwat Khon Kaen. There appeared a new group: rich-fruits-breed mulberry raising group. Ban Lao Rat Phatthana experimented with producing fermented Thai noodle dough by using knowledge from people in the community and seeking knowledge from neighboring communities. They adapted and applied the body of knowledge of Thai noodle production until they were successful. When community people knew themselves, knew their own resources, and could manage basic resources, changes in the community occurred. They extended activities to cover all problems to respond to their needs. New organizations were established. These new organizations could provide benefits, including better management by individuals and groups, and increasing funds in the community. The results of this study may lead to more self-reliant communities.

**Recommendations**

*1. Recommendations for development*

1.1 Policy recommendations

1.1.1 Adjust the paradigm and build the new body of knowledge in development by using the concept of sustainable economy, and emphasize the concept of self-reliance as the concept of the mainstream in learning leading to community development. For sustainable community organization, use strategies for promoting the process of community participation to

originate learning leading to permanent development.

1.1.2 Use community organi- zation networks/problems as the standing figure in learning development leading to community-based development approach. State and private agencies should support and promote and stimulate to generate the learning process in the community for people to be able to solve problems by themselves.

1.1.3 There should be extensions of time and budgets for operation in each area, because work performance in the first phase should have continuity and 1-2 year follow-up.

1.2 Action recommendations

1.2.1 For promoting the KM process of community organization leading to sustainability and intellectual property, there should be integration of state and private sectors on the basis of community willingness; and there should be coordination in cooperation, sharing learning and summary of lessons in working together by organizing learning forum in continuity.

1.2.2 Community organizations should be supported and promoted to use community plans as plans for determining direction of community development based on their visions and strategies for development the determined area, and there should be follow-ups and evaluation in continuity. Indicators of success in KM of community organizing should be concretely developed.

*2. Recommendations for further research*

2.1 Support, promote and develop academic competence for community development officers at all levels to have knowledge and ability to conduct action research or participatory action research in order to be able to promote the learning process systematically, and transcribed lessons should be summarized for dissemination and sharing of learning.

2.2 Competence should be enhanced for community leaders, and local knowledge managers to have professionalism in promoting the learning process, KM and resource persons to stimulate the community to originate continuous learning.

2.3 There should be research and development to upgrade KM centers of networked community organizations to promote KM to benefit the community.

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